State of Utah Department of
Agriculture and Food

2005 State of Utah Ground-Water Program

By
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ACKNOWLEDGMENTS

The Utah Department of Agriculture and Food's (UDAF's) 2005 Ground-Water Sampling Program is successful because of contributions made by many people. UDAF's ground-water steering committee consists of Commissioner Leonard Blackham; Directors Clair Allen, George Hopkin, and Dr. David Clark; and Pesticide Program Manager Clark Burgess. This committee gives guidance, support, and direction to the program.

Efforts by members of the Utah Association of Conservation Districts (UACD) have also contributed greatly to the success of the 2005 sampling program. They helped select sampling sites and navigated us to locations of wells to be sampled. Their knowledge of local areas and contact with people who desired well sampling proves invaluable.

Terry Monroe, Jarred Manning, and Will Atkin of Utah Division of Water Rights (WR) helped in selection of well sites in the Pahvant and Curlew valleys.

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Finally, thanks are extended to the owners of wells without whose participation and trust this program would not have functioned.

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Front Cover: *Mark Quilter of UDAF Ground Water Program collecting water sample from well.*

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Utah Department of Agriculture & Food
State Ground-Water Program
Report 2005

Utah Department of Agriculture and Food's (UDAF's) State Ground-Water Program is funded by the legislature to assist private well owners and other agencies, organizations and concerned citizens to have a better understanding of water quality. Provisions of the Federal Clean Water Act require drinking water testing for public water systems. This act does not require testing of private wells used for drinking water, irrigation, and livestock watering even though these wells account for the majority of ground-water use in the State of Utah.

This report covers testing of private wells in the state by UDAF's State Ground-Water Program for 2005.

Cooperative Effort

UDAF has a memorandum of understanding with the Utah Division of Water Rights (WR) for collecting ground-water data from Pahvant and Curlew valleys. Sample analyses were done for inorganic and organic constituents that influence water quality. Guidance from WR has helped in selecting sampling sites and sharing data.

UDAF also works closely with the Department of Environmental Quality (DEQ) in providing expertise for the State Pesticide Management Plan and other ground-water programs. This relationship benefits UDAF by allowing agriculture's voice to be heard and its ideas considered during the planning process. UDAF is an essential link between DEQ and farmers and ranchers of the state regarding environmental issues.

The State Ground-Water Program works with members of local Soil Conservation Districts (SCDs) and Utah Association of Conservation Districts (UACD) to identify private wells for sampling. SCD cooperation and knowledge of the local area has been very beneficial in identifying wells for sampling, meeting well owners, and distributing information. The work of local district members who advertise, collect names, and organize sampling events helps to make the program successful.

UDAF's Ground-Water Sampling Procedures

UDAF meets with SCDs to inform and update members on ground-water issues. Districts then select wells for sampling in their area and obtain preliminary sample information by using UDAF's Pre-Sample Information Form (Fig. 1). For Pahvant and Curlew valleys, WR selected wells to be sampled.

Local SCD members escorted UDAF personnel to selected well sites. At each well, location was determined using a Global Positioning System (GPS) receiver. Water was then collected for inorganic, bacteria, and pesticide analyses at each well using established protocol. Samples were packed in ice and taken to the laboratory for analysis. Reports summarizing laboratory results were sent to each well owner. GPS information was provided to UDAF's GIS administrator who provided maps of the sampled areas.

During 2005, UDAF tested all samples for coliform and E. coli bacteria using IDEXX Colilert MUG kits in the field. This has been a significant addition to the program. We also conducted nitrate testing in the laboratory using an enzyme procedure from Nitrate Elimination Company, Incorporated, located in Lake Linden, Michigan. We found this procedure to be more dependable and accurate than cadmium reduction procedures that we have used in the past.

Areas Sampled

During 2005, 460 samples were taken from wells, drains, and springs in all of the seven UACD zones in the state. Each UACD district sampled is addressed in this report, with a map showing sample location and a table of chemical analyses. Narrative reports are also provided for each sampled district. Below is a general summary of ground-water quality for sampling during 2005 based on EPA standards.

Summary of Water Quality for 2005

There were no confirmed pesticide detections in the 460 samples taken during the 2005 sampling season based on EPA standards. Results show that water quality is diverse throughout the state with electrical conductivity (EC) ranging from 118 to 29,400 µmhos/cm with a mean of 1,140 µmhos/cm. Standards for EC are rendered as Total Dissolved Solids (TDS) for livestock watering and culinary use; for purposes of comparison, EC values are converted to TDS for these standards. TDS values are proportional to EC at a ratio of 3:5. Water having EC values exceeding 750 µmhos/cm may cause damage to sensitive plants when the water is used for irrigation. When EC exceeds 3,000 µmhos/cm severe damage to all but the most salt-tolerant plants is expected. Two hundred twenty four samples (224) exceeded the 750 µmhos/cm level and sixteen (16) exceeded the 3,000 µmhos/cm level. The Federal Clean Water Act sets an aesthetic standard of 500 ppm (500 ppm TDS) for drinking water. Water that exceeds this level may have an objectionable flavor. One hundred twenty nine (129) samples exceeded this value. When EC exceeds 3,333 µmhos/cm (2,000 ppm TDS) it becomes a health issue. Fifteen (15) samples exceeded this value. Since livestock have a much higher tolerance for saline water, the critical value for livestock watering is 8,333 µmhos/cm (5,000 ppm TDS). Only seven (7) samples exceeded this level.

Water Temperature

Variation in water temperature also demonstrates the great diversity of ground water quality throughout the state. Sampled water temperatures range from at 4.3 ºC to a high of 29.8 ºC. The average temperature was 14.6 ºC.

Water pH

An important chemical characteristic of water is pH. Generally the groundwater in Utah is slightly alkaline, with a mean pH of 7.99 for all samples taken this year. The range of pH for samples collected this year is 5.87 to 13.70. The value of pH can help estimate types of dissolved minerals and compounds likely to be found in the water. Water on either end of this range has characteristics that adversely affect water quality. A pH value less than 6.5 indicates the possible presence of heavy minerals, whereas a pH value greater than 9.0 may indicate the presence of excessive sodium.

Hardness

Hardness of water is determined on the basis of how much calcium (Ca) and magnesium (Mg) are in the water. In Utah, Ca and Mg are plentiful in the soils and also in ground water. Hardness values based on grains per gram (gpg) of water, range from 0.1 (soft) to 49.4 (very hard) with an average of 7.35 (moderate-hard). Soft water can have high sodium values and may not be fit for culinary use even though it is classified as “soft.”

Sodium Absorption Ratio (SAR)

Sodium (Na) affects water quality and soil in various ways. Na causes soil particles to separate, freeing organic matter. Soils with high Na levels appear as dark, slick waterlogged areas. These soils are not suitable for crop production because air and water cannot pass through them. The Sodium Absorption Ratio (SAR) indicates whether irrigation water is likely to degrade soils due to excess Na. When the SAR value reaches 3, soils may begin to degrade. When the SAR value reaches 9, damage is severe. SAR values for samples this year range from 0.0 to 93.2, with a mean of 3.91. Special irrigation practices are required when using water with a high SAR value.

Bacteria (Coliform & Ecoli)

As found in previous years, bacteria are a major problem for private water systems. Thirty-four percent (34%) of the wells and springs sampled this year tested positive for coliform bacteria, as compared to 59% in 1999, 36% in 2000, 29% in 2001, 27% in 2002, 31% in 2003, and 33% in 2004. Although most coliform bacteria do not pose a health problem, their presence in well water indicates that surface waters, soil, or other contamination is getting into the well. Bacteria problems are usually seen in older wells, wells with improper casing and caps, wells that are too shallow or systems that have been improperly maintained.

Of greater concern is the presence of E. coli in water samples. During 2005, 8% of the wells and springs sampled tested positive for E. coli as compared to 34% in 1999, 7% in 2000, 4% in 2001, 3.4% in 2002, 5.8% in 2003, and 6.6% in 2004. These wells have been contaminated with mammalian fecal material, the only source for this bacterium. The source could be effluent from septic systems near the well, poor well construction with livestock near the well head, or open wells in areas where animals and manure are present.

Specific elements that exceed irrigation, livestock, or drinking water standards are discussed in the district reports as described below.

More detailed descriptions of water quality for each sampled area are presented in this report. The report covers specific UACD zones and districts where sampling was conducted, and in some cases separate areas within districts are included where circumstances warrant separate treatment. Tables of chemical, bacterial, and physical characteristics of sampled water are also included. Measured values on the tables that exceed primary drinking water standards are underlined, whereas those exceeding secondary standards are shaded. Measured values that indicate minor animal health problems are underlined and values that exceed livestock health standards are also shaded. Measured values that exceed irrigation standards are underlined, with levels in the severe range being shaded. A map for each district is presented that shows sampling site locations.

Sample site locations can be identified on the map using the "Id#" column from the related table. Values of –0.1000 indicate that this element or compound was not measured above the detection limit of the procedure used to test for the element or compound.

Pesticides

The generic Pesticide Management Plan (PMP) for the State of Utah identifies five pesticides which have the potential to be a threat to the ground water supply. Each of these pesticides is broad-spectrum. herbicides. The pesticides are: (1) Alachlor, (2) Atrazine, (3) Cyanazine, (4) Metolachlor, and (5) Simazine. In addition to these pesticides, the UDAF laboratory also screens for a broad range of other pesticides which are sold and used in the state which have the potential to contaminate ground water resources according to the following list.

List of Pesticides

Hexachlorocyclopentadiene	Alpha Chlordane	2,4,5-TP (Silvex)
Hexachlorobenzene	Dieldrin	Picloram
Simazine *	Endrin	Aldicarb
Atrazine *	Methoxychlor	Aldicarb sulfone
Gamma-Lindane	Chlordane "T"	Aldicarb sulfoxide
Heptachlor	Toxaphene "T"	Carbofuran
Alachlor *	Prometon	Methomyl
Aldrin	Dicamba	Oxamyl (Vydate)
Heptachlor-Epoxide	2,4-D	3-OH Carbofuran
Gamma Chlordane	PCP	3-Keto Carbofuran
Disulfton	Diazinon	Metolachlor *

* Pesticide identified for restriction under the proposed PMP rule.

Laboratory Screening for Pesticides

The UDAF laboratory performs a screening analysis of all water samples using four different EPA approved screening methods. The methods are as follows: (1) EPA Method 515.1 used for detecting chlorinated phenoxy acid, (2) EPA Method 505 for detection of chlorinated pesticides and organophosphates, (3) EPA Method 531.1 for detection of carbamates, and (4) an immunoassay method for pesticide residue screening used for detection of chlorinated phenoxy acid and carbamates. The immunoassay method

indicates the presence or absence of pesticides in the ground water sample. In the event that a sample tests positive for the presence of pesticides using the screening procedure, a more extensive laboratory process utilizing Gas Chromotography(GC) or High Performance Liquid Chromatography(HPLC) is used to determine the actual contamination level of the suspected pesticide.

Water wells constructed of materials containing Poly-Vinyl Chloride (PVC) can produce “false positives” using the immunoassay method for pesticide screening. Other environmental conditions can also combine to produce “hits” in the screening procedure which include: welding done on the well head, which can release compounds from the PVC well casing, dead animals in the wells during sampling, and large diameter shallow wells located in the middle of agricultural fields. When these conditions cause positive “hits” in the screening method, the samples are subjected to the more rigorous GC analysis for further quantification and evaluation.

During laboratory screening of water samples for the 2005 sampling season, twenty (20) samples tested positive for the pesticide 2,4-D, using the pesticide residue screening procedure. The samples were located in distinct areas of the state, during separate sampling collection periods. Each of these samples was subjected to evaluation using the GC analysis method, and all of the twenty samples tested negative for pesticides.

A field investigation conducted by UDAF personnel concluded that the contamination could have originated in the air, or by the sampling personnel passing through treated areas. One of the above means of contamination may have caused the initial positive indication during the screening process. The five wells were pumped and purged prior to resampling to verify the presence of pesticides in the aquifer. Subsequent sampling and analysis of the well showed no indication of pesticide contamination.

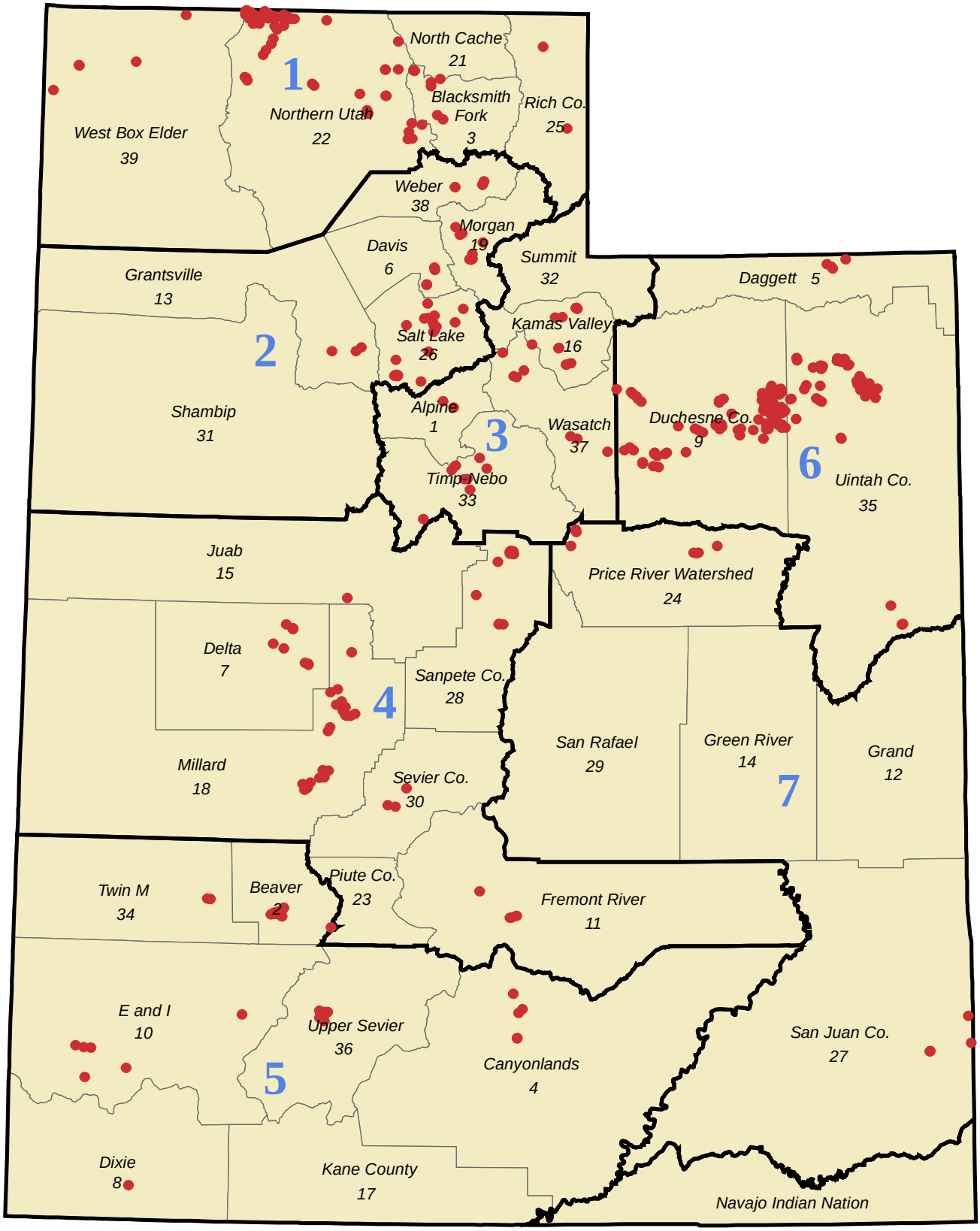
Suspect Pesticide Sample Locations

Sample ID	Date	Location	Pesticide
5031	5/18/2005	Roosevelt, Utah	Atrazine

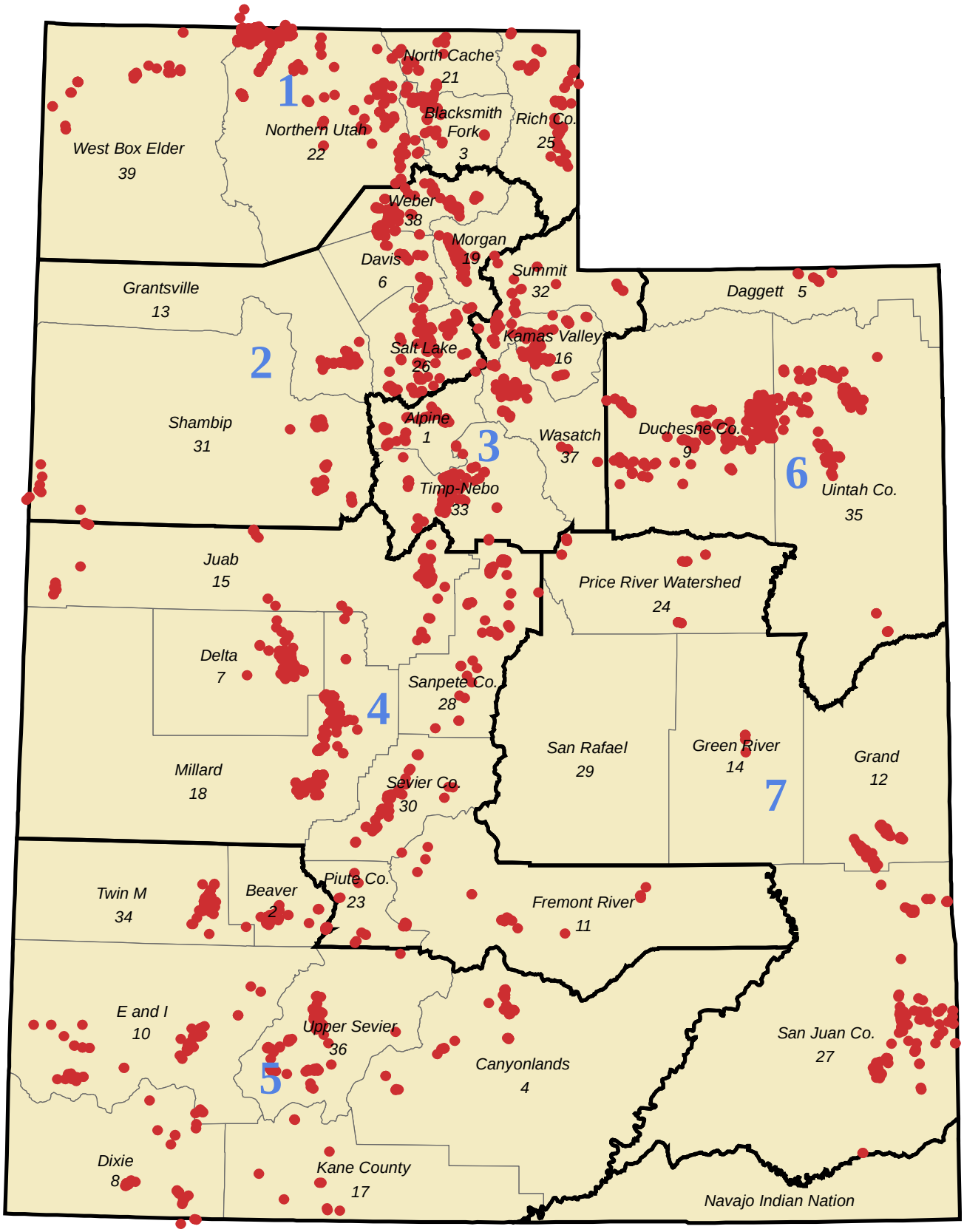
Sample was found to be an accidental spike sample for laboratory quality control. Resampling of the water source confirmed no atrazine or other pesticides above the laboratory detection limit.

None of the ground water samples tested positive for pesticide contamination using GC analysis.
No pesticides were detected in any of the other samples collected during the 2005 sampling year.

Map 1. 2005 Ground Water Sample Locations



Map 2. Historic Ground Water Sample Locations 1996 - 2005



UDAF PRE-SAMPLE INFORMATION FORM

(This is a non-regulatory program. Data from sampling this well will be for your use and information)

Name:_____ Water Right #:_____
Address: _____ Depth of Well_____
City: _____ Depth of Water: _____
Telephone #_____ Conservation District: _____

Please sketch a map showing how to locate your well (North is the top of the page.) Please give street name, and distances from major intersections or any other landmarks.

May we turn on your water or pump without you being present?_____

Are there instructions we need to sample your well(s)?_____

_____

By signing this form you are giving permission for the State of Utah Department of Agriculture and Food to cross your property and sample your well.

I the undersigned am the lawful agent of the above described well and grant permission to the Sate of Utah Department of Agriculture and Food to sample said well(s). I also grant access permission to the well.

_____ _____
Sign on the above line Date

For any further information contact:

Mark Quilter, Ground-Water Specialist
UDAF, 350 North Redwood Road
Box 146500, Salt Lake City, UT 84114-6500
(801) 538-9905 Fax: (801) 538-9436

FIG. 1. Pre-Sample Information Form.

Zone 1

UACD Zone 1 consists of five districts in three counties comprising the northern tier of the state including Box Elder, Cache, and Rich counties. Sampling testing may not have been done in all the districts or counties listed in Zone 1.

Seventy-six (76) sites were sampled in five (5) districts in Zone 1 during the spring, summer, and fall of 2005. These included eight (8) sampled in the Blacksmith Fork District, one (1) in the North Cache District, sixty (60) in the Northern Utah District, two (2) in the Rich County District, and five (5) in the West Box Elder District. A separate narrative report is presented for each district, with maps showing approximate locations of the sample sites. Each report covers three categories of water quality criteria: irrigation, livestock, and culinary. Data are presented in four tables for each zone, grouped according to district—namely, general parameters (temperature, pH, total dissolved solids (TDS), and chemicals for which there are no standards); irrigation, livestock, and drinking water parameters.

Blacksmith Fork District

General:

Eight (8) samples were collected in the Blacksmith Fork District. Water temperatures range from 12.6 ºC to 16.6 ºC, with a mean of 14.9 ºC. The pH for the district ranges from 7.72 to 8.26, with a mean of 8.01.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressure, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. None of the samples exceeded the 3,000 µmhos/cm standard.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 mark the beginning of problems and values greater than 9 indicate severe problems. None of the water sampled in this district has elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples collected in this area have high bicarbonate, which is common for water in Utah. None of the samples exceeded the severe level of 8.5 meq/l.

No other elements were detected above concentration levels harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Water sampled in this district is moderately-hard to hard, with grains per gallon (gpg) ranging from 4.9 to 6.3, with a mean of 5.6 gpg. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Samples 5291, 5443, and 5444 have high manganese concentrations.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5447 and 5448 are contaminated with coliform and E. coli bacteria. The wells these samples were collected from should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

BLACKSMITH FORK
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5291	-0.1000	53.30	6.67	-0.1000	28.22	12.98	17.43	8.00	16.6	365
5372	-0.1000	37.48	16.12	-0.1000	14.11	19.40	54.30	8.26	16.3	353
5443	-0.1000	63.50	5.90	0.0517	29.09	21.23	38.02	8.03	14.1	338
5444	-0.1000	69.89	5.10	0.0632	37.84	11.29	38.07	7.90	12.6	338
5445	-0.1000	28.08	10.25	-0.1000	28.94	9.52	35.72	7.94	15.9	323
5446	-0.1000	67.15	8.07	0.0702	39.71	9.29	61.71	7.72	16.6	331
5447	-0.1000	61.81	1.90	-0.1000	23.57	13.39	34.98	8.10	13.0	407
5448	-0.1000	67.15	1.99	-0.1000	27.72	15.26	9.02	8.15	13.7	400

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5291	-0.1000	-0.10	10.88	-0.10	-0.1000	0.1291	5.81	0.0875	-0.1000	-0.10	0.3	609
5372	-0.1000	-0.10	18.72	-0.10	-0.1000	-0.1000	5.24	-0.1000	-0.1000	-0.10	0.5	589
5443	-0.1000	0.07	15.43	-0.10	-0.1000	0.0861	4.51	0.2092	-0.1000	-0.10	0.6	564
5444	-0.1000	-0.10	10.24	-0.10	-0.1000	0.1725	4.54	0.2374	-0.1000	-0.10	0.3	563
5445	-0.1000	-0.10	9.69	-0.10	-0.1000	-0.1000	4.23	-0.1000	-0.1000	-0.10	0.3	539
5446	-0.1000	-0.10	10.24	-0.10	-0.1000	-0.1000	4.54	-0.1000	-0.1000	-0.10	0.2	551
5447	-0.1000	-0.10	23.93	-0.10	-0.1000	-0.1000	5.45	-0.1000	-0.1000	0.11	0.3	679
5448	-0.1000	-0.10	27.12	-0.10	-0.1000	-0.1000	5.19	-0.1000	-0.1000	-0.10	0.4	667

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

BLACKSMITH FORK
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5291	-0.1000	0.0124	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.30	-0.1000	365	-0.1000	-0.10
5372	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.07	-0.1000	353	-0.1000	-0.10
5443	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.85	-0.1000	338	-0.1000	-0.10
5444	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	21.76	-0.1000	338	-0.1000	-0.10
5445	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	21.64	-0.1000	323	-0.1000	-0.10
5446	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	21.38	-0.1000	331	-0.1000	-0.10
5447	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.46	-0.1000	407	-0.1000	0.11
5448	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.35	-0.1000	400	-0.1000	-0.10

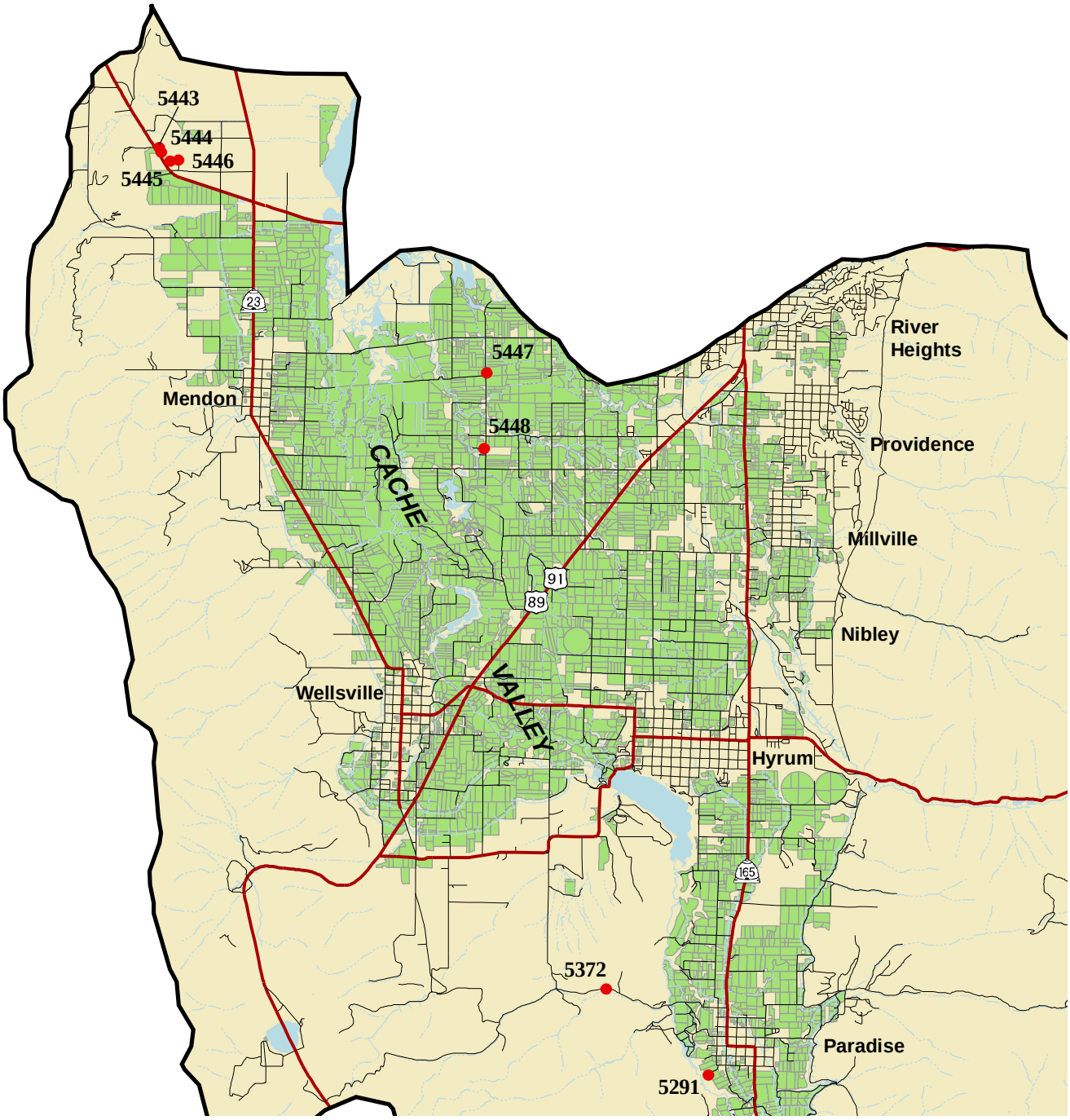
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5291	0.0124	0.1748	-0.1000	-0.1000	-0.1000	0.1291	0.0875	-0.1	-0.1000	9.30	-0.1000	365	-0.10	6.84	0	0	6.0
5372	-0.1000	0.0651	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.5	-0.1000	5.07	-0.1000	353	-0.10	7.62	0	0	5.6
5443	-0.1000	0.1266	-0.1000	-0.1000	-0.1000	0.0861	0.2092	-0.1	-0.1000	16.85	-0.1000	338	-0.10	7.90	0	0	5.1
5444	-0.1000	0.1056	-0.1000	-0.1000	-0.1000	0.1725	0.2374	-0.1	-0.1000	21.76	-0.1000	338	-0.10	7.94	0	0	5.4
5445	-0.1000	0.0870	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	21.64	-0.1000	323	-0.10	7.81	0	0	4.9
5446	-0.1000	0.0500	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	21.38	-0.1000	331	-0.10	7.87	0	0	5.3
5447	-0.1000	0.0774	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.8	-0.1000	12.46	-0.1000	407	0.11	7.45	1	1	6.3
5448	-0.1000	0.0700	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.0	-0.1000	12.35	-0.1000	400	-0.10	7.55	1	1	5.9

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 3. Blacksmith Fork District

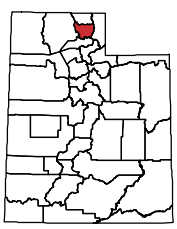


Map Scale 1:150,000 (1 inch = 2.4 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



North Cache District

General:

One (1) sample was collected in the North Cache District. Sampled water temperature was 13.1. The pH for the sample was 8.01.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. None of the samples in this district exceeded the 750 µmhos/cm standard. None of the samples exceeded the 3,000 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the water sampled in this district has SAR values above 3.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. None of the samples collected in this district have high bicarbonate levels.

No other elements were detected above concentrations that are harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Water sampled in this district tested moderately-hard to hard, with grains per gallon (gpg) readings from 0.1 to 10.3 with a mean of 5.0 gpg. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceed the health standard of 2,000 ppm.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

None of the samples from this district was found to have bacterial contamination.

NORTH CACHE
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5290	-0.1000	59.83	1.40	-0.1000	25.35	11.59	-0.10	8.01	13.1	325

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5290	-0.1000	-0.10	14.94	0.00	-0.1000	-0.1000	5.24	-0.1000	-0.1000	-0.10	0.3	541

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5290	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.28	-0.1000	325	-0.1000	-0.10

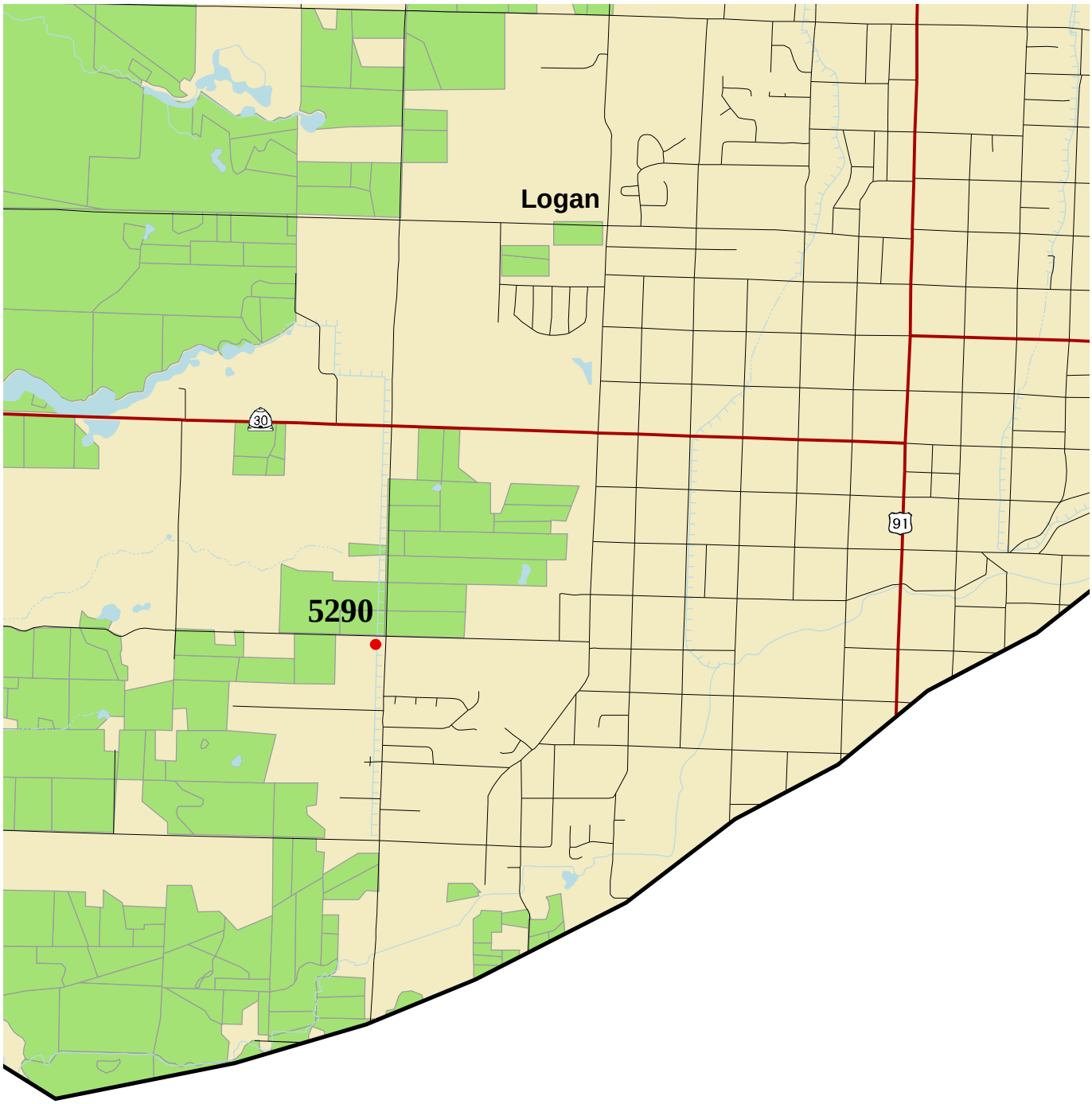
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5290	-0.1000	0.1308	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.1	-0.1000	5.28	-0.1000	325	-0.10	8.01	0	0	5.0

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 4. North Cache District



Map Scale 1:24,000 (1 inch = 0.4 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location

Northern Utah District

General:

Sixty (60) samples were collected in the Northern Utah District. Sampled water temperatures range from 11.5 ºC to 29.5 ºC, with a mean of 18.1 ºC. The pH for the district ranges from 7.12 to 9.96, with a mean of 8.06.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Only nine (9) of the sixty (60) samples have EC values **less** than 750 µmhos/cm. Twelve (12) samples exceed the severe-injury level of 3,000 µmhos/cm.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Most water samples in this district have elevated SAR values. Fifteen (15) samples exceed the severe level of 9.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples collected this year have high bicarbonate, which is common for water in Utah. Samples 5421, 5422, and 5424 exceed 8.5, the level above which severe problems appear.

Some specific elements can be toxic to plants. Samples 5348, 5417 through 5421 have elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Fourty-six (46) of the samples have elevated Cl. Many of these samples also exceed the severe level.

Manganese (Mn) is a micro-nutrient and is required for plant growth, yet in excess it can damage plants. Manganese above 0.2 ppm can injure plants and cause reduction in dry matter production. Excess manganese interferes with the plant's ability to use other nutrients such as calcium (Ca). Sample 5350 has elevated concentrations of manganese.

No other elements were detected in concentrations harmful to plants.

Livestock:

Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Livestock watering standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. Values above 5,000 ppm are too high in salts for most livestock. Usually livestock will not drink water of this quality unless forced. Seven (7) of the samples exceed the salinity standard for livestock. Sample 5348 is exceedingly high in dissolved solids and could cause severe injury if used to water livestock.

Sulfur (S) in the form of sulfate can cause water to be off flavored and causes diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. None of the samples exceeds the livestock standard for sulfur. However, several samples are approaching this level.

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Samples 5346, 5420, 5422, 5424, and 5442 have elevated molybdenum.

Culinary:

Water sampled in this district varies from soft to very hard, with grains per gallon (gpg) ranging from 1.3 to 27.5 with a mean of 9.6. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. TDS for all samples **except** 5240, 5242, 5243, 5244, 5380, 5381, 5435, 5437, and 5442 exceed the EPA aesthetic standard of 500 ppm. Above this level the water may be off-flavored, but it is not a health problem until TDS reaches 2,000 ppm. Samples 5348, 5349, 5350, 5352, 5353, 5417, 5418, 5419, 5420, 5421, and 5430 exceed the health standard for TDS.

Arsenic (As) exceeded the primary drinking water standard in sample 5424 with a value of 0.0663 ppm.

High iron (Fe) can cause discoloration of plumbing fixtures and promote the growth of iron bacteria, which stains anything that it contacts. Again, this is an aesthetic issue, not a health concern. Samples 5349 and 5350 have high iron.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Samples 5292, 5348, 5349, 5350, 5426, and 5430 have high manganese levels.

Sulfate (S) is a soluble form of sulfur that can cause flavor problems in drinking water if its concentration is greater than 83 ppm sulfur. Bacteria in the water use sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Samples 5345, 5348, 5421, 5427, and 5432 have high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Thirty-four (34) of the sixty (60) samples tested positive for coliform bacteria. These include samples 5239, 5240, 5242, 5343 through 5347, 5350 through 5353, 5355, 5357, 5358, 5361, 5380, 5417 through 5428, 5430 through 5432, 5436, and 5437. Samples 5343, 5344, 5346, 5353, 5355, 5357, 5418, 5419, 5421, 5423, and 5424 tested positive for E. coli. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

NORTHERN UTAH
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5238	-0.1000	62.93	32.28	0.1104	51.65	73.79	-0.10	7.74	16.6	660
5239	-0.1000	58.21	33.93	0.1087	58.04	74.71	-0.10	7.77	11.5	703
5240	-0.1000	16.83	2.97	-0.1000	4.67	116.08	-0.10	8.08	21.7	387
5241	-0.1000	63.93	12.28	0.1106	36.12	189.54	-0.10	7.62	18.0	911
5242	-0.1000	25.98	5.96	0.0533	14.36	42.71	0.24	8.23	17.1	263
5243	-0.1000	30.86	1.23	-0.1000	16.71	18.05	-0.10	7.80	15.0	220
5244	-0.1000	31.91	5.52	-0.1000	17.67	39.76	-0.10	7.51	17.9	293
5292	-0.1000	82.32	2.66	-0.1000	36.20	205.57	-0.10	7.97	12.2	1052
5343	-0.1000	100.35	11.52	-0.1000	17.53	42.66	-0.10	8.34	14.4	568
5344	-0.1000	59.92	9.22	-0.1000	32.14	121.49	-0.10	9.15	22.1	664
5345	-0.1000	166.52	19.57	0.0930	81.85	289.74	-0.10	8.00	12.1	1548
5346	-0.1000	28.10	9.22	0.0839	12.14	249.14	-0.10	8.30	18.7	922
5347	-0.1000	115.72	14.86	0.0822	54.13	256.74	-0.10	8.07	15.8	1170
5348	-0.1000	316.41	235.83	2.4761	125.14	6129.53	-0.10	7.48	17.4	17640
5349	-0.1000	233.81	171.60	1.1604	137.49	3266.18	-0.10	7.95	19.5	8490
5350	-0.1000	144.47	90.52	0.5851	99.42	1779.59	-0.10	7.91	19.1	5022
5351	-0.1000	102.97	35.70	0.2330	53.52	528.95	-0.10	9.03	17.0	1926
5352	-0.1000	90.05	62.21	0.4386	63.10	835.52	-0.10	9.96	18.5	2646
5353	-0.1000	109.22	31.60	0.2050	64.22	669.13	-0.10	8.78	16.2	2220
5354	-0.1000	78.84	9.21	0.0619	33.52	201.60	-0.10	8.03	11.5	1023
5355	-0.1000	146.65	14.22	0.0866	58.32	236.50	-0.10	7.90	18.9	1314
5356	-0.1000	147.01	15.23	0.0818	57.81	220.78	-0.10	7.78	16.7	1212
5357	-0.1000	109.45	8.23	0.0608	50.68	205.04	-0.10	7.92	19.8	1159
5358	-0.1000	102.08	6.06	-0.1000	48.32	163.37	-0.10	8.16	19.3	1021
5359	-0.1000	124.80	5.60	-0.1000	60.10	158.08	-0.10	8.19	19.6	1105
5360	-0.1000	78.23	4.85	-0.1000	38.40	162.76	-0.10	8.19	19.5	929
5361	-0.1000	48.00	5.55	0.0657	22.30	241.43	-0.10	8.27	20.8	968
5362	-0.1000	88.11	24.68	0.1047	34.06	434.63	-0.10	8.08	22.7	1590
5363	-0.1000	140.74	16.19	0.0886	56.28	249.66	-0.10	7.99	13.7	1320
5364	-0.1000	106.27	17.06	0.0977	44.99	324.40	-0.10	8.07	14.9	1326
5365	-0.1000	148.65	22.55	0.0801	44.52	316.26	-0.10	8.06	20.4	1374
5366	-0.1000	225.69	19.71	-0.1000	57.38	123.17	-0.10	7.77	19.0	1212
5367	-0.1000	121.33	12.04	-0.1000	29.05	44.28	-0.10	8.26	17.6	702
5368	-0.1000	105.13	16.09	-0.1000	28.51	51.97	-0.10	7.98	19.3	673
5369	-0.1000	119.39	14.37	-0.1000	28.89	45.81	-0.10	8.04	18.2	687
5370	-0.1000	204.34	23.57	0.0781	58.77	337.95	-0.10	7.75	17.8	1596
5371	-0.1000	192.41	19.19	0.0519	52.32	188.25	-0.10	7.98	17.8	1242
5380	-0.1000	58.82	7.13	-0.1000	16.28	31.11	-0.10	8.07	17.1	361
5381	-0.1000	53.34	8.18	-0.1000	12.24	19.60	-0.10	7.97	17.0	297
5382	-0.1000	72.76	9.21	0.1310	31.14	472.05	-0.10	8.08	22.5	1590
5417	-0.1000	204.68	182.12	1.8212	82.07	3976.54	0.14	7.26	24.4	8244
5418	-0.1000	240.75	224.42	2.3569	95.35	4932.23	0.19	7.12	24.7	9810
5419	-0.1000	130.01	97.53	0.9207	56.42	2656.18	0.14	7.67	23.8	5418
5420	-0.1000	57.77	42.36	0.3537	27.05	1158.67	-0.10	8.04	29.5	2586
5421	-0.1000	186.51	273.04	2.9076	138.73	6896.09	0.44	8.46	28.5	9678
5422	-0.1000	78.04	56.42	0.3183	89.18	166.27	0.25	7.70	15.7	1140
5423	-0.1000	56.04	16.49	0.1046	43.27	98.00	-0.10	8.09	18.0	709
5424	-0.1000	70.95	50.20	0.2192	53.38	163.48	0.28	7.63	15.8	998
5425	-0.1000	56.08	26.27	0.1053	41.84	113.10	-0.10	8.48	16.7	745
5426	-0.1000	120.58	12.24	0.0836	55.97	304.07	-0.10	7.93	14.6	1278
5427	-0.1000	230.94	14.27	0.0807	76.66	316.97	-0.10	7.63	13.8	1488
5428	-0.1000	377.10	9.79	0.0520	93.91	82.19	-0.10	7.90	16.0	1566
5429	-0.1000	109.88	13.02	-0.1000	44.25	117.83	-0.10	8.12	16.6	947
5430	-0.1000	93.73	50.13	0.3560	53.93	1466.48	-0.10	7.91	19.0	3492
5431	-0.1000	70.19	10.62	0.0809	61.37	119.72	-0.10	8.26	17.8	947
5432	-0.1000	122.61	12.96	0.0809	73.12	298.91	-0.10	7.93	15.8	1410
5435	-0.1000	67.13	6.84	-0.1000	15.92	22.48	-0.10	8.24	16.1	362
5436	-0.1000	132.18	14.42	-0.1000	35.83	64.71	-0.10	8.26	18.1	799
5437	-0.1000	33.64	7.56	0.0578	19.26	33.45	0.39	8.45	19.8	278
5442	-0.1000	33.24	14.00	-0.1000	28.94	40.91	-0.10	8.12	13.4	440

Values of -0.1 are below detection limits of testing procedure.

NORTHERN UTAH
SOIL CONSERVATION DISTRICT

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5238	-0.1000	0.20	85.15	0.00	0.0375	-0.1000	7.03	-0.1000	-0.1000	0.05	1.7	1,100
5239	-0.1000	0.21	118.44	0.00	-0.1000	-0.1000	6.75	-0.1000	-0.1000	-0.10	1.7	1,171
5240	-0.1000	0.08	54.76	0.00	-0.1000	0.0201	4.75	-0.1000	-0.1000	-0.10	6.5	645
5241	-0.1000	0.25	238.28	0.00	-0.1000	-0.1000	6.07	-0.1000	-0.1000	-0.10	4.7	1,519
5242	-0.1000	0.09	12.78	0.00	-0.1000	0.0582	4.25	0.0371	-0.1000	-0.10	1.7	439
5243	-0.1000	-0.10	12.94	0.00	0.0213	-0.1000	3.11	-0.1000	-0.1000	0.22	0.7	367
5244	-0.1000	0.08	23.98	0.00	-0.1000	-0.1000	4.32	-0.1000	-0.1000	-0.10	1.4	488
5292	-0.1000	-0.10	396.67	0.00	-0.1000	0.0220	5.81	0.0671	-0.1000	2.45	4.7	1,753
5343	-0.1000	0.11	199.25	0.00	-0.1000	0.0580	2.96	-0.1000	-0.1000	0.82	1.0	947
5344	0.1418	0.16	186.91	0.00	-0.1000	0.0997	4.66	-0.1000	-0.1000	-0.10	3.1	1,107
5345	-0.1000	0.19	686.87	0.00	-0.1000	-0.1000	5.34	-0.1000	-0.1000	-0.10	4.6	2,580
5346	-0.1000	0.22	318.40	0.00	-0.1000	-0.1000	4.99	-0.1000	-0.1000	-0.10	9.9	1,536
5347	-0.1000	0.17	530.31	0.00	-0.1000	-0.1000	4.75	-0.1000	-0.1000	-0.10	4.9	1,950
5348	-0.1000	1.15	11,065.70	0.00	-0.1000	-0.1000	5.06	0.1124	-0.1000	-0.10	73.8	29,400
5349	-0.1000	0.65	6,645.70	0.00	-0.1000	0.4516	2.65	0.0954	-0.1000	0.04	41.9	14,150
5350	-0.1000	0.26	3,806.41	0.00	-0.1000	3.3063	0.55	1.1872	-0.1000	1.39	27.9	8,370
5351	-0.1000	0.27	1,137.43	0.00	-0.1000	-0.1000	2.87	-0.1000	-0.1000	-0.10	10.5	3,210
5352	0.0608	0.40	1,682.16	1.00	-0.1000	0.0347	0.85	-0.1000	-0.1000	-0.10	16.5	4,410
5353	-0.1000	0.24	1,397.66	0.00	-0.1000	-0.1000	3.18	-0.1000	-0.1000	-0.10	12.6	3,700
5354	-0.1000	0.15	390.04	0.00	-0.1000	-0.1000	4.91	-0.1000	-0.1000	0.05	4.8	1,705
5355	-0.1000	0.14	675.44	0.00	-0.1000	-0.1000	3.92	-0.1000	-0.1000	-0.10	4.2	2,190
5356	-0.1000	0.16	583.10	0.00	-0.1000	-0.1000	4.51	-0.1000	-0.1000	-0.10	3.9	2,020
5357	-0.1000	0.13	507.91	0.00	-0.1000	-0.1000	3.92	-0.1000	-0.1000	-0.10	4.1	1,932
5358	-0.1000	0.10	451.05	0.00	-0.1000	-0.1000	3.55	-0.1000	-0.1000	-0.10	3.3	1,701
5359	-0.1000	0.09	512.06	0.00	-0.1000	-0.1000	3.26	-0.1000	-0.1000	-0.10	2.9	1,842
5360	-0.1000	0.08	389.54	0.00	-0.1000	-0.1000	3.48	-0.1000	-0.1000	-0.10	3.8	1,548
5361	-0.1000	0.08	402.94	0.00	-0.1000	-0.1000	3.90	-0.1000	-0.1000	-0.10	7.2	1,614
5362	-0.1000	0.14	946.11	0.00	-0.1000	-0.1000	3.74	-0.1000	-0.1000	-0.10	10.0	2,650
5363	-0.1000	0.14	652.09	0.00	-0.1000	-0.1000	4.64	-0.1000	-0.1000	-0.10	4.5	2,200
5364	-0.1000	0.13	671.42	0.00	-0.1000	-0.1000	4.23	-0.1000	-0.1000	-0.10	6.6	2,210
5365	-0.1000	0.14	680.09	0.00	-0.1000	-0.1000	4.32	-0.1000	-0.1000	-0.10	5.8	2,290
5366	-0.1000	0.10	699.59	0.00	-0.1000	-0.1000	2.43	-0.1000	-0.1000	-0.10	1.9	2,020
5367	-0.1000	0.08	282.75	0.00	-0.1000	-0.1000	2.54	-0.1000	-0.1000	-0.10	0.9	1,170
5368	-0.1000	0.08	264.72	0.00	-0.1000	-0.1000	2.47	-0.1000	-0.1000	-0.10	1.2	1,121
5369	-0.1000	0.08	280.32	0.00	-0.1000	-0.1000	2.56	-0.1000	-0.1000	-0.10	1.0	1,145
5370	-0.1000	0.15	933.74	0.00	-0.1000	-0.1000	3.42	-0.1000	-0.1000	-0.10	5.4	2,660
5371	-0.1000	0.12	683.44	0.00	-0.1000	0.0248	2.98	-0.1000	-0.1000	-0.10	3.1	2,070
5380	-0.1000	-0.10	83.09	0.00	-0.1000	-0.1000	3.07	-0.1000	-0.1000	-0.10	0.9	602
5381	-0.1000	-0.10	57.28	0.00	-0.1000	-0.1000	2.83	-0.1000	-0.1000	-0.10	0.6	495
5382	-0.1000	0.12	-0.10	0.00	-0.1000	-0.1000	3.81	-0.1000	-0.1000	-0.10	11.7	2,650
5417	-0.1000	1.71	7,076.90	0.00	-0.1000	0.0255	5.70	-0.1000	-0.1000	-0.10	59.4	13,740
5418	-0.1000	1.89	8,232.65	0.00	-0.1000	0.0256	6.27	-0.1000	-0.1000	-0.10	68.1	16,350
5419	-0.1000	1.39	3,802.02	0.00	-0.1000	0.0788	7.67	0.0275	-0.1000	-0.10	49.0	9,030
5420	-0.1000	0.76	1,555.60	0.00	-0.1000	-0.1000	4.25	-0.1000	-0.1000	-0.10	31.5	4,310
5421	0.0578	3.10	9,944.45	0.00	0.0294	0.0789	13.74	0.0476	-0.1000	-0.10	93.2	16,130
5422	-0.1000	0.57	272.26	0.00	0.0288	-0.1000	12.48	-0.1000	-0.1000	-0.10	3.1	1,900
5423	0.0556	0.25	109.29	0.00	-0.1000	0.0390	6.79	-0.1000	-0.1000	0.05	2.4	1,181
5424	-0.1000	0.42	143.69	0.00	0.0202	-0.1000	10.80	0.0424	-0.1000	-0.10	3.6	1,664
5425	-0.1000	0.19	265.87	0.00	-0.1000	0.0532	4.10	0.0267	-0.1000	-0.10	2.8	1,241
5426	-0.1000	0.13	649.04	0.00	-0.1000	0.0373	4.01	0.1483	-0.1000	-0.10	5.7	2,130
5427	-0.1000	0.16	683.00	0.00	-0.1000	-0.1000	4.67	-0.1000	-0.1000	0.12	4.6	2,480
5428	-0.1000	0.13	983.54	0.00	-0.1000	-0.1000	3.07	-0.1000	-0.1000	0.21	1.0	2,610
5429	-0.1000	0.15	420.60	0.00	-0.1000	-0.1000	2.80	-0.1000	-0.1000	-0.10	2.4	1,579
5430	-0.1000	0.38	2,341.89	0.00	-0.1000	-0.1000	3.37	0.1418	-0.1000	0.05	29.9	5,820
5431	-0.1000	0.12	338.41	0.00	-0.1000	-0.1000	3.94	-0.1000	-0.1000	0.15	2.5	1,578
5432	-0.1000	0.21	588.57	0.00	0.0629	-0.1000	4.93	-0.1000	-0.1000	-0.10	5.3	2,350
5435	-0.1000	0.07	87.90	0.00	-0.1000	-0.1000	2.76	-0.1000	-0.1000	-0.10	0.6	604
5436	-0.1000	0.10	350.77	0.00	-0.1000	-0.1000	2.54	-0.1000	-0.1000	-0.10	1.3	1,332
5437	-0.1000	0.10	15.25	0.00	-0.1000	0.1515	4.32	0.0393	-0.1000	-0.10	1.1	463
5442	-0.1000	0.13	31.76	0.00	-0.1000	-0.1000	4.84	0.0393	-0.1000	0.04	1.3	734

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

NORTHERN UTAH
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5238	-0.1000	0.0155	0.20	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	26.09	-0.1000	660	0.0194	0.05
5239	-0.1000	0.0361	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	23.88	-0.1000	703	0.0241	-0.10
5240	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.25	-0.1000	387	-0.1000	-0.10
5241	-0.1000	-0.1000	0.25	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	43.60	-0.1000	911	-0.1000	-0.10
5242	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.66	-0.1000	263	-0.1000	-0.10
5243	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.29	-0.1000	220	-0.1000	0.22
5244	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.42	-0.1000	293	-0.1000	-0.10
5292	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.95	-0.1000	1,052	-0.1000	2.45
5343	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.54	-0.1000	568	-0.1000	0.82
5344	0.1418	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	35.89	-0.1000	664	-0.1000	-0.10
5345	-0.1000	-0.1000	0.19	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	123.78	-0.1000	1,548	-0.1000	-0.10
5346	-0.1000	-0.1000	0.22	-0.1000	-0.1000	-0.1000	0.0141	-0.1000	-0.1000	21.41	-0.1000	922	-0.1000	-0.10
5347	-0.1000	-0.1000	0.17	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	69.12	-0.1000	1,170	-0.1000	-0.10
5348	-0.1000	0.0446	1.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	141.59	-0.1000	17,640	-0.1000	-0.10
5349	-0.1000	-0.1000	0.65	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	81.33	-0.1000	8,490	-0.1000	0.04
5350	-0.1000	-0.1000	0.26	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.33	-0.1000	5,022	-0.1000	1.39
5351	-0.1000	-0.1000	0.27	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	38.86	-0.1000	1,926	-0.1000	-0.10
5352	0.0608	-0.1000	0.40	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	54.30	-0.1000	2,646	-0.1000	-0.10
5353	-0.1000	-0.1000	0.24	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	45.51	-0.1000	2,220	-0.1000	-0.10
5354	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.38	-0.1000	1,023	-0.1000	0.05
5355	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	47.85	-0.1000	1,314	-0.1000	-0.10
5356	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	62.87	-0.1000	1,212	-0.1000	-0.10
5357	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	31.45	-0.1000	1,159	-0.1000	-0.10
5358	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	18.27	-0.1000	1,021	-0.1000	-0.10
5359	-0.1000	0.0110	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	26.64	-0.1000	1,105	-0.1000	-0.10
5360	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.71	-0.1000	929	-0.1000	-0.10
5361	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	13.10	-0.1000	968	-0.1000	-0.10
5362	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.11	-0.1000	1,590	-0.1000	-0.10
5363	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	47.70	-0.1000	1,320	-0.1000	-0.10
5364	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	41.37	-0.1000	1,326	-0.1000	-0.10
5365	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	59.37	-0.1000	1,374	-0.1000	-0.10
5366	-0.1000	0.0165	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.23	-0.1000	1,212	-0.1000	-0.10
5367	-0.1000	0.0101	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.07	-0.1000	702	-0.1000	-0.10
5368	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.28	-0.1000	673	-0.1000	-0.10
5369	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.35	-0.1000	687	-0.1000	-0.10
5370	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	38.64	-0.1000	1,596	-0.1000	-0.10
5371	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	32.11	-0.1000	1,242	-0.1000	-0.10
5380	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.55	-0.1000	361	-0.1000	-0.10
5381	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.04	-0.1000	297	-0.1000	-0.10
5382	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	17.43	-0.1000	1,590	-0.1000	-0.10
5417	-0.1000	-0.1000	1.71	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	66.57	-0.1000	8,244	-0.1000	-0.10
5418	-0.1000	-0.1000	1.89	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	70.17	-0.1000	9,810	-0.1000	-0.10
5419	-0.1000	-0.1000	1.39	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	46.01	-0.1000	5,418	-0.1000	-0.10
5420	-0.1000	0.0149	0.76	-0.1000	-0.1000	-0.1000	0.0101	-0.1000	-0.1000	34.34	-0.1000	2,586	-0.1000	-0.10
5421	0.0578	0.0204	3.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	110.45	-0.1000	9,678	-0.1000	-0.10
5422	-0.1000	-0.1000	0.57	-0.1000	-0.1000	-0.1000	0.0113	-0.1000	-0.1000	46.00	-0.1000	1,140	-0.1000	-0.10
5423	0.0556	-0.1000	0.25	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	28.04	-0.1000	709	-0.1000	0.05
5424	-0.1000	0.0663	0.42	-0.1000	-0.1000	-0.1000	0.0223	-0.1000	-0.1000	36.28	-0.1000	998	-0.1000	-0.10
5425	-0.1000	-0.1000	0.19	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.58	-0.1000	745	-0.1000	-0.10
5426	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	42.89	-0.1000	1,278	-0.1000	-0.10
5427	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	104.52	-0.1000	1,488	-0.1000	0.12
5428	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	32.20	-0.1000	1,566	-0.1000	0.21
5429	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	13.89	-0.1000	947	-0.1000	-0.10
5430	-0.1000	-0.1000	0.38	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	51.04	-0.1000	3,492	-0.1000	0.05
5431	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	53.76	-0.1000	947	-0.1000	0.15
5432	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	111.04	-0.1000	1,410	-0.1000	-0.10
5435	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.06	-0.1000	362	-0.1000	-0.10
5436	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.37	-0.1000	799	-0.1000	-0.10
5437	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.35	-0.1000	278	-0.1000	-0.10
5442	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	0.0141	-0.1000	-0.1000	26.25	-0.1000	440	-0.1000	0.04

Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

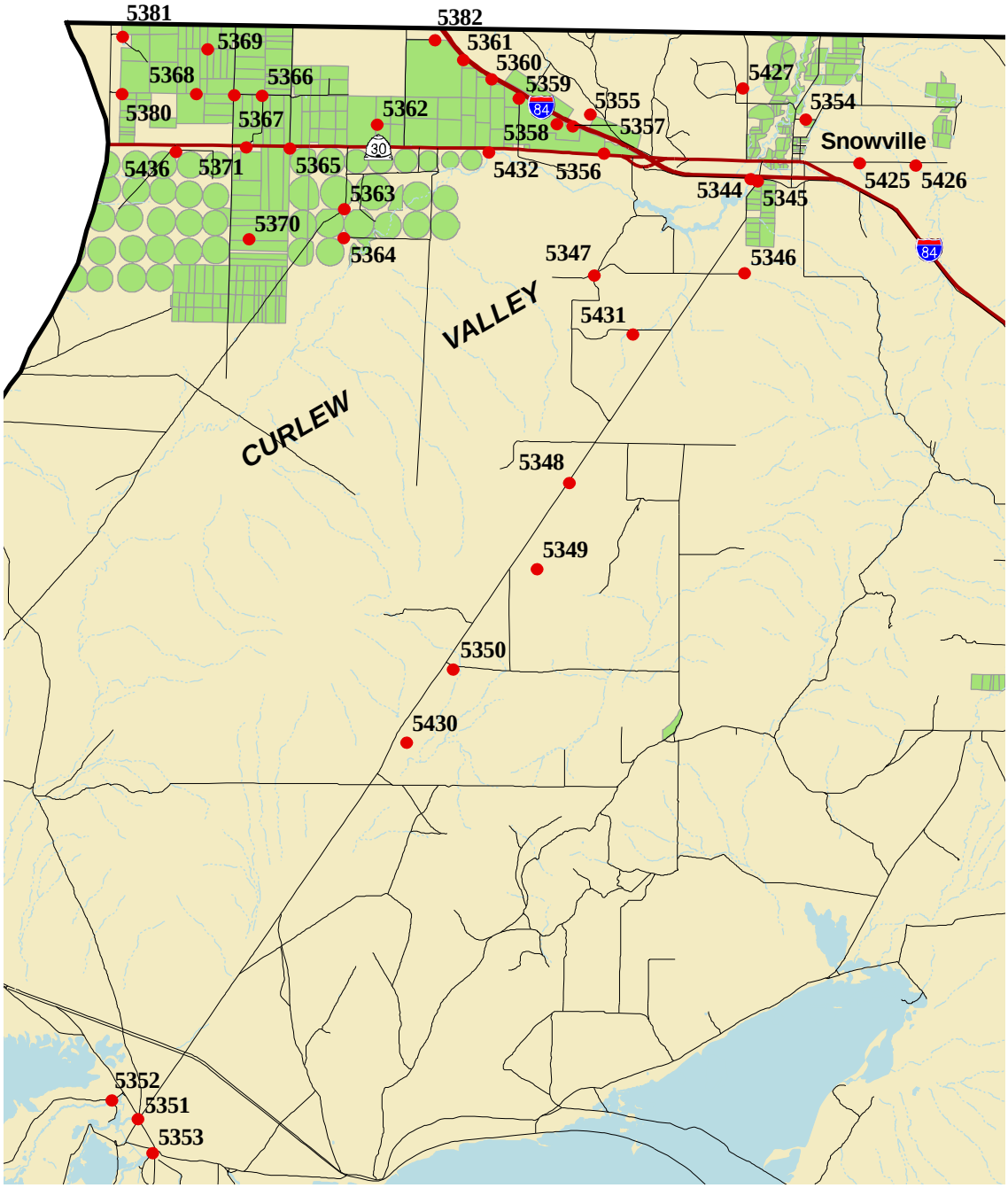
NORTHERN UTAH
SOIL CONSERVATION DISTRICT

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5238	0.0155	0.0719	-0.1000	-0.1000	0.0375	-0.1000	-0.1000	10.0	-0.1000	26.09	-0.1000	660	0.05	7.74	0	0	6.7
5239	0.0361	0.0862	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.0	-0.1000	23.88	-0.1000	703	-0.10	7.77	1	0	6.8
5240	-0.1000	0.0382	-0.1000	-0.1000	-0.1000	0.0201	-0.1000	1.4	-0.1000	6.25	-0.1000	387	-0.10	8.08	1	0	1.3
5241	-0.1000	0.0569	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.9	-0.1000	43.60	-0.1000	911	-0.10	7.62	0	0	5.9
5242	-0.1000	0.1141	-0.1000	-0.1000	-0.1000	0.0582	0.0371	-0.1	-0.1000	4.66	-0.1000	263	-0.10	8.23	1	0	2.4
5243	-0.1000	-0.1000	-0.1000	-0.1000	0.0213	-0.1000	-0.1000	-0.1	-0.1000	11.29	-0.1000	220	0.22	7.80	0	0	2.8
5244	-0.1000	0.0312	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.1	-0.1000	7.42	-0.1000	293	-0.10	7.51	0	0	2.9
5292	-0.1000	0.1057	-0.1000	-0.1000	-0.1000	0.0220	0.0671	1.8	-0.1000	5.95	-0.1000	1,052	2.45	7.97	0	0	6.9
5343	-0.1000	0.2786	-0.1000	-0.1000	-0.1000	0.0580	-0.1000	1.9	-0.1000	8.54	-0.1000	568	0.82	8.34	1	1	6.9
5344	-0.1000	0.0899	-0.1000	-0.1000	-0.1000	0.0997	-0.1000	-0.1	-0.1000	35.89	-0.1000	664	-0.10	9.15	1	1	5.4
5345	-0.1000	0.0587	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.5	-0.1000	123.78	-0.1000	1,548	-0.10	8.00	1	0	14.5
5346	-0.1000	0.0421	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	21.41	-0.1000	922	-0.10	8.30	1	1	2.4
5347	-0.1000	0.0662	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	69.12	-0.1000	1,170	-0.10	8.07	1	0	9.9
5348	0.0446	0.0548	-0.1000	-0.1000	-0.1000	-0.1000	0.1124	-0.1	-0.1000	141.59	-0.1000	17,640	-0.10	7.48	0	0	25.8
5349	-0.1000	0.1105	-0.1000	-0.1000	-0.1000	0.4516	0.0954	-0.1	-0.1000	81.33	-0.1000	8,490	0.04	7.95	0	0	21.7
5350	-0.1000	0.2350	-0.1000	-0.1000	-0.1000	3.3063	1.1872	-0.1	-0.1000	1.33	-0.1000	5,022	1.39	7.91	1	0	14.3
5351	-0.1000	0.0828	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	38.86	-0.1000	1,926	-0.10	9.03	1	0	9.2
5352	-0.1000	0.0964	-0.1000	-0.1000	-0.1000	0.0347	-0.1000	-0.1	-0.1000	54.30	-0.1000	2,646	-0.10	9.96	1	0	9.0
5353	-0.1000	0.0721	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	45.51	-0.1000	2,220	-0.10	8.78	1	1	10.1
5354	-0.1000	0.1209	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	25.38	-0.1000	1,023	0.05	8.03	0	0	6.6
5355	-0.1000	0.1926	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.9	-0.1000	47.85	-0.1000	1,314	-0.10	7.90	1	1	12.0
5356	-0.1000	0.1361	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.4	-0.1000	62.87	-0.1000	1,212	-0.10	7.78	0	0	12.0
5357	-0.1000	0.1501	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	31.45	-0.1000	1,159	-0.10	7.92	1	1	9.4
5358	-0.1000	0.1967	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	18.27	-0.1000	1,021	-0.10	8.16	1	0	8.8
5359	0.0110	0.2114	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.9	-0.1000	26.64	-0.1000	1,105	-0.10	8.19	0	0	10.8
5360	-0.1000	0.1272	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	14.71	-0.1000	929	-0.10	8.19	0	0	6.8
5361	-0.1000	0.0700	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	13.10	-0.1000	968	-0.10	8.27	1	0	4.1
5362	-0.1000	0.2302	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	19.11	-0.1000	1,590	-0.10	8.08	0	0	7.1
5363	-0.1000	0.0641	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	47.70	-0.1000	1,320	-0.10	7.99	0	0	11.5
5364	-0.1000	0.0526	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	41.37	-0.1000	1,326	-0.10	8.07	0	0	8.8
5365	-0.1000	0.0710	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.4	-0.1000	59.37	-0.1000	1,374	-0.10	8.06	0	0	11.3
5366	0.0165	0.3240	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.2	-0.1000	16.23	-0.1000	1,212	-0.10	7.77	0	0	16.6
5367	0.0101	0.2585	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.4	-0.1000	10.07	-0.1000	702	-0.10	8.26	0	0	8.8
5368	-0.1000	0.2168	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	10.28	-0.1000	673	-0.10	7.98	0	0	7.8
5369	-0.1000	0.3083	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	10.35	-0.1000	687	-0.10	8.04	0	0	8.7
5370	-0.1000	0.1711	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.9	-0.1000	38.64	-0.1000	1,596	-0.10	7.75	0	0	15.4
5371	-0.1000	0.1471	-0.1000	-0.1000	-0.1000	0.0248	-0.1000	4.8	-0.1000	32.11	-0.1000	1,242	-0.10	7.98	0	0	14.3
5380	-0.1000	0.1137	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	9.55	-0.1000	361	-0.10	8.07	1	0	4.4
5381	-0.1000	0.1420	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	7.04	-0.1000	297	-0.10	7.97	0	0	3.8
5382	-0.1000	0.1022	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	17.43	-0.1000	1,590	-0.10	8.08	0	0	6.1
5417	-0.1000	0.1095	-0.1000	-0.1000	-0.1000	0.0255	-0.1000	0.5	-0.1000	66.57	-0.1000	8,244	-0.10	7.26	1	0	16.8
5418	-0.1000	0.1264	-0.1000	-0.1000	-0.1000	0.0256	-0.1000	4.2	-0.1000	70.17	-0.1000	9,810	-0.10	7.12	1	1	19.7
5419	-0.1000	0.2615	-0.1000	-0.1000	-0.1000	0.0788	0.0275	-0.1	-0.1000	46.01	-0.1000	5,418	-0.10	7.67	1	1	10.9
5420	0.0149	0.1042	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.9	-0.1000	34.34	-0.1000	2,586	-0.10	8.04	1	0	5.0
5421	0.0204	0.1429	-0.1000	-0.1000	0.0294	0.0789	0.0476	-0.1	-0.1000	110.45	-0.1000	9,678	-0.10	8.46	1	1	19.0
5422	-0.1000	0.1166	-0.1000	-0.1000	0.0288	-0.1000	-0.1000	8.1	-0.1000	46.00	-0.1000	1,140	-0.10	7.70	1	0	9.8
5423	-0.1000	0.1080	-0.1000	-0.1000	-0.1000	0.0390	-0.1000	6.1	-0.1000	28.04	-0.1000	709	0.05	8.09	1	1	5.8
5424	0.0663	0.1152	-0.1000	-0.1000	0.0202	-0.1000	0.0424	4.9	-0.1000	36.28	-0.1000	998	-0.10	7.63	1	1	7.3
5425	-0.1000	0.1927	-0.1000	-0.1000	-0.1000	0.0532	0.0267	-0.1	-0.1000	12.58	-0.1000	745	-0.10	8.48	1	0	5.7
5426	-0.1000	0.1014	-0.1000	-0.1000	-0.1000	0.0373	0.1483	-0.1	-0.1000	42.89	-0.1000	1,278	-0.10	7.93	1	0	10.3
5427	-0.1000	0.0289	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	104.52	-0.1000	1,488	0.12	7.63	1	0	18.0
5428	-0.1000	0.5376	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.5	-0.1000	32.20	-0.1000	1,566	0.21	7.90	1	0	27.5
5429	-0.1000	0.2667	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.6	-0.1000	13.89	-0.1000	947	-0.10	8.12	0	0	9.0
5430	-0.1000	0.0597	-0.1000	-0.1000	-0.1000	-0.1000	0.1418	-0.1	-0.1000	51.04	-0.1000	3,492	0.05	7.91	1	0	8.6
5431	-0.1000	0.0733	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	53.76	-0.1000	947	0.15	8.26	1	0	7.7
5432	-0.1000	0.0252	-0.1000	-0.1000	0.0629	-0.1000	-0.1000	6.1	-0.1000	111.04	-0.1000	1,410	-0.10	7.93	1	0	11.4
5435	-0.1000	0.1332	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	9.06	-0.1000	362	-0.10	8.24	0	0	4.9
5436	-0.1000	0.2696	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	10.37	-0.1000	799	-0.10	8.26	1	0	9.8
5437	-0.1000	0.3758	-0.1000	-0.1000	-0.1000	0.1515	0.0393	-0.1	-0.1000	1.35	-0.1000	278	-0.10	8.45	1	0	3.1
5442	-0.1000	0.0311	-0.1000	-0.1000	-0.1000	-0.1000	0.0393	1.0	-0.1000	26.25	-0.1000	440	0.04	8.12	0	0	3.6

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 5. Northern Utah District - Snowville Area

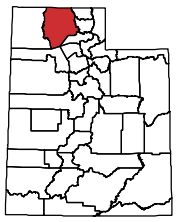


Map Scale 1:190,000 (1 inch = 3 miles)

N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



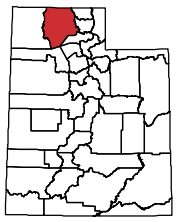
Map 6. Northern Utah District - Tremonton Area

Map Scale 1:375,000 (1 inch = 5.9 miles)

N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Rich County District

General:

Two (2) samples were collected in the North Cache District. Sampled water temperatures range from 11.4 ºC to 16.8 ºC, with a mean of 14.1 ºC. The pH for the district ranges from 7.54 to 7.76, with a mean of 7.65.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. One (1) sample in this district 5289 exceeded the 750 µmhos/cm standard. None of the samples exceeded the 3,000 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the water sampled has elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples collected in this district have high bicarbonate levels, which is common for water in Utah.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Sample 5289 has elevated Cl, and exceedes the severe level.

No other elements were detected above concentrations that are harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Water sampled in this district tested hard to very hard, with grains per gallon (gpg) readings from 5.7 to 15.2 with a mean of 10.0 gpg. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. Sample 5289 exceeds the aesthetic standard for salinity. None of the samples reach the level of being a health risk.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Sample 5289 has high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Sample 5288 is contaminated with coliform bacteria. None of the samples are contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected

RICH COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5288	-0.1000	69.92	2.75	-0.1000	26.81	21.65	-0.10	7.76	11.4	382
5289	-0.1000	149.49	3.29	-0.1000	110.32	105.38	-0.10	7.54	16.8	1072

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5288	-0.1000	0.07	27.93	0.00	-0.1000	-0.1000	5.58	-0.1000	-0.1000	-0.10	0.6	637
5289	-0.1000	0.32	161.67	0.00	0.0469	-0.1000	9.16	0.0496	-0.1000	1.34	1.6	1,786

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5288	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.88	-0.1000	382	-0.1000	-0.10
5289	-0.1000	-0.1000	0.32	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	143.16	-0.1000	1,072	-0.1000	1.34

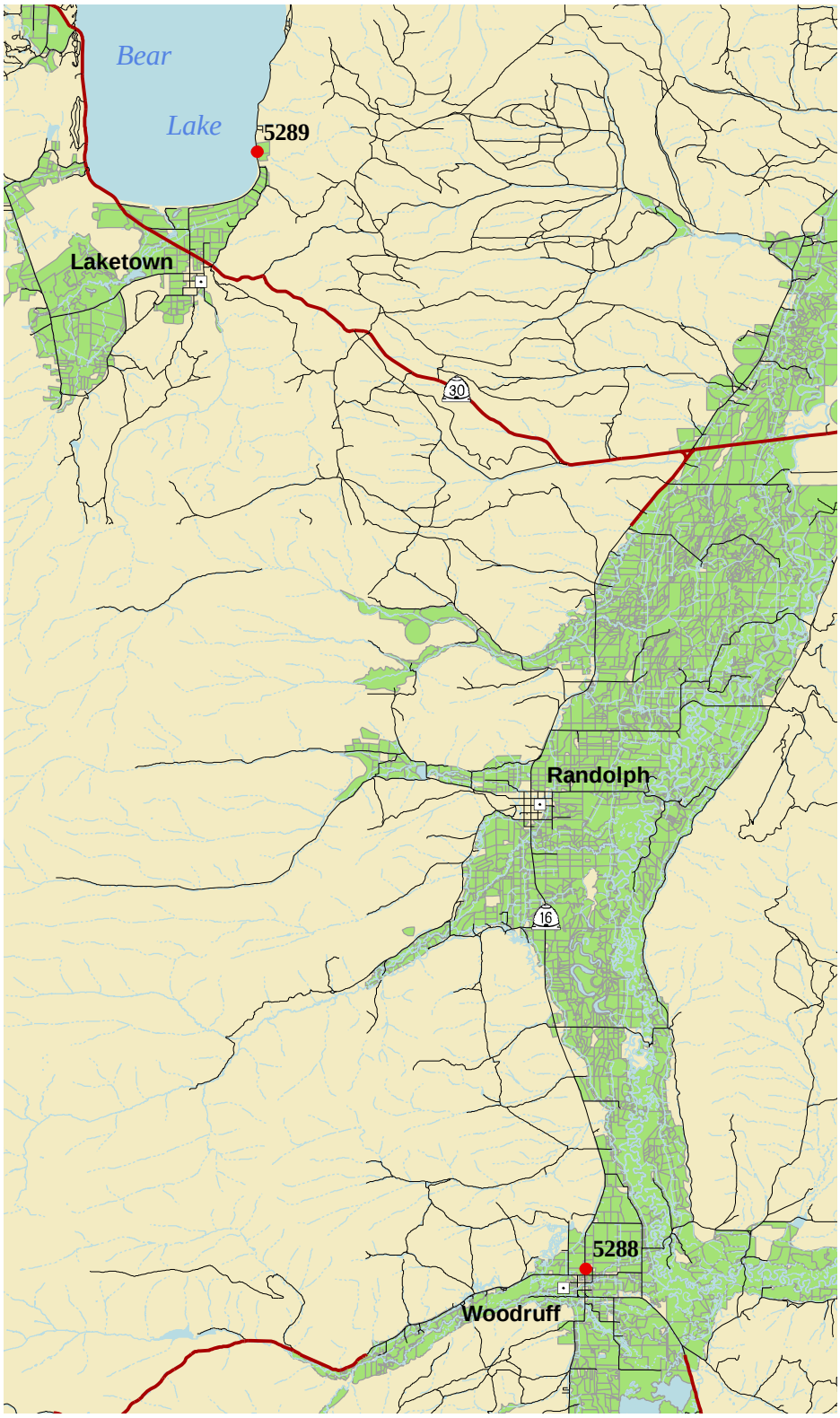
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5288	-0.1000	0.0934	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	10.88	-0.1000	382	-0.10	7.76	1	0	5.7
5289	-0.1000	0.1000	-0.1000	-0.1000	0.0469	-0.1000	0.0496	1.3	-0.1000	143.16	-0.1000	1,072	1.34	7.54	0	0	15.2

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

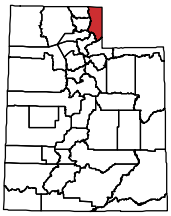
Map 7. Rich County District



Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:227,000 (1 inch = 3.6 miles)

West Box Elder District

General:

Five (5) samples were collected in the West Box Elder District. Sampled water temperatures range from 11.6 ºC to 17.9 ºC, with a mean of 14.7 ºC. The pH for the district ranges from 7.62 to 8.22, with a mean of 7.96.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Sample 5434 exceeded the 750 µmhos/cm standard. None of the samples exceeded the 3,000 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the water sampled in this district has elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples collected in this district, have high bicarbonate levels, which is common for water in Utah.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Sample 5434 has elevated Cl. None of these samples exceed the severe level.

No other elements were detected above concentrations that are harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Water sampled in this district tested slightly-hard to hard, with grains per gallon (gpg) readings from 3.2 to 7.0 with a mean of 4.6 gpg. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. Sample 5434 exceeded the aesthetic standard for salinity. None of the samples reach the level of being a health risk.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well

construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5377, 5379, 5433 are contaminated with coliform bacteria. Sample 5377 is contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

WEST BOX ELDER
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5377	-0.1000	47.86	5.99	-0.1000	7.51	21.56	-0.10	8.12	17.9	263
5378	-0.1000	64.82	11.82	-0.1000	28.87	32.74	-0.10	7.62	15.8	437
5379	-0.1000	49.17	2.89	-0.1000	15.64	43.16	-0.10	8.04	15.7	338
5433	-0.1000	42.87	3.06	-0.1000	12.95	42.11	-0.10	7.81	11.6	376
5434	-0.1000	103.74	2.48	-0.1000	16.26	61.58	-0.10	8.22	12.5	578

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5377	-0.1000	0.08	42.70	0.00	-0.1000	-0.1000	2.69	-0.1000	-0.1000	-0.10	0.8	438
5378	-0.1000	0.11	64.04	0.00	-0.1000	-0.1000	5.13	-0.1000	-0.1000	0.04	0.8	729
5379	-0.1000	0.12	22.89	0.00	-0.1000	-0.1000	4.75	-0.1000	-0.1000	0.04	1.4	564
5433	-0.1000	0.08	83.45	0.00	-0.1000	-0.1000	3.04	-0.1000	-0.1000	-0.10	1.4	626
5434	-0.1000	0.10	180.46	0.00	-0.1000	0.0344	3.66	-0.1000	-0.1000	0.49	1.5	964

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5377	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.17	-0.1000	263	-0.1000	-0.10
5378	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.03	-0.1000	437	-0.1000	0.04
5379	-0.1000	0.0119	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.41	-0.1000	338	-0.1000	0.04
5433	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.80	-0.1000	376	-0.1000	-0.10
5434	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.11	-0.1000	578	-0.1000	0.49

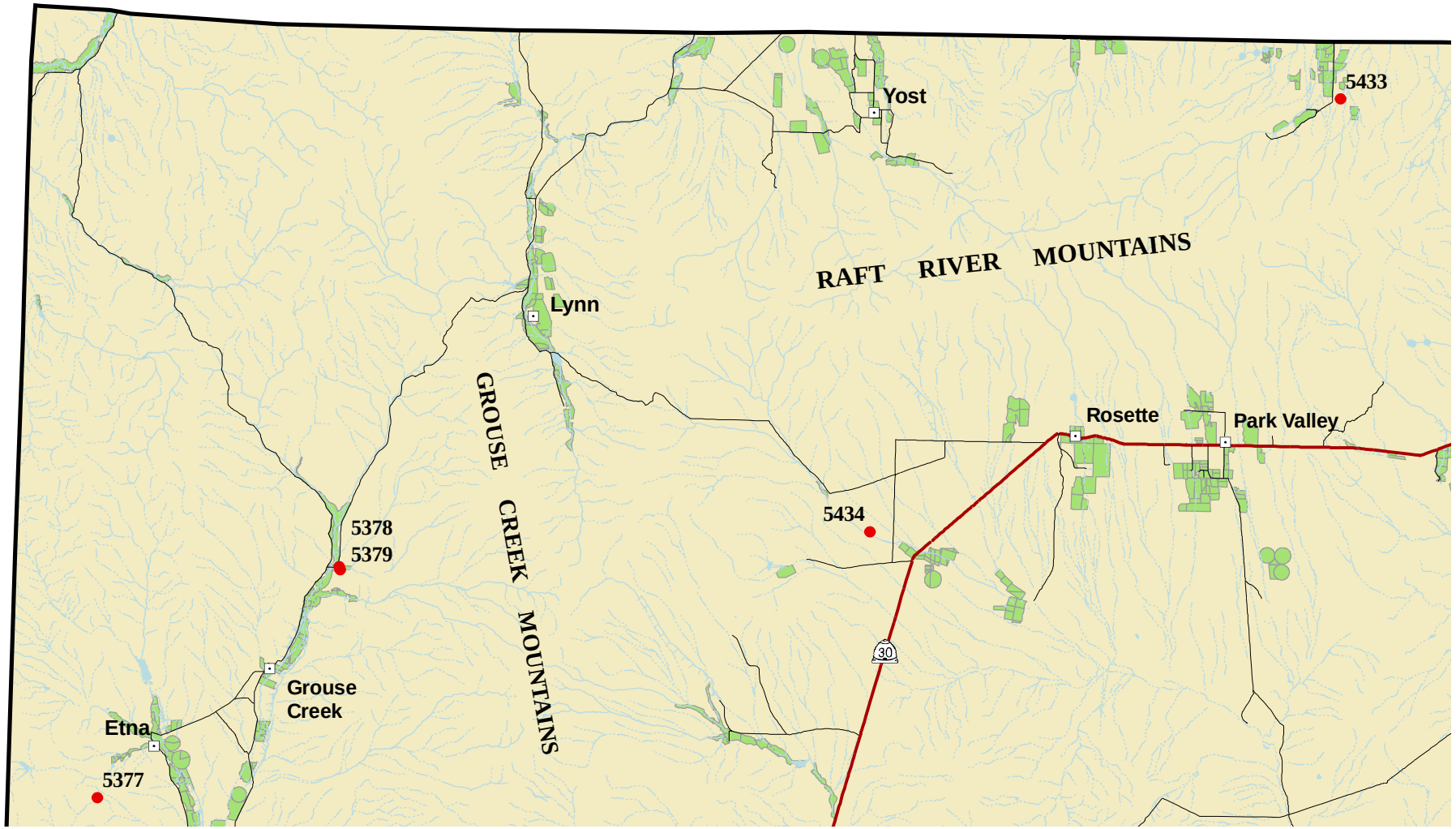
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5377	-0.1000	0.1268	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	7.17	-0.1000	263	-0.10	8.12	1	1	3.2
5378	-0.1000	0.1021	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	14.03	-0.1000	437	0.04	7.62	0	0	5.5
5379	0.0119	0.0870	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.9	-0.1000	10.41	-0.1000	338	0.04	8.04	1	0	3.8
5433	-0.1000	0.0738	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	7.80	-0.1000	376	-0.10	7.81	1	0	3.3
5434	-0.1000	0.0911	-0.1000	-0.1000	-0.1000	0.0344	-0.1000	-0.1	-0.1000	11.11	-0.1000	578	0.49	8.22	0	0	7.0

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 8. West Box Elder District

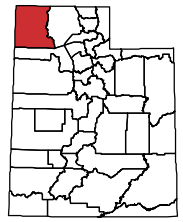


Map Scale 1:300,000 (1 inch = 4.7 miles)

- Sample location
- Major road
- Other road
- Stream
- Ditch or canal
- Aqueduct
- Intermittent stream
- Water body
- Irrigated cropland
- SCD boundary

N

District Location



Zone 2

UACD Zone 2 consists of six districts in five counties including Weber, Morgan, Davis, Salt Lake, and Tooele counties. Sampling testing may not have been done in all the districts or counties listed in Zone 2.

Forty eight (48) sites were sampled in five of the six districts of Zone 2 during the spring, summer, and fall of 2005 with five (5) sampled in the Davis County District, three (3) in the Grantsville District, ten (10) in the Morgan District, twenty-four (24) in the Salt Lake District, and six (6) in the Weber District. A separate narrative report is presented for each district with maps showing the location of the sample sites. Each report covers three categories of water quality criteria: irrigation, livestock, and culinary. Data are presented in four tables for each zone. These include general parameters: temperature, pH, total dissolved solids (TDS) and chemicals for which there are no standards; irrigation, livestock, and drinking water parameters.

Davis County District

General:

Five (5) samples were collected in the Davis County District. Sampled water temperatures range from 15.4 ºC to 18.5 ºC, with a mean of 17.2 ºC. The pH for the district ranges from 7.85 to 8.71.with a mean of 8.23.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Samples 5439, and 5440 exceed the irrigation standard of 750 µmhos/cm. None of the samples exceeded the 3,000 µmhos/cm standard.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Samples 5246, 5438, 5439, and 5440 exceed the SAR standard of 3. None of the water sampled in this district has severe SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l, and severe problems appear when it exceeds 8.5 meq/l. All samples have high bicarbonate, which is common for water in Utah. None of the samples exceeded the 8.5 severe standard.

No other elements were above concentrations that are harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Samples 5246, and 5438 have elevated molybdenum.

Culinary:

Samples in this district tested very soft to slightly hard with grains per gallon (gpg) values of 0.2 to 3.4, with a mean of 1.9. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. Sample 5440 exceeds the aesthetic standard for salinity.

High iron (Fe) can cause discoloration of plumbing fixtures and promote the growth of iron bacteria, which stains anything that it contacts. Again, this is an aesthetic issue, not a health concern. Sample 5246 has high iron concentrations.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

None of the samples are contaminated with coliform bacteria. None of the samples are contaminated with E. coli bacteria.

DAVIS COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5245	-0.1000	41.53	3.07	-0.1000	16.49	38.12	-0.10	7.85	17.1	317
5246	-0.1000	2.45	0.65	-0.1000	0.74	56.95	0.24	8.34	15.4	169
5438	-0.1000	15.02	1.46	-0.1000	4.70	129.48	-0.10	8.71	18.5	437
5439	-0.1000	25.59	1.51	-0.1000	8.56	122.46	-0.10	8.21	17.7	500
5440	-0.1000	34.36	1.54	-0.1000	11.48	103.67	-0.10	8.02	17.2	503

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5245	-0.1000	-0.10	35.98	0.00	0.0262	0.0282	3.79	-0.1000	-0.1000	0.10	1.3	529
5246	-0.1000	-0.10	14.46	0.00	-0.1000	0.6000	2.36	0.0201	-0.1000	-0.10	8.2	282
5438	-0.1000	0.15	89.33	0.00	-0.1000	0.0317	3.18	-0.1000	-0.1000	-0.10	7.5	728
5439	-0.1000	0.13	89.00	0.00	-0.1000	-0.1000	4.08	-0.1000	-0.1000	-0.10	5.3	834
5440	-0.1000	0.10	90.57	0.00	-0.1000	-0.1000	4.01	-0.1000	-0.1000	-0.10	3.9	838

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5245	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.63	-0.1000	317	-0.1000	0.10
5246	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	0.0145	-0.1000	-0.1000	6.40	-0.1000	169	-0.1000	-0.10
5438	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	0.0158	-0.1000	-0.1000	17.86	-0.1000	437	-0.1000	-0.10
5439	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	23.74	-0.1000	500	-0.1000	-0.10
5440	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.26	-0.1000	503	-0.1000	-0.10

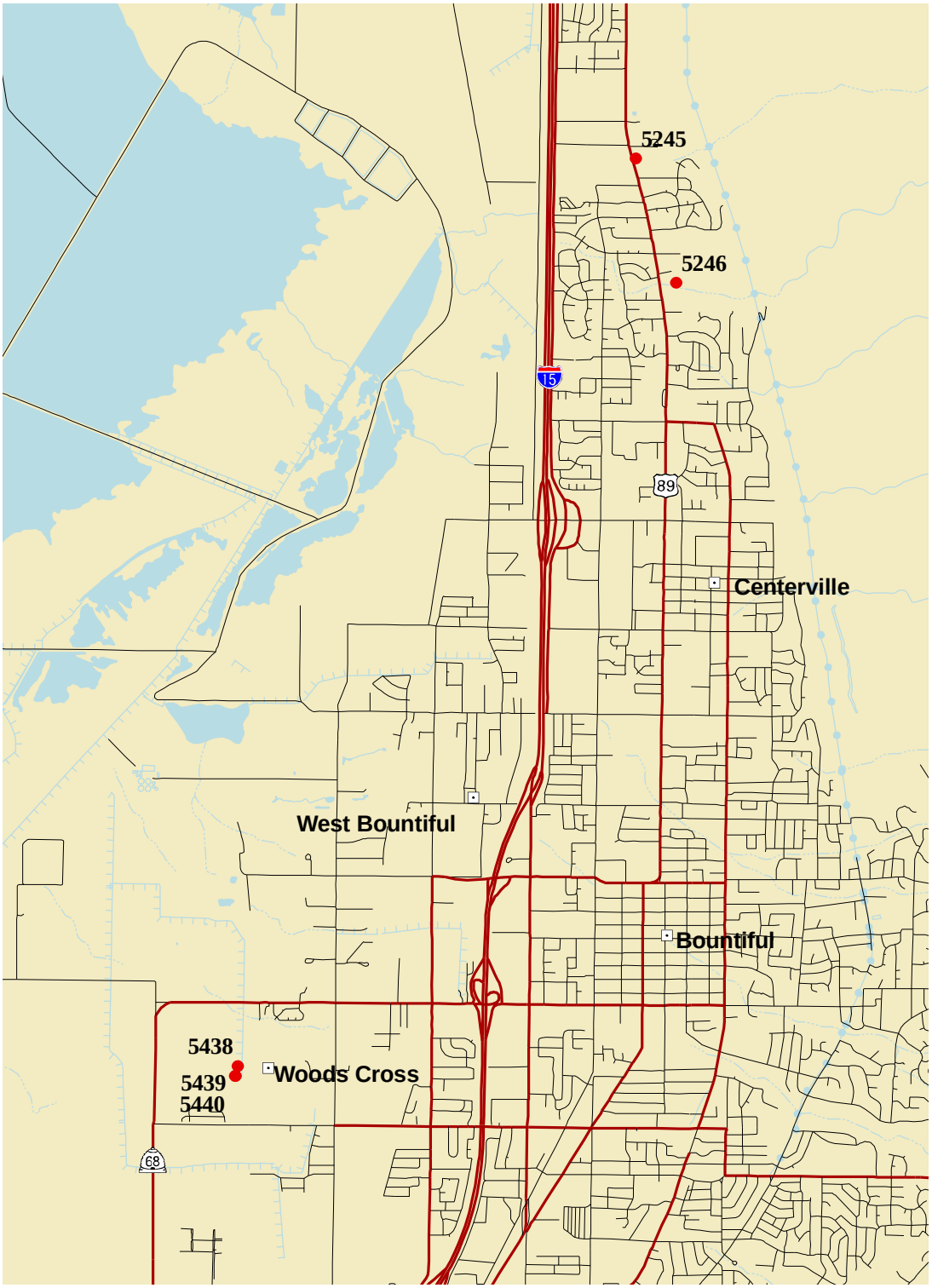
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5245	-0.1000	0.0259	-0.1000	-0.1000	0.0262	0.0282	-0.1000	0.7	-0.1000	14.63	-0.1000	317	0.10	7.85	0	0	3.4
5246	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.6000	0.0201	-0.1	-0.1000	6.40	-0.1000	169	-0.10	8.34	0	0	0.2
5438	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0317	-0.1000	5.8	-0.1000	17.86	-0.1000	437	-0.10	8.71	0	0	1.2
5439	-0.1000	0.0318	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.5	-0.1000	23.74	-0.1000	500	-0.10	8.21	0	0	2.0
5440	-0.1000	0.0437	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.8	-0.1000	25.26	-0.1000	503	-0.10	8.02	0	0	2.7

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

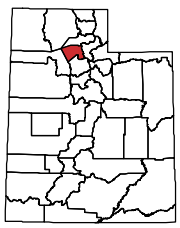
Map 9. Davis District



Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:55,000 (1 inch = 0.87 miles)

Grantsville District

General:

Three (3) wells were sampled in the Grantsville District. Sampled water temperatures range from 16.3 ºC to 20.2 ºC, with a mean of 18.3 ºC. The pH for this district ranges from 7.64 to 8.05 with a mean of 7.84.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. All wells in this area exceeded the irrigation standard of 750 µmhos/cm. None of the samples exceeded the severe level of 3,000 µmhos/cm.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3, marks the beginning of problems and values greater than 9 indicate severe problems. None of the samples in this district have elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All samples collected in this area have high bicarbonate, which is common for water in Utah. No samples exceeded the severe level of 8.5 meq/l.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Samples 5375, and 5376 have elevated Cl. None of these samples exceed the severe level.

No other elements were above concentrations that are harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Sample 5374 has elevated molybdenum.

No other elements were above concentrations that are harmful to livestock.

Culinary:

The water sampled in this district varies from moderately-hard to hard, with grains per gallon (gpg) readings from 5.7 to 12.2 with a mean of 8.5. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. TDS for all samples exceed the EPA aesthetic standard of 500 ppm. In excess of 500 ppm the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. All of the samples in this district exceeded the aesthetic standard of 500 ppm. None of the samples exceeded the health standard.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate.

Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Sample 5375 has high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

None of the samples are contaminated with coliform bacteria. None of the samples are contaminated with E. coli bacteria.

GRANTSVILLE
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5374	-0.1000	72.51	1.86	-0.1000	24.63	78.12	-0.10	8.05	16.3	544
5375	-0.1000	147.07	6.09	0.0608	60.74	139.11	-0.10	7.64	18.3	996
5376	-0.1000	90.04	2.79	-0.1000	40.06	59.52	-0.10	7.83	20.2	686

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5374	-0.1000	0.08	105.12	0.00	-0.1000	-0.1000	3.83	-0.1000	-0.1000	-0.10	2.0	906
5375	-0.1000	0.19	214.44	0.00	-0.1000	0.0370	5.39	-0.1000	-0.1000	-0.10	2.4	1,660
5376	-0.1000	-0.10	289.22	0.00	-0.1000	-0.1000	2.69	-0.1000	-0.1000	-0.10	1.3	1,144

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5374	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	0.1090	-0.1000	-0.1000	48.27	-0.1000	544	-0.1000	-0.10
5375	-0.1000	-0.1000	0.19	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	142.63	-0.1000	996	-0.1000	-0.10
5376	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.58	-0.1000	686	-0.1000	-0.10

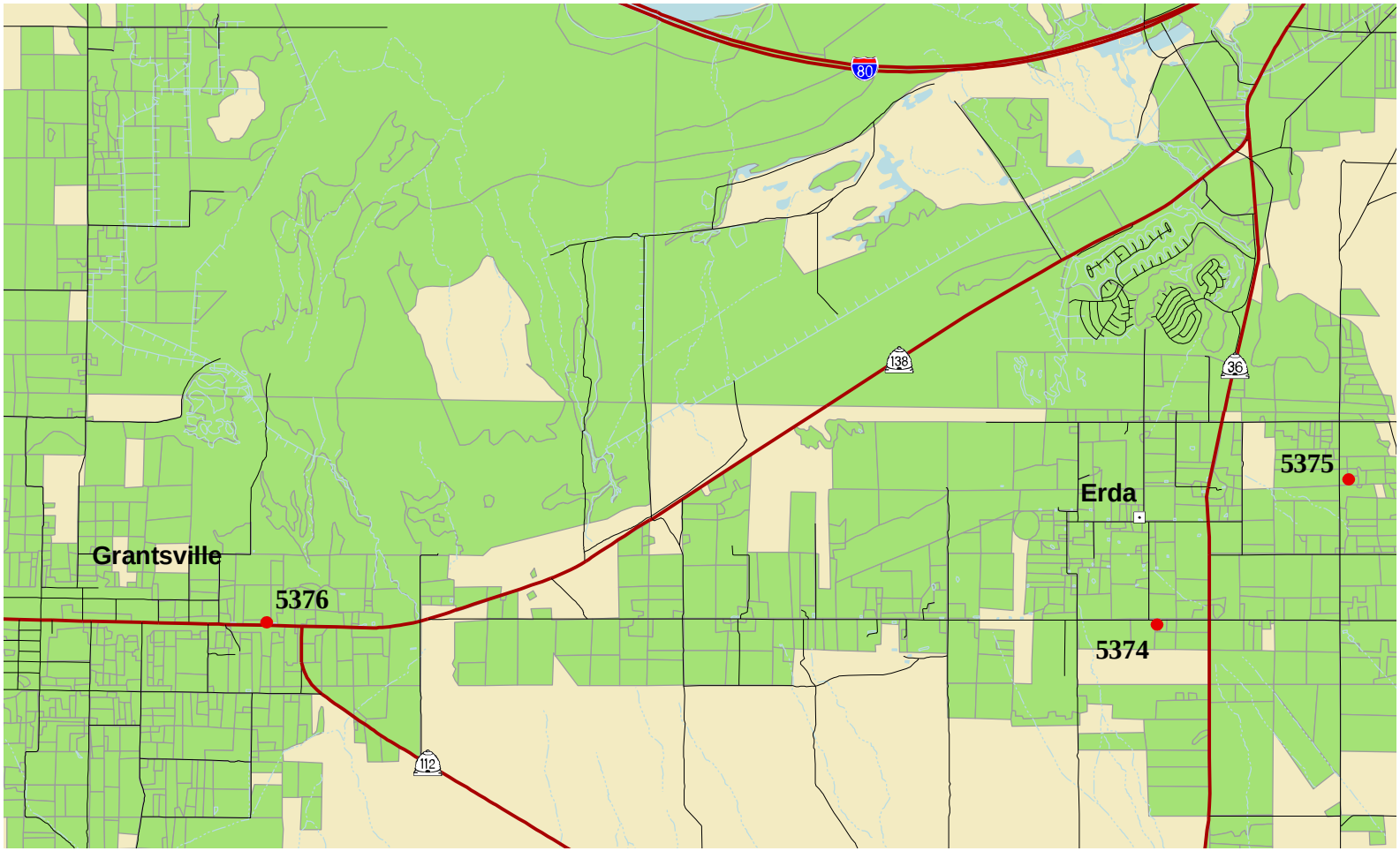
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5374	-0.1000	0.1150	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.3	-0.1000	48.27	-0.1000	544	-0.10	8.05	0	0	5.7
5375	-0.1000	0.0267	-0.1000	-0.1000	-0.1000	0.0370	-0.1000	1.9	-0.1000	142.63	-0.1000	996	-0.10	7.64	0	0	12.2
5376	-0.1000	0.3662	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	8.58	-0.1000	686	-0.10	7.83	0	0	7.6

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 10. Grantsville District

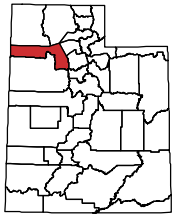


Map Scale 1:82,000 (1 inch = 1.3 miles)

N

- Sample location
- Major road
- Other road
- Stream
- Ditch or canal
- Aqueduct
- Intermittent stream
- Water body
- Irrigated cropland
- SCD boundary

District Location



Morgan District

General:

Ten (10) samples were collected in the Morgan District. Sampled water temperatures range from 12.2 ºC to 24.6 ºC, with a mean of 15.8 ºC. The pH for the district ranges from 7.22 to 7.62 with a mean of 7.45.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Samples 5230, 5231, 5232, and 5234 exceeded the irrigation standard of 750 µmhos/cm. None of the samples exceeded the 3,000 µmhos/cm standard.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the samples in this district have elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l, and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah. None of the samples exceeds the 8.5 severe standard.

No other elements were above concentrations that are harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Samples in this district tested slightly-hard to very hard with grains per gallon (gpg) values of 4.5 to 9.2 with an average of 6.6. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. In excess of 500 ppm the water may be off-flavored, but it is not a health problem until TDS reaches 2,000 ppm. Samples 5230, 5231, and 5232 exceeded the 500 ppm level. None of the samples reach the level of being a health risk.

Sample 5231 exceeds the EPA nitrate (NO3) standard of 10 ppm nitrate expressed as nitrogen (NO3-N). NO3 is an important nutrient for plant growth. It is found in nitrogen fertilizers, manure, septic systems, and some minerals. NO3 is toxic to young infants (usually less than 6 months of age) and causes “blue baby syndrome.” NO3 can only be removed from water by reverse osmosis or distillation.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well

construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5228, 5229, 5230, 5233, 5234, and 5283 are contaminated with coliform bacteria. Sample 5283 is also contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

MORGAN
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5228	-0.1000	58.64	3.44	-0.1000	18.64	20.04	-0.10	7.59	24.6	320
5229	-0.1000	74.03	10.13	-0.1000	26.90	22.43	-0.10	7.47	14.3	427
5230	-0.1000	98.14	8.96	-0.1000	45.51	43.46	-0.10	7.38	12.2	613
5231	-0.1000	111.24	5.19	-0.1000	46.91	53.38	-0.10	7.22	12.3	694
5232	-0.1000	95.82	4.70	-0.1000	44.10	45.57	-0.10	7.36	12.8	600
5233	-0.1000	89.64	2.20	-0.1000	20.36	30.90	-0.10	7.38	13.8	448
5234	-0.1000	103.40	6.71	-0.1000	17.86	30.00	-0.10	7.62	18.4	472
5235	-0.1000	73.12	3.34	-0.1000	24.48	24.71	-0.10	7.45	19.2	406
5282	-0.1000	65.53	3.10	-0.1000	13.28	39.09	-0.10	7.57	12.3	378
5283	-0.1000	84.15	5.76	-0.1000	18.45	27.65	0.57	7.48	17.8	397

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5228	-0.1000	-0.10	31.64	0.00	0.0634	0.0394	4.10	-0.1000	-0.1000	0.07	0.6	533
5229	-0.1000	0.07	63.28	0.00	-0.1000	-0.1000	5.13	-0.1000	-0.1000	-0.10	0.6	712
5230	-0.1000	0.09	75.96	0.00	0.0213	-0.1000	7.19	-0.1000	-0.1000	-0.10	0.9	1,021
5231	-0.1000	0.10	106.31	0.00	-0.1000	-0.1000	7.69	-0.1000	-0.1000	-0.10	1.1	1,157
5232	-0.1000	0.08	70.07	0.00	-0.1000	-0.1000	5.65	-0.1000	-0.1000	0.21	1.0	1,000
5233	-0.1000	0.08	48.04	0.00	-0.1000	-0.1000	6.02	-0.1000	-0.1000	-0.10	0.8	747
5234	-0.1000	0.08	66.35	0.00	-0.1000	-0.1000	6.04	-0.1000	-0.1000	-0.10	0.7	787
5235	-0.1000	0.08	56.87	0.00	-0.1000	0.0373	4.78	-0.1000	-0.1000	-0.10	0.6	677
5282	-0.1000	0.08	76.91	0.00	-0.1000	-0.1000	3.39	-0.1000	-0.1000	0.13	1.2	630
5283	-0.1000	0.08	50.27	0.00	0.0226	-0.1000	5.37	-0.1000	-0.1000	0.04	0.7	662

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5228	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.75	-0.1000	320	-0.1000	0.07
5229	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.89	-0.1000	427	-0.1000	-0.10
5230	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	20.93	-0.1000	613	-0.1000	-0.10
5231	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.73	-0.1000	694	-0.1000	-0.10
5232	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	22.02	-0.1000	600	-0.1000	0.21
5233	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.31	-0.1000	448	-0.1000	-0.10
5234	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.91	-0.1000	472	-0.1000	-0.10
5235	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.91	-0.1000	406	-0.1000	-0.10
5282	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.10	-0.1000	378	-0.1000	0.13
5283	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.49	-0.1000	397	-0.1000	0.04

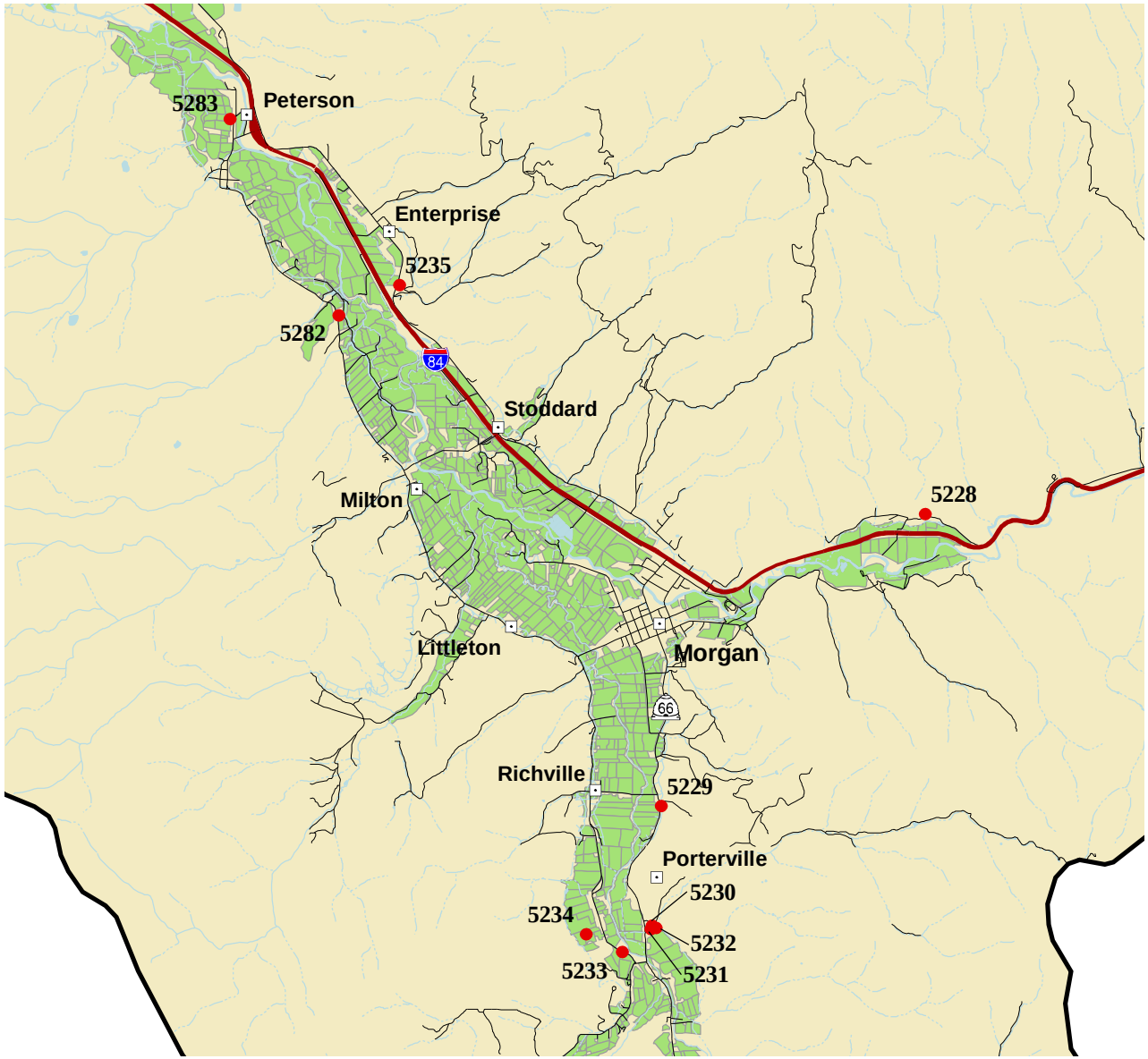
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5228	-0.1000	0.1037	-0.1000	-0.1000	0.0634	0.0394	-0.1000	-0.1	-0.1000	9.75	-0.1000	320	0.07	7.59	1	0	4.5
5229	-0.1000	0.3245	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	5.89	-0.1000	427	-0.10	7.47	1	0	5.9
5230	-0.1000	0.3516	-0.1000	-0.1000	0.0213	-0.1000	-0.1000	7.8	-0.1000	20.93	-0.1000	613	-0.10	7.38	1	0	8.4
5231	-0.1000	0.3173	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.1	-0.1000	25.73	-0.1000	694	-0.10	7.22	0	0	9.2
5232	-0.1000	0.3224	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	22.02	-0.1000	600	0.21	7.36	0	0	8.2
5233	-0.1000	0.1591	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.1	-0.1000	8.31	-0.1000	448	-0.10	7.38	1	0	6.4
5234	-0.1000	0.3688	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	7.91	-0.1000	472	-0.10	7.62	1	0	7.1
5235	-0.1000	0.1682	-0.1000	-0.1000	-0.1000	0.0373	-0.1000	2.2	-0.1000	10.91	-0.1000	406	-0.10	7.45	0	0	5.7
5282	-0.1000	0.2964	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.8	-0.1000	5.10	-0.1000	378	0.13	7.57	0	0	4.6
5283	-0.1000	0.1765	-0.1000	-0.1000	0.0226	-0.1000	-0.1000	-0.1	-0.1000	12.49	-0.1000	397	0.04	7.48	1	1	6.0

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

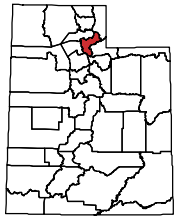
Map 11. Morgan District



Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:122,000 (1 inch = 1.9 miles)

Salt Lake District

General:

Twenty-four (24) samples were collected in the Salt Lake District during 2005. Sampled water temperatures range from 10.0 °C to 23.6 °C, with a mean of 16.2 °C. The pH for the district ranges from 7.33 to 9.22 with a mean of 7.83.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Three (3) of the twenty-four (24) samples have EC values **less** than 750 µmhos/cm. These samples are 5248, 5253, and 5297. None of the samples exceeded the 3,000 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Three (3) of the wells sampled in this district, 5293, 5373, and 5394 have elevated SAR values. Sample 5293 has severe SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples **except** 5451 have high bicarbonate, which is common for water in Utah. None of the samples exceed the severe 8.5 level.

Some specific elements can be toxic to plants. Chlorine, found in the form of Chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Samples 5213, 5254, 5255, 5256, 5257, 5258, 5293, 5295, 5394, and 5441 have elevated chlorine. Samples 5213 and 5394 have over 355 ppm of chlorine and will likely cause severe injury to plants.

Some specific elements can be toxic to plants. Sample 5394 has elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

Manganese (Mn) above 0.2 ppm can injure plants and cause reduction in dry matter production. Excess manganese interferes with the plant's ability to use other nutrients such as calcium (Ca). Sample 5395 has elevated manganese.

No other elements were found in concentrations harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Samples 5213 and 5248 have elevated molybdenum.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district varies from soft to very hard, with grains per gallon (gpg) ranging from 0.9 to 13.1 with a mean of 7.6. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. All the samples **except** 5248, 5253, 5297, 5373, and 5451 exceeded the aesthetic standard for salinity. No samples exceed the 2,000 ppm level.

Arsenic (As) exceeded the primary drinking water standard in sample 5248 with a value of 0.0572 ppm.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Samples 5373, 5394, and 5395 have a high manganese concentration.

Sulfate (S) is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur. Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present high sulfate concentrations can cause diarrhea in people not used to drinking it. Samples 5213 and 5394 have high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5251, 5255, 5258, 5293, 5297, and 5394 are contaminated with coliform bacteria. Samples 5297 and 5394 were also contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

SALT LAKE
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5107	-0.1000	159.05	2.91	-0.1000	54.18	41.34	-0.10	7.53	15.1	663
5213	0.0152	27.99	182.08	0.0834	1.96	-0.10	17.45	7.43	11.6	1072
5247	-0.1000	107.92	2.83	-0.1000	43.07	44.04	-0.10	7.62	14.9	628
5248	-0.1000	11.41	2.20	-0.1000	4.33	42.69	0.14	9.22	23.6	202
5249	-0.1000	105.68	3.62	-0.1000	36.82	42.91	-0.10	7.62	17.1	580
5250	-0.1000	121.59	3.10	-0.1000	44.59	36.21	-0.10	7.56	14.7	659
5251	-0.1000	133.21	3.39	-0.1000	43.75	47.33	-0.10	7.47	20.3	706
5252	-0.1000	127.93	2.94	-0.1000	45.53	40.82	-0.10	7.57	16.5	694
5253	-0.1000	64.85	1.80	-0.1000	23.05	14.76	-0.10	8.05	15.5	356
5254	-0.1000	127.65	4.87	-0.1000	33.31	58.95	-0.10	7.34	17.0	724
5255	-0.1000	132.85	5.50	-0.1000	37.13	70.38	-0.10	7.47	16.4	743
5256	-0.1000	117.87	6.10	-0.1000	34.11	64.09	-0.10	7.72	15.9	677
5257	-0.1000	123.15	7.43	-0.1000	34.91	67.87	-0.10	7.79	15.2	727
5258	-0.1000	96.19	3.50	0.0552	26.24	105.99	-0.10	7.46	16.4	722
5293	-0.1000	34.84	34.79	0.1347	22.62	286.56	-0.10	8.33	18.3	1043
5294	-0.1000	91.15	10.41	0.0544	28.15	44.55	-0.10	7.76	21.7	562
5295	-0.1000	108.52	5.24	-0.1000	29.50	61.79	-0.10	7.70	15.1	653
5296	-0.1000	121.97	3.99	-0.1000	33.12	62.38	-0.10	7.57	15.3	664
5297	-0.1000	63.57	1.04	-0.1000	22.76	13.86	-0.10	8.84	10.0	323
5373	-0.1000	19.53	8.74	-0.1000	13.76	129.40	0.66	8.29	14.6	466
5394	-0.1000	163.18	42.25	0.2636	61.23	351.73	1.00	7.33	15.2	1572
5395	-0.1000	105.94	4.12	-0.1000	42.21	73.10	-0.10	8.06	16.5	734
5441	-0.1000	84.02	2.74	-0.1000	30.30	21.87	-0.10	7.82	15.4	568
5451	-0.1000	86.10	3.72	-0.1000	22.92	24.51	-0.10	8.47	15.9	472

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5107	-0.1000	0.16	93.29	0.00	-0.1000	-0.1000	5.58	-0.1000	-0.1000	-0.10	0.7	1,105
5213	0.1692	-0.10	392.76	0.00	-0.1000	-0.1000	6.29	-0.1000	-0.1000	-0.10	0.0	1,786
5247	-0.1000	0.12	92.49	0.00	-0.1000	0.0613	5.50	0.0342	-0.1000	-0.10	0.9	1,046
5248	-0.1000	0.10	28.68	0.00	-0.1000	0.0311	1.86	0.0266	-0.1000	0.11	2.7	337
5249	-0.1000	0.12	57.78	0.00	-0.1000	-0.1000	5.30	-0.1000	-0.1000	-0.10	0.9	966
5250	-0.1000	0.11	84.07	0.00	-0.1000	-0.1000	5.61	-0.1000	-0.1000	-0.10	0.7	1,098
5251	-0.1000	0.14	114.84	0.00	-0.1000	-0.1000	5.58	-0.1000	-0.1000	-0.10	0.9	1,176
5252	-0.1000	0.12	107.70	0.00	-0.1000	-0.1000	5.56	-0.1000	-0.1000	-0.10	0.8	1,156
5253	-0.1000	-0.10	35.56	0.00	-0.1000	-0.1000	3.40	-0.1000	-0.1000	0.10	0.4	593
5254	-0.1000	0.16	195.60	0.00	-0.1000	-0.1000	5.23	-0.1000	-0.1000	0.05	1.2	1,206
5255	-0.1000	0.16	165.54	0.00	0.0245	-0.1000	5.98	-0.1000	-0.1000	0.23	1.4	1,239
5256	-0.1000	0.15	152.43	0.00	-0.1000	-0.1000	5.45	-0.1000	-0.1000	-0.10	1.3	1,128
5257	-0.1000	0.16	183.95	0.00	-0.1000	-0.1000	5.17	-0.1000	-0.1000	-0.10	1.4	1,212
5258	-0.1000	0.17	245.46	0.00	-0.1000	0.0223	3.40	-0.1000	-0.1000	0.20	2.5	1,203
5293	-0.1000	0.32	262.09	0.00	-0.1000	-0.1000	5.28	-0.1000	-0.1000	-0.10	9.3	1,738
5294	-0.1000	0.14	137.83	0.00	-0.1000	-0.1000	3.29	-0.1000	-0.1000	-0.10	1.0	936
5295	-0.1000	0.12	163.63	0.00	0.0247	-0.1000	4.64	-0.1000	-0.1000	0.04	1.4	1,089
5296	-0.1000	0.16	141.04	0.00	-0.1000	0.0314	6.02	-0.1000	-0.1000	0.04	1.3	1,106
5297	-0.1000	-0.10	10.67	0.00	-0.1000	-0.1000	4.42	-0.1000	-0.1000	-0.10	0.4	538
5373	-0.1000	0.28	23.28	0.00	-0.1000	0.1623	6.81	0.0617	-0.1000	-0.10	5.5	777
5394	-0.1000	1.58	663.58	0.00	0.0243	0.0231	8.37	0.1080	-0.1000	-0.10	6.0	2,620
5395	-0.1000	0.16	119.81	0.00	-0.1000	0.1448	6.16	0.2467	-0.1000	-0.10	1.5	1,224
5441	-0.1000	-0.10	188.53	0.00	-0.1000	-0.1000	3.50	-0.1000	-0.1000	-0.10	0.5	946
5451	-0.1000	-0.10	138.44	0.00	-0.1000	0.0377	0.94	-0.1000	-0.1000	-0.10	0.6	787

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

SALT LAKE
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5107	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	67.51	-0.1000	663	-0.1000	-0.10
5213	0.1692	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	0.0149	-0.1000	-0.1000	142.59	-0.1000	1,072	-0.1000	-0.10
5247	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	58.77	-0.1000	628	-0.1000	-0.10
5248	-0.1000	0.0572	0.10	-0.1000	-0.1000	-0.1000	0.0262	-0.1000	-0.1000	10.83	-0.1000	202	-0.1000	0.11
5249	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	69.07	-0.1000	580	-0.1000	-0.10
5250	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	69.70	-0.1000	659	-0.1000	-0.10
5251	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	68.92	-0.1000	706	-0.1000	-0.10
5252	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	65.74	-0.1000	694	-0.1000	-0.10
5253	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	30.02	-0.1000	356	-0.1000	0.10
5254	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	27.45	-0.1000	724	-0.1000	0.05
5255	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	37.64	-0.1000	743	-0.1000	0.23
5256	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	29.68	-0.1000	677	0.0109	-0.10
5257	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	29.12	-0.1000	727	0.0124	-0.10
5258	-0.1000	-0.1000	0.17	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	22.11	-0.1000	722	-0.1000	0.20
5293	-0.1000	-0.1000	0.32	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	75.80	-0.1000	1,043	-0.1000	-0.10
5294	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	35.02	-0.1000	562	-0.1000	-0.10
5295	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	26.74	-0.1000	653	0.0108	0.04
5296	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.26	-0.1000	664	0.0123	0.04
5297	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.22	-0.1000	323	-0.1000	-0.10
5373	-0.1000	-0.1000	0.28	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.39	-0.1000	466	-0.1000	-0.10
5394	-0.1000	-0.1000	1.58	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	90.10	-0.1000	1,572	-0.1000	-0.10
5395	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	56.73	-0.1000	734	-0.1000	-0.10
5441	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.69	-0.1000	568	-0.1000	-0.10
5451	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	40.86	-0.1000	472	-0.1000	-0.10

Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5107	-0.1000	0.0544	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.7	-0.1000	67.51	-0.1000	663	-0.10	7.53	0	0	12.5
5213	-0.1000	0.0570	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	142.59	-0.1000	1,072	-0.10	7.43	0	0	1.8
5247	-0.1000	0.0287	-0.1000	-0.1000	-0.1000	0.0613	0.0342	4.2	-0.1000	58.77	-0.1000	628	-0.10	7.62	0	0	8.8
5248	0.0572	-0.1000	-0.1000	-0.1000	-0.1000	0.0311	0.0266	-0.1	-0.1000	10.83	-0.1000	202	0.11	9.22	0	0	0.9
5249	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.8	-0.1000	69.07	-0.1000	580	-0.10	7.62	0	0	8.3
5250	-0.1000	0.0288	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	69.70	-0.1000	659	-0.10	7.56	0	0	9.7
5251	-0.1000	0.0277	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.2	-0.1000	68.92	-0.1000	706	-0.10	7.47	1	0	10.3
5252	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.2	-0.1000	65.74	-0.1000	694	-0.10	7.57	0	0	10.1
5253	-0.1000	0.0686	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.1	-0.1000	30.02	-0.1000	356	0.10	8.05	0	0	5.1
5254	-0.1000	0.1748	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.2	-0.1000	27.45	-0.1000	724	0.05	7.34	0	0	9.4
5255	-0.1000	0.1435	-0.1000	-0.1000	0.0245	-0.1000	-0.1000	3.5	-0.1000	37.64	-0.1000	743	0.23	7.47	1	0	9.9
5256	-0.1000	0.1387	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.2	-0.1000	29.68	-0.1000	677	-0.10	7.72	0	0	8.9
5257	-0.1000	0.1327	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.8	-0.1000	29.12	-0.1000	727	-0.10	7.79	0	0	9.2
5258	-0.1000	0.1374	-0.1000	-0.1000	-0.1000	0.0223	-0.1000	1.4	-0.1000	22.11	-0.1000	722	0.20	7.46	1	0	7.2
5293	-0.1000	0.0478	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.0	-0.1000	75.80	-0.1000	1,043	-0.10	8.33	1	0	3.4
5294	-0.1000	0.0552	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.1	-0.1000	35.02	-0.1000	562	-0.10	7.76	0	0	7.0
5295	-0.1000	0.1466	-0.1000	-0.1000	0.0247	-0.1000	-0.1000	-0.1	-0.1000	26.74	-0.1000	653	0.04	7.70	0	0	8.1
5296	-0.1000	0.1460	-0.1000	-0.1000	-0.1000	0.0314	-0.1000	1.3	-0.1000	25.26	-0.1000	664	0.04	7.57	0	0	9.1
5297	-0.1000	0.2093	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	15.22	-0.1000	323	-0.10	8.84	1	1	5.0
5373	-0.1000	0.1055	-0.1000	-0.1000	-0.1000	0.1623	0.0617	-0.1	-0.1000	0.39	-0.1000	466	-0.10	8.29	0	0	1.9
5394	-0.1000	0.1112	-0.1000	-0.1000	0.0243	0.0231	0.1080	1.0	-0.1000	90.10	-0.1000	1,572	-0.10	7.33	1	1	13.1
5395	-0.1000	0.1904	-0.1000	-0.1000	-0.1000	0.1448	0.2467	-0.1	-0.1000	56.73	-0.1000	734	-0.10	8.06	0	0	8.7
5441	-0.1000	0.1729	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.2	-0.1000	7.69	-0.1000	568	-0.10	7.82	0	0	6.7
5451	-0.1000	0.2008	-0.1000	-0.1000	-0.1000	0.0377	-0.1000	3.0	-0.1000	40.86	-0.1000	472	-0.10	8.47	0	0	6.4

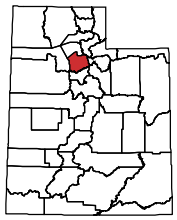
Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 12. Salt Lake District

Map Scale 1:330,000 (1 inch = 5.2 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Weber District

General:

Six (6) samples were collected in the Weber District. Sampled water temperatures range from 9.7 °C to 14.6 °C, with a mean of 12.0 °C. The pH for the district ranges from 7.27 to 8.10 with a mean of 7.82.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. None of the water samples exceeded the 750 µmhos/cm standard. None of the samples exceeded the severe-injury level of 3,000 µmhos/cm, which would affect most plants.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the samples from this area exceed the SAR standard with values greater than 3.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah. None of the samples exceeded the 8.5 level.

No other elements were found in concentrations harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Water in this district varies from soft to hard, with grains per gallon (gpg) ranging from 2.1 to 4.5 with a mean of 3.3. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. None of the samples exceeded the EPA aesthetic standard of 500 ppm for salinity. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples reach the level of being a health risk.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5286, 5287, and 5450 are contaminated with coliform bacteria. None of the samples are contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

WEBER
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5284	-0.1000	49.72	1.25	-0.1000	16.16	8.13	-0.10	8.10	11.2	244
5285	-0.1000	51.01	1.06	-0.1000	16.17	8.89	-0.10	8.04	9.7	253
5286	-0.1000	41.79	1.54	-0.1000	16.66	4.97	-0.10	8.02	10.9	216
5287	-0.1000	63.27	1.43	-0.1000	13.52	17.62	-0.10	7.27	14.6	289
5449	-0.1000	31.81	0.99	-0.1000	6.48	19.80	-0.10	7.91	13.7	192
5450	-0.1000	29.35	0.51	-0.1000	6.99	6.87	-0.10	7.58	11.7	145

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5284	-0.1000	-0.10	12.26	0.00	-0.1000	-0.1000	4.21	-0.1000	-0.1000	-0.10	0.3	407
5285	-0.1000	-0.10	13.62	0.00	-0.1000	-0.1000	4.23	-0.1000	-0.1000	-0.10	0.3	422
5286	-0.1000	-0.10	9.50	0.00	-0.1000	0.0381	3.66	-0.1000	-0.1000	-0.10	0.2	360
5287	-0.1000	-0.10	19.78	0.00	-0.1000	-0.1000	4.66	-0.1000	-0.1000	-0.10	0.5	481
5449	-0.1000	-0.10	21.16	0.00	0.0232	0.0251	2.23	-0.1000	-0.1000	-0.10	0.8	320
5450	-0.1000	-0.10	6.49	0.00	-0.1000	-0.1000	1.99	-0.1000	-0.1000	-0.10	0.3	242

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5284	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.62	-0.1000	244	-0.1000	-0.10
5285	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.56	-0.1000	253	-0.1000	-0.10
5286	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.54	-0.1000	216	-0.1000	-0.10
5287	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.42	-0.1000	289	-0.1000	-0.10
5449	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.26	-0.1000	192	-0.1000	-0.10
5450	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.62	-0.1000	145	-0.1000	-0.10

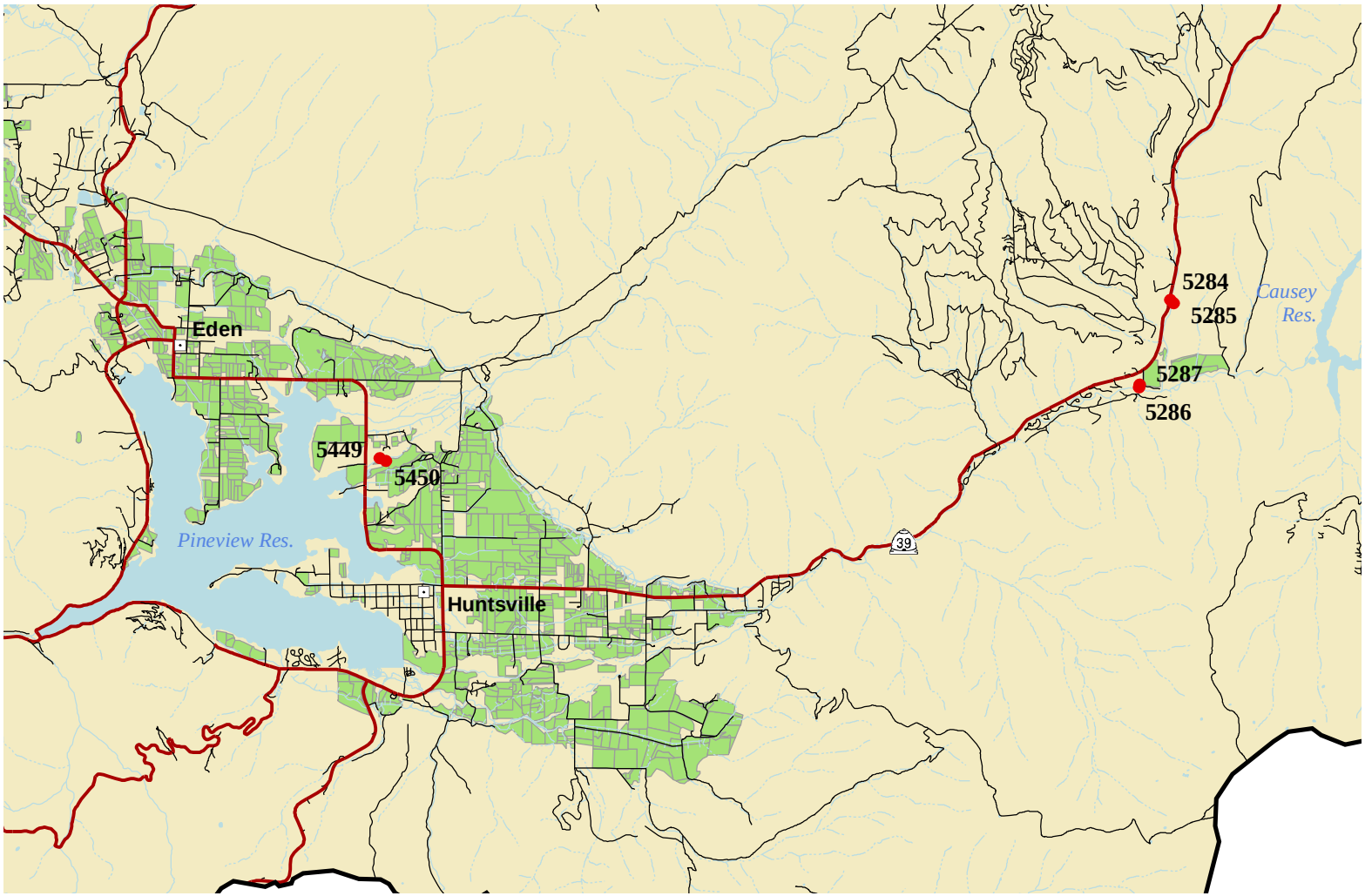
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5284	-0.1000	0.2157	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	2.62	-0.1000	244	-0.10	8.10	0	0	3.9
5285	-0.1000	0.2163	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	2.56	-0.1000	253	-0.10	8.04	0	0	3.9
5286	-0.1000	0.1145	-0.1000	-0.1000	-0.1000	0.0381	-0.1000	-0.1	-0.1000	2.54	-0.1000	216	-0.10	8.02	1	0	3.4
5287	-0.1000	0.0978	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	2.42	-0.1000	289	-0.10	7.27	1	0	4.5
5449	-0.1000	0.0694	-0.1000	-0.1000	-0.1000	0.0232	0.0251	-0.1000	-0.1	-0.1000	2.26	-0.1000	192	-0.10	7.91	0	2.2
5450	-0.1000	0.0337	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	1.62	-0.1000	145	-0.10	7.58	1	0	2.1

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 13. Weber County District

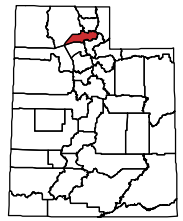


Map Scale 1:110,000 (1 inch = 1.7 miles)

N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Zone 3

UACD Zone 3 consists of five districts in three counties, including Summit, Utah, and Wasatch counties. Sampling testing may not have been done in all the districts or counties listed in Zone 3

Thirty-three (33) sites were sampled in four districts of Zone 3 during the spring, summer, and fall of 2005. There were two (2) in the Alpine District, fourteen (14) in the Kamas Valley District, ten (10) in the Timp-Nebo District, and seven (7) in the Wasatch District. A separate narrative report is presented for each district with maps showing the location of the sample sites. Each report covers three categories of water quality criteria: irrigation, livestock, and culinary. Data are presented in four tables for each zone, grouped according to district, general parameters (temperature, pH, total dissolved solids (TDS), and chemicals for which there are no standards); irrigation, livestock and drinking water parameters.

Alpine District

General:

Two (2) samples were collected in the Alpine District. Sampled water temperatures range from 13.0°C to 13.9°C, with a mean of 13.5 °C. The pH for the district ranges from 7.64 to 7.71 with a mean of 7.68.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Sample 5214 collected in this district exceed the salinity standard of 750 µmhos/cm.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the samples have values greater than the 3 standard.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

No other elements were found in concentrations harmful to plants.

Livestock:

No water quality standards for livestock were exceeded.

Culinary:

Water in this district tested slightly hard, with grains per gallon (gpg) ranging from 5.8 to 7.3 with a mean of 6.6. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceeded the 500 ppm standard.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

No samples from this district were found to have bacterial contamination.

ALPINE
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5150	-0.1000	67.86	1.58	-0.1000	31.85	15.23	-0.10	7.71	13.9	361
5214	-0.1000	81.70	3.46	-0.1000	43.39	22.68	-0.10	7.64	13.0	472

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5150	-0.1000	0.07	17.90	0.00	-0.1000	-0.1000	4.64	-0.1000	-0.1000	-0.10	0.4	602
5214	-0.1000	0.11	33.09	0.00	-0.1000	-0.1000	5.69	-0.1000	-0.1000	-0.10	0.5	787

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5150	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	20.01	-0.1000	361	-0.1000	-0.10
5214	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	32.96	-0.1000	472	-0.1000	-0.10

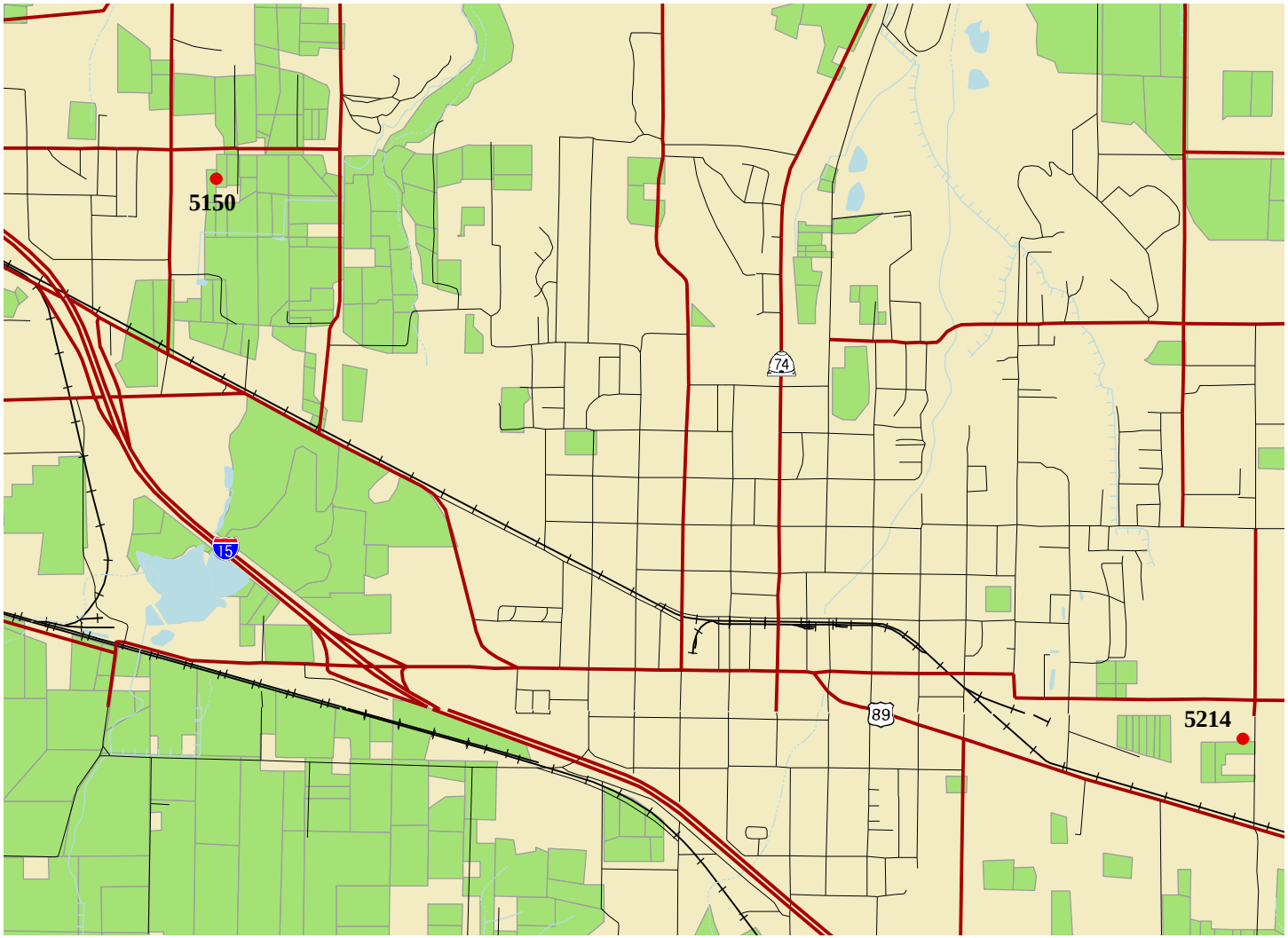
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detectio limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5150	-0.1000	0.1367	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.8	-0.1000	20.01	-0.1000	361	-0.10	7.71	0	0	5.8
5214	-0.1000	0.0500	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.6	-0.1000	32.96	-0.1000	472	-0.10	7.64	0	0	7.3

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

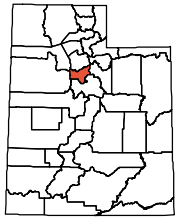
Map 14. Alpine District



Sample location
Major road
Other road
Railroad
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:32,000 (1 inch = 0.5 miles)

Kamas Valley District

General:

Fourteen (14) samples were collected in the Kamas Valley District. Sampled water temperatures range from 8.5°C to 17.6°C, with a mean of 11.2 °C. The pH for the district ranges from 7.41 to 8.63 with a mean of 7.76.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. None of the Samples exceeded the salinity standard of 750 µmhos/cm.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. No samples exceeded the SAR standard of 3.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

Manganese (Mn) is a micro-nutrient and is required for plant growth, yet in excess it can damage plants. Manganese above 0.2 ppm can injure plants and cause reduction in dry matter production. Excess manganese interferes with the plant's ability to use other nutrients such as calcium (Ca). Samples 5225 and 5298 have elevated concentrations of manganese.

No elements were found in concentrations harmful to plants.

Livestock:

No other water quality standards for livestock were exceeded.

Culinary:

Water in this district tested slightly-hard to hard, with grains per gallon (gpg) ranging from 1.9 to 5.6 with a mean of 4.1. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. No samples exceed the EPA aesthetic standard of 500 ppm above which the water may be off-flavored, but it is not a health problem until TDS exceeds 2,000 ppm. None of the samples exceeded the aesthetic drinking water standard of 500 ppm. None of the samples exceeded the 2,000 ppm health standard.

High iron (Fe) can cause discoloration of plumbing fixtures and promote the growth of iron bacteria, which stain anything they contact. This is an aesthetic issue, not a health concern. Sample 5225 has high iron.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Samples 5225 and 5298 have high manganese concentration.

The most serious problem with drinking water from private water systems is bacterial contamination.

Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5217, 5219, 5226, 5298, and 5300 are contaminated with coliform bacteria. Sample 5300 is also contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

KAMAS VALLEY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5216	-0.1000	52.50	0.93	-0.1000	18.81	3.20	-0.10	7.59	14.3	248
5217	-0.1000	33.00	0.56	-0.1000	13.18	2.95	-0.10	7.94	8.5	170
5218	-0.1000	59.44	0.68	-0.1000	17.64	3.70	-0.10	7.57	9.2	260
5219	-0.1000	57.36	0.76	-0.1000	16.77	3.14	-0.10	7.47	9.1	252
5221	-0.1000	74.98	0.81	-0.1000	21.06	3.56	-0.10	7.42	8.5	318
5222	-0.1000	55.80	0.82	-0.1000	19.21	3.43	-0.10	7.56	11.4	264
5223	-0.1000	55.25	0.65	-0.1000	19.32	4.69	-0.10	7.78	11.8	259
5224	-0.1000	57.81	0.80	-0.1000	27.82	5.19	-0.10	7.44	11.5	304
5225	-0.1000	59.02	1.90	-0.1000	26.55	10.57	-0.10	7.54	11.2	342
5226	-0.1000	56.66	0.64	-0.1000	15.59	5.15	-0.10	7.89	9.9	254
5227	-0.1000	46.44	1.58	-0.1000	11.09	20.60	-0.10	7.41	17.6	256
5298	-0.1000	61.82	0.93	-0.1000	10.41	45.34	-0.10	8.34	11.1	402
5299	-0.1000	43.47	0.82	-0.1000	9.42	3.66	-0.10	8.00	8.9	188
5300	-0.1000	26.39	0.86	-0.1000	6.30	4.52	-0.10	8.63	14.2	122

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5216	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	3.70	-0.1000	-0.1000	1.77	0.1	413
5217	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	2.61	-0.1000	-0.1000	-0.10	0.1	283
5218	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0313	3.77	-0.1000	-0.1000	0.17	0.1	434
5219	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.03	-0.1000	-0.1000	0.19	0.1	420
5221	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.88	-0.1000	-0.1000	0.18	0.1	530
5222	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	3.77	-0.1000	-0.1000	1.24	0.1	440
5223	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0424	4.09	-0.1000	-0.1000	0.06	0.1	432
5224	-0.1000	-0.10	4.15	0.00	-0.1000	-0.1000	4.97	-0.1000	-0.1000	-0.10	0.1	506
5225	-0.1000	-0.10	6.77	0.00	-0.1000	1.2501	4.29	0.6084	-0.1000	-0.10	0.3	570
5226	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.01	-0.1000	-0.1000	-0.10	0.2	424
5227	-0.1000	-0.10	20.80	0.00	0.0756	-0.1000	3.35	-0.1000	-0.1000	1.96	0.7	427
5298	-0.1000	-0.10	133.76	0.00	-0.1000	0.0334	2.13	0.3874	-0.1000	0.48	1.4	670
5299	-0.1000	-0.10	4.30	0.00	-0.1000	-0.1000	2.76	-0.1000	-0.1000	-0.10	0.1	313
5300	-0.1000	-0.10	3.98	0.00	-0.1000	0.1308	1.64	-0.1000	-0.1000	-0.10	0.2	203

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

KAMAS VALLEY
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5216	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.27	-0.1000	248	-0.1000	1.77
5217	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.20	-0.1000	170	-0.1000	-0.10
5218	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.04	-0.1000	260	-0.1000	0.17
5219	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.59	-0.1000	252	-0.1000	0.19
5221	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.13	-0.1000	318	-0.1000	0.18
5222	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.37	-0.1000	264	-0.1000	1.24
5223	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.78	-0.1000	259	-0.1000	0.06
5224	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.14	-0.1000	304	-0.1000	-0.10
5225	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	24.10	-0.1000	342	-0.1000	-0.10
5226	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.92	-0.1000	254	-0.1000	-0.10
5227	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.83	-0.1000	256	-0.1000	1.96
5298	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.08	-0.1000	402	-0.1000	0.48
5299	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.41	-0.1000	188	-0.1000	-0.10
5300	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.24	-0.1000	122	-0.1000	-0.10

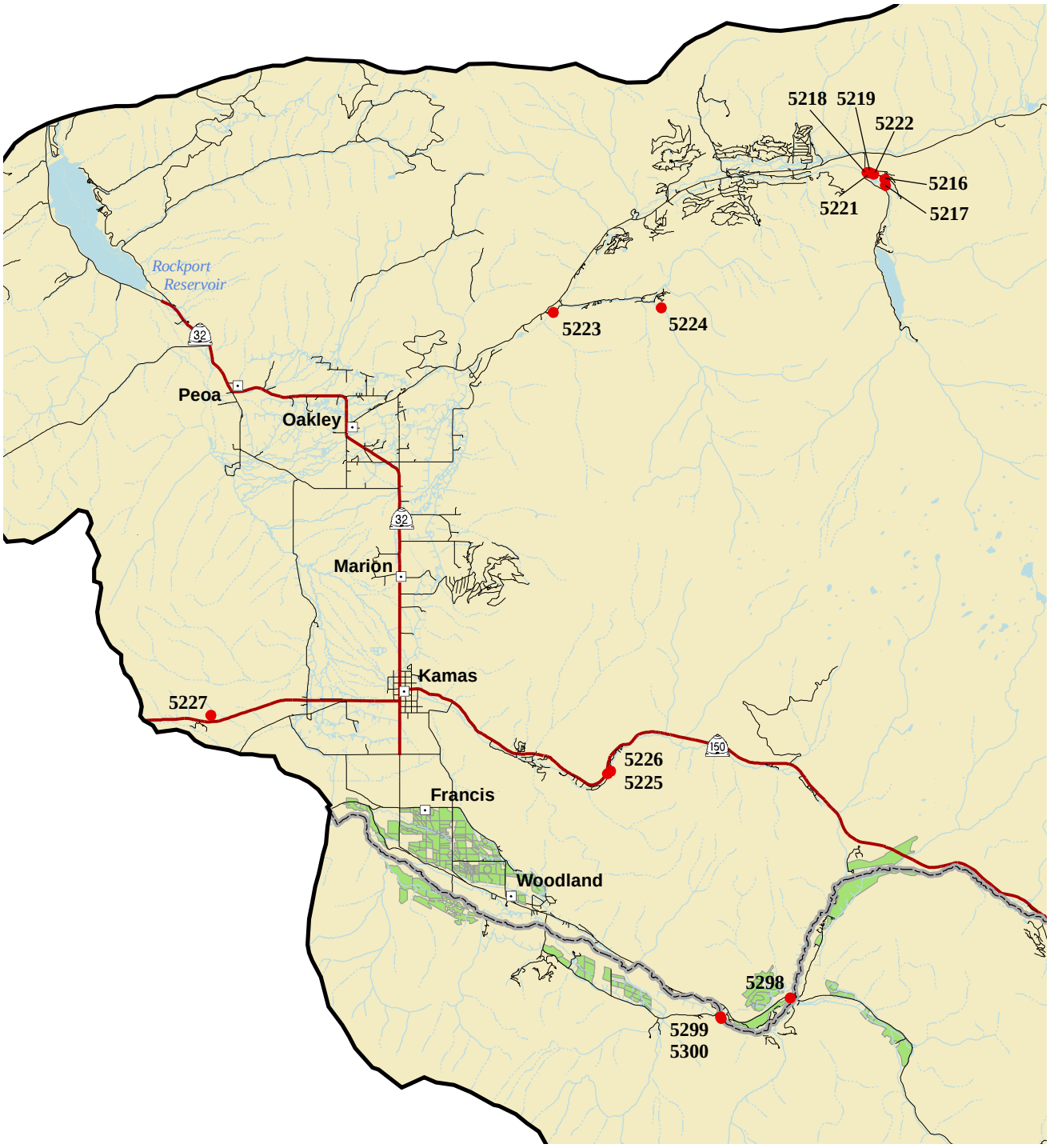
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detecti limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5216	-0.1000	0.0682	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	9.27	-0.1000	248	1.77	7.59	0	0	4.2
5217	-0.1000	0.0559	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	3.20	-0.1000	170	-0.10	7.94	1	0	2.7
5218	-0.1000	0.0806	-0.1000	-0.1000	-0.1000	0.0313	-0.1000	-0.1	-0.1000	12.04	-0.1000	260	0.17	7.57	0	0	4.5
5219	-0.1000	0.0679	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	6.59	-0.1000	252	0.19	7.47	1	0	4.3
5221	-0.1000	0.0737	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	12.13	-0.1000	318	0.18	7.42	0	0	5.6
5222	-0.1000	0.0542	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	14.37	-0.1000	264	1.24	7.56	0	0	4.4
5223	-0.1000	0.0797	-0.1000	-0.1000	-0.1000	0.0424	-0.1000	-0.1	-0.1000	6.78	-0.1000	259	0.06	7.78	0	0	4.4
5224	-0.1000	0.0462	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	7.14	-0.1000	304	-0.10	7.44	0	0	5.0
5225	-0.1000	0.0275	-0.1000	-0.1000	-0.1000	1.2501	0.6084	-0.1	-0.1000	24.10	-0.1000	342	-0.10	7.54	0	0	5.0
5226	-0.1000	0.0357	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	4.92	-0.1000	254	-0.10	7.89	1	0	4.2
5227	-0.1000	0.0204	-0.1000	-0.1000	0.0756	-0.1000	-0.1000	-0.1	-0.1000	4.83	-0.1000	256	1.96	7.41	0	0	3.4
5298	-0.1000	0.3523	-0.1000	-0.1000	-0.1000	0.0334	0.3874	-0.1	-0.1000	1.08	-0.1000	402	0.48	8.34	1	0	4.2
5299	-0.1000	0.0744	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	3.41	-0.1000	188	-0.10	8.00	0	0	3.1
5300	-0.1000	0.0528	-0.1000	-0.1000	-0.1000	0.1308	-0.1000	-0.1	-0.1000	4.24	-0.1000	122	-0.10	8.63	1	1	1.9

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 15. Kamas Valley District

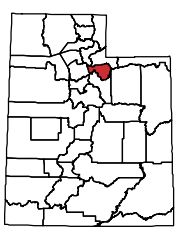


Map Scale 1:185,000 (1 inch = 2.9 miles)

N

- Sample location
- Major road
- Other road
- Stream
- Ditch or canal
- Aqueduct
- Intermittent stream
- Water body
- Irrigated cropland
- SCD boundary

District Location



Timp-Nebo District

General:

Ten (10) samples were collected in the Timp-Nebo District. Sampled water temperatures range from 12.4 °C to 18.7 °C, with a mean of 14.0 °C. The pH for the district ranges from 7.58 to 8.88 with a mean of 8.00.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Samples 5083, 5108, and 5383 exceeded the salinity standard of 750 µmhos/cm. None of the samples exceeded the severe-injury level of 3,000 µmhos/cm, which would affect most plants.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Sample 5383 has severe elevated SAR at 15.8.

Bicarbonate (HCO3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah. Sample 5383 exceeds the 8.5 level.

Some specific elements can be toxic to plants. Sample 5383 has elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

Chlorine found in the form of chloride (Cl) can damage sensitive plants at concentrations above 145 ppm and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Samples 5108 and 5383 have high chlorine.

Manganese (Mn) is a micro-nutrient and is required for plant growth, yet in excess it can damage plants. Manganese above 0.2 ppm can injure plants and cause reduction in dry matter production. Excess manganese interferes with the plant's ability to use other nutrients such as calcium (Ca). Sample 5083 has elevated concentrations of manganese.

No other elements were found in concentrations harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Sample 5383 has elevated molybdenum.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district varies from slightly-hard to very hard, with grains per gallon (gpg) ranging from 2.8 to 14.8 with a mean of 6.1. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. Samples 5083, 5108, and 5383 exceed the EPA aesthetic standard of 500 ppm. At this level the water may be off-flavored, but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceeded the health standard for total dissolved solids.

High iron (Fe) can cause discoloration of plumbing fixtures and promote the growth of iron bacteria, which stain anything they contact. This is an aesthetic issue, not a health concern. Samples 5067 and 5384 have high iron.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Samples 5064, 5067, 5068, 5083, and 5384 have high manganese levels.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people. Sample 5383 has high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5108 and 5383 are contaminated with coliform bacteria. Sample 5383 is also contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

TIMP-NEBO
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5064	-0.1000	72.05	2.29	-0.1000	24.43	28.61	-0.10	8.06	13.4	367
5065	-0.1000	30.99	7.59	-0.1000	26.82	23.46	-0.10	7.94	14.0	273
5066	-0.1000	25.81	6.36	-0.1000	22.00	29.72	-0.10	8.15	13.0	246
5067	-0.1000	30.22	5.87	-0.1000	21.85	30.89	-0.10	8.05	12.8	259
5068	-0.1000	43.23	5.82	-0.1000	20.72	20.71	-0.10	7.88	14.1	261
5069	-0.1000	62.74	1.46	-0.1000	22.04	35.92	-0.10	7.64	13.5	355
5083	-0.1000	186.15	41.71	0.0868	67.53	156.33	-0.10	7.87	18.7	1212
5108	-0.1000	193.75	2.57	-0.1000	47.40	98.98	0.18	7.58	13.2	852
5383	-0.1000	11.71	2.61	0.1472	56.96	589.52	0.48	8.88	12.4	1584
5384	-0.1000	51.92	4.29	-0.1000	27.40	20.20	-0.10	7.95	14.4	369

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5064	-0.1000	-0.10	22.04	0.00	0.0307	0.0949	4.82	0.1376	-0.1000	-0.10	0.7	612
5065	-0.1000	0.08	12.26	0.00	-0.1000	0.1295	3.77	0.0369	-0.1000	-0.10	0.7	455
5066	-0.1000	0.09	11.73	0.00	-0.1000	0.1087	3.66	0.0415	-0.1000	-0.10	1.0	410
5067	-0.1000	0.09	13.37	0.00	-0.1000	0.3103	3.68	0.1447	-0.1000	-0.10	1.0	432
5068	-0.1000	-0.10	9.07	0.00	-0.1000	0.1204	4.08	0.0964	-0.1000	-0.10	0.6	435
5069	-0.1000	-0.10	32.32	0.00	-0.1000	-0.1000	4.42	-0.1000	-0.1000	-0.10	1.0	592
5083	-0.1000	0.21	-0.10	0.00	-0.1000	0.1635	1.90	0.5108	-0.1000	1.53	2.5	2,020
5108	-0.1000	0.13	164.91	0.00	-0.1000	-0.1000	7.14	-0.1000	-0.1000	0.12	1.7	1,420
5383	-0.1000	1.85	323.43	0.00	-0.1000	-0.1000	15.47	-0.1000	0.0561	-0.10	15.8	2,640
5384	-0.1000	0.08	18.08	0.00	-0.1000	0.3717	5.23	0.1063	-0.1000	-0.10	0.6	615

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

TIMP-NEBO
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5064	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.39	-0.1000	367	-0.1000	-0.10
5065	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.77	-0.1000	273	-0.1000	-0.10
5066	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.45	-0.1000	246	-0.1000	-0.10
5067	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.03	-0.1000	259	-0.1000	-0.10
5068	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.16	-0.1000	261	-0.1000	-0.10
5069	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.69	-0.1000	355	-0.1000	-0.10
5083	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	13.41	-0.1000	1,212	-0.1000	1.53
5108	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	31.25	-0.1000	852	-0.1000	0.12
5383	-0.1000	-0.1000	1.85	-0.1000	-0.1000	-0.1000	0.0594	-0.1000	-0.1000	137.29	0.0561	1,584	0.0486	-0.10
5384	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.08	-0.1000	369	-0.1000	-0.10

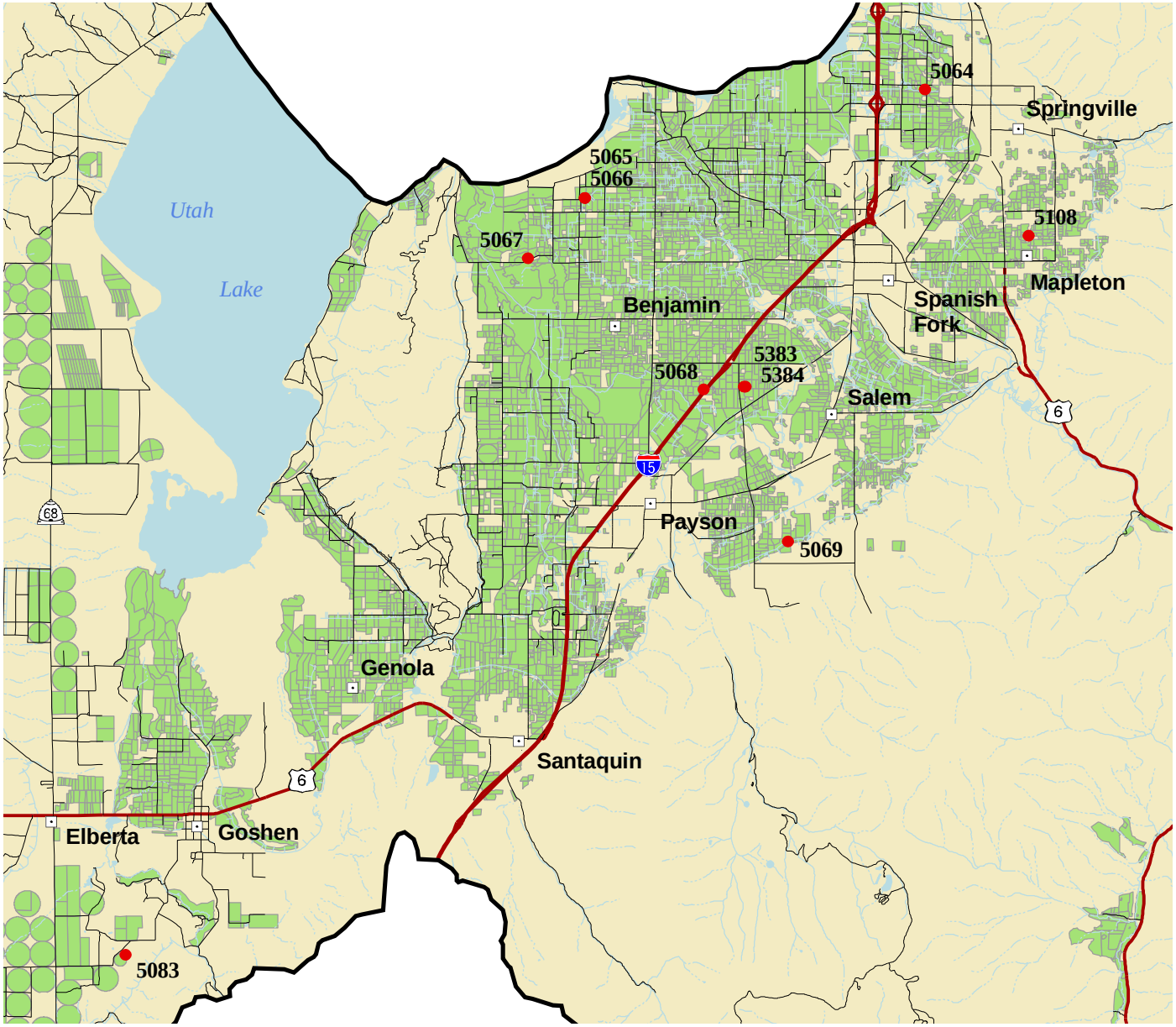
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5064	-0.1000	0.1538	-0.1000	-0.1000	0.0307	0.0949	0.1376	-0.1	-0.1000	19.39	-0.1000	367	-0.10	8.06	0	0	5.6
5065	-0.1000	0.1344	-0.1000	-0.1000	-0.1000	0.1295	0.0369	-0.1	-0.1000	9.77	-0.1000	273	-0.10	7.94	0	0	3.4
5066	-0.1000	0.2564	-0.1000	-0.1000	-0.1000	0.1087	0.0415	-0.1	-0.1000	4.45	-0.1000	246	-0.10	8.15	0	0	2.8
5067	-0.1000	0.1867	-0.1000	-0.1000	-0.1000	0.3103	0.1447	-0.1	-0.1000	7.03	-0.1000	259	-0.10	8.05	0	0	3.0
5068	-0.1000	0.2423	-0.1000	-0.1000	-0.1000	0.1204	0.0964	-0.1	-0.1000	5.16	-0.1000	261	-0.10	7.88	0	0	3.7
5069	-0.1000	0.1082	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.6	-0.1000	15.69	-0.1000	355	-0.10	7.64	0	0	5.0
5083	-0.1000	0.4464	-0.1000	-0.1000	-0.1000	0.1635	0.5108	-0.1	-0.1000	13.41	-0.1000	1,212	1.53	7.87	0	0	14.8
5108	-0.1000	0.2777	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.4	-0.1000	31.25	-0.1000	852	0.12	7.58	1	0	14.1
5383	-0.1000	0.0620	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.2	-0.1000	137.29	0.0561	1,584	-0.10	8.88	1	1	4.0
5384	-0.1000	0.5050	-0.1000	-0.1000	-0.1000	0.3717	0.1063	-0.1	-0.1000	6.08	-0.1000	369	-0.10	7.95	0	0	4.6

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

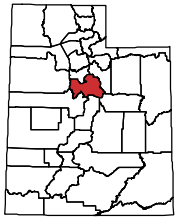
Map 16. Timp-Nebo District



Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:205,000 (1 inch = 3.2 miles)

Wasatch District

General:

Seven (7) samples were collected in the Wasatch District. Sampled water temperatures range from 6.2 °C to 13.8 °C, with a mean of 10.1 °C. The pH for the district ranges from 7.38 to 8.69 with a mean of 8.02.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. No samples exceed the 750 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the water sampled in this district has elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples **except** 5339 have high bicarbonate, which is common for water in Utah.

Manganese (Mn) above 0.2 ppm can injure plants and cause reduction in dry matter production. Excess manganese interferes with the plant's ability to use other nutrients such as calcium (Ca). Sample 5302 has elevated manganese.

No other elements were found in concentrations harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Water in this district varies from soft to slightly hard, with grains per gallon (gpg) ranging from 1.0 to 6.0 with a mean of 3.8. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. No samples exceed the EPA aesthetic standard of 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations of manganese may cause discoloration of plumbing fixtures and have poor flavor. Sample 5302 has a high manganese concentration.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that

mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5215, 5302, and 5469 are contaminated with coliform bacteria. This well should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected. No E. coli was found in any samples from this area.

WASATCH
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5022	-0.1000	64.41	1.35	-0.1000	37.77	28.38	-0.10	8.14	6.2	419
5109	-0.1000	72.82	1.93	-0.1000	14.12	8.98	-0.10	7.38	12.4	254
5215	-0.1000	38.13	3.86	-0.1000	9.02	12.47	-0.10	7.49	13.8	199
5302	-0.1000	69.67	1.76	-0.1000	14.47	11.35	-0.16	7.60	12.4	308
5339	-0.1000	15.73	3.03	-0.1000	1.94	5.00	-0.10	8.69	10.5	103
5468	-0.1000	46.98	0.32	-0.1000	10.27	3.57	-0.10	8.33	7.5	218
5469	-0.1000	47.75	0.59	-0.1000	15.51	4.57	-0.10	8.52	8.1	229

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5022	-0.1000	-0.10	23.06	0.00	-0.1000	-0.1000	6.20	-0.1000	-0.1000	-0.10	0.7	698
5109	-0.1000	-0.10	21.69	0.00	-0.1000	-0.1000	2.98	-0.1000	-0.1000	-0.10	0.3	423
5215	-0.1000	-0.10	17.49	0.00	-0.1000	-0.1000	2.56	-0.1000	-0.1000	-0.10	0.5	332
5302	-0.1000	-0.10	15.78	0.00	-0.1000	0.2226	4.08	1.3583	-0.1000	0.15	0.3	514
5339	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0798	1.27	-0.1000	-0.1000	0.20	0.3	172
5468	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	3.05	-0.1000	-0.1000	-0.10	0.1	363
5469	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	3.50	-0.1000	-0.1000	-0.10	0.1	382

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5022	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.94	-0.1000	419	-0.1000	-0.10
5109	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.91	-0.1000	254	-0.1000	-0.10
5215	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.02	-0.1000	199	-0.1000	-0.10
5302	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	55.86	-0.1000	308	-0.0747	0.15
5339	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.93	-0.1000	103	-0.1000	0.20
5468	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.35	-0.1000	218	-0.1000	-0.10
5469	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.36	-0.1000	229	-0.1000	-0.10

Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5022	-0.1000	0.1024	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	11.94	-0.1000	419	-0.10	8.14	0	0	6.0
5109	-0.1000	0.2094	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.2	-0.1000	8.91	-0.1000	254	-0.10	7.38	0	0	5.1
5215	-0.1000	0.2895	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	3.02	-0.1000	199	-0.10	7.49	1	0	2.8
5302	-0.1000	0.1944	-0.1000	-0.1000	-0.1000	0.2226	1.3583	-0.1	-0.1000	55.86	-0.1000	308	0.15	7.60	1	0	4.9
5339	-0.1000	0.0294	-0.1000	-0.1000	-0.1000	0.0798	-0.1000	-0.1	-0.1000	2.93	-0.1000	103	0.20	8.69	0	0	1.0
5468	-0.1000	0.0945	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.3	-0.1000	1.35	-0.1000	218	-0.10	8.33	0	0	3.3
5469	-0.1000	0.1782	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	3.36	-0.1000	229	-0.10	8.52	1	0	3.7

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

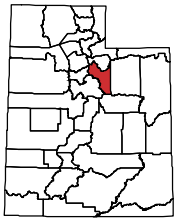
Map 17. Wasatch District

Map Scale 1:355,000 (1 inch = 5.6 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Zone 4

UACD Zone 4 consists of six districts in six counties including Juab, Millard, Piute, Sanpete, Sevier, and Wayne counties. Sampling testing may not have been done in all the districts or counties listed in Zone 4.

Fifty-seven (57) sites were sampled in Zone 4 during the spring, summer, and fall of 2005. These include eleven (11) in the Delta District, four (4) in the Fremont River District, one (1) in the Juab District, twenty-three (23) in the Millard District, three (3) in the Sevier County District, and fifteen (15) in the Sanpete County District. Many of the Millard District wells were sampled as part of an ongoing agreement with the Division of Water Rights and Utah Department of Natural Resources. A narrative report is presented for these areas together with data tables and maps showing approximate locations of sampling sites. The report covers three categories of water quality criteria—irrigation, livestock, and culinary.

Delta District

General:

Nine (11) samples were collected in the Delta District. Sampled water temperatures range from 15.0 °C to 22.0 °C, with a mean of 18.4 °C. The pH for the district ranges from 8.20 to 9.36 with a mean of 8.62.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Samples 5331 and 5336 have elevated EC values, above the 750 µmhos/cm standard. None of the samples exceeded the 3,000 µmhos/cm standard.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Samples 5330, 5331, 5336, and 5337 from this district have elevated SAR values. Samples 5330 and 5331 have SAR values that exceed the severe level of 9.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

Some specific elements can be toxic to plants. Sample 5331 has elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Samples 5331 and 5336 have elevated Cl. None of these samples exceed the severe level.

No other elements were found in concentrations harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Sample 5336 has elevated molybdenum.

Sulfate (SO_4) is shown on chemical analyses for sulfur (S). Sulfur as sulfate can cause water to be off flavored and produces diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Sample 5336 has elevated sulfur at concentrations which exceed the livestock standard for sulfur.

Culinary:

Water in this district generally tested soft to hard, with grains per gallon (gpg) ranging from 0.1 to 10.1 and a mean of 2.5. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for salinity is 500 ppm. At this level the water may be off-flavored, but it is not a health problem until TDS reaches 2,000 ppm μmhos/cm. TDS for samples 5331 and 5336 are above the aesthetic standard. None of the samples are above the 2000 ppm level.

EPA has set a standard for Arsenic (As) in drinking water at 0.05 ppm. Samples 5330 and 5331 exceeds this arsenic standard.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur. Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Sample 5336 has high sulfur (S).

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5329, 5334, and 5337 were contaminated with coliform bacteria. None of the samples were contaminated with E.coli bacteria.

DELTA
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5327	-0.1000	12.79	3.02	-0.1000	9.82	44.19	-0.10	8.60	22.0	197
5328	-0.1000	18.38	5.14	-0.1000	18.37	32.35	-0.10	8.45	18.5	223
5329	-0.1000	14.88	2.91	-0.1000	15.38	27.04	-0.10	8.55	18.0	193
5330	-0.1000	1.64	4.06	-0.1000	0.78	129.76	0.21	9.36	17.3	371
5331	-0.1000	8.59	1.73	0.1669	5.67	269.25	-0.10	8.74	18.2	845
5332	-0.1000	19.80	4.40	-0.1000	21.46	49.72	-0.10	8.50	15.6	312
5333	-0.1000	20.60	4.93	-0.1000	22.40	51.19	-0.10	8.47	20.7	428
5334	-0.1000	22.47	6.79	0.0638	27.68	78.51	-0.10	8.41	20.7	428
5335	-0.1000	23.35	2.86	-0.1000	16.40	53.29	-0.10	8.60	20.7	301
5336	-0.1000	74.25	15.01	0.1474	99.22	373.48	0.37	8.20	15.3	1464
5337	-0.1000	8.26	2.31	-0.1000	6.72	81.49	-0.10	8.94	15.0	298

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5327	-0.1000	0.09	19.84	0.00	-0.1000	-0.1000	2.54	-0.1000	-0.1000	-0.10	2.3	329
5328	-0.1000	0.10	28.67	0.00	-0.1000	-0.1000	2.61	-0.1000	-0.1000	-0.10	1.3	371
5329	-0.1000	0.08	18.66	0.00	-0.1000	-0.1000	2.52	-0.1000	-0.1000	-0.10	1.2	321
5330	-0.1000	0.23	35.50	1.00	-0.1000	-0.1000	4.25	-0.1000	-0.1000	-0.10	20.9	619
5331	-0.1000	0.76	278.48	0.00	-0.1000	0.1571	3.55	-0.1000	-0.1000	-0.10	17.5	1,408
5332	-0.1000	0.11	59.68	0.00	-0.1000	0.0311	2.26	-0.1000	-0.1000	-0.10	1.8	520
5333	-0.1000	0.12	62.97	0.00	-0.1000	-0.1000	2.32	-0.1000	-0.1000	-0.10	1.9	714
5334	-0.1000	0.14	110.80	0.00	-0.1000	-0.1000	2.36	-0.1000	-0.1000	-0.10	2.6	714
5335	-0.1000	0.11	57.55	0.00	-0.1000	0.0472	2.17	-0.1000	-0.1000	-0.10	2.1	502
5336	-0.1000	0.37	547.77	0.00	-0.1000	-0.1000	2.72	0.0287	-0.1000	-0.10	6.7	2,440
5337	-0.1000	0.17	45.73	0.00	-0.1000	0.0413	2.43	-0.1000	-0.1000	-0.10	5.1	496

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

DELTA
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5327	-0.1000	0.0133	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.40	-0.1000	197	0.0149	-0.10
5328	-0.1000	0.0163	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.43	-0.1000	223	0.0196	-0.10
5329	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.97	-0.1000	193	0.0156	-0.10
5330	-0.1000	0.0568	0.23	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.16	-0.1000	371	-0.1000	-0.10
5331	-0.1000	0.1648	0.76	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	35.94	-0.1000	845	-0.1000	-0.10
5332	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	18.28	-0.1000	312	0.0121	-0.10
5333	-0.1000	0.0250	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.25	-0.1000	428	0.0159	-0.10
5334	-0.1000	0.0230	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.53	-0.1000	428	0.0308	-0.10
5335	-0.1000	0.0192	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.80	-0.1000	301	-0.1000	-0.10
5336	-0.1000	0.0338	0.37	-0.1000	-0.1000	-0.1000	0.0374	-0.1000	-0.1000	209.43	-0.1000	1,464	0.0270	-0.10
5337	-0.1000	0.0320	0.17	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.25	-0.1000	298	-0.1000	-0.10

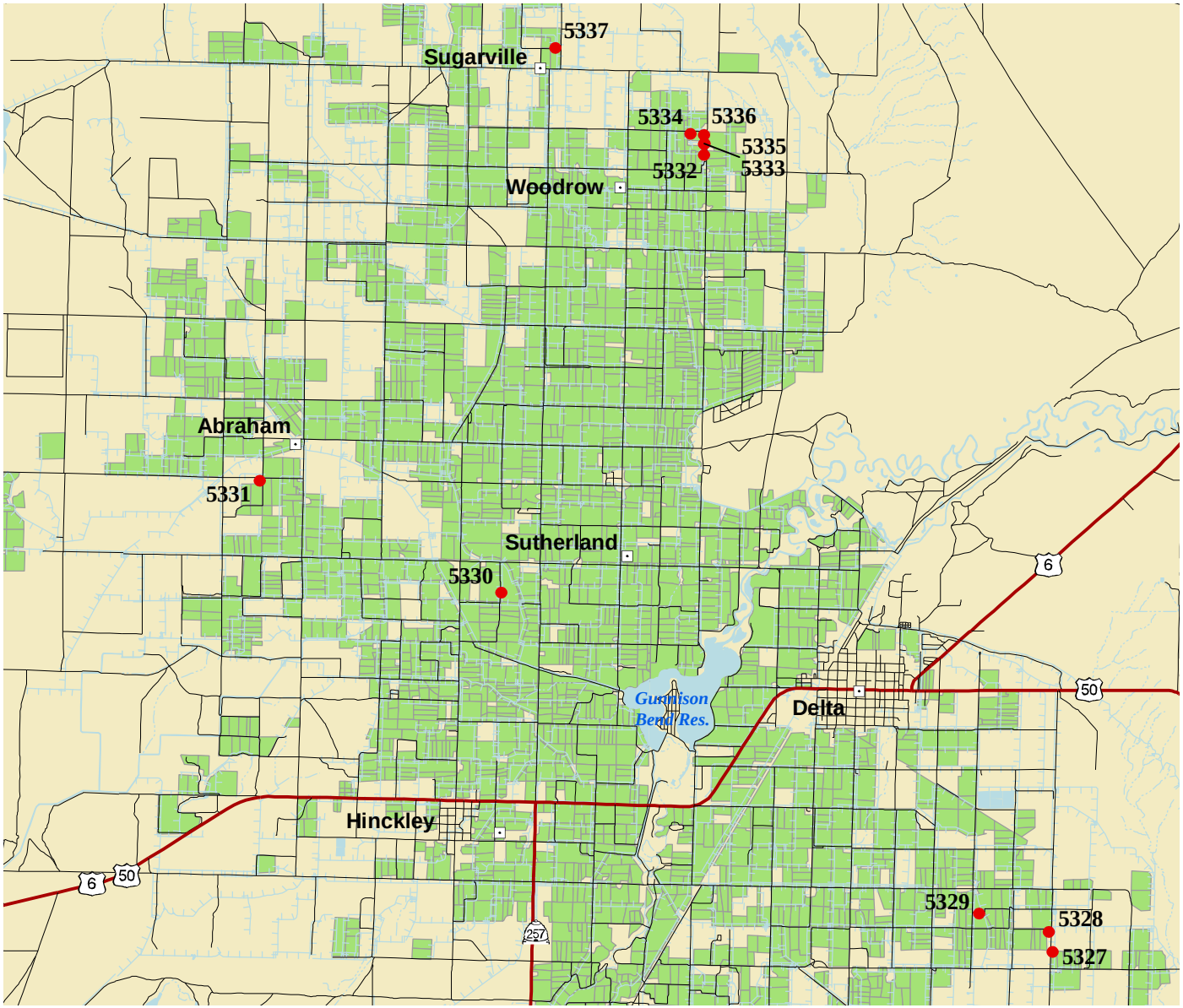
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5327	0.0133	0.1050	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	4.40	-0.1000	197	-0.10	8.60	0	0	1.3
5328	0.0163	0.1100	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	5.43	-0.1000	223	-0.10	8.45	0	0	2.1
5329	-0.1000	0.1582	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	3.97	-0.1000	193	-0.10	8.55	1	0	1.8
5330	0.0568	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	11.16	-0.1000	371	-0.10	9.36	0	0	0.1
5331	0.1648	0.0307	-0.1000	-0.1000	-0.1000	0.1571	-0.1000	-0.1	-0.1000	35.94	-0.1000	845	-0.10	8.74	0	0	0.8
5332	-0.1000	0.0444	-0.1000	-0.1000	-0.1000	0.0311	-0.1000	-0.1	-0.1000	18.28	-0.1000	312	-0.10	8.50	0	0	2.4
5333	0.0250	0.0407	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	19.25	-0.1000	428	-0.10	8.47	0	0	2.5
5334	0.0230	0.0493	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	25.53	-0.1000	428	-0.10	8.41	1	0	2.9
5335	0.0192	0.1442	-0.1000	-0.1000	-0.1000	0.0472	-0.1000	-0.1	-0.1000	19.80	-0.1000	301	-0.10	8.60	0	0	2.3
5336	0.0338	0.0721	-0.1000	-0.1000	-0.1000	-0.1000	0.0287	-0.1	-0.1000	209.43	-0.1000	1,464	-0.10	8.20	0	0	10.1
5337	0.0320	0.0576	-0.1000	-0.1000	-0.1000	0.0413	-0.1000	-0.1	-0.1000	16.25	-0.1000	298	-0.10	8.94	1	0	0.9

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

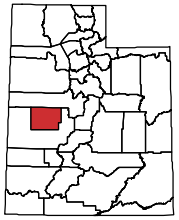
Map 18. Delta District



Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:130,000 (1 inch = 2.1 miles)

Fremont River District

General:

Four (4) samples were collected in the Fremont River District. Sampled water temperatures range from 9.7 °C to 17.1 °C, with a mean of 12.9 °C. The pH for the district ranges from 7.45 to 8.03 with a mean of 7.79.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. All of the samples from this district exceed the 750 µmhos/cm, except 5397. None of the samples exceed the severe EC level.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the samples have elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l, and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

No other elements were found in concentrations harmful to plants.

Livestock:

Sulfate (SO_4) is shown on chemical analyses for sulfur (S). Sulfur as sulfate can cause water to be off flavored and produces diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Samples 5396 and 5398 have elevated sulfur at concentrations which exceed the livestock standard for sulfur.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district tested soft to moderately hard, with grains per gallon (gpg) ranging from 5.9 to 19.0 with a mean of 12.3. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceeded the aesthetic standard for salinity.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Samples 5396 and 5398 have high sulfur.

Sample 5398 exceeds the EPA nitrate (NO3) standard of 10 ppm nitrate expressed as nitrogen (NO3-N). NO3 is an important nutrient for plant growth. It is found in nitrogen fertilizers, manure, septic systems, and some minerals. NO3 is toxic to young infants (usually less than 6 months of age) and causes “blue baby syndrome.” NO3 can only be removed from water by reverse osmosis or distillation.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Sample 5396 was contaminated with coliform bacteria. None of the samples were contaminated with E.coli bacteria.

FREMONT RIVER
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5396	-0.1000	264.10	5.80	-0.1000	61.15	20.76	-0.10	7.89	9.7	945
5397	-0.1000	90.90	1.31	-0.1000	10.63	9.09	-0.10	7.77	10.8	361
5398	-0.1000	200.75	9.09	0.0668	90.31	58.60	-0.10	7.45	17.1	1019
5399	-0.1000	97.34	3.67	-0.1000	27.02	21.91	-0.10	8.03	13.9	451

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5396	-0.1000	0.16	16.80	0.00	-0.1000	-0.1000	4.56	-0.1000	-0.1000	0.05	0.3	1,575
5397	-0.1000	0.11	-0.10	0.00	-0.1000	-0.1000	5.28	-0.1000	-0.1000	0.10	0.2	602
5398	-0.1000	0.48	71.22	0.00	-0.1000	-0.1000	6.33	-0.1000	-0.1000	-0.10	0.9	1,698
5399	-0.1000	0.13	19.66	0.00	0.0204	-0.1000	3.77	-0.1000	-0.1000	0.18	0.5	752

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5396	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	256.22	-0.1000	945	-0.1000	0.05
5397	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.08	-0.1000	361	-0.1000	0.10
5398	-0.1000	-0.1000	0.48	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	193.17	-0.1000	1,019	-0.1000	-0.10
5399	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	63.96	-0.1000	451	-0.1000	0.18

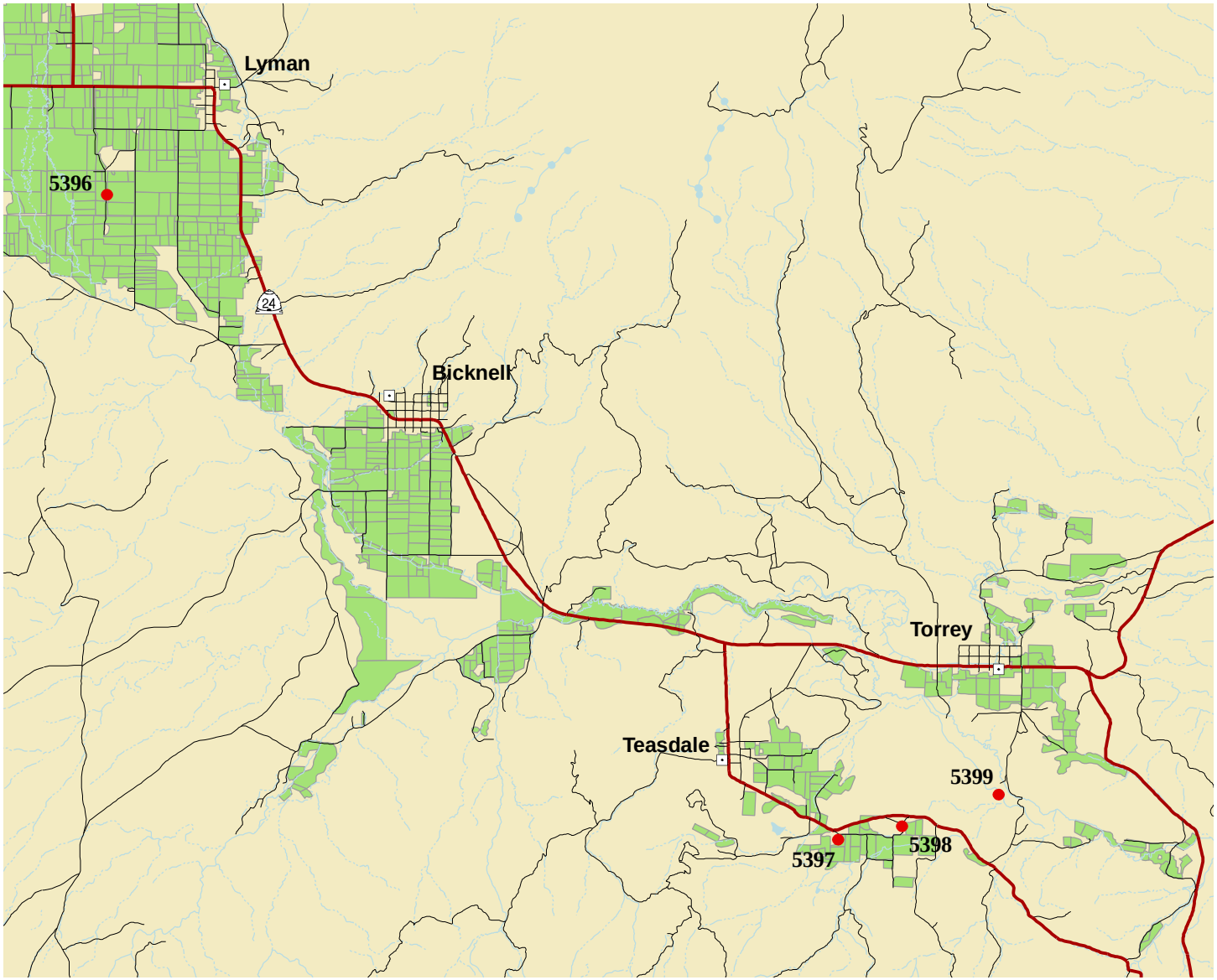
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5396	-0.1000	0.0286	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.5	-0.1000	256.22	-0.1000	945	0.05	7.89	1	0	19.0
5397	-0.1000	0.1606	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.8	-0.1000	7.08	-0.1000	361	0.10	7.77	0	0	5.9
5398	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.8	-0.1000	193.17	-0.1000	1,019	-0.10	7.45	0	0	17.0
5399	-0.1000	0.0291	-0.1000	-0.1000	0.0204	-0.1000	-0.1000	0.0	-0.1000	63.96	-0.1000	451	0.18	8.03	0	0	7.3

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

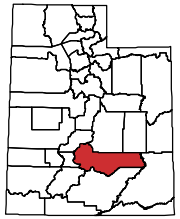
Map 19. Fremont River District



Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:120,000 (1 inch = 1.9 miles)

Juab County District

General:

One (1) sample was collected in the Juab County District. Sampled water temperature was 23.4 °C. The pH for the sample was 7.85.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Sample 5338 has high EC at 4,300.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Sample 5338 has a severe SAR value of 10.8.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l, and severe problems appear when it exceeds 8.5 meq/l

No other elements were found in concentrations harmful to plants.

Livestock:

No water quality standards for livestock were exceeded.

Culinary:

Water in this district tested hard, with grains per gallon (gpg) at 15.4. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. Sample 5338 exceeds the high standard at a value of 2,580.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables. No samples from this district were found to have bacterial contamination.

JUAB COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5338	-0.1000	141.12	27.15	0.3824	121.76	728.06	-0.10	7.85	23.4	2580

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5338	-0.1000	0.48	-0.10	0.00	-0.1000	1.0332	0.61	0.1376	-0.1000	-0.10	10.8	4,300

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5338	-0.1000	-0.1000	0.48	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	140.41	-0.1000	2,580	-0.1000	-0.10

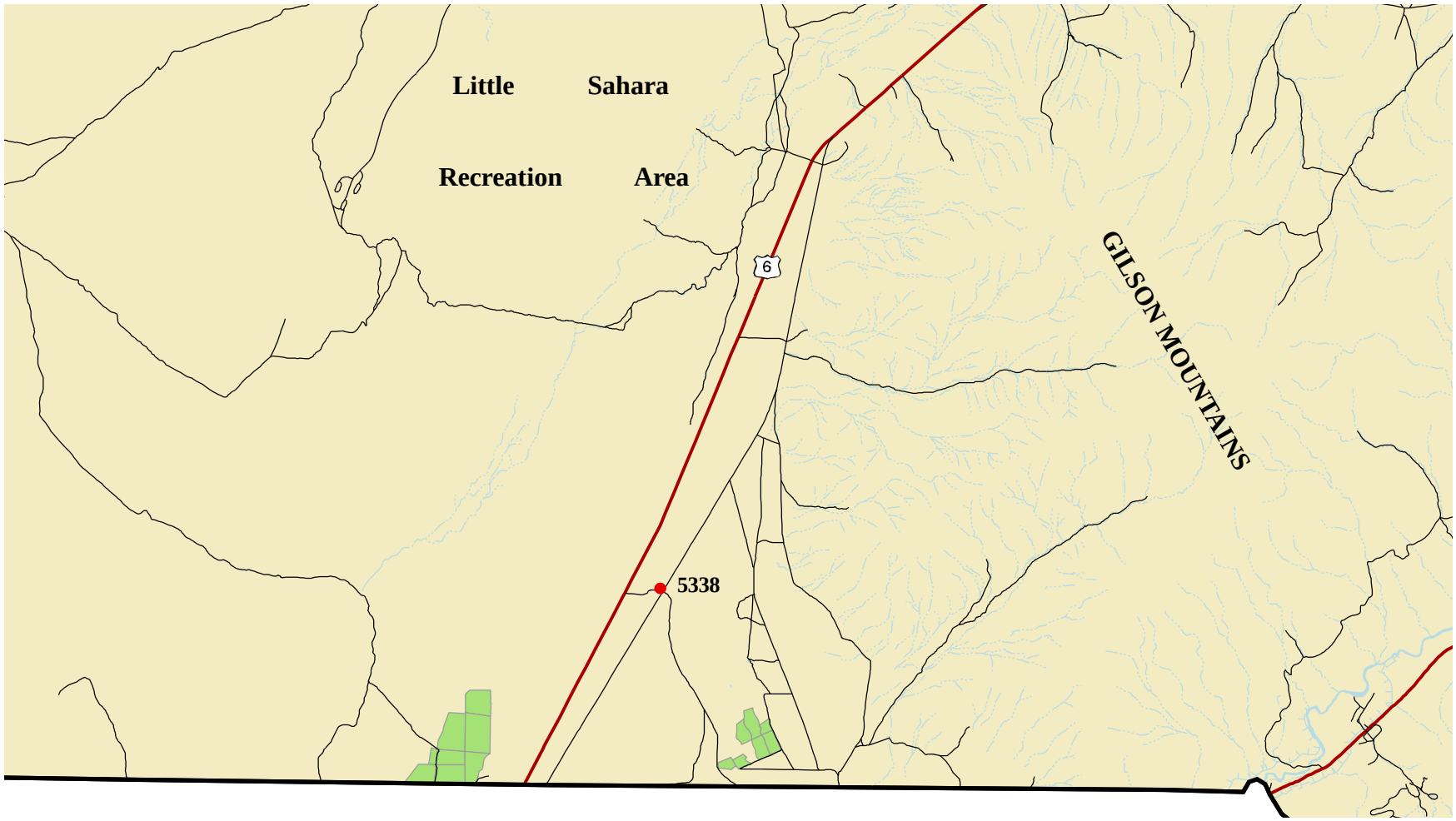
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5338	-0.1000	0.0315	-0.1000	-0.1000	-0.1000	1.0332	0.1376	-0.1	-0.1000	140.41	-0.1000	2,580	-0.10	7.85	0	0	15.4

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 20. Juab District

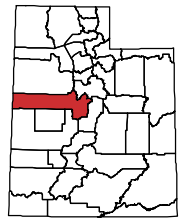


Map Scale 1:100,000 (1 inch = 1.6 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Millard District

General:

Twenty-three (23) samples were collected in the Millard District. Sampled water temperatures range from 13.5 °C to 19.0 °C, with a mean of 16.2 °C. The pH for the district ranges from 7.21 to 8.08 with a mean of 7.70.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Only five (5) of the twenty-three (23) samples have EC values **less** than 750 µmhos/cm. Samples 5146 and 5148 exceed the severe-injury level of 3,000 µmhos/cm.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Samples 5146 and 5148 have elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah. None of the samples exceed the 8.5 level.

Boron (B) is toxic to sensitive plants when concentration exceeds 0.7 ppm. It will cause severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating safe health from toxicity is small. Samples 5146 and 5148 have elevated boron.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Samples 5131, 5132, 5136, 5138, 5139, 5140, 5142, 5145, and 5147 have elevated Cl. Sample 5132 is extremely high with a Cl value of 305.68.

No other elements were found in concentrations harmful to plants.

Livestock:

Sulfur (S) in the form of sulfate can cause water to be off flavored and may cause diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Samples 5138, 5146, and 5148 have sulfur exceeding the livestock standard for sulfur.

No other water quality standards for livestock were exceeded.

Culinary:

Water in this district varies from moderately-hard to very hard, with grains per gallon (gpg) ranging from 4.7 to 49.4 with a mean of 11.1. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC.

TDS for 17 samples exceed the EPA aesthetic standard of 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. Samples 5146 and 5148 exceed the health standard and should not be used for drinking.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Samples 5138, 5146, and 5148 have high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5130, 5133, 5137, 5138, 5139, and 5140 are contaminated with coliform bacteria. None of the samples are contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

MILLARD
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5128	-0.1000	60.97	1.51	-0.1000	33.67	79.73	-0.10	7.58	16.8	503
5129	-0.1000	67.14	1.17	-0.1000	41.34	25.33	-0.10	7.48	13.5	445
5130	-0.1000	110.81	3.08	-0.1000	40.90	55.55	-0.10	7.54	15.5	633
5131	-0.1000	146.48	3.76	-0.1000	48.09	54.18	-0.10	7.72	15.8	748
5132	-0.1000	147.33	2.59	-0.1000	75.30	61.39	-0.10	7.60	14.8	916
5133	-0.1000	88.91	1.48	-0.1000	45.10	35.75	-0.10	7.62	14.2	575
5134	-0.1000	46.68	2.70	-0.1000	34.17	25.49	-0.10	7.91	19.0	365
5135	-0.1000	68.33	1.39	-0.1000	48.23	32.77	-0.10	7.85	18.0	476
5136	-0.1000	82.42	1.96	-0.1000	38.16	36.54	-0.10	8.01	18.6	562
5137	-0.1000	52.28	1.39	-0.1000	31.91	20.13	-0.10	7.83	17.9	341
5138	-0.1000	176.07	4.99	0.0883	125.71	73.92	-0.10	7.55	18.9	1128
5139	-0.1000	88.28	12.13	0.2208	65.57	87.17	-0.10	7.88	18.9	790
5140	-0.1000	97.64	14.08	0.2509	33.37	108.87	-0.10	7.99	16.4	753
5141	-0.1000	96.41	3.50	-0.1000	32.48	39.15	-0.10	7.61	14.0	527
5142	-0.1000	114.54	2.98	-0.1000	32.13	55.61	-0.10	7.63	14.7	642
5143	-0.1000	115.04	5.18	0.0532	34.60	60.72	-0.10	7.58	15.0	635
5144	-0.1000	79.40	1.87	-0.1000	26.66	28.59	-0.10	7.92	15.2	410
5145	-0.1000	98.12	3.78	0.0532	39.80	79.23	-0.10	7.58	14.7	685
5146	-0.1000	523.05	49.59	0.7549	322.44	497.93	-0.10	7.21	16.9	3306
5147	-0.1000	81.78	7.34	0.1032	37.66	57.56	-0.10	7.73	18.5	580
5148	-0.1000	361.11	11.44	0.6855	281.99	490.85	-0.10	7.43	15.0	3048
5149	-0.1000	55.15	4.27	0.0896	41.05	87.98	-0.10	8.08	15.5	630
5326	-0.1000	58.91	0.97	-0.1000	22.28	22.34	-0.10	7.81	14.3	341

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5128	-0.1000	0.16	37.20	0.00	-0.1000	0.1573	7.16	-0.1000	-0.1000	0.90	2.0	839
5129	-0.1000	0.12	22.72	0.00	-0.1000	-0.1000	7.14	-0.1000	-0.1000	0.25	0.6	742
5130	-0.1000	0.11	109.83	0.00	-0.1000	-0.1000	5.80	-0.1000	-0.1000	-0.10	1.1	1,055
5131	-0.1000	0.12	153.21	0.00	-0.1000	-0.1000	5.41	-0.1000	-0.1000	-0.10	1.0	1,246
5132	-0.1000	0.09	305.68	0.00	0.0285	-0.1000	4.40	-0.1000	-0.1000	-0.10	1.0	1,527
5133	-0.1000	0.07	133.59	0.00	0.0205	-0.1000	4.71	-0.1000	-0.1000	-0.10	0.8	958
5134	-0.1000	-0.10	66.89	0.00	-0.1000	0.0217	3.83	-0.1000	-0.1000	-0.10	0.7	608
5135	-0.1000	0.09	71.67	0.00	-0.1000	-0.1000	5.91	-0.1000	-0.1000	-0.10	0.7	794
5136	-0.1000	0.07	213.80	0.00	-0.1000	-0.1000	2.21	-0.1000	-0.1000	-0.10	0.8	936
5137	-0.1000	-0.10	38.47	0.00	-0.1000	-0.1000	4.51	-0.1000	-0.1000	-0.10	0.5	568
5138	-0.1000	0.20	270.83	0.00	-0.1000	-0.1000	3.46	-0.1000	-0.1000	-0.10	1.0	1,880
5139	-0.1000	0.24	187.36	0.00	-0.1000	-0.1000	3.88	-0.1000	-0.1000	-0.10	1.7	1,316
5140	-0.1000	0.51	231.53	0.00	-0.1000	-0.1000	3.99	-0.1000	-0.1000	0.06	2.4	1,255
5141	-0.1000	0.14	84.45	0.00	-0.1000	-0.1000	5.04	-0.1000	-0.1000	-0.10	0.9	879
5142	-0.1000	0.16	155.95	0.00	-0.1000	-0.1000	4.03	-0.1000	-0.1000	-0.10	1.2	1,070
5143	-0.1000	0.21	112.38	0.00	-0.1000	-0.1000	5.41	-0.1000	-0.1000	-0.10	1.3	1,058
5144	-0.1000	0.10	45.43	0.00	-0.1000	-0.1000	4.99	-0.1000	-0.1000	-0.10	0.7	683
5145	-0.1000	0.29	180.27	0.00	-0.1000	0.0281	5.08	-0.1000	-0.1000	-0.10	1.7	1,141
5146	-0.1000	1.10	-0.10	0.00	-0.1000	-0.1000	4.12	-0.1000	-0.1000	-0.10	4.2	5,510
5147	-0.1000	0.24	146.31	0.00	-0.1000	-0.1000	4.29	-0.1000	-0.1000	-0.10	1.3	966
5148	-0.1000	1.31	-0.10	0.00	-0.1000	-0.1000	3.57	-0.1000	-0.1000	-0.10	4.7	5,080
5149	-0.1000	0.28	137.15	0.00	-0.1000	-0.1000	3.61	-0.1000	-0.1000	0.07	2.2	1,050
5326	-0.1000	0.07	22.35	0.00	-0.1000	0.0338	4.60	-0.1000	-0.1000	-0.10	0.6	568

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

MILLARD
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5128	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.49	-0.1000	503	-0.1000	0.90
5129	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.16	-0.1000	445	-0.1000	0.25
5130	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	29.60	-0.1000	633	-0.1000	-0.10
5131	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	58.49	-0.1000	748	-0.1000	-0.10
5132	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	46.24	-0.1000	916	-0.1000	-0.10
5133	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.65	-0.1000	575	-0.1000	-0.10
5134	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.74	-0.1000	365	-0.1000	-0.10
5135	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.60	-0.1000	476	-0.1000	-0.10
5136	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.03	-0.1000	562	-0.1000	-0.10
5137	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.15	-0.1000	341	-0.1000	-0.10
5138	-0.1000	-0.1000	0.20	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	183.69	-0.1000	1,128	-0.1000	-0.10
5139	-0.1000	-0.1000	0.24	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	78.40	-0.1000	790	0.0114	-0.10
5140	-0.1000	-0.1000	0.51	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	34.66	-0.1000	753	-0.1000	0.06
5141	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	22.66	-0.1000	527	-0.1000	-0.10
5142	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	36.92	-0.1000	642	-0.1000	-0.10
5143	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	40.29	-0.1000	635	-0.1000	-0.10
5144	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	13.20	-0.1000	410	-0.1000	-0.10
5145	-0.1000	-0.1000	0.29	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	24.95	-0.1000	685	-0.1000	-0.10
5146	-0.1000	0.0126	1.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	366.90	-0.1000	3,306	-0.1000	-0.10
5147	-0.1000	-0.1000	0.24	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	24.02	-0.1000	580	-0.1000	-0.10
5148	-0.1000	-0.1000	1.31	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	285.18	-0.1000	3,048	-0.1000	-0.10
5149	-0.1000	0.0121	0.28	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	40.06	-0.1000	630	0.0121	0.07
5326	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.49	-0.1000	341	-0.1000	-0.10

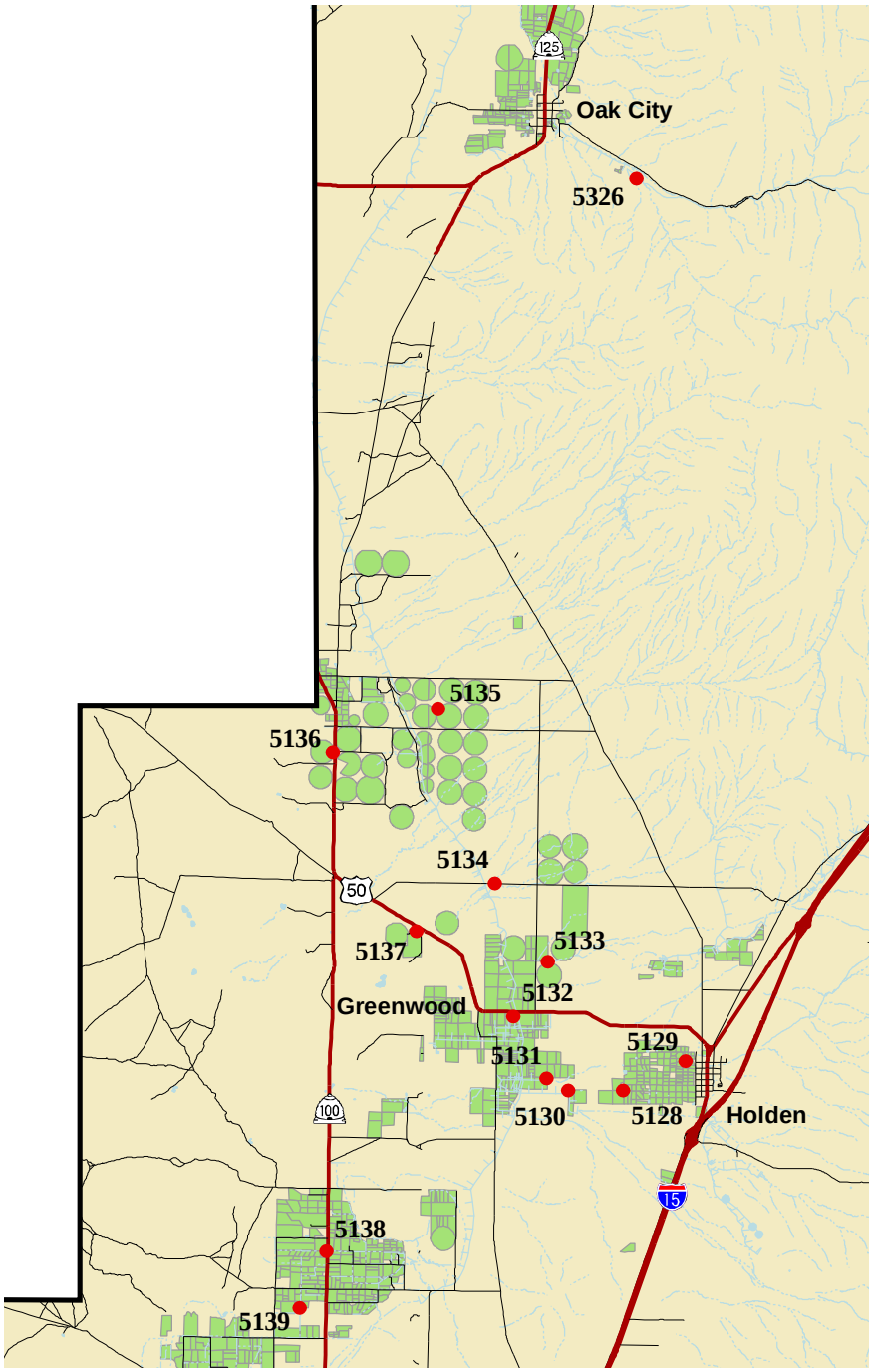
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5128	-0.1000	0.0808	-0.1000	-0.1000	-0.1000	0.1573	-0.1000	6.0	-0.1000	14.49	-0.1000	503	0.90	7.58	0	0	5.5
5129	-0.1000	0.1096	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.9	-0.1000	6.16	-0.1000	445	0.25	7.48	0	0	6.3
5130	-0.1000	0.0388	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.1	-0.1000	29.60	-0.1000	633	-0.10	7.54	1	0	8.9
5131	-0.1000	0.0346	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.5	-0.1000	58.49	-0.1000	748	-0.10	7.72	0	0	11.4
5132	-0.1000	0.0726	-0.1000	-0.1000	0.0285	-0.1000	-0.1000	8.4	-0.1000	46.24	-0.1000	916	-0.10	7.60	0	0	13.0
5133	-0.1000	0.1567	-0.1000	-0.1000	0.0205	-0.1000	-0.1000	4.7	-0.1000	10.65	-0.1000	575	-0.10	7.62	1	0	7.8
5134	-0.1000	0.2045	-0.1000	-0.1000	-0.1000	0.0217	-0.1000	2.3	-0.1000	3.74	-0.1000	365	-0.10	7.91	0	0	4.7
5135	-0.1000	0.1683	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.4	-0.1000	12.60	-0.1000	476	-0.10	7.85	0	0	6.8
5136	-0.1000	0.1570	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.0	-0.1000	11.03	-0.1000	562	-0.10	8.01	0	0	7.1
5137	-0.1000	0.1418	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.1	-0.1000	4.15	-0.1000	341	-0.10	7.83	1	0	4.9
5138	-0.1000	0.0211	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.2	-0.1000	183.69	-0.1000	1,128	-0.10	7.55	1	0	17.6
5139	-0.1000	0.0393	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.3	-0.1000	78.40	-0.1000	790	-0.10	7.88	1	0	9.0
5140	-0.1000	0.0742	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.4	-0.1000	34.66	-0.1000	753	0.06	7.99	1	0	7.7
5141	-0.1000	0.1846	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.6	-0.1000	22.66	-0.1000	527	-0.10	7.61	0	0	7.5
5142	-0.1000	0.1179	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.7	-0.1000	36.92	-0.1000	642	-0.10	7.63	0	0	8.6
5143	-0.1000	0.0771	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.0	-0.1000	40.29	-0.1000	635	-0.10	7.58	0	0	8.8
5144	-0.1000	0.1569	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.1	-0.1000	13.20	-0.1000	410	-0.10	7.92	0	0	6.2
5145	-0.1000	0.0954	-0.1000	-0.1000	-0.1000	0.0281	-0.1000	1.3	-0.1000	24.95	-0.1000	685	-0.10	7.58	0	0	8.1
5146	0.0126	0.0438	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.7	-0.1000	366.90	-0.1000	3,306	-0.10	7.21	0	0	49.4
5147	-0.1000	0.1167	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.0	-0.1000	24.02	-0.1000	580	-0.10	7.73	0	0	7.0
5148	-0.1000	0.0433	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.8	-0.1000	285.18	-0.1000	3,048	-0.10	7.43	0	0	37.6
5149	0.0121	0.0551	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.4	-0.1000	40.06	-0.1000	630	0.07	8.08	0	0	5.6
5326	-0.1000	0.0754	-0.1000	-0.1000	-0.1000	0.0338	-0.1000	-0.1	-0.1000	6.49	-0.1000	341	-0.10	7.81	0	0	4.7

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 21. Millard North District - Holden Area

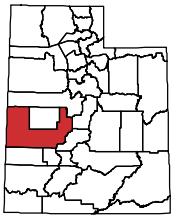


Map Scale 1:240,000 (1 inch = 3.8 miles)

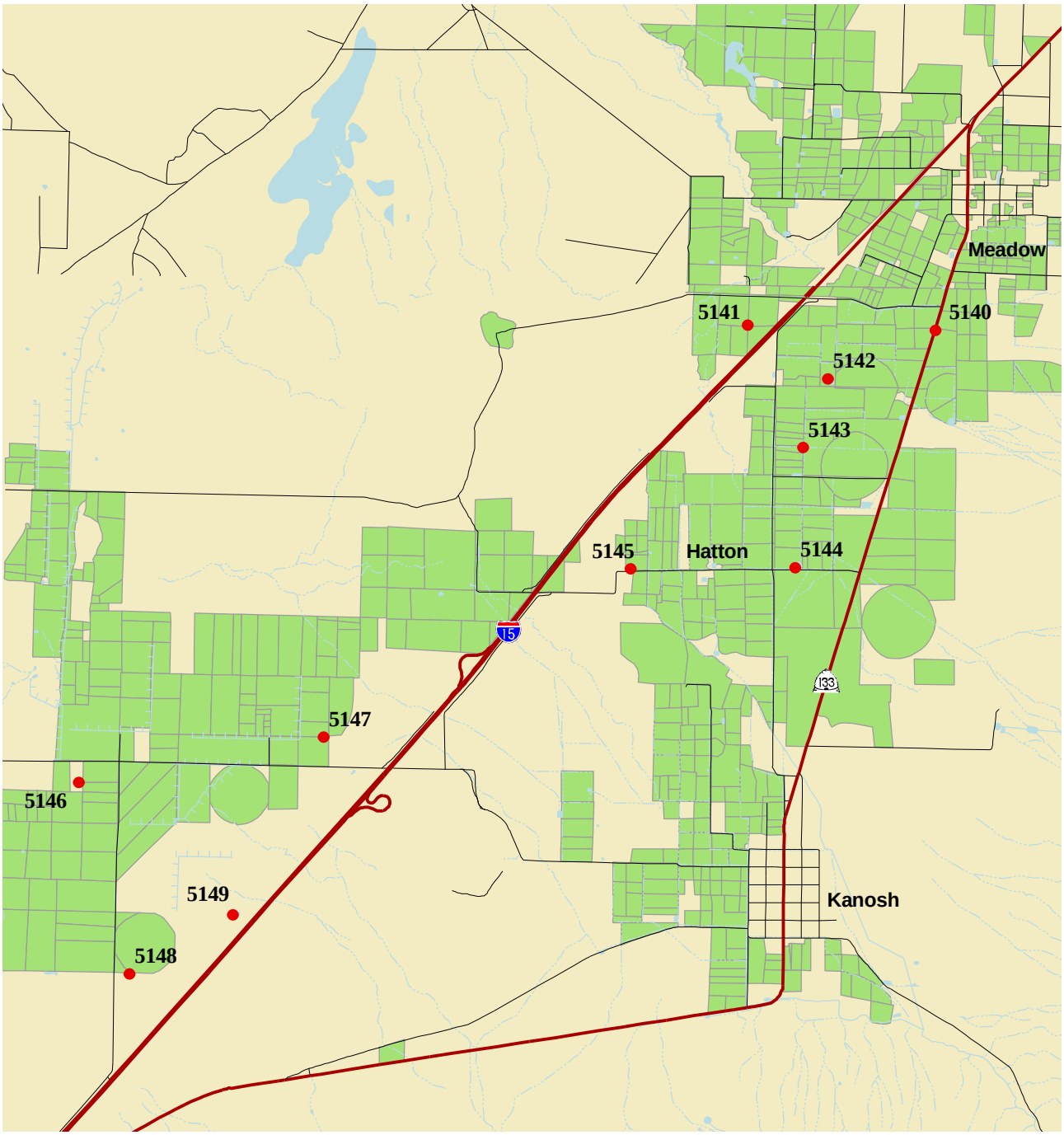
N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Map 22. Millard South District - Meadow Area

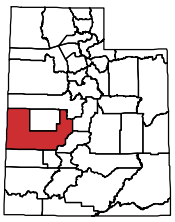


Map Scale 1:85,000 (1 inch = 1.3 miles)

N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Sanpete County District

General:

Fifteen (15) samples were collected in the Sanpete County District. Sampled water temperatures range from 11.7 °C to 16.8 °C, with a mean of 13.0 °C. The pH for the district ranges from 7.44 to 9.48 with a mean of 7.99.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. All of the samples except 5385 and 5390 have EC values greater than 750 µmhos/cm. None of the samples exceed the 3,000 level of severe injury to plants.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Samples 5070, 5071, 5072, 5074, 5076, 5077, 5078, 5079, and 5080 have elevated SAR values. Samples 5077 and 5079 have extremely high SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All samples have high bicarbonate, which is common for water in Utah.

Some specific elements can be toxic to plants. Samples 5077 and 5080 have elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Samples 5070, 5071, 5072, 5074, 5076, 5077, 5079, and 5080 have elevated Cl. None of these samples exceed the severe level.

No other elements were found in concentrations harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Sample 5075 has elevated molybdenum.

No other water quality standards for livestock were exceeded.

Culinary:

Water in this district varies from very soft to hard, with grains per gallon (gpg) ranging from 0.2 to 11.4 with a mean of 5.4. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health

problem until TDS reaches 2,000 ppm. All of the samples except 5385, 5389, and 5390 exceed the aesthetic standard for TDS. None of the samples exceed the health standard.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Sample 5072 and 5076 have high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Sample 5390 is contaminated with coliform (Col.) bacteria, and should not be used for drinking until the source of contamination is identified and corrected. None of the samples are contaminated with E. coli bacteria.

SANPETE COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5070	-0.1000	76.94	2.27	0.0751	71.52	188.02	-0.10	7.54	12.4	943
5071	-0.1000	14.98	1.75	0.1574	17.20	348.82	-0.10	8.40	12.4	1043
5072	-0.1000	89.78	2.35	0.0757	78.10	192.92	-0.10	7.49	12.5	1036
5074	-0.1000	111.86	1.76	-0.1000	82.67	201.40	-0.10	7.44	11.7	1111
5075	-0.1000	52.09	2.65	-0.1000	54.43	43.29	-0.10	7.69	14.3	518
5076	-0.1000	39.29	1.26	0.0988	41.14	312.63	-0.10	8.05	12.1	1047
5077	-0.1000	1.90	0.48	0.0796	0.97	293.33	-0.10	9.48	11.8	817
5078	-0.1000	23.66	1.00	-0.1000	18.27	187.33	-0.10	7.97	12.7	522
5079	-0.1000	7.05	0.51	0.0504	4.43	284.71	-0.10	8.84	12.7	711
5080	-0.1000	25.70	1.18	0.0741	27.60	282.45	-0.10	8.04	12.2	805
5081	-0.1000	47.24	1.85	0.0890	66.76	33.17	-0.10	7.64	12.8	510
5082	-0.1000	60.11	2.15	0.0840	73.30	49.13	-0.10	7.62	12.0	590
5385	-0.1000	67.48	1.17	-0.1000	35.53	20.82	-0.10	7.91	16.8	421
5389	-0.1000	43.02	1.55	-0.1000	64.63	26.67	-0.10	7.83	14.4	484
5390	-0.1000	43.64	1.92	-0.1000	31.41	14.06	-0.10	7.94	14.8	310

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5070	-0.1000	0.21	212.53	0.00	-0.1000	-0.1000	6.90	-0.1000	-0.1000	0.42	3.7	1,571
5071	-0.1000	0.24	220.46	0.00	-0.1000	0.1958	7.73	-0.1000	-0.1000	-0.10	14.6	1,739
5072	-0.1000	0.20	271.06	0.00	-0.1000	-0.1000	6.66	-0.1000	-0.1000	0.04	3.6	1,727
5074	-0.1000	0.35	290.59	0.00	0.0252	-0.1000	9.68	-0.1000	-0.1000	-0.10	3.5	1,852
5075	-0.1000	0.13	86.43	0.00	-0.1000	-0.1000	5.41	-0.1000	-0.1000	-0.10	1.0	864
5076	-0.1000	0.21	249.20	0.00	-0.1000	0.1742	6.31	0.0422	-0.1000	-0.10	8.3	1,745
5077	-0.1000	1.00	163.34	1.00	-0.1000	0.0518	5.72	-0.1000	0.0284	-0.10	43.2	1,361
5078	-0.1000	0.10	46.66	0.00	-0.1000	-0.1000	6.94	-0.1000	-0.1000	0.49	7.0	870
5079	-0.1000	0.41	160.58	0.00	-0.1000	0.1083	5.08	-0.1000	0.0117	-0.10	20.7	1,185
5080	-0.1000	0.80	203.92	0.00	0.0208	-0.1000	6.16	-0.1000	-0.1000	0.14	9.2	1,341
5081	-0.1000	0.12	26.79	0.00	0.0253	-0.1000	7.58	-0.1000	-0.1000	-0.10	0.7	850
5082	-0.1000	0.13	62.16	0.00	0.0214	-0.1000	7.95	-0.1000	-0.1000	-0.10	1.0	983
5385	-0.1000	0.07	42.38	0.00	0.0618	-0.1000	5.34	-0.1000	-0.1000	0.88	0.5	702
5389	-0.1000	0.11	17.93	0.00	-0.1000	0.0253	5.08	-0.1000	-0.1000	-0.10	0.6	806
5390	-0.1000	0.08	5.39	0.00	-0.1000	-0.1000	3.74	-0.1000	-0.1000	-0.10	0.4	516

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

SANPETE COUNTY
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5070	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	74.93	-0.1000	943	-0.1000	0.42
5071	-0.1000	-0.1000	0.24	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	77.15	-0.1000	1,043	-0.1000	-0.10
5072	-0.1000	-0.1000	0.20	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	87.50	-0.1000	1,036	-0.1000	0.04
5074	-0.1000	-0.1000	0.35	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	38.11	-0.1000	1,111	-0.1000	-0.10
5075	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	0.0235	-0.1000	-0.1000	20.28	-0.1000	518	-0.1000	-0.10
5076	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	90.03	-0.1000	1,047	-0.1000	-0.10
5077	-0.1000	0.0151	1.00	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	34.43	0.0284	817	-0.1000	-0.10
5078	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	20.43	-0.1000	522	-0.1000	0.49
5079	-0.1000	-0.1000	0.41	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	37.33	0.0117	711	-0.1000	-0.10
5080	-0.1000	-0.1000	0.80	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	34.29	-0.1000	805	-0.1000	0.14
5081	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.50	-0.1000	510	0.0138	-0.10
5082	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.29	-0.1000	590	-0.1000	-0.10
5385	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.92	-0.1000	421	-0.1000	0.88
5389	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.86	-0.1000	484	-0.1000	-0.10
5390	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.01	-0.1000	310	-0.1000	-0.10

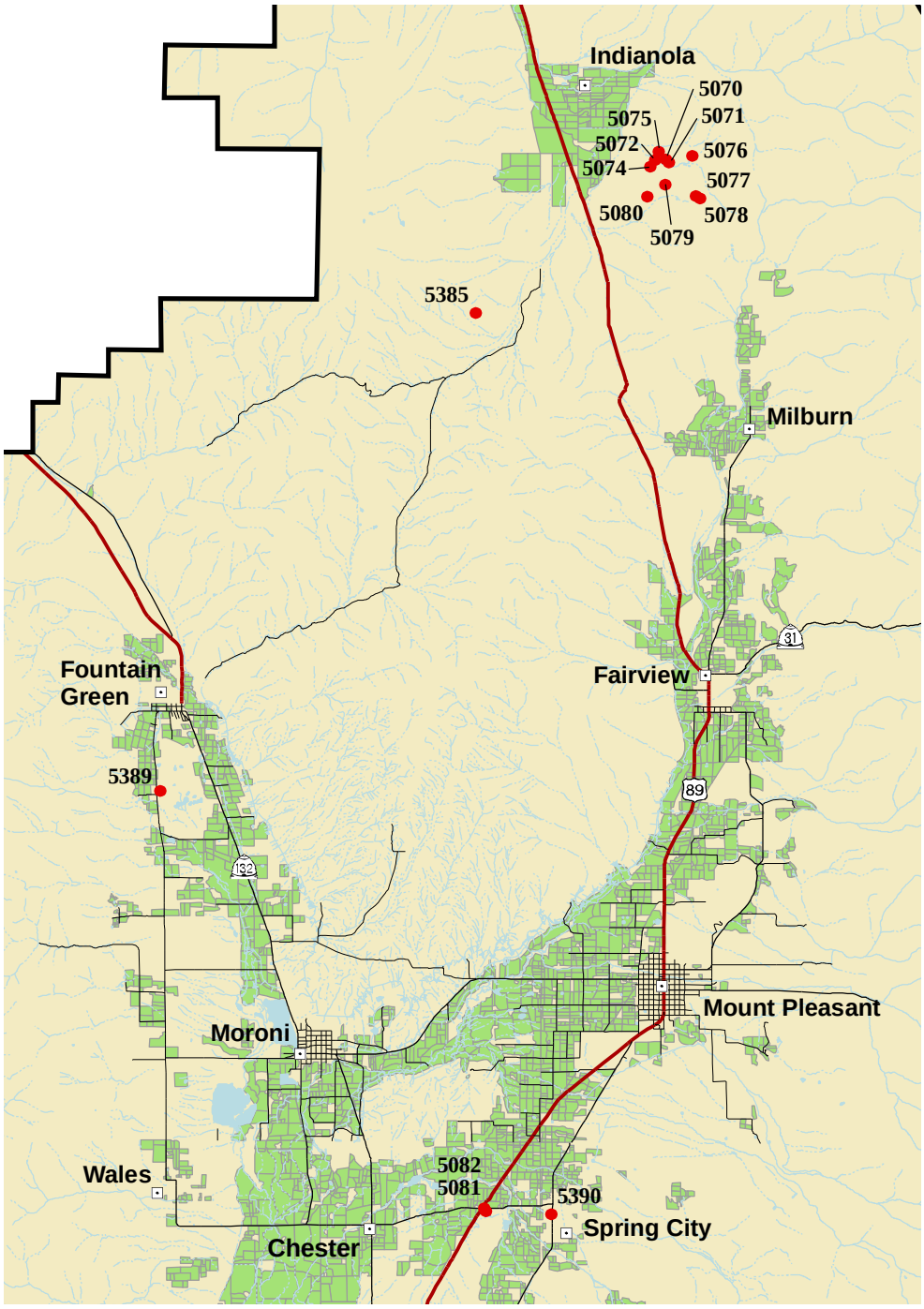
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5070	-0.1000	0.0700	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.6	-0.1000	74.93	-0.1000	943	0.42	7.54	0	0	8.7
5071	-0.1000	0.0579	-0.1000	-0.1000	-0.1000	0.1958	-0.1000	-0.1	-0.1000	77.15	-0.1000	1,043	-0.10	8.40	0	0	1.9
5072	-0.1000	0.0364	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	87.50	-0.1000	1,036	0.04	7.49	0	0	9.8
5074	-0.1000	0.1188	-0.1000	-0.1000	0.0252	-0.1000	-0.1000	5.4	-0.1000	38.11	-0.1000	1,111	-0.10	7.44	0	0	11.4
5075	-0.1000	0.0797	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	20.28	-0.1000	518	-0.10	7.69	0	0	6.2
5076	-0.1000	0.0371	-0.1000	-0.1000	-0.1000	0.1742	0.0422	-0.1	-0.1000	90.03	-0.1000	1,047	-0.10	8.05	0	0	4.7
5077	0.0151	0.0374	-0.1000	-0.1000	-0.1000	0.0518	-0.1000	-0.1	-0.1000	34.43	0.0284	817	-0.10	9.48	0	0	0.2
5078	-0.1000	0.2513	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.1	-0.1000	20.43	-0.1000	522	0.49	7.97	0	0	2.5
5079	-0.1000	0.0899	-0.1000	-0.1000	-0.1000	0.1083	-0.1000	-0.1	-0.1000	37.33	0.0117	711	-0.10	8.84	0	0	0.7
5080	-0.1000	0.1419	-0.1000	-0.1000	0.0208	-0.1000	-0.1000	-0.1	-0.1000	34.29	-0.1000	805	0.14	8.04	0	0	3.1
5081	-0.1000	0.1402	-0.1000	-0.1000	0.0253	-0.1000	-0.1000	3.8	-0.1000	12.50	-0.1000	510	-0.10	7.64	0	0	6.7
5082	-0.1000	0.1712	-0.1000	-0.1000	0.0214	-0.1000	-0.1000	3.6	-0.1000	16.29	-0.1000	590	-0.10	7.62	0	0	7.8
5385	-0.1000	0.0923	-0.1000	-0.1000	0.0618	-0.1000	-0.1000	-0.1	-0.1000	16.92	-0.1000	421	0.88	7.91	0	0	6.0
5389	-0.1000	0.0596	-0.1000	-0.1000	-0.1000	0.0253	-0.1000	1.9	-0.1000	8.86	-0.1000	484	-0.10	7.83	0	0	6.3
5390	-0.1000	0.2142	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.6	-0.1000	6.01	-0.1000	310	-0.10	7.94	1	0	4.4

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 23. Sanpete County District

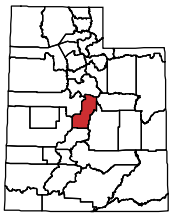


Map Scale 1:225,000 (1 inch = 3.6 miles)

N

- Sample location
- Major road
- Other road
- Stream
- Ditch or canal
- Aqueduct
- Intermittent stream
- Water body
- Irrigated cropland
- SCD boundary

District Location



Sevier County District

General:

Three (3) samples were collected in the Sanpete County District. Sampled water temperatures range from 12.8 °C to 16.4 °C, with a mean of 14.5 °C. The pH for the district ranges from 7.88 to 8.05 with a mean of 7.95.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. None of the samples have EC values greater than 750 µmhos/cm.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the samples have elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All samples have high bicarbonate, which is common for water in Utah.

No other elements were found in concentrations harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Water in this district is moderately hard, with grains per gallon (gpg) ranging from 5.4 to 5.6 with a mean of 5.5. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceed the aesthetic standard for TDS.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

None of the samples are contaminated with coliform or E. coli bacteria.

SEVIER COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5391	-0.1000	73.09	2.82	-0.1000	21.96	15.10	-0.10	8.05	14.2	377
5392	-0.1000	57.53	2.88	-0.1000	37.78	22.83	-0.10	7.88	16.4	410
5393	-0.1000	70.71	3.12	-0.1000	21.90	18.54	-0.10	7.92	12.8	388

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5391	-0.1000	0.07	41.09	0.00	-0.1000	-0.1000	5.87	-0.1000	-0.1000	-0.10	0.4	629
5392	-0.1000	0.10	25.88	0.00	-0.1000	-0.1000	5.89	-0.1000	-0.1000	-0.10	0.6	684
5393	-0.1000	0.14	23.26	0.00	-0.1000	-0.1000	5.06	-0.1000	-0.1000	-0.10	0.5	647

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5391	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	24.80	-0.1000	377	-0.1000	-0.10
5392	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.06	-0.1000	410	-0.1000	-0.10
5393	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.19	-0.1000	388	-0.1000	-0.10

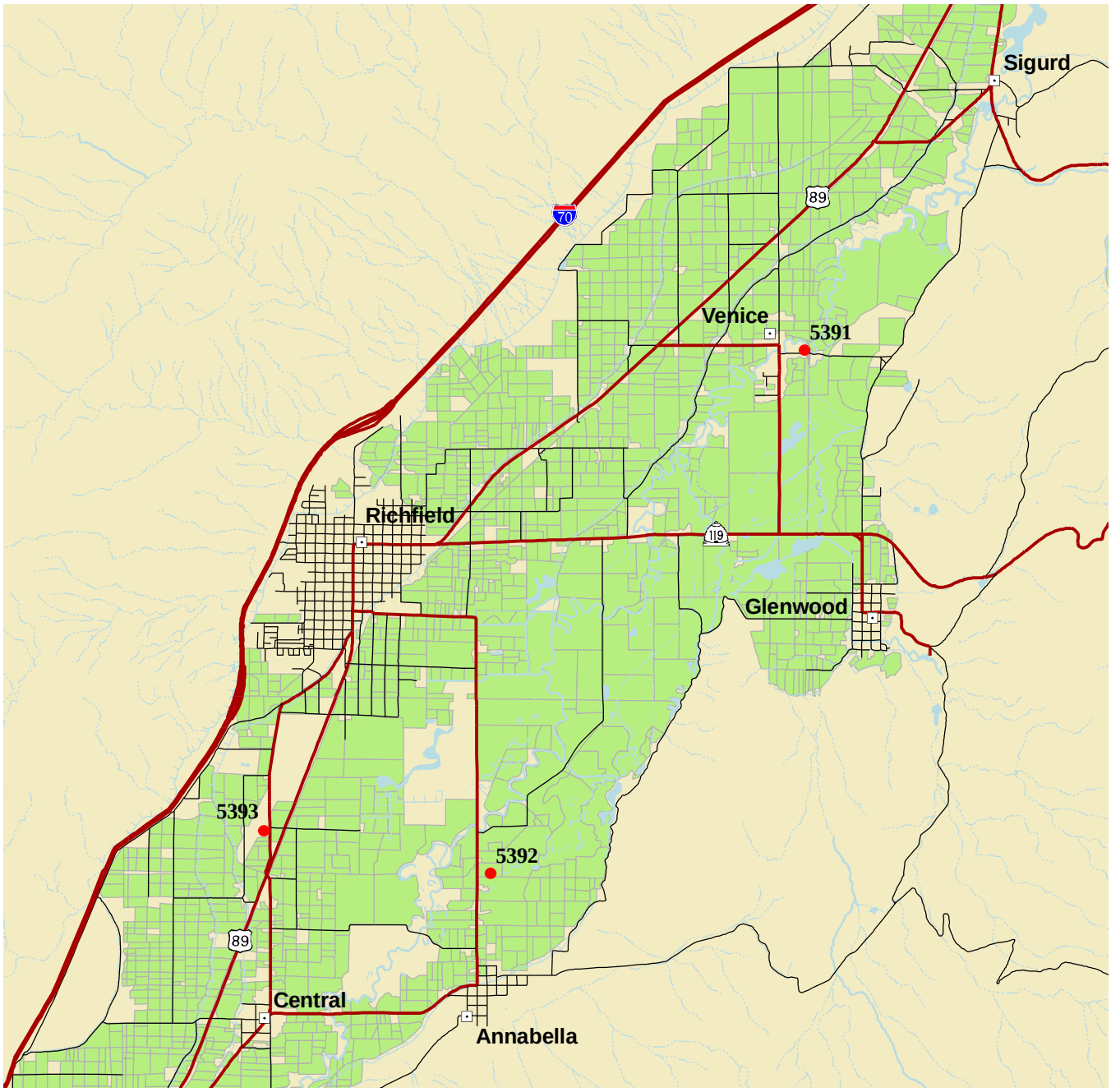
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5391	-0.1000	0.0337	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.9	-0.1000	24.80	-0.1000	377	-0.10	8.05	0	0	5.6
5392	-0.1000	0.0645	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	15.06	-0.1000	410	-0.10	7.88	0	0	5.6
5393	-0.1000	0.0691	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.8	-0.1000	16.19	-0.1000	388	-0.10	7.92	0	0	5.4

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

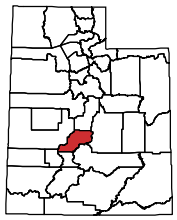
Map 24. Sevier County District



Map Scale 1:100,000 (1 inch = 1.6 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Zone 5

UACD Zone 5 consists of seven districts in five counties, including Beaver, Iron, Garfield, Kane, and Washington counties. Sampling testing may not have been done in all the districts or counties listed in Zone 5.

Thirty-five (35) sites were sampled in six (6) districts of Zone 5 during the spring, summer, and fall of 2005. One (1) well was sampled in the Dixie District, six (6) in the E and I District, three (3) in the Twin M District, twelve (12) in the Beaver District, five (5) in the Canyonlands District, and eight (8) in the Upper Sevier District. A separate narrative report is presented for each district. These reports include data tables and maps showing locations of sample sites. Each report covers three categories of water quality criteria—irrigation, livestock, and culinary. Since water use may overlap among these categories for a single well, analytical results are compared to all three sets of criteria.

Dixie District

General:

One (1) water sample was collected from the Dixie district. Sampled water temperature was 22.9 °C . The pH was 7.38.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Sample 5304 exceeded the 750 µmhos/cm standard with an EC value of 1,950 µmhos/cm.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Sample 5304 has a slightly elevated SAR value at 3.8.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. Sample 5304 has high bicarbonate, which is common for water in Utah.

No other elements were found in concentrations harmful to plants.

Livestock:

Sulfate (SO_4) is shown on chemical analyses for sulfur (S). Sulfur as sulfate can cause water to be off flavored and produces diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Sample 5304 has elevated sulfur at concentrations which exceed the livestock standard for sulfur.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district is hard, with grains per gallon (gpg) at 15.3. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. Sample 5304 exceeds the aesthetic standard for TDS.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

None of the samples are contaminated with coliform or E. coli bacteria.

DIXIE
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5304	-0.1000	181.66	12.37	0.1046	79.66	243.28	-0.10	7.38	22.9	1170

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5304	-0.1000	0.47	131.88	0.00	-0.1000	0.0213	4.14	0.1696	-0.1000	0.11	3.8	1,950

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5304	-0.1000	-0.1000	0.47	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	332.60	-0.1000	1,170	-0.1000	0.11

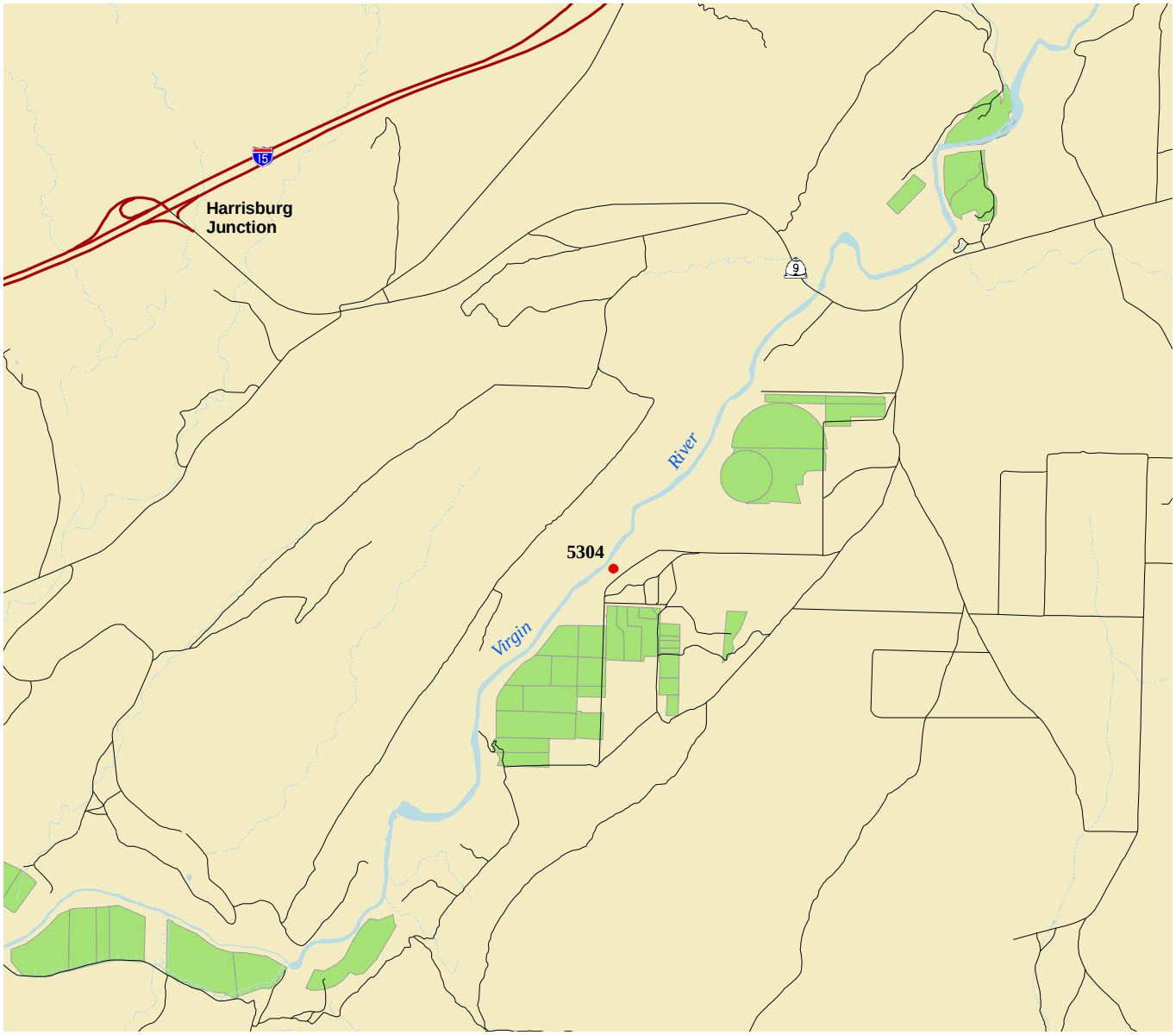
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5304	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0213	0.1696	-0.1	-0.1000	332.60	-0.1000	1,170	0.11	7.38	0	0	15.3

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

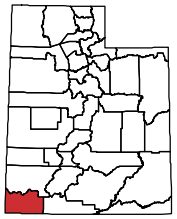
Map 25. Dixie District



Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:40,000 (1 inch = 0.63 miles)

E and I District

General:

Six (6) samples were collected in the E and I District. Sampled water temperatures range from 10.8 °C to 19.6 °C, with a mean of 16.3 °C. The pH for the district ranges from 7.44 to 8.54 with a mean of 8.05.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Sample 5307 and 5413 have EC values greater than 750 µmhos/cm. None of the samples exceed the severe level of EC.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. No samples have elevated SAR.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Samples 5307 and 5413 have elevated Cl.

No other elements were found in concentrations harmful to plants.

Livestock:

Sulfate (SO_4) is shown on chemical analyses for sulfur (S). Sulfur as sulfate can cause water to be off flavored and produces diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Sample 5413 has elevated sulfur at concentrations which exceed the livestock standard for sulfur.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district varies from soft to slightly hard, with grains per gallon (gpg) ranging from 2.4 to 17.5 with a mean of 7.2. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. TDS for eight samples exceed the EPA aesthetic standard of 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. Sample 5413 exceeds the aesthetic standard for TDS.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Sample 5413 has high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

None of the samples are contaminated with coliform or E. coli bacteria.

E AND I
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5303	-0.1000	61.43	2.63	-0.1000	25.57	8.67	-0.10	8.24	10.8	314
5305	-0.1000	71.56	1.94	-0.1000	11.39	25.97	-0.10	7.93	19.1	347
5306	-0.1000	43.16	3.73	-0.1000	11.01	12.08	-0.10	8.54	15.6	221
5307	-0.1000	144.23	6.66	-0.1000	26.96	23.86	-0.10	7.80	15.4	620
5308	-0.1000	34.55	3.69	-0.1000	6.01	26.62	-0.10	8.34	17.2	211
5413	-0.1000	181.82	4.07	0.0637	117.62	78.81	-0.10	7.44	19.6	1120

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5303	-0.1000	-0.10	10.15	0.00	-0.1000	-0.1000	4.97	-0.1000	-0.1000	-0.10	0.2	523
5305	-0.1000	0.08	53.51	0.00	-0.1000	0.0230	3.68	-0.1000	-0.1000	0.13	0.8	578
5306	-0.1000	-0.10	25.54	0.00	-0.1000	-0.1000	2.65	-0.1000	-0.1000	-0.10	0.4	369
5307	-0.1000	-0.10	151.99	0.00	-0.1000	-0.1000	5.02	-0.1000	-0.1000	0.06	0.5	1,033
5308	-0.1000	0.08	16.52	0.00	-0.1000	-0.1000	2.48	-0.1000	-0.1000	0.06	1.1	352
5413	-0.1000	0.35	296.70	0.00	-0.1000	3.8881	4.99	0.1046	-0.1000	0.14	1.1	1,867

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5303	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.61	-0.1000	314	-0.1000	-0.10
5305	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.95	-0.1000	347	-0.1000	0.13
5306	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	0.0131	-0.1000	-0.1000	-0.1000	3.59	-0.1000	221	-0.1000	-0.10
5307	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.41	-0.1000	620	-0.1000	0.06
5308	-0.1000	0.0178	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.65	-0.1000	211	-0.1000	0.06
5413	-0.1000	-0.1000	0.35	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	183.39	-0.1000	1,120	-0.1000	0.14

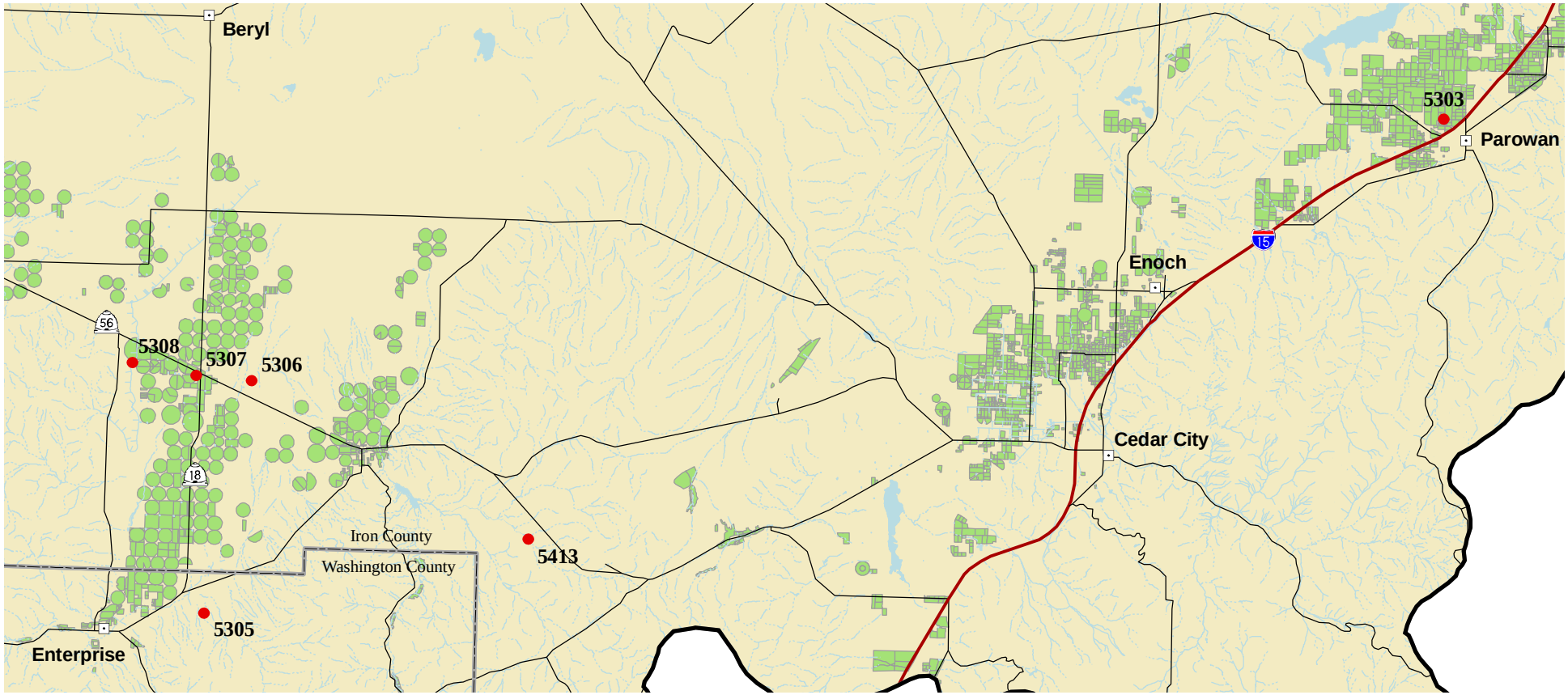
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5303	-0.1000	0.1741	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	7.61	-0.1000	314	-0.10	8.24	0	0	5.1
5305	-0.1000	0.0627	-0.1000	-0.1000	-0.1000	0.0230	-0.1000	1.2	-0.1000	7.95	-0.1000	347	0.13	7.93	0	0	4.9
5306	-0.1000	0.0530	-0.1000	0.0131	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	3.59	-0.1000	221	-0.10	8.54	0	0	3.2
5307	-0.1000	0.0479	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.3	-0.1000	19.41	-0.1000	620	0.06	7.80	0	0	10.0
5308	0.0178	0.1345	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	6.65	-0.1000	211	0.06	8.34	0	0	2.4
5413	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.8881	0.1046	-0.1	-0.1000	183.39	-0.1000	1,120	0.14	7.44	0	0	17.5

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 26. E and I District

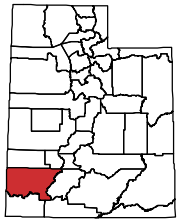


Map Scale 1:355,000 (1 inch = 5.6 miles)

N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Twin M District

General:

Three (3) samples were collected in the Twin M District. Sampled water temperatures range from 19.4 °C to 24.0 °C, with a mean of 20.9 °C. The pH for the district ranges from 8.16 to 8.65 with a mean of 8.44.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. None of the samples from this district exceed the 750 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the samples have an elevated SAR value.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

No other elements were found in concentrations harmful to plants.

Livestock:

No water quality standards for livestock were exceeded.

Culinary:

The sample for the district tested moderately hard, with 3.8 grains per gallon (gpg). Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. TDS for eight samples exceeds the EPA aesthetic standard of 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceed the aesthetic standard for TDS.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5309 and 5310 were contaminated with coliform bacteria. None of the samples were contaminated with E.coli bacteria.

TWIN M
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5309	-0.1000	22.09	3.20	-0.1000	7.70	18.12	-0.10	8.65	19.4	152
5310	-0.1000	53.31	3.74	-0.1000	15.05	25.68	-0.10	8.16	19.4	313
5311	-0.1000	24.45	3.43	-0.1000	8.63	46.12	0.15	8.51	24.0	251

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5309	-0.1000	0.07	8.50	0.00	-0.1000	0.0844	1.86	-0.1000	-0.1000	-0.10	0.8	253
5310	-0.1000	0.09	56.08	0.00	-0.1000	-0.1000	2.45	-0.1000	-0.1000	-0.10	0.8	522
5311	-0.1000	0.15	29.05	0.00	-0.1000	-0.1000	2.45	-0.1000	-0.1000	-0.10	2.0	419

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5309	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.71	-0.1000	152	-0.1000	-0.10
5310	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.08	-0.1000	313	-0.1000	-0.10
5311	-0.1000	0.0314	0.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	17.29	-0.1000	251	-0.1000	-0.10

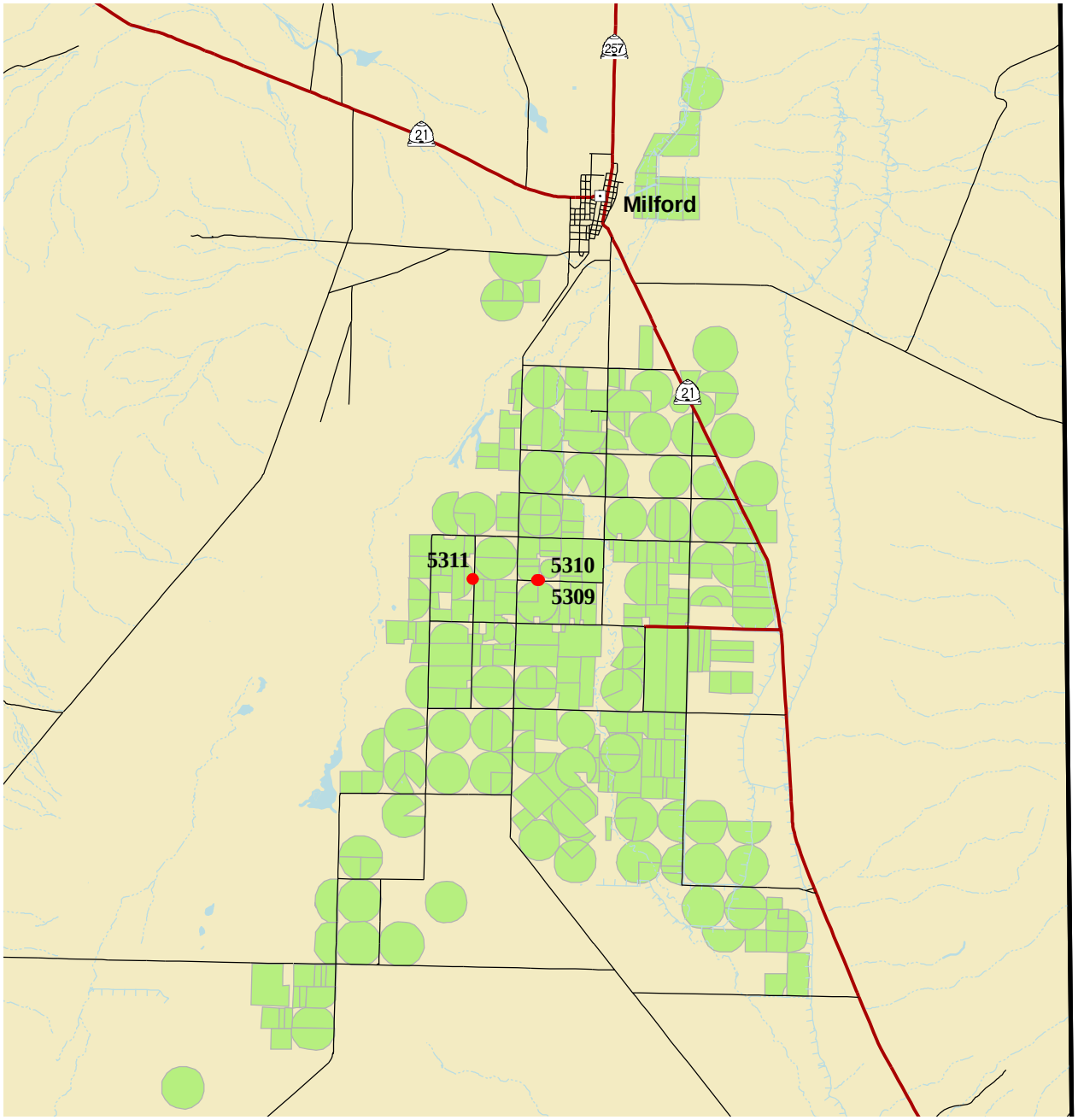
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5309	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0844	-0.1000	-0.1	-0.1000	7.71	-0.1000	152	-0.10	8.65	1	0	1.7
5310	-0.1000	0.0291	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.2	-0.1000	19.08	-0.1000	313	-0.10	8.16	1	0	4.0
5311	0.0314	0.0437	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	17.29	-0.1000	251	-0.10	8.51	0	0	1.9

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

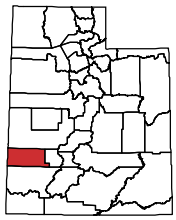
Map 27. Twin M District



Map Scale 1:122,000 (1 inch = 1.9 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Beaver District

General:

Twelve (12) samples were collected in the Beaver District. Sampled water temperatures range from 4.3 °C to 17.0 °C, with a mean of 13.6 °C. The pH for the district ranges from 7.03 to 8.18 with a mean of 7.53.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Sample 5323 exceeds the 750 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Sample 5320 has a slightly elevated SAR value at 3.4.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples from this district have high bicarbonate except sample 5312. High bicarbonate is common for water in Utah.

No other elements were found in concentrations harmful to plants.

Livestock:

No water quality standards for livestock were exceeded.

Culinary:

The water sampled in this district tested moderately hard, with grains per gallon (gpg) ranging from 0.8 to 6.3, with a mean of 3.6. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. TDS for eight samples exceeds the EPA aesthetic standard of 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceed the aesthetic standard for TDS.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5313, 5314, 5316, 5321, and 5323 were contaminated with coliform bacteria. Samples 5313, 5314,5316, and 5323 were also contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

BEAVER
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5312	-0.1000	10.68	1.02	-0.1000	3.21	6.89	-0.10	8.18	4.3	71
5313	-0.1000	42.69	5.27	-0.1000	9.35	22.18	-0.10	7.28	15.2	238
5314	-0.1000	44.26	4.82	-0.1000	9.41	17.76	-0.10	7.16	14.9	236
5315	-0.1000	47.34	2.12	-0.1000	9.98	14.91	-0.10	7.51	17.0	247
5316	-0.1000	59.39	3.11	-0.1000	12.05	23.91	-0.10	7.03	13.1	325
5317	-0.1000	76.26	5.11	-0.1000	15.12	25.37	-0.10	7.35	13.3	376
5320	-0.1000	46.97	12.83	-0.1000	9.96	98.63	-0.10	7.94	14.6	434
5321	-0.1000	63.61	2.17	-0.1000	14.00	15.86	-0.10	7.06	14.1	309
5322	-0.1000	65.18	3.06	-0.1000	13.76	16.97	-0.10	7.98	13.6	315
5323	-0.1000	87.91	9.39	-0.1000	20.31	46.15	-0.10	7.24	14.0	469
5324	-0.1000	30.22	1.31	-0.1000	6.15	11.14	-0.10	7.83	13.7	154
5325	-0.1000	26.87	1.16	-0.1000	5.86	9.61	-0.10	7.84	14.8	137

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5312	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	0.99	-0.1000	-0.1000	0.70	0.5	118
5313	-0.1000	0.08	12.47	0.00	0.0213	-0.1000	3.39	-0.1000	-0.1000	-0.10	0.8	397
5314	-0.1000	-0.10	15.33	0.00	-0.1000	-0.1000	3.16	0.0251	-0.1000	-0.10	0.6	394
5315	-0.1000	-0.10	29.08	0.00	0.0792	-0.1000	2.56	-0.1000	-0.1000	-0.10	0.5	411
5316	-0.1000	-0.10	46.46	0.00	-0.1000	-0.1000	3.02	-0.1000	-0.1000	-0.10	0.7	542
5317	-0.1000	0.09	29.73	0.00	0.0220	-0.1000	4.47	-0.1000	-0.1000	-0.10	0.7	627
5320	-0.1000	0.21	44.05	0.00	-0.1000	-0.1000	4.84	-0.1000	-0.1000	-0.10	3.4	723
5321	-0.1000	0.08	25.26	0.00	0.0281	-0.1000	3.35	-0.1000	-0.1000	-0.10	0.5	515
5322	-0.1000	-0.10	37.65	0.00	-0.1000	0.0215	3.42	-0.1000	-0.1000	-0.10	0.5	525
5323	-0.1000	0.11	30.05	0.00	0.0309	-0.1000	6.35	-0.1000	-0.1000	-0.10	1.2	782
5324	-0.1000	-0.10	5.23	0.00	-0.1000	0.0455	1.78	-0.1000	-0.1000	-0.10	0.5	257
5325	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	1.53	-0.1000	-0.1000	-0.10	0.4	228

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

BEAVER
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5312	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.99	-0.1000	71	-0.1000	0.70
5313	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.86	-0.1000	238	-0.1000	-0.10
5314	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.23	-0.1000	236	-0.1000	-0.10
5315	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.47	-0.1000	247	-0.1000	-0.10
5316	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.10	-0.1000	325	-0.1000	-0.10
5317	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.39	-0.1000	376	-0.1000	-0.10
5320	-0.1000	0.0427	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	33.26	-0.1000	434	-0.1000	-0.10
5321	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.23	-0.1000	309	-0.1000	-0.10
5322	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.63	-0.1000	315	-0.1000	-0.10
5323	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	17.21	-0.1000	469	-0.1000	-0.10
5324	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.59	-0.1000	154	-0.1000	-0.10
5325	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.84	-0.1000	137	-0.1000	-0.10

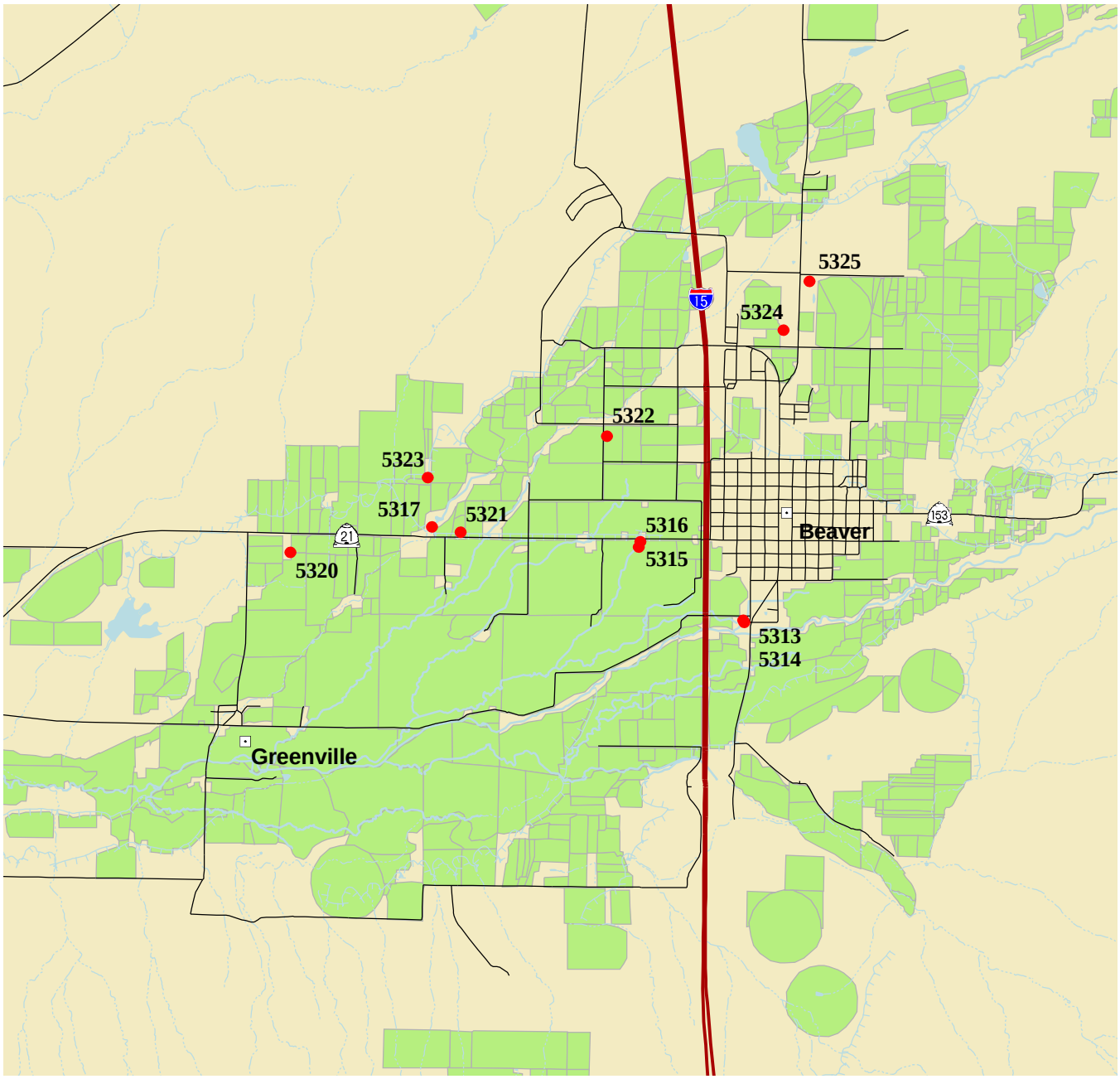
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5312	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	0.99	-0.1000	71	0.70	8.18	0	0	0.8
5313	-0.1000	0.0390	-0.1000	-0.1000	0.0213	-0.1000	-0.1000	-0.1	-0.1000	3.86	-0.1000	238	-0.10	7.28	1	1	3.0
5314	-0.1000	0.0374	-0.1000	-0.1000	-0.1000	-0.1000	0.0251	-0.1	-0.1000	5.23	-0.1000	236	-0.10	7.16	1	1	3.1
5315	-0.1000	0.0427	-0.1000	-0.1000	0.0792	-0.1000	-0.1000	3.1	-0.1000	8.47	-0.1000	247	-0.10	7.51	0	0	3.4
5316	-0.1000	0.1069	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.7	-0.1000	8.10	-0.1000	325	-0.10	7.03	1	1	4.2
5317	-0.1000	-0.1000	-0.1000	-0.1000	0.0220	-0.1000	-0.1000	3.1	-0.1000	16.39	-0.1000	376	-0.10	7.35	0	0	5.3
5320	0.0427	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	33.26	-0.1000	434	-0.10	7.94	0	0	3.3
5321	-0.1000	0.0817	-0.1000	-0.1000	0.0281	-0.1000	-0.1000	3.5	-0.1000	16.23	-0.1000	309	-0.10	7.06	1	0	4.5
5322	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0215	-0.1000	1.7	-0.1000	12.63	-0.1000	315	-0.10	7.98	0	0	4.6
5323	-0.1000	0.0424	-0.1000	-0.1000	0.0309	-0.1000	-0.1000	3.5	-0.1000	17.21	-0.1000	469	-0.10	7.24	1	1	6.3
5324	-0.1000	0.0425	-0.1000	-0.1000	-0.1000	0.0455	-0.1000	-0.1	-0.1000	10.59	-0.1000	154	-0.10	7.83	0	0	2.1
5325	-0.1000	0.0371	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	9.84	-0.1000	137	-0.10	7.84	0	0	1.9

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

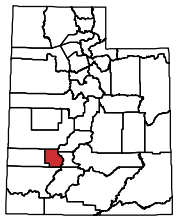
Map 28. Beaver District



Map Scale 1:70,000 (1 inch = 1.1 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Canyonlands District

General:

Five (5) samples were collected in the Canyonlands District. Sampled water temperatures range from 12.1 °C to 17.9 °C, with a mean of 15.3 °C. The pH for the district ranges from 7.89 to 8.17 with a mean of 8.04.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. None of the samples collected exceed the 750 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. None of the samples have an elevated SAR value.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

Zinc (Zn) is a micro-nutrient and is required for plant growth. However, in excess of 2 ppm it can injure plants. Sample 5400 has elevated zinc.

No other elements were found in concentrations harmful to plants.

Livestock:

No water quality standards for livestock were exceeded.

Culinary:

The water sampled in this district tested moderately hard, with grains per gallon (gpg) ranging from 4.5 to 6.5, with a mean of 5.1. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. TDS for eight samples exceeds the EPA aesthetic standard of 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceed the aesthetic standard for TDS.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that

mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Sample 5403 was contaminated with coliform bacteria. None of the samples tested positive for E.coli bacteria.

CANYONLANDS
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5400	-0.1000	77.42	3.78	-0.1000	34.03	18.66	-0.10	8.06	13.7	427
5401	-0.1000	76.87	2.94	-0.1000	8.57	13.01	-0.10	7.89	17.9	301
5402	-0.1000	34.02	10.36	-0.1000	43.52	18.31	-0.10	8.12	12.1	355
5403	-0.1000	55.71	6.06	-0.1000	31.84	23.52	-0.10	8.17	17.3	368
5404	-0.1000	55.40	2.13	-0.1000	22.16	12.34	-0.10	7.96	15.6	445

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5400	-0.1000	0.14	10.69	0.00	-0.1000	-0.1000	4.25	-0.1000	-0.1000	3.33	0.4	711
5401	-0.1000	-0.10	20.50	0.00	-0.1000	-0.1000	3.79	-0.1000	-0.1000	0.04	0.4	502
5402	-0.1000	0.13	9.36	0.00	-0.1000	-0.1000	5.30	-0.1000	-0.1000	-0.10	0.5	591
5403	-0.1000	-0.10	24.43	0.00	-0.1000	0.0278	4.12	0.0338	-0.1000	-0.10	0.6	614
5404	-0.1000	-0.10	6.95	0.00	-0.1000	-0.1000	4.42	-0.1000	-0.1000	0.19	0.4	742

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5400	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	55.84	-0.1000	427	-0.1000	3.33
5401	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	13.72	-0.1000	301	-0.1000	0.04
5402	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.19	-0.1000	355	-0.1000	-0.10
5403	-0.1000	0.0151	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	30.53	-0.1000	368	-0.1000	-0.10
5404	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.64	-0.1000	445	-0.1000	0.19

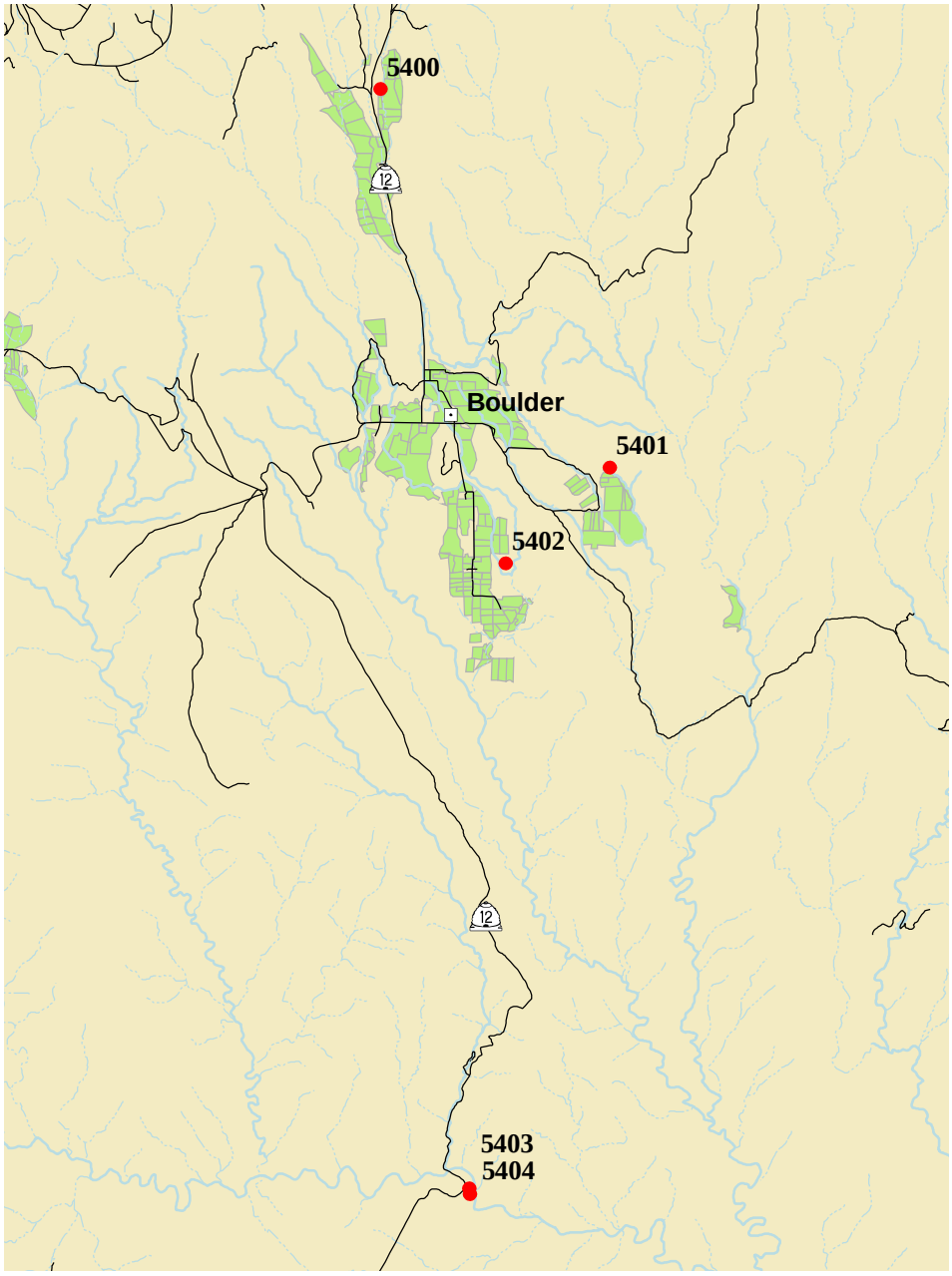
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5400	-0.1000	0.0490	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0	-0.1000	55.84	-0.1000	427	3.33	8.06	0	0	6.5
5401	-0.1000	0.1536	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	13.72	-0.1000	301	0.04	7.89	0	0	5.0
5402	-0.1000	0.1376	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.1	-0.1000	7.19	-0.1000	355	-0.10	8.12	0	0	4.5
5403	0.0151	0.0305	-0.1000	-0.1000	-0.1000	0.0278	0.0338	-0.1	-0.1000	30.53	-0.1000	368	-0.10	8.17	1	0	5.1
5404	-0.1000	0.1853	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	3.64	-0.1000	445	0.19	7.96	0	0	4.5

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

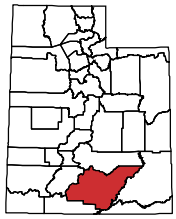
Map 29. Canyonlands District



Map Scale 1:140,000 (1 inch = 2.2 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Upper Sevier District

General:

Eight (8) samples were collected in the Upper Sevier District. Sampled water temperatures range from 9.5 °C to 15.4 °C, with a mean of 11.4 °C. The pH for the district ranges from 7.92 to 8.84 with a mean of 8.22.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. No samples in this district exceed the 750 µmhos/cm standard.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. No samples in this district have an elevated SAR values.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive concentrations, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All samples have high bicarbonate, which is common for water in Utah.

No other elements were found in concentrations harmful to plants.

Livestock:

All of the tested water samples meet livestock quality standards.

Culinary:

Water in this district varies from slightly-hard to moderely-hard, with grains per gallon (gpg) ranging from 1.6 to 5.9 with a mean of 3.8. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceeded the aesthetic standard for salinity.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Samples 5405, 5410, and 5412 have high manganese levels.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that

mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5405, 5407, 5408, 5410, and 5412 are contaminated with coliform bacteria, and should not be used for drinking until the source of contamination is identified and corrected. None of the samples are contaminated with E. coli bacteria.

UPPER SEVIER
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5405	-0.1000	62.29	7.99	-0.1000	39.27	32.80	-0.10	7.97	9.5	278
5406	-0.1000	63.96	3.27	-0.1000	30.50	35.60	-0.10	8.01	11.0	396
5407	-0.1000	60.17	2.47	-0.1000	24.36	21.63	-0.10	7.92	10.1	331
5408	-0.1000	50.07	2.00	-0.1000	22.99	8.58	-0.10	8.24	9.9	274
5409	-0.1000	45.87	2.78	-0.1000	19.45	20.29	-0.10	8.17	10.0	277
5410	-0.1000	19.55	2.68	-0.1000	8.28	20.44	-0.10	8.84	12.5	141
5411	-0.1000	29.83	4.30	-0.1000	7.87	16.31	-0.10	8.11	15.4	182
5412	-0.1000	32.53	3.02	-0.1000	8.91	17.17	0.19	8.47	13.1	187

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5405	-0.1000	-0.10	41.06	0.00	-0.1000	-0.1000	4.51	0.1117	-0.1000	-0.10	0.8	464
5406	-0.1000	-0.10	-0.10	0.00	0.0487	-0.1000	7.14	-0.1000	-0.1000	0.35	0.9	660
5407	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	5.59	-0.1000	-0.1000	-0.10	0.6	552
5408	-0.1000	-0.10	4.32	0.00	-0.1000	-0.1000	4.31	-0.1000	-0.1000	-0.10	0.3	457
5409	-0.1000	-0.10	4.73	0.00	-0.1000	-0.1000	4.56	-0.1000	-0.1000	-0.10	0.6	461
5410	-0.1000	-0.10	4.66	0.00	-0.1000	0.1083	2.37	0.1608	-0.1000	-0.10	1.0	235
5411	-0.1000	0.07	8.85	0.00	-0.1000	-0.1000	2.63	-0.1000	-0.1000	-0.10	0.7	303
5412	-0.1000	0.08	7.42	0.00	-0.1000	0.2778	2.80	0.5031	-0.1000	0.30	0.7	311

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5405	-0.1000	0.0213	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	41.63	-0.1000	278	-0.1000	-0.10
5406	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.06	-0.1000	396	-0.1000	0.35
5407	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.53	-0.1000	331	0.0134	-0.10
5408	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.98	-0.1000	274	-0.1000	-0.10
5409	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.68	-0.1000	277	-0.1000	-0.10
5410	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.70	-0.1000	141	-0.1000	-0.10
5411	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.19	-0.1000	182	0.0114	-0.10
5412	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.50	-0.1000	187	-0.1000	0.30

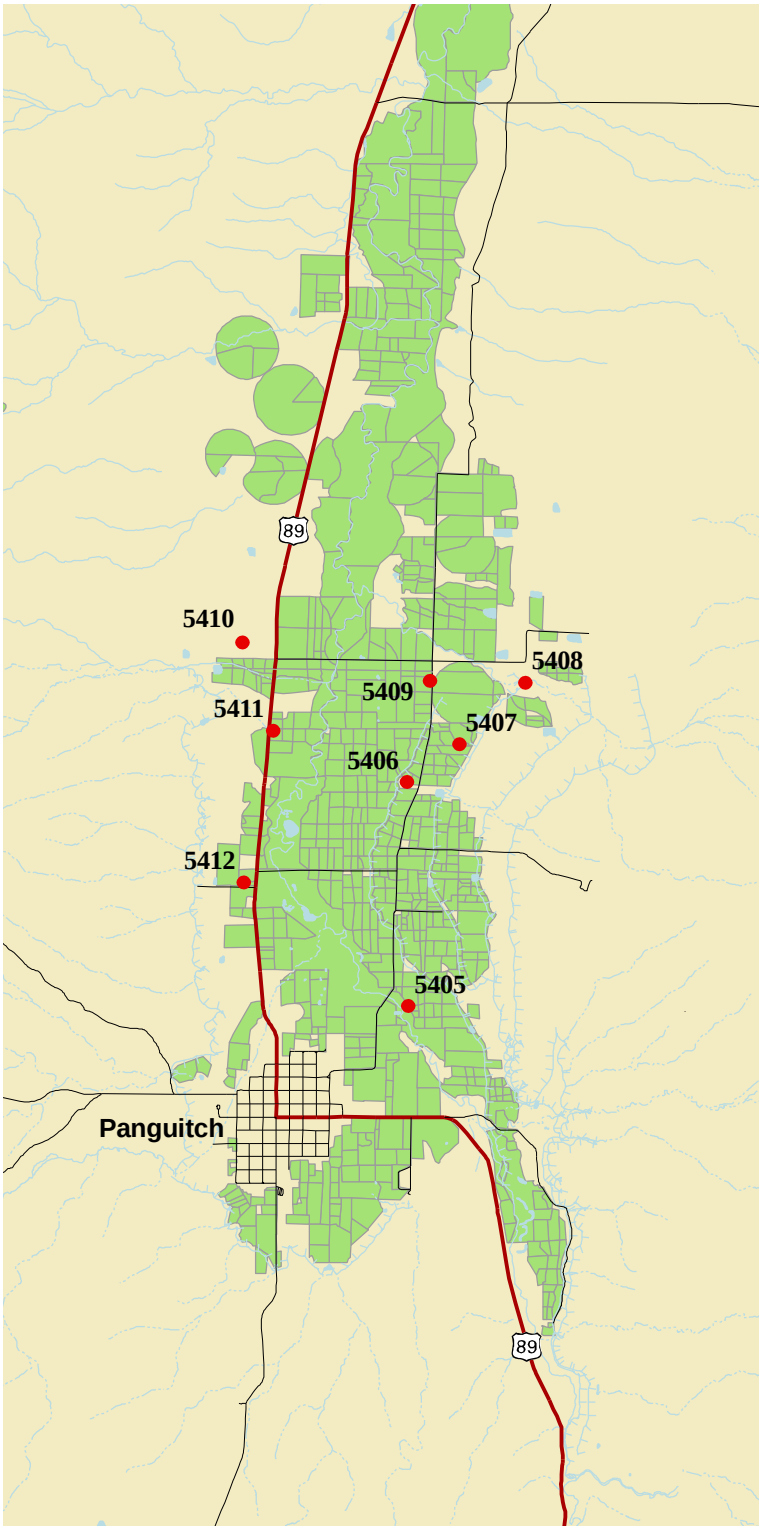
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5405	0.0213	0.0316	-0.1000	-0.1000	-0.1000	-0.1000	0.1117	-0.1	-0.1000	41.63	-0.1000	278	-0.10	7.97	1	0	5.9
5406	-0.1000	0.0733	-0.1000	-0.1000	0.0487	-0.1000	-0.1000	0.5	-0.1000	2.06	-0.1000	396	0.35	8.01	0	0	5.5
5407	-0.1000	0.0665	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0	-0.1000	2.53	-0.1000	331	-0.10	7.92	1	0	4.9
5408	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	3.98	-0.1000	274	-0.10	8.24	1	0	4.3
5409	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	2.68	-0.1000	277	-0.10	8.17	0	0	3.8
5410	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.1083	0.1608	-0.1	-0.1000	1.70	-0.1000	141	-0.10	8.84	1	0	1.6
5411	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.5	-0.1000	2.19	-0.1000	182	-0.10	8.11	0	0	2.2
5412	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.2778	0.5031	-0.1	-0.1000	2.50	-0.1000	187	0.30	8.47	1	0	2.4

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

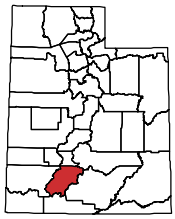
Map 30. Upper Sevier District



Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map Scale 1:98,000 (1 inch = 1.55 miles)

Zone 6

UACD Zone 6 consists of three districts in three counties, including Duchesne, Uintah, and Daggett counties. Sampling testing may not have been done in all the districts or counties listed in Zone 6

One Hundred and eighty-eight (188) sites were sampled in three districts of Zone 6 during the spring, summer, and fall of 2005. There were One Hundred and eleven (111) in the Duchesne District, seventy-three (73) in the Uintah District, and four (4) in the Daggett District. A separate narrative report is presented for each district with maps showing the location of the sample sites. Each report covers three categories of water quality criteria: irrigation, livestock, and culinary. Data are presented in four tables for each zone, grouped according to district, general parameters (temperature, pH, total dissolved solids (TDS), and chemicals for which there are no standards); irrigation, livestock and drinking water parameters.

Duchesne District

General:

One Hundred and eleven (111) samples were collected in the Duchesne District. Sampled water temperatures range from 9.2 °C to 29.8 °C, with a mean of 13.5 °C. The pH for the district ranges from 7.19 to 9.63 with a mean of 7.98.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Samples 5010, 5011, 5013, 5017, 5021, 5029, 5034, 5035, 5040, 5085 through 5095, 5097, 5098, 5100, 5101, 5102, 5110, 5112, 5125, 5158, 5159, 5160, 5165, 5186, 5194, 5301, 5452, 5453, 5456, and 5457 exceed the salinity standard of 750 µmhos/cm. Sample 5159 also exceeds the severe standard of 3,000 µmhos/cm.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Samples 5009, 5013, 5014, 5016, 5021, 5023, 5029, 5085, 5089, 5090, 5091, 5096, 5098, 5099, 5105, 5106, 5114, 5115, 5121, 5125, 5158, 5159, and 5456 have values greater than the 3 standard. Samples 5014, 5023, 5029, 5096, 5098, 5099, 5105, 5106, 5121, 5125, 5158, 5159, and 5456 also exceed the severe damage standard of 9.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah. Samples 5090, 5091, 5100, 5125, and 5457 have very high bicarbonate.

Some specific elements can be toxic to plants. Samples 5090, 5091, 5098, 5125, and 5160 have elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage

increases under sprinkler irrigation and is more severe in windy conditions. Samples 5095 and 5097 have elevated Cl. None of these samples exceed the severe level.

Manganese (Mn) above 0.2 ppm can injure plants and cause reduction in dry matter production. Excess manganese interferes with the plant's ability to use other nutrients such as calcium (Ca). Samples 5101 and 5160 have elevated manganese.

Zinc (Zn) is a micro-nutrient and is required for plant growth. However, in excess of 2 ppm it can injure plants. Sample 5086 has elevated zinc.

No other elements were found in concentrations harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Samples 5035, 5088, 5090, 5091, and 5125 have elevated molybdenum.

Sulfate (SO_4) is shown on chemical analyses for sulfur (S). Sulfur as sulfate can cause water to be off flavored and produces diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Sample 5010, 5011, 5013, 5035, 5086, 5087, 5089, 5097, 5100, 5160, 5194, and 5301 have elevated sulfur at concentrations which exceed the livestock standard for sulfur.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district tested very soft to hard, with grains per gallon (gpg) ranging from 0.1 to 26.7 with a mean of 6.6. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS reaches 2,000 ppm. Samples 5010, 5011, 5013, 5017, 5021, 5029, 5034, 5035, 5086 through 5091, 5095, 5097, 5098, 5100, 5101, 5102, 5125, 5158, 5159, 5160, 5186, 5194, 5301, 5452, 5453, 5456, and 5457 exceeded the 500 ppm standard. Sample 5159 also exceeded the health advisory standard of 2,000 ppm.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5005, 5021, 5028, 5031, 5037, 5040, 5041, 5042, 5092, 5093, 5100, 5102, 5103, 5104, 5110, 5112, 5116, 5160, 5166, 5167, 5169, 5170, 5191, 5192, 5278, 5279, 5454 through 5458 are contaminated with coliform bacteria. Samples 5028, 5031, 5042, 5112, 5116, 5160, and 5166 are also contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

DUCHESNE COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5001	-0.1000	53.73	3.53	-0.1000	12.23	10.74	-0.10	7.94	11.0	235
5002	-0.1000	52.97	3.32	-0.1000	14.80	11.72	-0.10	7.59	12.0	242
5003	-0.1000	49.34	3.09	-0.1000	22.46	14.27	-0.10	7.73	11.6	267
5004	-0.1000	51.39	2.98	-0.1000	12.84	6.69	-0.10	7.84	12.0	216
5005	-0.1000	50.38	3.22	-0.1000	12.86	5.93	-0.10	7.88	12.5	203
5006	-0.1000	54.04	3.39	-0.1000	17.57	12.16	-0.10	7.71	10.6	247
5007	-0.1000	56.66	3.61	-0.1000	24.08	16.04	-0.10	7.59	11.4	290
5008	-0.1000	49.80	4.60	-0.1000	17.50	7.17	-0.10	7.93	10.3	224
5009	-0.1000	13.14	2.53	0.0643	5.24	70.26	-0.10	8.41	12.4	245
5010	-0.1000	335.87	5.07	0.0703	46.19	44.76	-0.10	7.75	11.5	884
5011	-0.1000	266.55	7.91	0.1228	74.53	130.80	-0.10	7.66	12.1	1117
5012	-0.1000	39.94	3.72	-0.1000	17.93	30.28	-0.10	8.00	12.3	247
5013	-0.1000	109.15	5.39	0.1115	93.08	246.26	-0.10	7.93	12.4	1072
5014	-0.1000	3.10	1.35	-0.1000	1.36	168.33	-0.10	9.02	12.5	422
5015	-0.1000	58.24	3.42	-0.1000	13.49	9.94	-0.10	8.01	10.8	221
5016	-0.1000	13.71	2.20	-0.1000	5.09	87.60	-0.10	8.25	12.9	261
5017	-0.1000	95.68	8.10	0.0791	62.59	66.97	-0.10	7.50	13.7	588
5018	-0.1000	58.85	3.75	-0.1000	23.55	17.04	-0.10	7.82	11.5	342
5019	-0.1000	41.91	3.32	-0.1000	17.07	7.79	-0.10	7.86	12.0	228
5020	-0.1000	37.96	3.18	-0.1000	17.33	8.27	-0.10	7.86	13.5	219
5021	-0.1000	136.89	6.26	0.1583	78.48	480.61	-0.10	7.31	12.3	1088
5023	-0.1000	4.09	0.91	-0.1000	1.23	142.44	-0.10	9.26	13.4	369
5025	-0.1000	25.40	3.07	-0.1000	13.79	38.72	-0.10	8.17	14.6	225
5028	-0.1000	28.13	3.18	-0.1000	14.66	44.13	-0.10	8.11	10.9	241
5029	-0.1000	1.45	0.94	-0.1000	0.63	226.45	-0.10	9.23	14.2	554
5030	-0.1000	48.87	4.63	-0.1000	10.86	6.96	-0.10	7.87	13.1	217
5031	-0.1000	54.10	7.83	0.0936	50.45	30.07	0.19	8.61	25.0	410
5032	-0.1000	49.14	3.20	-0.1000	25.06	19.53	-0.10	8.03	12.1	305
5033	-0.1000	54.64	3.50	-0.1000	28.39	30.59	-0.10	7.67	16.0	352
5034	-0.1000	65.83	6.43	0.1077	50.84	52.21	-0.10	7.61	13.7	512
5035	-0.1000	148.57	7.57	0.2539	87.56	170.68	-0.10	7.72	12.8	1069
5036	-0.1000	54.15	4.62	0.0617	23.15	37.21	-0.10	7.88	13.1	363
5037	-0.1000	82.81	0.70	-0.1000	32.89	14.33	-0.10	7.66	11.7	379
5040	-0.1000	88.89	2.35	0.0566	51.38	15.77	-0.10	7.66	9.5	488
5041	-0.1000	80.18	1.21	-0.1000	42.10	14.05	-0.10	7.98	10.1	413
5042	-0.1000	96.35	0.70	-0.1000	43.43	11.15	-0.10	7.76	13.5	436
5085	-0.1000	20.54	0.69	-0.1000	15.44	134.94	-0.10	8.46	11.6	456
5086	-0.1000	261.24	2.09	0.4041	194.60	79.24	-0.10	7.48	12.1	1224
5087	-0.1000	157.19	0.92	-0.1000	80.36	126.01	-0.10	7.82	10.8	976
5088	-0.1000	147.91	1.08	-0.1000	64.47	109.65	-0.10	7.66	11.0	818
5089	-0.1000	51.91	0.98	-0.1000	46.76	213.25	-0.10	8.20	10.4	872
5090	-0.1000	92.96	1.94	0.1810	58.20	208.69	-0.10	7.64	14.5	904
5091	-0.1000	124.08	6.73	0.0803	78.88	234.81	-0.10	7.64	16.0	1105
5092	-0.1000	90.84	1.71	-0.1000	40.43	51.00	-0.10	8.07	9.4	491
5093	-0.1000	78.48	1.62	-0.1000	35.94	50.06	-0.10	7.69	10.6	483
5094	-0.1000	79.87	1.57	-0.1000	35.34	45.92	-0.10	7.68	9.2	469
5095	-0.1000	59.34	4.44	0.1273	83.13	137.07	-0.10	7.98	11.2	872
5096	-0.1000	196.14	9.61	0.4400	216.33	979.75	-0.10	7.51	12.9	332
5097	-0.1000	289.31	2.06	-0.1000	136.36	196.83	-0.10	7.36	11.5	1434
5098	-0.1000	0.92	0.63	0.0761	0.37	240.42	-0.10	9.63	13.0	622
5099	-0.1000	1.61	0.62	-0.1000	0.53	136.99	-0.10	9.40	13.2	353
5100	-0.1000	188.86	1.68	0.0848	53.21	134.41	-0.10	7.19	14.3	959
5101	-0.1000	86.28	4.26	0.0513	83.66	33.64	-0.10	7.70	11.8	616
5102	-0.1000	111.50	2.52	0.0514	45.45	47.92	-0.10	7.58	13.0	572
5103	-0.1000	92.92	2.34	-0.1000	31.66	13.37	-0.10	7.66	13.9	401

DUCHESNE COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5104	-0.1000	90.04	2.36	-0.1000	31.41	15.20	-0.10	7.62	14.9	398
5105	-0.1000	1.66	0.22	-0.1000	0.89	129.73	-0.10	9.60	14.2	337
5106	-0.1000	2.35	0.40	-0.1000	1.50	109.64	-0.10	9.41	14.8	296
5110	-0.1000	118.49	2.55	0.0522	63.39	8.60	-0.10	7.64	13.1	465
5111	-0.1000	103.99	0.77	-0.1000	48.15	10.87	-0.10	7.83	12.8	391
5112	-0.1000	130.40	1.21	0.0509	57.17	12.39	-0.10	7.77	12.6	453
5114	-0.1000	10.84	2.34	0.0516	5.54	87.35	-0.10	8.65	14.6	270
5115	-0.1000	6.58	0.40	-0.1000	3.10	100.14	-0.10	8.78	14.5	284
5116	-0.1000	60.22	1.48	-0.1000	13.99	3.76	-0.10	8.40	20.8	232
5117	-0.1000	48.81	3.22	-0.1000	12.78	3.55	-0.10	8.01	17.1	196
5118	-0.1000	80.80	4.78	-0.1000	34.96	19.30	-0.10	8.02	14.7	382
5119	-0.1000	57.97	3.59	-0.1000	17.58	10.65	-0.10	7.88	14.9	245
5120	-0.1000	44.75	3.61	-0.1000	12.20	22.25	-0.10	8.05	16.0	220
5121	-0.1000	3.46	1.02	0.0512	1.13	99.70	-0.10	8.92	15.4	269
5122	-0.1000	57.96	4.63	-0.1000	15.20	9.68	-0.10	7.94	15.7	231
5123	-0.1000	66.26	1.33	-0.1000	14.90	5.03	-0.10	7.76	13.9	229
5124	-0.1000	74.90	0.98	-0.1000	29.67	7.53	-0.10	7.72	16.4	364
5125	-0.1000	3.17	1.17	0.0652	1.32	430.10	-0.10	8.90	23.4	1066
5126	-0.1000	44.56	3.26	-0.1000	15.66	12.46	-0.10	7.95	15.1	233
5151	-0.1000	51.91	2.24	-0.1000	27.76	5.84	-0.10	7.92	13.8	281
5152	-0.1000	46.74	2.13	-0.1000	27.11	5.16	-0.10	7.89	13.6	267
5153	-0.1000	69.57	2.59	-0.1000	36.56	6.81	-0.10	7.59	12.5	366
5154	-0.1000	45.56	2.10	-0.1000	26.63	6.32	-0.10	7.78	12.8	271
5155	-0.1000	50.31	2.48	-0.1000	33.90	12.10	-0.10	7.70	14.3	322
5156	-0.1000	44.36	1.71	-0.1000	20.25	4.65	-0.10	7.95	14.0	232
5157	-0.1000	62.84	2.49	-0.1000	32.29	6.90	-0.10	7.77	14.1	334
5158	-0.1000	1.40	0.86	0.0728	0.49	228.23	-0.10	9.40	16.3	589
5159	-0.1000	145.89	5.66	0.1993	70.68	620.96	-0.10	7.74	16.0	2154
5160	-0.1000	262.34	9.68	0.0844	85.60	92.26	0.52	7.76	29.8	1197
5163	-0.1000	47.37	3.14	-0.1000	15.71	7.38	-0.10	8.09	14.7	229
5164	-0.1000	45.93	0.37	-0.1000	22.00	10.00	-0.10	7.97	12.0	247
5165	-0.1000	83.13	1.02	0.0545	53.85	13.23	-0.10	7.81	12.1	469
5166	-0.1000	87.27	4.41	-0.1000	23.18	13.64	-0.10	7.51	15.4	368
5167	-0.1000	75.22	0.99	-0.1000	19.79	19.50	-0.10	7.64	14.4	335
5168	-0.1000	77.15	0.88	-0.1000	19.26	9.53	-0.10	7.88	11.6	325
5169	-0.1000	68.67	0.71	-0.1000	17.94	5.13	-0.10	7.77	12.7	292
5170	-0.1000	69.05	0.98	-0.1000	35.24	8.01	-0.10	7.70	14.4	344
5186	-0.1000	112.00	0.54	-0.1000	37.57	22.20	-0.10	7.53	12.9	517
5187	-0.1000	57.67	0.28	-0.1000	17.29	7.91	-0.10	7.60	16.1	265
5188	-0.1000	48.43	-0.10	-0.1000	17.56	9.04	-0.10	7.95	11.9	250
5189	-0.1000	62.59	0.70	-0.1000	19.19	15.79	-0.10	7.77	15.1	308
5190	-0.1000	69.77	0.51	-0.1000	39.34	4.98	-0.10	7.67	10.6	381
5191	-0.1000	70.65	0.56	-0.1000	30.12	8.81	-0.10	7.63	12.9	359
5192	-0.1000	60.38	1.19	-0.1000	21.87	15.41	-0.10	7.75	14.0	314
5194	-0.1000	213.28	1.61	0.1476	158.04	166.48	-0.10	7.56	15.6	1254
5195	-0.1000	40.80	2.93	-0.1000	17.99	7.32	-0.10	8.02	14.1	233
5278	-0.1000	56.53	1.63	-0.1000	7.22	2.55	-0.10	7.74	15.0	203
5279	-0.1000	93.86	4.00	-0.1000	13.17	4.66	-0.10	7.48	15.2	325
5301	-0.1000	201.45	1.54	-0.1000	50.55	13.19	-0.10	7.71	10.1	741
5452	-0.1000	100.20	3.16	-0.1000	48.56	11.01	-0.10	7.88	14.3	517
5453	-0.1000	95.85	1.69	-0.1000	46.64	18.64	-0.10	7.81	11.4	504
5454	-0.1000	35.79	1.82	-0.1000	13.52	9.67	-0.10	8.47	13.4	184
5455	-0.1000	61.70	0.82	-0.1000	26.92	7.12	-0.10	7.78	13.4	306
5456	-0.1000	3.28	1.79	0.0528	5.68	208.94	-0.10	9.36	14.0	600
5457	-0.1000	243.38	1.68	0.2594	50.85	86.07	-0.10	7.61	12.6	977
5458	-0.1000	48.98	3.32	-0.1000	14.00	10.34	-0.10	8.04	11.6	250

Values of -0.1 are below detection limits of testing procedure.

DUCHESNE COUNTY
SOIL CONSERVATION DISTRICT

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5001	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0895	3.62	-0.1000	-0.1000	-0.10	0.3	392
5002	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0983	3.72	-0.1000	-0.1000	-0.10	0.4	404
5003	-0.1000	-0.10	-0.10	0.00	-0.1000	0.1195	4.01	-0.1000	-0.1000	-0.10	0.4	445
5004	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0950	2.98	-0.1000	-0.1000	-0.10	0.2	360
5005	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0974	2.69	-0.1000	-0.1000	-0.10	0.2	339
5006	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0442	3.61	0.0275	-0.1000	-0.10	0.4	411
5007	-0.1000	-0.10	-0.10	0.00	0.0396	0.0860	4.12	-0.1000	-0.1000	0.16	0.4	484
5008	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0818	2.87	0.0367	-0.1000	-0.10	0.2	373
5009	-0.1000	-0.10	-0.10	0.00	-0.1000	0.1505	2.63	0.0219	-0.1000	-0.10	4.1	408
5010	-0.1000	0.10	-0.10	0.00	-0.1000	0.0310	2.43	0.1340	-0.1000	-0.10	0.6	1,473
5011	-0.1000	0.12	-0.10	0.00	-0.1000	0.0891	2.41	0.0770	-0.1000	-0.10	1.8	1,861
5012	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	2.65	-0.1000	-0.1000	-0.10	1.0	411
5013	-0.1000	0.12	67.82	0.00	-0.1000	0.0725	3.31	0.1000	-0.1000	0.40	4.2	1,786
5014	-0.1000	0.11	11.28	0.00	-0.1000	-0.1000	5.34	-0.1000	-0.1000	-0.10	20.1	704
5015	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0620	3.04	0.0354	-0.1000	-0.10	0.3	368
5016	-0.1000	0.12	-0.10	0.00	-0.1000	0.0576	3.53	-0.1000	-0.1000	-0.10	5.1	435
5017	-0.1000	0.26	36.27	0.00	0.1147	-0.1000	7.95	-0.1000	-0.1000	0.12	1.3	980
5018	-0.1000	-0.10	34.40	0.00	-0.1000	-0.1000	3.42	-0.1000	-0.1000	-0.10	0.5	570
5019	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0538	3.05	-0.1000	-0.1000	-0.10	0.3	380
5020	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0476	5.59	-0.1000	-0.1000	-0.10	0.3	365
5021	-0.1000	0.25	-0.10	0.00	-0.1000	0.0916	3.77	-0.1000	-0.1000	0.26	8.1	1,813
5023	-0.1000	-0.10	43.57	1.00	-0.1000	0.0536	4.03	-0.1000	-0.1000	-0.10	15.9	615
5025	-0.1000	-0.10	-0.10	0.00	-0.1000	0.1847	2.52	-0.1000	-0.1000	-0.10	1.5	375
5028	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0507	2.76	-0.1000	-0.1000	-0.10	1.7	401
5029	-0.1000	0.13	13.39	2.00	-0.1000	-0.1000	6.79	-0.1000	-0.1000	-0.10	39.5	923
5030	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0637	2.67	-0.1000	-0.1000	-0.10	0.2	362
5031	0.0967	0.29	17.65	0.00	-0.1000	0.1136	5.08	-0.1000	-0.1000	-0.10	0.7	683
5032	-0.1000	0.09	8.43	0.00	-0.1000	0.1776	4.51	0.0504	-0.1000	-0.10	0.6	509
5033	-0.1000	0.08	14.37	0.00	-0.1000	0.0367	4.34	-0.1000	-0.1000	-0.10	0.8	587
5034	-0.1000	0.31	19.77	0.00	-0.1000	-0.1000	6.86	-0.1000	-0.1000	-0.10	1.2	854
5035	-0.1000	0.19	68.15	0.00	-0.1000	0.0587	5.69	0.0604	-0.1000	-0.10	2.7	1,782
5036	-0.1000	-0.10	35.77	0.00	-0.1000	-0.1000	3.07	-0.1000	-0.1000	-0.10	1.1	605
5037	-0.1000	0.12	5.54	0.00	-0.1000	-0.1000	6.61	-0.1000	-0.1000	-0.10	0.3	631
5040	-0.1000	0.08	30.88	0.00	0.0261	-0.1000	6.72	-0.1000	-0.1000	-0.10	0.3	813
5041	-0.1000	-0.10	18.42	0.00	-0.1000	-0.1000	6.97	-0.1000	-0.1000	-0.10	0.3	689
5042	-0.1000	-0.10	-0.10	0.00	0.0238	-0.1000	7.56	-0.1000	-0.1000	0.11	0.2	726
5085	-0.1000	0.35	15.86	0.00	-0.1000	-0.1000	4.60	-0.1000	-0.1000	-0.10	5.5	760
5086	-0.1000	0.55	43.15	0.00	-0.1000	0.0727	6.90	0.0256	-0.1000	32.59	0.9	2,040
5087	-0.1000	0.19	31.78	0.00	-0.1000	-0.1000	7.84	-0.1000	-0.1000	-0.10	2.0	1,626
5088	-0.1000	0.15	23.55	0.00	-0.1000	-0.1000	7.76	-0.1000	-0.1000	-0.10	1.9	1,363
5089	-0.1000	0.47	35.61	0.00	-0.1000	-0.1000	3.92	-0.1000	-0.1000	-0.10	5.2	1,453
5090	-0.1000	1.45	102.58	0.00	-0.1000	-0.1000	10.91	-0.1000	-0.1000	-0.10	4.2	1,506
5091	-0.1000	1.52	113.10	0.00	-0.1000	0.1074	14.24	-0.1000	-0.1000	0.14	4.1	1,842
5092	-0.1000	0.14	28.76	0.00	-0.1000	0.0432	5.72	-0.1000	-0.1000	-0.10	1.1	818
5093	-0.1000	0.13	28.31	0.00	-0.1000	0.0212	5.59	-0.1000	-0.1000	-0.10	1.2	805
5094	-0.1000	0.13	22.33	0.00	-0.1000	-0.1000	5.46	-0.1000	-0.1000	-0.10	1.1	781
5095	-0.1000	0.16	241.86	0.00	-0.1000	-0.1000	6.07	-0.1000	-0.1000	-0.10	2.7	1,454
5096	-0.1000	0.21	-0.10	0.00	0.0215	0.1236	6.20	0.0408	-0.1000	0.09	11.5	553
5097	-0.1000	0.39	187.89	0.00	0.0303	0.0629	6.59	0.0205	-0.1000	0.06	2.4	2,390
5098	-0.1000	0.97	9.72	2.00	-0.1000	-0.1000	6.84	-0.1000	-0.1000	-0.10	53.3	1,037
5099	-0.1000	0.43	-0.10	1.00	-0.1000	-0.1000	4.42	-0.1000	-0.1000	-0.10	24.0	589
5100	-0.1000	0.21	23.61	0.00	-0.1000	0.0308	8.80	-0.1000	-0.1000	0.04	2.2	1,599
5101	-0.1000	0.22	31.97	0.00	0.0218	0.0683	8.28	3.5382	-0.1000	-0.10	0.6	1,026
5102	-0.1000	0.15	13.74	0.00	-0.1000	-0.1000	7.38	-0.1000	-0.1000	-0.10	1.0	953
5103	-0.1000	0.08	7.94	0.00	-0.1000	-0.1000	5.92	-0.1000	-0.1000	-0.10	0.3	669

DUCHESNE COUNTY
SOIL CONSERVATION DISTRICT

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5104	-0.1000	0.08	8.12	0.00	0.0203	-0.1000	5.91	-0.1000	-0.1000	0.26	0.4	664
5105	-0.1000	0.21	-0.10	2.00	-0.1000	-0.1000	4.14	-0.1000	-0.1000	-0.10	20.2	561
5106	-0.1000	0.14	-0.10	1.00	-0.1000	0.0673	3.48	-0.1000	-0.1000	-0.10	13.7	493
5110	-0.1000	0.12	11.54	0.00	-0.1000	-0.1000	8.32	-0.1000	-0.1000	-0.10	0.2	775
5111	-0.1000	0.10	8.12	0.00	-0.1000	0.0364	6.62	-0.1000	-0.1000	-0.10	0.2	652
5112	-0.1000	0.10	13.34	0.00	-0.1000	-0.1000	7.76	-0.1000	-0.1000	-0.10	0.2	755
5114	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0498	3.16	-0.1000	-0.1000	0.18	5.4	450
5115	-0.1000	0.08	-0.10	0.00	-0.1000	-0.1000	3.31	-0.1000	-0.1000	-0.10	8.1	473
5116	0.1794	0.10	-0.10	0.00	-0.1000	0.1466	2.43	-0.1000	-0.1000	-0.10	0.1	386
5117	-0.1000	-0.10	-0.10	0.00	-0.1000	0.4446	2.83	0.0253	-0.1000	-0.10	0.1	326
5118	-0.1000	-0.10	20.53	0.00	-0.1000	0.0618	2.69	0.0324	-0.1000	-0.10	0.5	637
5119	-0.1000	-0.10	-0.10	0.00	-0.1000	0.3388	3.59	-0.1000	-0.1000	-0.10	0.3	408
5120	-0.1000	-0.10	-0.10	0.00	0.0369	0.2582	2.85	-0.1000	-0.1000	0.25	0.8	367
5121	-0.1000	0.11	-0.10	0.00	-0.1000	-0.1000	3.62	-0.1000	-0.1000	-0.10	11.9	449
5122	-0.1000	-0.10	-0.10	0.00	-0.1000	0.1282	2.94	-0.1000	-0.1000	-0.10	0.3	385
5123	-0.1000	-0.10	3.83	0.00	-0.1000	0.0637	3.66	-0.1000	-0.1000	-0.10	0.1	381
5124	-0.1000	0.08	44.29	0.00	0.0215	-0.1000	4.64	-0.1000	-0.1000	0.06	0.2	607
5125	-0.1000	1.07	103.02	1.00	-0.1000	-0.1000	11.13	-0.1000	-0.1000	-0.10	51.2	1,777
5126	-0.1000	0.12	-0.10	0.00	-0.1000	0.2627	3.04	-0.1000	-0.1000	0.05	0.4	388
5151	-0.1000	-0.10	6.20	0.00	-0.1000	0.0253	3.86	-0.1000	-0.1000	-0.10	0.2	468
5152	-0.1000	-0.10	6.27	0.00	-0.1000	0.0510	3.77	-0.1000	-0.1000	-0.10	0.1	445
5153	-0.1000	-0.10	10.26	0.00	-0.1000	0.0948	4.71	-0.1000	-0.1000	0.46	0.2	610
5154	-0.1000	-0.10	9.22	0.00	-0.1000	0.0393	3.68	-0.1000	-0.1000	-0.10	0.2	451
5155	0.0571	-0.10	20.47	0.00	-0.1000	0.0571	4.42	-0.1000	-0.1000	-0.10	0.3	536
5156	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0324	3.26	-0.1000	-0.1000	0.28	0.1	387
5157	-0.1000	-0.10	9.16	0.00	-0.1000	0.0527	4.25	-0.1000	-0.1000	0.33	0.2	556
5158	-0.1000	0.46	5.02	2.00	-0.1000	-0.1000	6.61	-0.1000	-0.1000	-0.10	42.3	981
5159	-0.1000	0.23	-0.10	0.00	-0.1000	-0.1000	4.25	-0.1000	-0.1000	-0.10	10.6	3,590
5160	0.0878	0.87	15.93	0.00	0.0213	0.1121	4.73	0.7451	-0.1000	-0.10	1.3	1,995
5163	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0973	3.28	-0.1000	-0.1000	-0.10	0.2	382
5164	-0.1000	-0.10	-0.10	0.00	0.0203	-0.1000	4.03	-0.1000	-0.1000	-0.10	0.3	412
5165	-0.1000	0.09	14.61	0.00	-0.1000	-0.1000	8.39	-0.1000	-0.1000	-0.10	0.3	782
5166	-0.1000	0.09	12.25	0.00	0.0390	-0.1000	6.07	-0.1000	-0.1000	-0.10	0.3	614
5167	-0.1000	0.10	5.90	0.00	-0.1000	0.2224	5.80	0.0284	-0.1000	0.23	0.5	559
5168	-0.1000	0.08	6.57	0.00	-0.1000	-0.1000	4.93	-0.1000	-0.1000	-0.10	0.3	542
5169	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.71	-0.1000	-0.1000	-0.10	0.1	486
5170	-0.1000	0.07	7.18	0.00	-0.1000	-0.1000	5.59	-0.1000	-0.1000	-0.10	0.2	574
5186	-0.1000	0.09	23.95	0.00	0.0244	-0.1000	7.25	-0.1000	-0.1000	-0.10	0.5	862
5187	-0.1000	-0.10	6.05	0.00	-0.1000	-0.1000	3.62	-0.1000	-0.1000	0.08	0.2	442
5188	-0.1000	-0.10	10.46	0.00	-0.1000	-0.1000	3.28	-0.1000	-0.1000	-0.10	0.3	416
5189	-0.1000	-0.10	15.33	0.00	-0.1000	0.0210	3.62	-0.1000	-0.1000	-0.10	0.4	514
5190	-0.1000	-0.10	5.71	0.00	-0.1000	0.0618	4.77	-0.1000	-0.1000	-0.10	0.1	635
5191	-0.1000	-0.10	13.72	0.00	-0.1000	-0.1000	5.96	-0.1000	-0.1000	-0.10	0.2	598
5192	-0.1000	0.08	15.44	0.00	-0.1000	0.0409	3.18	-0.1000	-0.1000	0.05	0.4	523
5194	-0.1000	0.46	28.29	0.00	0.0263	-0.1000	7.76	0.0307	-0.1000	0.06	2.1	2,090
5195	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0405	3.11	-0.1000	-0.1000	-0.10	0.2	388
5278	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	5.28	-0.1000	-0.1000	-0.10	0.1	339
5279	-0.1000	-0.10	4.53	0.00	-0.1000	-0.1000	2.02	-0.1000	-0.1000	-0.10	0.1	542
5301	-0.1000	0.12	8.14	0.00	-0.1000	-0.1000	4.01	-0.1000	-0.1000	-0.10	0.2	1,235
5452	-0.1000	0.07	23.77	0.00	-0.1000	0.0573	5.37	-0.1000	-0.1000	-0.10	0.2	861
5453	-0.1000	0.09	7.92	0.00	0.0211	-0.1000	7.42	-0.1000	-0.1000	0.08	0.4	840
5454	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0304	2.89	-0.1000	-0.1000	-0.10	0.3	306
5455	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	5.46	-0.1000	-0.1000	0.06	0.2	510
5456	-0.1000	0.07	88.73	0.00	-0.1000	-0.1000	4.78	-0.1000	-0.1000	-0.10	16.2	1,000
5457	-0.1000	0.59	48.76	0.00	-0.1000	-0.1000	9.16	-0.1000	-0.1000	0.08	1.3	1,628
5458	-0.1000	0.08	-0.10	0.00	-0.1000	0.1205	3.26	-0.1000	-0.1000	-0.10	0.3	416

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

DUCHESNE COUNTY
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5001	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.69	-0.1000	235	-0.1000	-0.10
5002	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.32	-0.1000	242	-0.1000	-0.10
5003	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.16	-0.1000	267	-0.1000	-0.10
5004	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.50	-0.1000	216	-0.1000	-0.10
5005	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.36	-0.1000	203	-0.1000	-0.10
5006	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.61	-0.1000	247	-0.1000	-0.10
5007	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	18.08	-0.1000	290	-0.1000	0.16
5008	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.99	-0.1000	224	-0.1000	-0.10
5009	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.67	-0.1000	245	-0.1000	-0.10
5010	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	294.01	-0.1000	884	-0.1000	-0.10
5011	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	332.87	-0.1000	1,117	-0.1000	-0.10
5012	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.40	-0.1000	247	-0.1000	-0.10
5013	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	278.05	-0.1000	1,072	-0.1000	0.40
5014	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	28.14	-0.1000	422	-0.1000	-0.10
5015	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	13.16	-0.1000	221	-0.1000	-0.10
5016	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.70	-0.1000	261	-0.1000	-0.10
5017	-0.1000	-0.1000	0.26	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	41.39	-0.1000	588	-0.1000	0.12
5018	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	27.00	-0.1000	342	-0.1000	-0.10
5019	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.98	-0.1000	228	-0.1000	-0.10
5020	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.75	-0.1000	219	-0.1000	-0.10
5021	-0.1000	-0.1000	0.25	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	105.36	-0.1000	1,088	-0.1000	0.26
5023	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	21.80	-0.1000	369	-0.1000	-0.10
5025	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	22.31	-0.1000	225	-0.1000	-0.10
5028	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	24.95	-0.1000	241	-0.1000	-0.10
5029	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	31.10	-0.1000	554	-0.1000	-0.10
5030	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	18.78	-0.1000	217	-0.1000	-0.10
5031	0.0967	-0.1000	0.29	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	41.70	-0.1000	410	-0.1000	-0.10
5032	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.40	-0.1000	305	-0.1000	-0.10
5033	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	29.70	-0.1000	352	-0.1000	-0.10
5034	-0.1000	-0.1000	0.31	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	36.91	-0.1000	512	0.0190	-0.10
5035	-0.1000	-0.1000	0.19	-0.1000	-0.1000	-0.1000	0.0108	-0.1000	-0.1000	236.76	-0.1000	1,069	-0.1000	-0.10
5036	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	36.12	-0.1000	363	-0.1000	-0.10
5037	-0.1000	0.0153	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.70	-0.1000	379	0.0616	-0.10
5040	-0.1000	0.0115	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.91	-0.1000	488	0.0236	-0.10
5041	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.66	-0.1000	413	0.0364	-0.10
5042	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.65	-0.1000	436	0.0228	0.11
5085	-0.1000	-0.1000	0.35	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	48.11	-0.1000	456	-0.1000	-0.10
5086	-0.1000	-0.1000	0.55	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	430.74	-0.1000	1,224	-0.1000	32.59
5087	-0.1000	-0.1000	0.19	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	186.55	-0.1000	976	-0.1000	-0.10
5088	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	0.0398	-0.1000	-0.1000	118.50	-0.1000	818	-0.1000	-0.10
5089	-0.1000	-0.1000	0.47	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	188.52	-0.1000	872	-0.1000	-0.10
5090	-0.1000	-0.1000	1.45	-0.1000	-0.1000	-0.1000	0.0159	-0.1000	-0.1000	59.70	-0.1000	904	-0.1000	-0.10
5091	-0.1000	-0.1000	1.52	-0.1000	-0.1000	-0.1000	0.0124	-0.1000	-0.1000	77.59	-0.1000	1,105	-0.1000	0.14
5092	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	39.41	-0.1000	491	-0.1000	-0.10
5093	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	41.37	-0.1000	483	-0.1000	-0.10
5094	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	40.85	-0.1000	469	-0.1000	-0.10
5095	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	51.32	-0.1000	872	-0.1000	-0.10
5096	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	108.81	-0.1000	332	-0.1000	0.09
5097	-0.1000	-0.1000	0.39	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	407.12	-0.1000	1,434	-0.1000	0.06
5098	-0.1000	-0.1000	0.97	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	47.25	-0.1000	622	-0.1000	-0.10
5099	-0.1000	-0.1000	0.43	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.61	-0.1000	353	-0.1000	-0.10
5100	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	171.92	-0.1000	959	-0.1000	0.04
5101	-0.1000	-0.1000	0.22	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	53.31	-0.1000	616	-0.1000	-0.10
5102	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	57.78	-0.1000	572	-0.1000	-0.10
5103	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	20.77	-0.1000	401	-0.1000	-0.10

DUCHESNE COUNTY
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5104	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	21.16	-0.1000	398	-0.1000	0.26
5105	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.43	-0.1000	337	-0.1000	-0.10
5106	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.09	-0.1000	296	-0.1000	-0.10
5110	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.63	-0.1000	465	0.0141	-0.10
5111	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.89	-0.1000	391	0.0323	-0.10
5112	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.17	-0.1000	453	0.0274	-0.10
5114	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	24.35	-0.1000	270	-0.1000	0.18
5115	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	23.14	-0.1000	284	-0.1000	-0.10
5116	0.1794	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	26.85	-0.1000	232	0.0107	-0.10
5117	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	13.05	-0.1000	196	-0.1000	-0.10
5118	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	65.21	-0.1000	382	-0.1000	-0.10
5119	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.60	-0.1000	245	-0.1000	-0.10
5120	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.11	-0.1000	220	-0.1000	0.25
5121	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.78	-0.1000	269	-0.1000	-0.10
5122	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	17.26	-0.1000	231	-0.1000	-0.10
5123	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.12	-0.1000	229	-0.1000	-0.10
5124	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.22	-0.1000	364	-0.1000	0.06
5125	-0.1000	-0.1000	1.07	-0.1000	-0.1000	-0.1000	0.0196	-0.1000	-0.1000	37.50	-0.1000	1,066	-0.1000	-0.10
5126	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	16.85	-0.1000	233	-0.1000	0.05
5151	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	18.35	-0.1000	281	-0.1000	-0.10
5152	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.20	-0.1000	267	-0.1000	-0.10
5153	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	29.79	-0.1000	366	-0.1000	0.46
5154	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.88	-0.1000	271	-0.1000	-0.10
5155	0.0571	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.60	-0.1000	322	-0.1000	-0.10
5156	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.32	-0.1000	232	-0.1000	0.28
5157	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	26.39	-0.1000	334	-0.1000	0.33
5158	-0.1000	-0.1000	0.46	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	48.52	-0.1000	589	-0.1000	-0.10
5159	-0.1000	-0.1000	0.23	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	116.56	-0.1000	2,154	-0.1000	-0.10
5160	0.0878	-0.1000	0.87	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	312.07	-0.1000	1,197	-0.1000	-0.10
5163	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.85	-0.1000	229	-0.1000	-0.10
5164	-0.1000	0.0147	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.32	-0.1000	247	0.0234	-0.10
5165	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.15	-0.1000	469	0.0288	-0.10
5166	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.27	-0.1000	368	-0.1000	-0.10
5167	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.11	-0.1000	335	-0.1000	0.23
5168	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.85	-0.1000	325	-0.1000	-0.10
5169	-0.1000	0.0104	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.18	-0.1000	292	-0.1000	-0.10
5170	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.25	-0.1000	344	0.0161	-0.10
5186	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	29.47	-0.1000	517	-0.1000	-0.10
5187	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.72	-0.1000	265	-0.1000	0.08
5188	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.31	-0.1000	250	-0.1000	-0.10
5189	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	24.25	-0.1000	308	-0.1000	-0.10
5190	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.66	-0.1000	381	-0.1000	-0.10
5191	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	18.60	-0.1000	359	-0.1000	-0.10
5192	-0.1000	0.0101	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	31.38	-0.1000	314	-0.1000	0.05
5194	-0.1000	-0.1000	0.46	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	393.46	-0.1000	1,254	-0.1000	0.06
5195	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	14.11	-0.1000	233	-0.1000	-0.10
5278	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.39	-0.1000	203	-0.1000	-0.10
5279	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.67	-0.1000	325	-0.1000	-0.10
5301	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	186.99	-0.1000	741	-0.1000	-0.10
5452	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	60.82	-0.1000	517	-0.1000	-0.10
5453	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	27.42	-0.1000	504	-0.1000	0.08
5454	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.97	-0.1000	184	-0.1000	-0.10
5455	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.33	-0.1000	306	0.0184	0.06
5456	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	41.41	-0.1000	600	-0.1000	-0.10
5457	-0.1000	-0.1000	0.59	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	166.45	-0.1000	977	0.0740	0.08
5458	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	1.2587	-0.1000	-0.1000	12.35	-0.1000	250	-0.1000	-0.10

Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

DUCHESNE COUNTY
SOIL CONSERVATION DISTRICT

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5001	-0.1000	0.0533	-0.1000	-0.1000	-0.1000	0.0895	-0.1000	-0.1	-0.1000	12.69	-0.1000	235	-0.10	7.94	0	0	3.9
5002	-0.1000	0.0585	-0.1000	-0.1000	-0.1000	0.0983	-0.1000	-0.1	-0.1000	12.32	-0.1000	242	-0.10	7.59	0	0	4.0
5003	-0.1000	0.0601	-0.1000	-0.1000	-0.1000	0.1195	-0.1000	-0.1	-0.1000	11.16	-0.1000	267	-0.10	7.73	0	0	4.2
5004	-0.1000	0.0460	-0.1000	-0.1000	-0.1000	0.0950	-0.1000	-0.1	-0.1000	14.50	-0.1000	216	-0.10	7.84	0	0	3.8
5005	-0.1000	0.0480	-0.1000	-0.1000	-0.1000	0.0974	-0.1000	-0.1	-0.1000	16.36	-0.1000	203	-0.10	7.88	1	0	3.7
5006	-0.1000	0.0584	-0.1000	-0.1000	-0.1000	0.0442	0.0275	-0.1	-0.1000	12.61	-0.1000	247	-0.10	7.71	0	0	4.2
5007	-0.1000	0.0582	-0.1000	-0.1000	0.0396	0.0860	-0.1000	-0.1	-0.1000	18.08	-0.1000	290	0.16	7.59	0	0	4.7
5008	-0.1000	0.0433	-0.1000	-0.1000	-0.1000	0.0818	0.0367	-0.1	-0.1000	19.99	-0.1000	224	-0.10	7.93	0	0	3.9
5009	-0.1000	0.0286	-0.1000	-0.1000	-0.1000	0.1505	0.0219	-0.1	-0.1000	25.67	-0.1000	245	-0.10	8.41	0	0	1.1
5010	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0310	0.1340	-0.1	-0.1000	294.01	-0.1000	884	-0.10	7.75	0	0	22.3
5011	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0891	0.0770	-0.1	-0.1000	332.87	-0.1000	1,117	-0.10	7.66	0	0	19.9
5012	-0.1000	0.0342	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	25.40	-0.1000	247	-0.10	8.00	0	0	3.4
5013	-0.1000	0.0279	-0.1000	-0.1000	-0.1000	0.0725	0.1000	-0.1	-0.1000	278.05	-0.1000	1,072	0.40	7.93	0	0	11.8
5014	-0.1000	0.0202	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	28.14	-0.1000	422	-0.10	9.02	0	0	0.3
5015	-0.1000	0.0540	-0.1000	-0.1000	-0.1000	0.0620	0.0354	-0.1	-0.1000	13.16	-0.1000	221	-0.10	8.01	0	0	4.2
5016	-0.1000	0.0491	-0.1000	-0.1000	-0.1000	0.0576	-0.1000	-0.1	-0.1000	16.70	-0.1000	261	-0.10	8.25	0	0	1.1
5017	-0.1000	0.0494	-0.1000	-0.1000	0.1147	-0.1000	-0.1000	-0.1	-0.1000	41.39	-0.1000	588	0.12	7.50	0	0	9.3
5018	-0.1000	0.0469	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	27.00	-0.1000	342	-0.10	7.82	0	0	4.8
5019	-0.1000	0.0406	-0.1000	-0.1000	-0.1000	0.0538	-0.1000	-0.1	-0.1000	16.98	-0.1000	228	-0.10	7.86	0	0	3.4
5020	-0.1000	0.0421	-0.1000	-0.1000	-0.1000	0.0476	-0.1000	-0.1	-0.1000	16.75	-0.1000	219	-0.10	7.86	0	0	3.2
5021	-0.1000	0.0597	-0.1000	-0.1000	-0.1000	0.0916	-0.1000	4.9	-0.1000	105.36	-0.1000	1,088	0.26	7.31	1	0	12.6
5023	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0536	-0.1000	-0.1	-0.1000	21.80	-0.1000	369	-0.10	9.26	0	0	0.3
5025	-0.1000	0.0380	-0.1000	-0.1000	-0.1000	0.1847	-0.1000	-0.1	-0.1000	22.31	-0.1000	225	-0.10	8.17	0	0	2.3
5028	-0.1000	0.0353	-0.1000	-0.1000	-0.1000	0.0507	-0.1000	-0.1	-0.1000	24.95	-0.1000	241	-0.10	8.11	1	1	2.5
5029	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	31.10	-0.1000	554	-0.10	9.23	0	0	0.1
5030	-0.1000	0.0359	-0.1000	-0.1000	-0.1000	0.0637	-0.1000	1.3	-0.1000	18.78	-0.1000	217	-0.10	7.87	0	0	3.5
5031	-0.1000	0.1177	-0.1000	-0.1000	-0.1000	0.1136	-0.1000	1.3	-0.1000	41.70	-0.1000	410	-0.10	8.61	1	1	6.1
5032	-0.1000	0.0431	-0.1000	-0.1000	-0.1000	0.1776	0.0504	-0.1	-0.1000	11.40	-0.1000	305	-0.10	8.03	0	0	4.3
5033	-0.1000	0.0489	-0.1000	-0.1000	-0.1000	0.0367	-0.1000	1.3	-0.1000	29.70	-0.1000	352	-0.10	7.67	0	0	4.9
5034	-0.1000	0.0463	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.0	-0.1000	36.91	-0.1000	512	-0.10	7.61	0	0	6.8
5035	-0.1000	0.0265	-0.1000	-0.1000	-0.1000	0.0587	0.0604	-0.1	-0.1000	236.76	-0.1000	1,069	-0.10	7.72	0	0	13.8
5036	-0.1000	0.0460	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	36.12	-0.1000	363	-0.10	7.88	0	0	4.5
5037	0.0153	0.3369	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.3	-0.1000	6.70	-0.1000	379	-0.10	7.66	1	0	6.8
5040	0.0115	0.4811	-0.1000	-0.1000	0.0261	-0.1000	-0.1000	2.5	-0.1000	8.91	-0.1000	488	-0.10	7.66	1	0	8.2
5041	-0.1000	0.3609	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.0	-0.1000	6.66	-0.1000	413	-0.10	7.98	1	0	7.2
5042	-0.1000	0.2394	-0.1000	-0.1000	0.0238	-0.1000	-0.1000	1.3	-0.1000	12.65	-0.1000	436	0.11	7.76	1	1	8.2
5085	-0.1000	0.0244	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	48.11	-0.1000	456	-0.10	8.46	0	0	2.1
5086	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0727	0.0256	-0.1	-0.1000	430.74	-0.1000	1,224	32.59	7.48	0	0	26.7
5087	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	186.55	-0.1000	976	-0.10	7.82	0	0	13.9
5088	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	118.50	-0.1000	818	-0.10	7.66	0	0	12.4
5089	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	188.52	-0.1000	872	-0.10	8.20	0	0	5.8
5090	-0.1000	0.0533	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	59.70	-0.1000	904	-0.10	7.64	0	0	8.8
5091	-0.1000	0.1521	-0.1000	-0.1000	-0.1000	0.1074	-0.1000	-0.1	-0.1000	77.59	-0.1000	1,105	0.14	7.64	0	0	11.9
5092	-0.1000	0.0404	-0.1000	-0.1000	-0.1000	0.0432	-0.1000	-0.1	-0.1000	39.41	-0.1000	491	-0.10	8.07	1	0	7.7
5093	-0.1000	0.0392	-0.1000	-0.1000	-0.1000	0.0212	-0.1000	-0.1	-0.1000	41.37	-0.1000	483	-0.10	7.69	1	0	6.7
5094	-0.1000	0.0362	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	40.85	-0.1000	469	-0.10	7.68	0	0	6.7
5095	-0.1000	0.0604	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.4	-0.1000	51.32	-0.1000	872	-0.10	7.98	0	0	8.3
5096	-0.1000	0.3254	-0.1000	-0.1000	0.0215	0.1236	0.0408	6.2	-0.1000	108.81	-0.1000	332	0.09	7.51	0	0	24.1
5097	-0.1000	-0.1000	-0.1000	-0.1000	0.0303	0.0629	0.0205	-0.1	-0.1000	407.12	-0.1000	1,434	0.06	7.36	0	0	24.9
5098	-0.1000	0.0499	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	47.25	-0.1000	622	-0.10	9.63	0	0	0.1
5099	-0.1000	0.0363	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	19.61	-0.1000	353	-0.10	9.40	0	0	0.1
5100	-0.1000	0.0824	-0.1000	-0.1000	-0.1000	0.0308	-0.1000	-0.1	-0.1000	171.92	-0.1000	959	0.04	7.19	1	0	14.2
5101	-0.1000	0.1811	-0.1000	-0.1000	0.0218	0.0683	3.5382	-0.1	-0.1000	53.31	-0.1000	616	-0.10	7.70	0	0	9.9
5102	-0.1000	0.0678	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	57.78	-0.1000	572	-0.10	7.58	1	0	9.2
5103	-0.1000	0.1074	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	20.77	-0.1000	401	-0.10	7.66	1	0	7.3

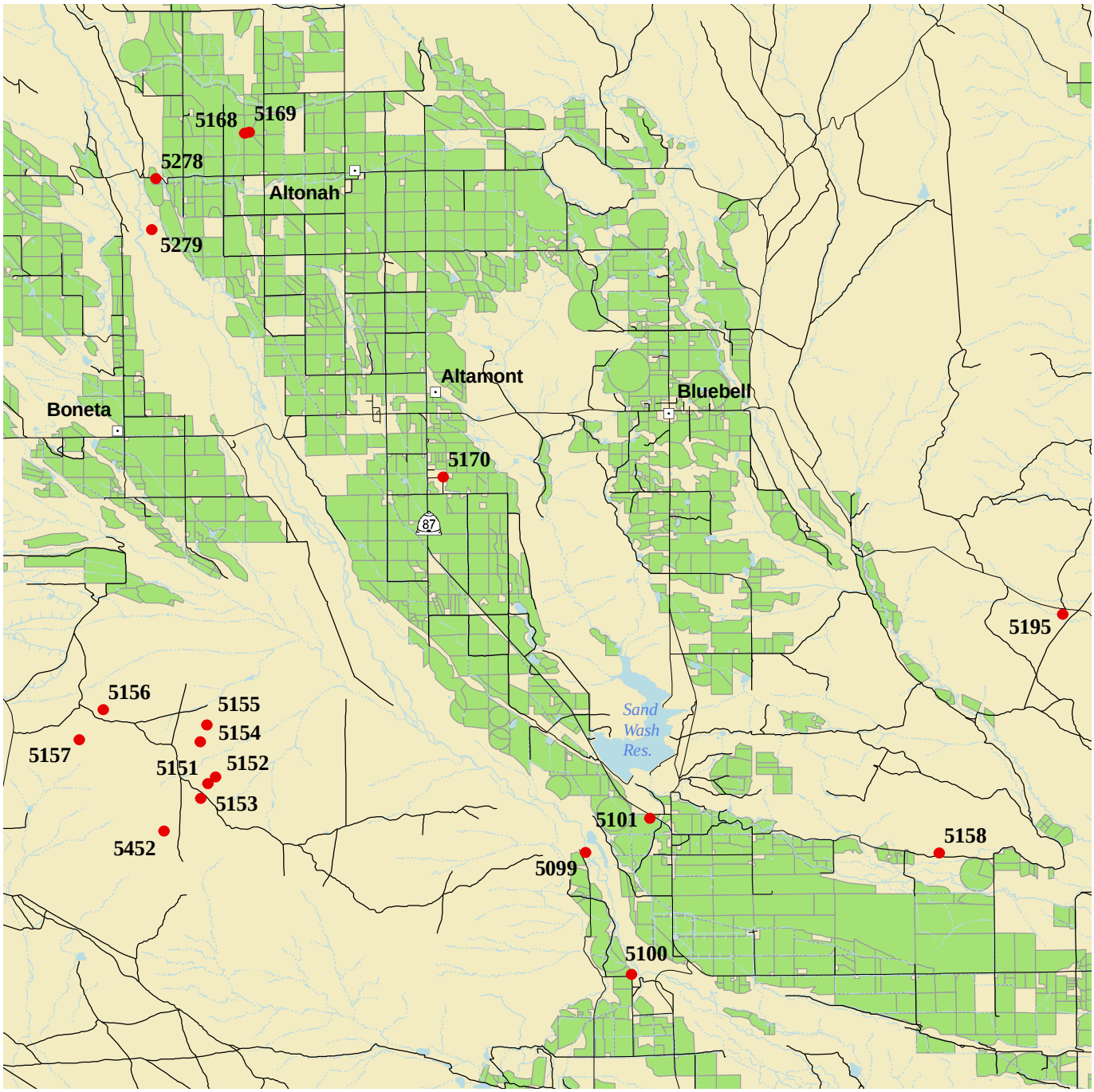
DUCHESNE COUNTY
SOIL CONSERVATION DISTRICT

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5104	-0.1000	0.1039	-0.1000	-0.1000	0.0203	-0.1000	-0.1000	1.0	-0.1000	21.16	-0.1000	398	0.26	7.62	1	0	7.1
5105	-0.1000	0.0574	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	9.43	-0.1000	337	-0.10	9.60	0	0	0.1
5106	-0.1000	0.0336	-0.1000	-0.1000	-0.1000	0.0673	-0.1000	-0.1	-0.1000	19.09	-0.1000	296	-0.10	9.41	0	0	0.2
5110	-0.1000	0.4813	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	4.63	-0.1000	465	-0.10	7.64	1	0	10.6
5111	-0.1000	0.2864	-0.1000	-0.1000	-0.1000	0.0364	-0.1000	1.0	-0.1000	3.89	-0.1000	391	-0.10	7.83	0	0	8.9
5112	-0.1000	0.4275	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	5.17	-0.1000	453	-0.10	7.77	1	1	11.0
5114	-0.1000	0.0353	-0.1000	-0.1000	-0.1000	0.0498	-0.1000	-0.1	-0.1000	24.35	-0.1000	270	0.18	8.65	0	0	1.0
5115	-0.1000	0.0273	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	23.14	-0.1000	284	-0.10	8.78	0	0	0.6
5116	-0.1000	0.1040	-0.1000	-0.1000	-0.1000	0.1466	-0.1000	-0.1	-0.1000	26.85	-0.1000	232	-0.10	8.40	1	1	4.3
5117	-0.1000	0.0522	-0.1000	-0.1000	-0.1000	0.4446	0.0253	-0.1	-0.1000	13.05	-0.1000	196	-0.10	8.01	0	0	3.6
5118	-0.1000	0.0528	-0.1000	-0.1000	-0.1000	0.0618	0.0324	-0.1	-0.1000	65.21	-0.1000	382	-0.10	8.02	0	0	6.8
5119	-0.1000	0.0642	-0.1000	-0.1000	-0.1000	0.3388	-0.1000	-0.1	-0.1000	11.60	-0.1000	245	-0.10	7.88	0	0	4.4
5120	-0.1000	0.0514	-0.1000	-0.1000	0.0369	0.2582	-0.1000	-0.1	-0.1000	16.11	-0.1000	220	0.25	8.05	0	0	3.3
5121	-0.1000	0.0376	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	15.78	-0.1000	269	-0.10	8.92	0	0	0.3
5122	-0.1000	0.0497	-0.1000	-0.1000	-0.1000	0.1282	-0.1000	-0.1	-0.1000	17.26	-0.1000	231	-0.10	7.94	0	0	4.3
5123	-0.1000	0.2220	-0.1000	-0.1000	-0.1000	0.0637	-0.1000	-0.1	-0.1000	4.12	-0.1000	229	-0.10	7.76	0	0	4.7
5124	-0.1000	0.3968	-0.1000	-0.1000	0.0215	-0.1000	-0.1000	4.3	-0.1000	5.22	-0.1000	364	0.06	7.72	0	0	6.1
5125	-0.1000	0.0382	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	37.50	-0.1000	1,066	-0.10	8.90	0	0	0.3
5126	-0.1000	0.0477	-0.1000	-0.1000	-0.1000	0.2627	-0.1000	-0.1	-0.1000	16.85	-0.1000	233	0.05	7.95	0	0	3.5
5151	-0.1000	0.0402	-0.1000	-0.1000	-0.1000	0.0253	-0.1000	-0.1	-0.1000	18.35	-0.1000	281	-0.10	7.92	0	0	4.7
5152	-0.1000	0.0505	-0.1000	-0.1000	-0.1000	0.0510	-0.1000	-0.1	-0.1000	14.20	-0.1000	267	-0.10	7.89	0	0	4.3
5153	-0.1000	0.0294	-0.1000	-0.1000	-0.1000	0.0948	-0.1000	-0.1	-0.1000	29.79	-0.1000	366	0.46	7.59	0	0	6.2
5154	-0.1000	0.0513	-0.1000	-0.1000	-0.1000	0.0393	-0.1000	-0.1	-0.1000	14.88	-0.1000	271	-0.10	7.78	0	0	4.2
5155	-0.1000	0.0550	-0.1000	-0.1000	-0.1000	0.0571	-0.1000	-0.1	-0.1000	14.60	-0.1000	322	-0.10	7.70	0	0	4.9
5156	-0.1000	0.0600	-0.1000	-0.1000	-0.1000	0.0324	-0.1000	-0.1	-0.1000	12.32	-0.1000	232	0.28	7.95	0	0	3.8
5157	-0.1000	0.0326	-0.1000	-0.1000	-0.1000	0.0527	-0.1000	-0.1	-0.1000	26.39	-0.1000	334	0.33	7.77	0	0	5.6
5158	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	48.52	-0.1000	589	-0.10	9.40	0	0	0.1
5159	-0.1000	0.1100	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	116.56	-0.1000	2,154	-0.10	7.74	0	0	12.7
5160	-0.1000	0.0966	-0.1000	-0.1000	0.0213	0.1121	0.7451	-0.1	-0.1000	312.07	-0.1000	1,197	-0.10	7.76	1	1	20.3
5163	-0.1000	0.0584	-0.1000	-0.1000	-0.1000	0.0973	-0.1000	-0.1	-0.1000	12.85	-0.1000	229	-0.10	8.09	0	0	3.7
5164	0.0147	0.2552	-0.1000	-0.1000	0.0203	-0.1000	-0.1000	1.0	-0.1000	3.32	-0.1000	247	-0.10	7.97	0	0	4.0
5165	-0.1000	0.2692	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	5.15	-0.1000	469	-0.10	7.81	0	0	8.0
5166	-0.1000	0.2807	-0.1000	-0.1000	0.0390	-0.1000	-0.1000	-0.1	-0.1000	7.27	-0.1000	368	-0.10	7.51	1	1	6.5
5167	-0.1000	0.1992	-0.1000	-0.1000	-0.1000	0.2224	0.0284	-0.1	-0.1000	4.11	-0.1000	335	0.23	7.64	1	0	5.6
5168	-0.1000	0.1053	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.0	-0.1000	6.85	-0.1000	325	-0.10	7.88	0	0	5.6
5169	0.0104	0.1533	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	5.18	-0.1000	292	-0.10	7.77	1	0	5.1
5170	-0.1000	0.1537	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	10.25	-0.1000	344	-0.10	7.70	1	0	6.1
5186	-0.1000	0.1059	-0.1000	-0.1000	0.0244	-0.1000	-0.1000	-0.1	-0.1000	29.47	-0.1000	517	-0.10	7.53	0	0	8.7
5187	-0.1000	0.0807	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	15.72	-0.1000	265	0.08	7.60	0	0	4.4
5188	-0.1000	0.1127	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.1	-0.1000	11.31	-0.1000	250	-0.10	7.95	0	0	3.9
5189	-0.1000	0.0641	-0.1000	-0.1000	-0.1000	0.0210	-0.1000	-0.1	-0.1000	24.25	-0.1000	308	-0.10	7.77	0	0	4.8
5190	-0.1000	0.1430	-0.1000	-0.1000	-0.1000	0.0618	-0.1000	2.6	-0.1000	12.66	-0.1000	381	-0.10	7.67	0	0	6.4
5191	-0.1000	0.2320	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.3	-0.1000	18.60	-0.1000	359	-0.10	7.63	1	0	5.9
5192	0.0101	0.1127	-0.1000	-0.1000	-0.1000	0.0409	-0.1000	1.1	-0.1000	31.38	-0.1000	314	0.05	7.75	1	0	4.8
5194	-0.1000	-0.1000	-0.1000	-0.1000	0.0263	-0.1000	0.0307	-0.1	-0.1000	393.46	-0.1000	1,254	0.06	7.56	0	0	21.7
5195	-0.1000	0.0475	-0.1000	-0.1000	-0.1000	0.0405	-0.1000	-0.1	-0.1000	14.11	-0.1000	233	-0.10	8.02	0	0	3.4
5278	-0.1000	0.1410	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.7	-0.1000	3.39	-0.1000	203	-0.10	7.74	1	0	3.7
5279	-0.1000	0.2875	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	3.67	-0.1000	325	-0.10	7.48	1	0	6.3
5301	-0.1000	0.1014	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	186.99	-0.1000	741	-0.10	7.71	0	0	14.7
5452	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0573	-0.1000	-0.1	-0.1000	60.82	-0.1000	517	-0.10	7.88	0	0	8.7
5453	-0.1000	0.1591	-0.1000	-0.1000	0.0211	-0.1000	-0.1000	2.8	-0.1000	27.42	-0.1000	504	0.08	7.81	0	0	8.3
5454	-0.1000	0.3389	-0.1000	-0.1000	-0.1000	0.0304	-0.1000	-0.1	-0.1000	2.97	-0.1000	184	-0.10	8.47	1	0	2.9
5455	-0.1000	0.3411	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.3	-0.1000	3.33	-0.1000	306	0.06	7.78	1	0	5.2
5456	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	41.41	-0.1000	600	-0.10	9.36	1	0	0.5
5457	-0.1000	0.0423	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.2	-0.1000	166.45	-0.1000	977	0.08	7.61	1	0	17.2
5458	-0.1000	0.0492	-0.1000	-0.1000	-0.1000	0.1205	-0.1000	-0.1	-0.1000	12.35	-0.1000	250	-0.10	8.04	1	0	3.7

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

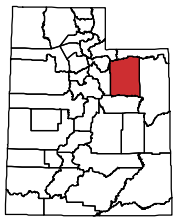
Map 31. Duchesne County District - Altamont Area



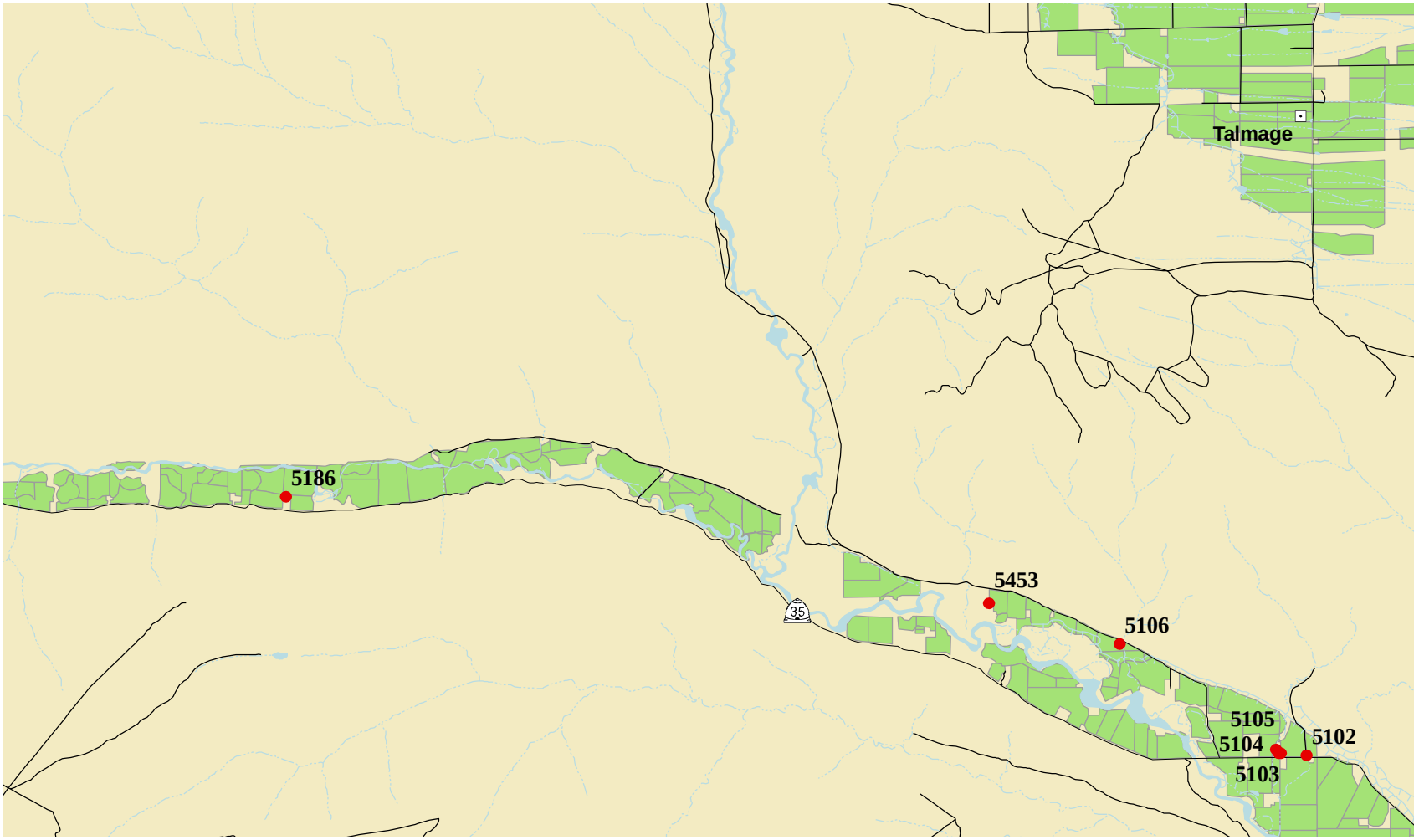
Map Scale 1:120,000 (1 inch = 1.9 miles)

- Sample location
- Major road
- Other road
- Stream
- Ditch or canal
- Aqueduct
- Intermittent stream
- Water body
- Irrigated cropland
- SCD boundary

District Location



Map 32. Duchesne County District - Talmage Area

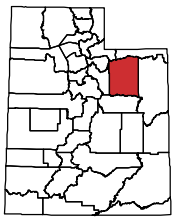


Map Scale 1:70,000 (1 inch = 1.1 miles)

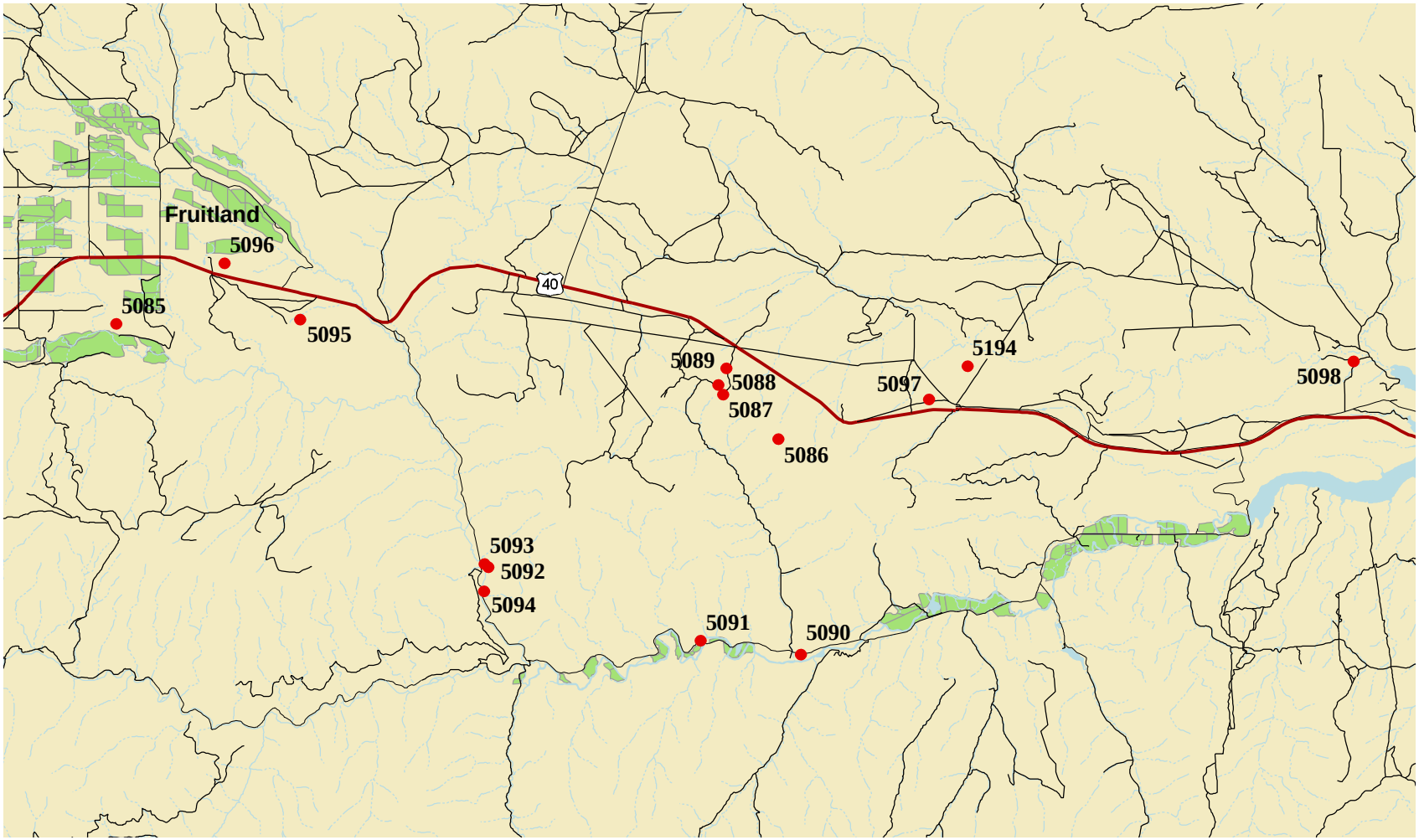
N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Map 33. Duchesne County District - Fruitland Area

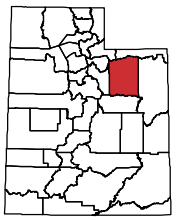


Map Scale 1:145,000 (1 inch = 2.3 miles)

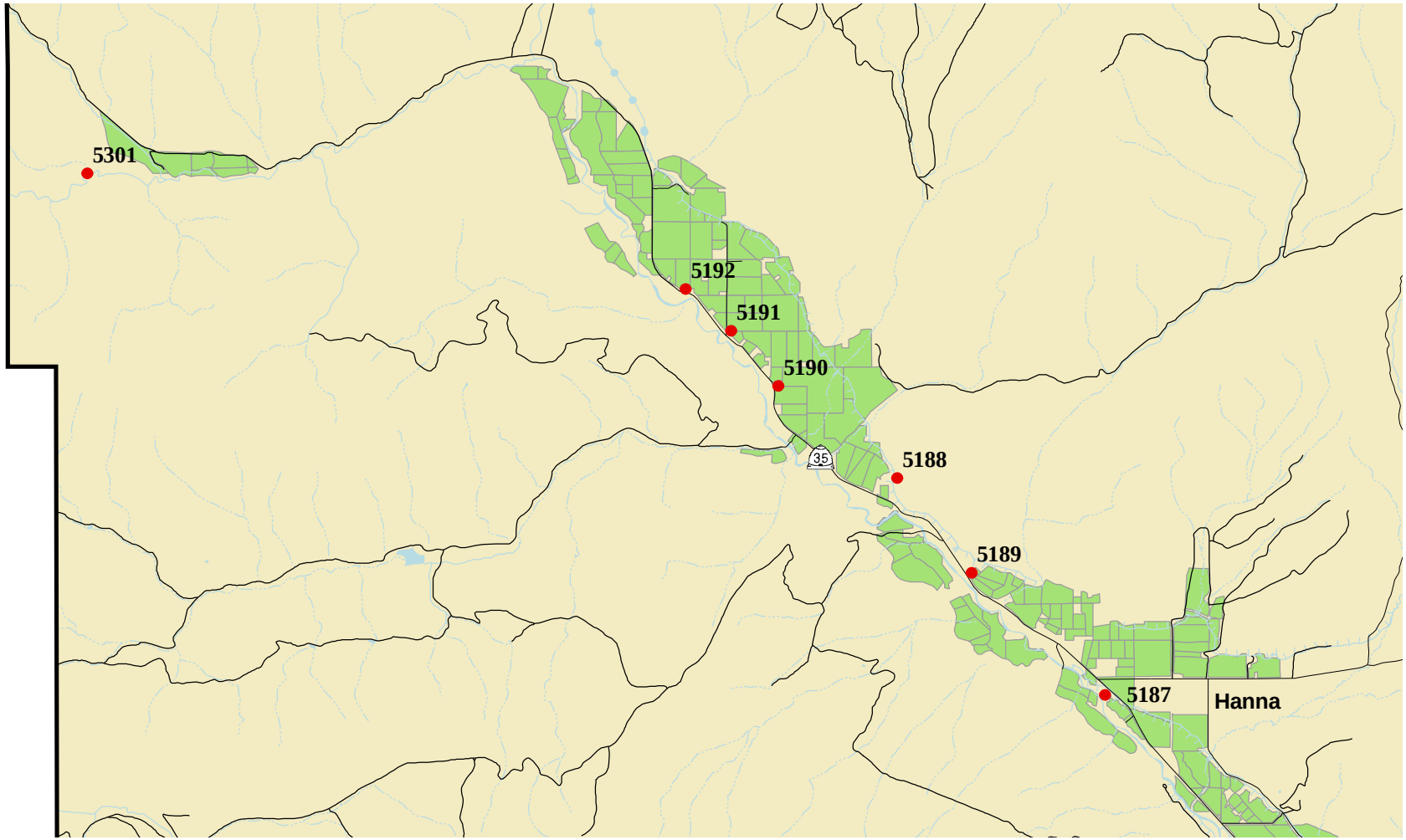
Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map 34. Duchesne County District - Hanna Area

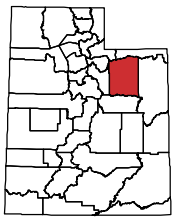


Map Scale 1:70,000 (1 inch = 1.1 miles)

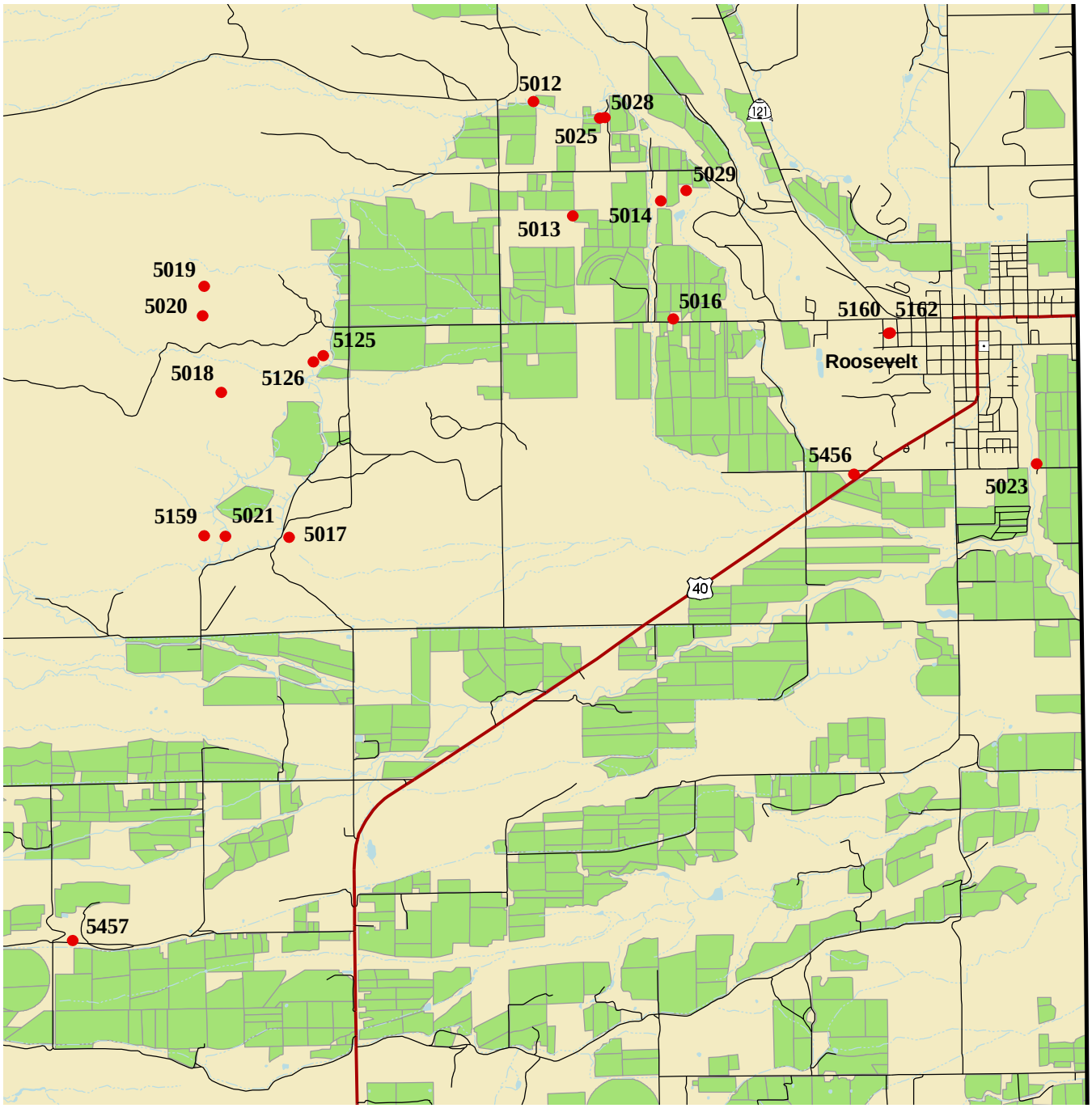
N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Map 35. Duchesne County District - Roosevelt Area

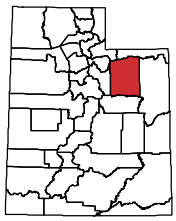


Map Scale 1:65,000 (1 inch = 1.03 miles)

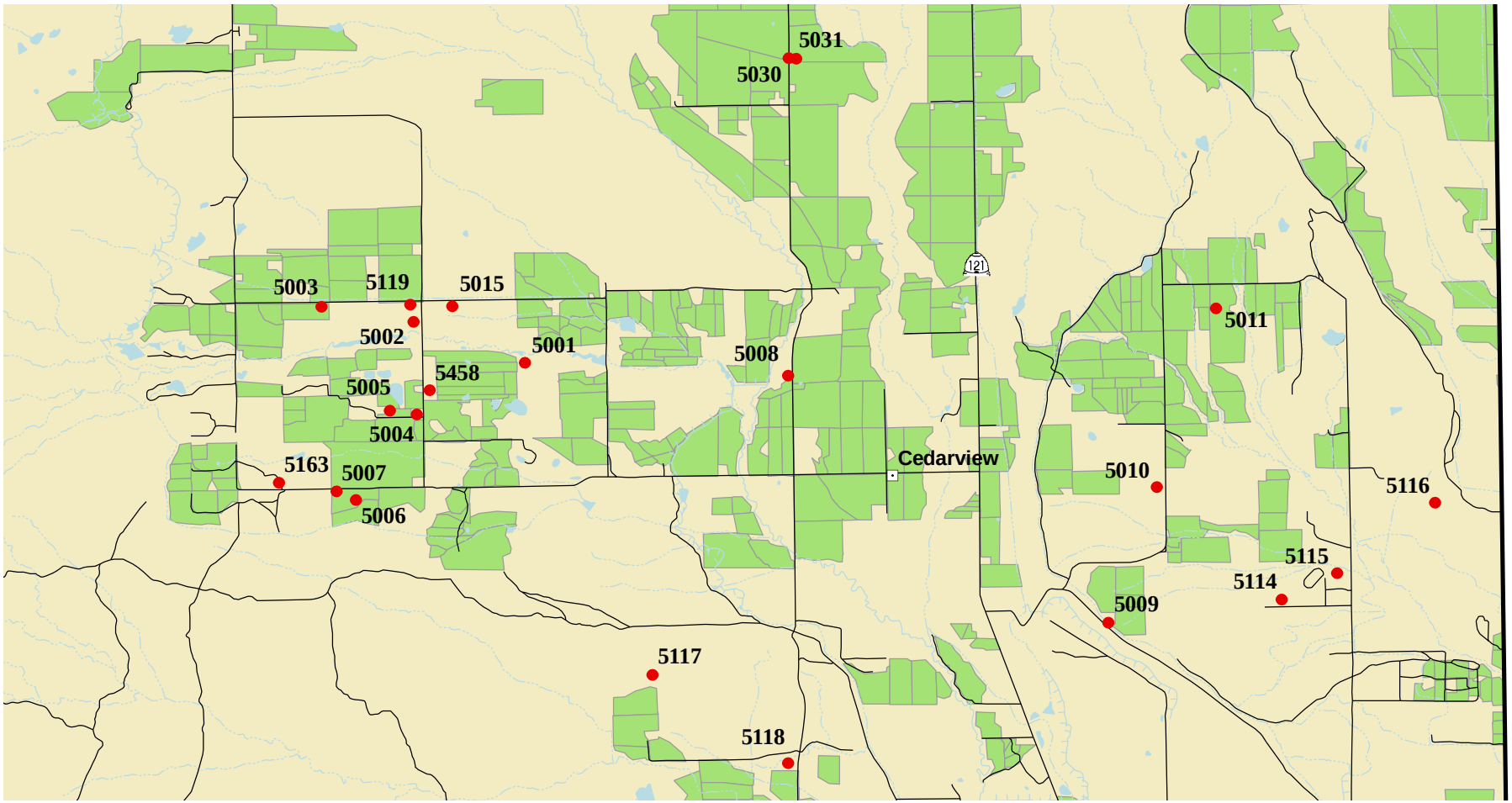
- Sample location
- Major road
- Other road
- Stream
- Ditch or canal
- Aqueduct
- Intermittent stream
- Water body
- Irrigated cropland
- SCD boundary

N

District Location



Map 36. Duchesne County District - Cedarview Area

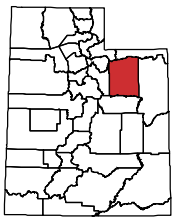


Map Scale 1:55,000 (1 inch = 0.87 miles)

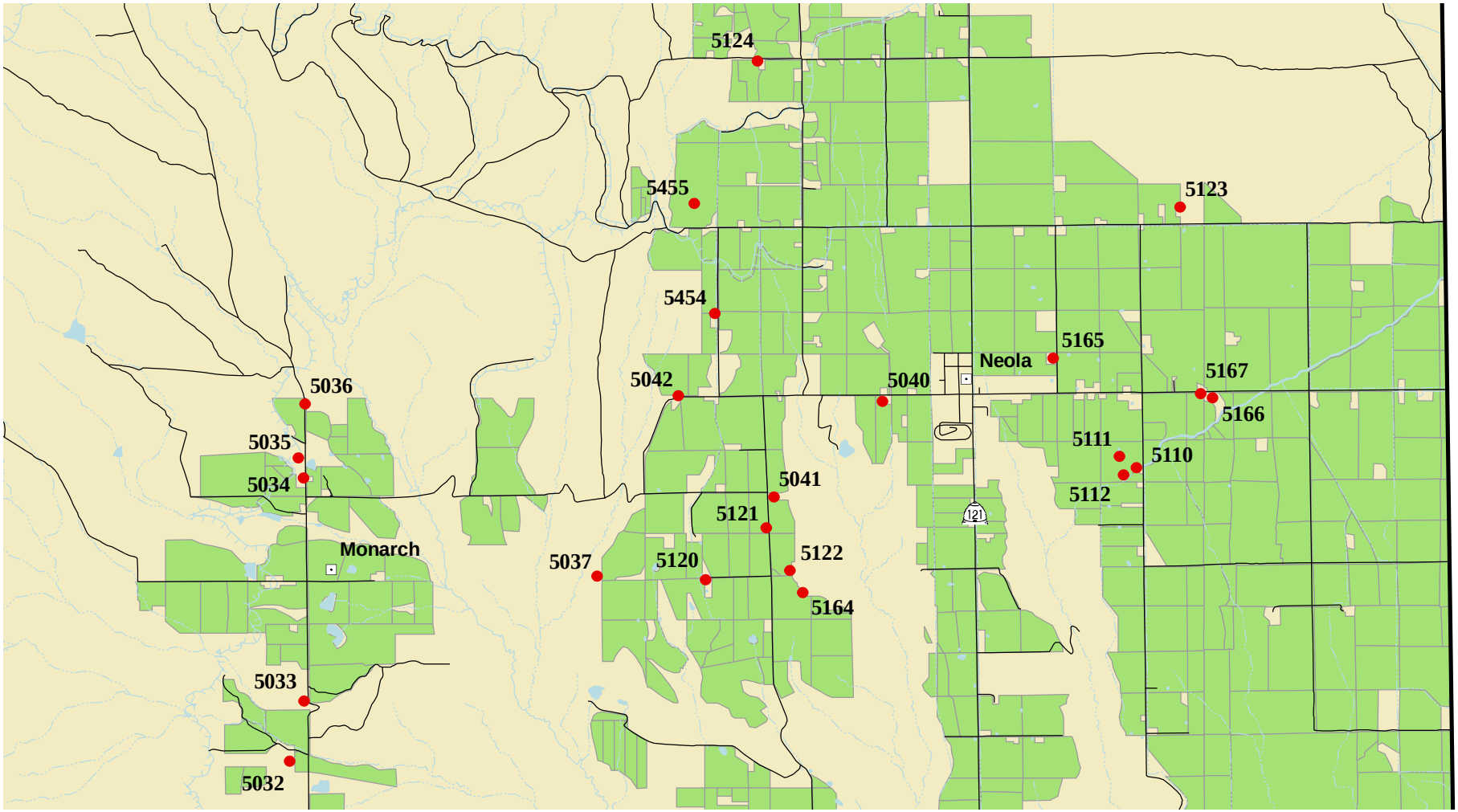
N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Map 37. Duchesne County District - Neola Area

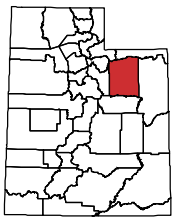


Map Scale 1:58,000 (1 inch = 0.92 miles)

N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Uintah County District

General:

Seventy-three (73) samples were collected in the Uintah County District. Sampled water temperatures range from 7.5°C to 21.5°C, with a mean of 13.2 °C. The pH for the district ranges from 5.87 to 9.60 with a mean of 7.81.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Samples 5024, 5044, 5047, 5054, 5055, 5056, 5057, 5058, 5060, 5061, 5174, 5178 through 5183, 5185, 5196, 5199, 5202, 5203, 5207, 5208, 5209, 5212, 5261 through 5264, 5266, 5270, 5271, 5272, 5273, 5274, and 5461 through 5467 exceeded the salinity standard of 750 µmhos/cm. None of the samples exceeded the severe salinity standard of 3,000 µmhos/cm.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Samples 5173, 5178, 5179, 5182 and 5199 exceeded the SAR standard of 3. Samples 5173, 5178, 5182, and 5199 also exceeded the severe damage standard of 9.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

Some specific elements can be toxic to plants. Sample 5461 has elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

Chlorine (Cl), found in the form of chloride (Cl^-), can damage sensitive plants at concentrations above 145 ppm, and concentrations exceeding 355 ppm can cause severe damage to almost all plants. Damage increases under sprinkler irrigation and is more severe in windy conditions. Samples 5178 and 5199 have elevated Cl. Sample 5199 also exceeds the severe level.

Manganese (Mn) above 0.2 ppm can injure plants and cause reduction in dry matter production. Excess manganese interferes with the plant's ability to use other nutrients such as calcium (Ca). Samples 5038, 5180, 5462, 5463, 5464, 5465, and 5467 have elevated manganese.

No elements were found in concentrations harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Samples 5044, 5056, 5178, 5182, 5183, 5199, 5208, 5209, 5210, 5212, and 5266 have elevated molybdenum.

Sulfate (SO_4) is shown on chemical analyses for sulfur (S). Sulfur as sulfate can cause water to be off flavored and produces diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Samples 5024, 5044, 5047, 5054, 5055, 5178, 5180, 5185, 5199, 5207, 5208, 5264, 5461, 5462, 5463, 5464, 5465, 5466, and 5467 have elevated sulfur at concentrations which exceed the livestock standard for sulfur. Samples 5024, 5054, and 5180 have extremely high levels of sulfur.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district tested slightly-hard to very hard, with grains per gallon (gpg) ranging from 0.6 to 37.4 with a mean of 9.5. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. No samples exceed the EPA aesthetic standard of 500 ppm above which the water may be off-flavored, but it is not a health problem until TDS exceeds 2,000 ppm. Samples 5024, 5044, 5047, 5054, 5055, 5057, 5058, 5060, 5174, 5178, 5179, 5180, 5181, 5182, 5185, 5196, 5199, 5202, 5203, 5207, 5208, 5209, 5212, 5261, 5262, 5263, 5264, 5266, 5270, 5271, 5272, 5273, and 5461 through 5467 exceeded the aesthetic drinking water standard of 500 ppm. None of the samples exceeded the 2,000 ppm health standard.

High iron (Fe) can cause discoloration of plumbing fixtures and promote the growth of iron bacteria, which stain anything they contact. This is an aesthetic issue, not a health concern. Samples 5174, 5180, 5184, and 5462 through 5467 have high iron.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Sample 5038, 5054, 5180, 5264, and 5462 through 5467 have high manganese concentration.

Sample 5057 exceeds the EPA nitrate (NO3) standard of 10 ppm nitrate expressed as nitrogen (NO3-N). NO3 is an important nutrient for plant growth. It is found in nitrogen fertilizers, manure, septic systems, and some minerals. NO3 is toxic to young infants (usually less than 6 months of age) and causes “blue baby syndrome.” NO3 can only be removed from water by reverse osmosis or distillation.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Samples 5024, 5044, 5047, 5054, 5055, 5058, 5178, 5179, 5180, 5181, 5185, 5199, 5202, 5203, 5206, 5207, 5208, 5209, 5261, 5262, 5263, 5264, 5270, 5271, 5272, and 5461 through 5467 have high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5039, 5045, 5060, 5178, 5179, 5183, 5184, 5196, 5200, 5207, 5208, 5212, 5261, 5262, 5265, 5266, 5270, 5271, 5272, 5273, 5274, 5276, and 5461 are contaminated with coliform bacteria. Samples 5184, 5200, and 5270 are also contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

UINTAH COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5024	-0.1000	451.50	2.67	0.1212	47.19	45.31	-0.10	7.56	13.0	1171
5038	-0.1000	72.16	1.46	-0.1000	27.68	17.27	-0.10	7.93	12.2	348
5039	-0.1000	88.14	1.12	-0.1000	29.65	14.33	-0.10	7.47	11.9	380
5044	-0.1000	209.51	2.96	-0.1000	71.38	20.72	-0.10	7.58	11.0	734
5045	-0.1000	74.13	0.54	-0.1000	18.64	7.20	-0.10	7.79	14.0	277
5046	-0.1000	68.50	0.60	-0.1000	17.80	7.87	-0.10	7.59	12.2	267
5047	-0.1000	327.36	4.23	-0.1000	58.98	21.01	-0.10	7.37	12.3	926
5048	-0.1000	73.31	0.46	-0.1000	17.68	5.82	-0.10	7.84	12.4	275
5049	-0.1000	65.46	0.64	-0.1000	19.52	4.74	-0.10	7.63	11.4	260
5050	-0.1000	87.06	0.66	-0.1000	19.64	6.57	-0.10	7.57	11.7	321
5051	-0.1000	77.93	0.67	-0.1000	20.37	6.69	-0.10	7.56	12.6	293
5052	-0.1000	66.65	0.47	-0.1000	13.70	7.80	-0.10	7.56	11.1	248
5053	-0.1000	62.23	0.56	-0.1000	14.80	6.98	-0.10	7.56	10.8	240
5054	-0.1000	335.16	2.57	-0.1000	77.62	29.63	-0.10	7.42	13.0	929
5055	-0.1000	257.27	2.38	-0.1000	68.19	26.48	-0.10	7.72	10.5	823
5056	-0.1000	90.63	7.41	0.0597	33.55	42.38	-0.10	7.69	12.7	478
5057	-0.1000	78.96	4.43	-0.1000	65.19	42.89	-0.10	7.60	13.3	573
5058	-0.1000	106.35	9.85	-0.1000	41.00	128.33	-0.10	7.92	14.1	647
5059	-0.1000	105.82	2.22	-0.1000	50.48	21.94	-0.10	7.97	14.1	425
5060	-0.1000	119.98	1.05	0.0600	64.93	27.58	-0.10	7.84	13.8	516
5061	-0.1000	93.40	0.84	0.0549	51.88	24.98	-0.10	7.52	14.1	487
5062	-0.1000	45.94	0.76	-0.1000	31.32	19.88	-0.10	7.92	15.1	293
5173	-0.1000	5.91	2.32	0.1043	3.66	147.04	-0.10	8.61	14.6	404
5174	-0.1000	133.07	1.19	-0.1000	50.32	42.01	-0.10	7.05	14.4	633
5175	-0.1000	88.86	1.04	-0.1000	26.20	5.59	-0.10	7.50	14.7	375
5176	-0.1000	95.48	0.72	-0.1000	23.87	5.63	-0.10	7.48	11.2	386
5178	-0.1000	12.12	2.34	0.2014	3.10	461.23	-0.10	8.42	13.3	1152
5179	-0.1000	60.12	5.38	0.1197	28.54	227.14	-0.10	7.63	14.1	840
5180	-0.1000	508.16	9.77	0.2927	131.25	111.31	-0.10	5.87	11.4	1584
5181	-0.1000	105.59	1.04	-0.1000	51.11	28.26	-0.10	7.58	11.2	565
5182	-0.1000	8.59	37.75	0.1264	5.39	167.17	-0.10	10.27	15.1	587
5183	-0.1000	98.01	-0.10	-0.1000	40.32	15.11	-0.10	7.39	17.5	475
5184	-0.1000	54.76	1.62	-0.1000	16.33	14.81	-0.10	8.00	16.4	255
5185	-0.1000	186.75	0.69	0.0757	93.25	25.71	-0.10	7.50	12.5	864
5196	-0.1000	105.55	0.43	-0.1000	72.14	30.94	-0.10	7.64	21.5	626
5197	-0.1000	108.90	1.57	-0.1000	22.58	5.53	-0.10	7.63	13.9	416
5198	-0.1000	100.52	1.66	-0.1000	26.89	5.56	-0.10	7.69	12.8	416
5199	-0.1000	51.77	5.45	0.1986	21.18	598.34	-0.10	8.22	14.2	1656
5200	-0.1000	72.14	0.71	0.0595	38.73	8.92	-0.10	7.78	14.8	389
5201	-0.1000	72.85	0.80	-0.1000	44.57	13.22	-0.10	7.89	14.2	429
5202	-0.1000	143.97	1.29	0.0511	50.41	50.27	-0.10	7.59	14.3	720
5203	-0.1000	94.26	1.12	-0.1000	59.29	23.02	-0.10	7.76	14.1	554
5204	-0.1000	68.96	0.84	-0.1000	41.68	17.54	-0.10	7.75	15.0	416
5205	-0.1000	102.68	2.88	-0.1000	29.03	7.32	-0.10	7.51	13.9	433
5206	-0.1000	64.29	4.24	-0.1000	34.06	31.06	-0.10	7.99	15.8	432
5207	-0.1000	205.80	1.47	0.0766	90.38	27.58	-0.10	7.60	13.4	953
5208	-0.1000	69.04	19.23	0.2321	1.06	-0.10	177.94	7.44	15.1	796
5209	0.0122	65.59	39.33	0.2929	2.59	-0.10	55.68	7.53	15.1	696
5210	0.0133	39.94	10.54	0.0705	1.43	-0.10	34.64	7.62	14.6	413
5211	-0.1000	17.50	6.12	-0.1000	0.36	-0.10	19.35	7.66	12.8	308
5212	0.0158	25.36	78.62	0.1169	9.61	-0.10	77.18	7.62	14.1	511
5261	-0.1000	114.06	1.50	-0.1000	69.72	57.32	-0.10	7.74	7.5	740
5262	-0.1000	111.87	1.20	-0.1000	63.49	58.73	-0.10	7.80	8.0	720
5263	-0.1000	116.35	1.49	-0.1000	69.17	57.31	-0.10	13.70	13.7	734

UINTAH COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5264	-0.1000	118.74	3.38	-0.1000	116.04	141.13	-0.10	8.01	10.4	999
5265	-0.1000	24.90	0.34	-0.1000	31.16	13.58	-0.10	8.19	14.1	249
5266	-0.1000	31.60	2.64	0.1374	74.82	100.16	0.24	8.74	15.5	623
5270	-0.1000	203.70	1.56	0.0724	44.29	18.43	-0.10	7.51	14.8	713
5271	-0.1000	166.67	2.45	0.0724	72.72	23.81	-0.10	7.47	12.6	755
5272	-0.1000	167.12	2.25	0.0703	68.67	20.26	-0.10	7.43	11.2	737
5273	-0.1000	94.35	1.27	0.0644	61.59	36.46	-0.10	7.59	16.4	604
5274	-0.1000	85.05	0.71	-0.1000	48.17	15.98	-0.10	7.88	13.3	461
5275	-0.1000	82.55	0.68	-0.1000	22.80	14.45	-0.10	7.82	12.0	332
5276	-0.1000	62.85	0.66	-0.1000	13.75	11.17	-0.10	6.94	14.2	273
5277	-0.1000	47.06	0.95	-0.1000	16.80	4.19	-0.10	7.65	8.6	232
5460	-0.1000	86.73	0.60	-0.1000	19.23	5.60	-0.10	7.88	11.4	378
5461	-0.1000	196.98	2.32	0.1096	124.91	81.19	-0.10	7.68	11.2	1047
5462	-0.1000	156.33	1.36	0.0723	89.73	26.53	-0.10	8.04	13.6	778
5463	-0.1000	148.58	0.86	0.0613	84.75	22.88	-0.10	7.92	12.6	747
5464	-0.1000	224.17	0.96	0.0653	91.55	24.72	-0.10	8.00	13.0	917
5465	-0.1000	241.64	3.25	0.0694	70.98	25.68	-0.10	7.85	12.8	889
5466	-0.1000	204.08	1.29	0.0630	91.80	23.55	-0.10	7.91	12.9	884
5467	-0.1000	166.90	1.49	0.0719	93.28	29.65	-0.10	7.82	13.5	853

Values of -0.1 are below detection limits of testing procedure.

UINTAH COUNTY
SOIL CONSERVATION DISTRICT

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5024	-0.1000	0.17	25.69	0.00	-0.1000	-0.1000	5.26	-0.1000	-0.1000	-0.10	0.5	1,952
5038	-0.1000	0.07	11.44	0.00	-0.1000	0.0791	5.69	0.9874	-0.1000	-0.10	0.4	580
5039	-0.1000	-0.10	7.95	0.00	-0.1000	-0.1000	7.34	0.0469	-0.1000	-0.10	0.3	633
5044	-0.1000	0.11	23.33	0.00	-0.1000	-0.1000	5.00	-0.1000	-0.1000	-0.10	0.3	1,224
5045	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	5.19	-0.1000	-0.1000	-0.10	0.2	462
5046	-0.1000	-0.10	3.98	0.00	-0.1000	-0.1000	4.10	-0.1000	-0.1000	-0.10	0.2	445
5047	-0.1000	0.14	15.39	0.00	-0.1000	-0.1000	4.25	-0.1000	-0.1000	-0.10	0.3	1,544
5048	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.64	-0.1000	-0.1000	-0.10	0.2	458
5049	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.05	-0.1000	-0.1000	-0.10	0.1	434
5050	-0.1000	-0.10	3.99	0.00	-0.1000	0.0637	4.16	-0.1000	-0.1000	-0.10	0.2	535
5051	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	3.99	-0.1000	-0.1000	-0.10	0.2	489
5052	-0.1000	-0.10	8.76	0.00	-0.1000	0.0430	4.03	-0.1000	-0.1000	-0.10	0.2	413
5053	-0.1000	-0.10	4.64	0.00	-0.1000	-0.1000	3.99	-0.1000	-0.1000	-0.10	0.2	400
5054	-0.1000	0.16	6.02	0.00	-0.1000	0.0241	4.01	0.0722	-0.1000	-0.10	0.4	1,549
5055	-0.1000	0.14	6.19	0.00	-0.1000	-0.1000	3.92	-0.1000	-0.1000	-0.10	0.4	1,372
5056	-0.1000	0.10	22.20	0.00	-0.1000	0.0971	5.30	-0.1000	-0.1000	-0.10	1.0	797
5057	-0.1000	0.12	83.51	0.00	-0.1000	-0.1000	5.67	-0.1000	-0.1000	-0.10	0.9	955
5058	-0.1000	0.28	-0.10	0.00	-0.1000	-0.1000	5.26	-0.1000	-0.1000	-0.10	2.7	1,079
5059	-0.1000	0.13	-0.10	0.00	-0.1000	-0.1000	7.18	-0.1000	-0.1000	0.05	0.4	709
5060	-0.1000	0.21	10.87	0.00	-0.1000	0.0216	6.86	-0.1000	-0.1000	0.04	0.5	860
5061	-0.1000	0.19	19.96	0.00	-0.1000	-0.1000	6.81	-0.1000	-0.1000	-0.10	0.5	811
5062	-0.1000	0.13	10.71	0.00	-0.1000	-0.1000	3.64	-0.1000	-0.1000	-0.10	0.6	489
5173	-0.1000	0.11	15.36	0.00	-0.1000	-0.1000	5.48	-0.1000	-0.1000	-0.10	11.7	673
5174	-0.1000	0.16	19.03	0.00	-0.1000	0.3884	10.06	0.0294	-0.1000	-0.10	0.8	1,055
5175	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.16	-0.1000	-0.1000	0.06	0.1	625
5176	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0833	4.08	-0.1000	-0.1000	-0.10	0.1	644
5178	-0.1000	0.31	154.94	0.00	-0.1000	-0.1000	4.99	-0.1000	0.0986	-0.10	30.6	1,920
5179	-0.1000	0.41	71.49	0.00	-0.1000	-0.1000	7.56	-0.1000	-0.1000	-0.10	6.0	1,400
5180	4.4851	0.40	59.95	0.00	-0.1000	9.4691	0.74	9.3838	-0.1000	0.93	1.1	2,640
5181	-0.1000	0.14	11.34	0.00	-0.1000	0.0500	5.37	-0.1000	-0.1000	-0.10	0.6	942
5182	0.1772	0.14	91.29	2.00	-0.1000	0.0859	1.67	-0.1000	-0.1000	-0.10	11.0	978
5183	-0.1000	0.12	25.79	0.00	-0.1000	-0.1000	6.51	-0.1000	-0.1000	-0.10	0.3	791
5184	0.1238	-0.10	6.03	0.00	0.1186	0.3333	3.33	0.0407	-0.1000	0.15	0.5	425
5185	-0.1000	0.28	12.62	0.00	-0.1000	0.0385	5.89	-0.1000	-0.1000	-0.10	0.4	1,440
5196	-0.1000	0.21	13.26	0.00	0.0552	-0.1000	8.21	-0.1000	-0.1000	-0.10	0.6	1,043
5197	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.31	-0.1000	-0.1000	-0.10	0.1	693
5198	-0.1000	-0.10	-0.10	0.00	-0.1000	0.0780	4.29	-0.1000	-0.1000	-0.10	0.1	693
5199	-0.1000	0.25	432.86	0.00	0.0258	-0.1000	6.24	-0.1000	0.0798	-0.10	17.7	2,760
5200	-0.1000	0.09	-0.10	0.00	-0.1000	-0.1000	7.03	-0.1000	-0.1000	-0.10	0.2	648
5201	-0.1000	0.12	-0.10	0.00	-0.1000	-0.1000	6.07	-0.1000	-0.1000	-0.10	0.3	715
5202	-0.1000	0.29	14.95	0.00	-0.1000	-0.1000	6.27	-0.1000	-0.1000	-0.10	0.9	1,200
5203	-0.1000	0.15	7.87	0.00	-0.1000	-0.1000	4.32	-0.1000	-0.1000	-0.10	0.5	924
5204	-0.1000	0.12	4.29	0.00	0.0260	0.0277	6.16	-0.1000	-0.1000	-0.10	0.4	694
5205	-0.1000	-0.10	5.39	0.00	0.0278	-0.1000	6.90	-0.1000	-0.1000	-0.10	0.2	722
5206	-0.1000	-0.10	14.36	0.00	-0.1000	-0.1000	2.36	-0.1000	-0.1000	-0.10	0.8	720
5207	-0.1000	0.35	15.61	0.00	-0.1000	0.0279	4.71	-0.1000	-0.1000	-0.10	0.4	1,588
5208	-0.1000	-0.10	9.99	0.00	-0.1000	0.0221	5.61	-0.1000	-0.1000	-0.10	0.0	1,326
5209	0.0755	-0.10	62.80	0.00	-0.1000	-0.1000	7.95	-0.1000	-0.1000	-0.10	0.0	1,160
5210	-0.1000	-0.10	9.26	0.00	-0.1000	-0.1000	5.12	-0.1000	-0.1000	-0.10	0.0	688
5211	0.1419	-0.10	9.63	0.00	-0.1000	-0.1000	3.97	-0.1000	-0.1000	-0.10	0.0	513
5212	-0.1000	-0.10	4.84	0.00	-0.1000	-0.1000	4.54	-0.1000	0.0649	-0.10	0.0	851
5261	-0.1000	0.08	8.45	0.00	-0.1000	-0.1000	6.02	-0.1000	-0.1000	-0.10	1.0	1,234
5262	-0.1000	0.09	9.13	0.00	-0.1000	-0.1000	6.00	-0.1000	-0.1000	-0.10	1.1	1,200
5263	-0.1000	0.08	8.86	0.00	-0.1000	-0.1000	6.11	-0.1000	-0.1000	-0.10	1.0	1,223

UINTAH COUNTY
SOIL CONSERVATION DISTRICT

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5264	-0.1000	0.33	20.44	0.00	-0.1000	0.1140	8.32	0.0667	-0.1000	0.04	2.2	1,665
5265	0.1368	0.10	7.37	0.00	-0.1000	0.1278	3.31	-0.1000	-0.1000	-0.10	0.4	415
5266	-0.1000	0.27	42.47	0.00	-0.1000	0.1084	7.03	-0.1000	-0.1000	-0.10	2.2	1,038
5270	-0.1000	0.26	6.54	0.00	-0.1000	-0.1000	4.56	-0.1000	-0.1000	-0.10	0.3	1,189
5271	-0.1000	0.28	15.80	0.00	-0.1000	-0.1000	6.04	-0.1000	-0.1000	-0.10	0.4	1,259
5272	-0.1000	0.26	12.61	0.00	-0.1000	-0.1000	5.69	-0.1000	-0.1000	-0.10	0.3	1,228
5273	-0.1000	0.29	44.58	0.00	-0.1000	-0.1000	6.38	-0.1000	-0.1000	-0.10	0.7	1,007
5274	-0.1000	0.17	7.92	0.00	-0.1000	-0.1000	6.31	-0.1000	-0.1000	-0.10	0.3	768
5275	-0.1000	-0.10	12.72	0.00	-0.1000	-0.1000	4.62	-0.1000	-0.1000	-0.10	0.4	554
5276	-0.1000	0.08	6.37	0.00	-0.1000	-0.1000	3.51	-0.1000	-0.1000	-0.10	0.3	455
5277	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	3.09	-0.1000	-0.1000	-0.10	0.1	387
5460	-0.1000	-0.10	4.93	0.00	-0.1000	-0.1000	4.25	-0.1000	-0.1000	-0.10	0.1	630
5461	-0.1000	0.90	19.54	0.00	-0.1000	-0.1000	5.48	-0.1000	-0.1000	-0.10	1.1	1,745
5462	-0.1000	0.30	16.03	0.00	-0.1000	1.4057	4.34	0.4404	-0.1000	-0.10	0.4	1,297
5463	-0.1000	0.26	15.01	0.00	-0.1000	3.5757	5.02	0.5047	-0.1000	-0.10	0.4	1,245
5464	-0.1000	0.29	18.67	0.00	-0.1000	3.6991	5.96	0.2606	-0.1000	-0.10	0.4	1,528
5465	-0.1000	0.23	14.63	0.00	-0.1000	7.3906	4.77	0.2030	-0.1000	-0.10	0.4	1,482
5466	-0.1000	0.27	16.62	0.00	-0.1000	2.6781	5.37	0.1641	-0.1000	-0.10	0.3	1,473
5467	-0.1000	0.34	19.10	0.00	-0.1000	4.1200	4.89	0.3125	-0.1000	-0.10	0.5	1,421

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

UINTAH COUNTY
SOIL CONSERVATION DISTRICT

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5024	-0.1000	-0.1000	0.17	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	380.90	-0.1000	1,171	-0.1000	-0.10
5038	-0.1000	-0.1000	0.07	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.04	-0.1000	348	-0.1000	-0.10
5039	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	11.95	-0.1000	380	-0.1000	-0.10
5044	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	0.0140	-0.1000	-0.1000	190.64	-0.1000	734	-0.1000	-0.10
5045	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	18.12	-0.1000	277	-0.1000	-0.10
5046	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.37	-0.1000	267	-0.1000	-0.10
5047	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	286.76	-0.1000	926	-0.1000	-0.10
5048	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	18.53	-0.1000	275	-0.1000	-0.10
5049	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.89	-0.1000	260	-0.1000	-0.10
5050	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	32.18	-0.1000	321	-0.1000	-0.10
5051	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.78	-0.1000	293	-0.1000	-0.10
5052	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.81	-0.1000	248	-0.1000	-0.10
5053	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.42	-0.1000	240	-0.1000	-0.10
5054	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	344.97	-0.1000	929	-0.1000	-0.10
5055	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	250.25	-0.1000	823	-0.1000	-0.10
5056	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	0.0447	-0.1000	-0.1000	54.07	-0.1000	478	-0.1000	-0.10
5057	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	32.42	-0.1000	573	-0.1000	-0.10
5058	-0.1000	0.0132	0.28	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	139.01	-0.1000	647	0.0133	-0.10
5059	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	23.33	-0.1000	425	-0.1000	0.05
5060	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	68.15	-0.1000	516	-0.1000	0.04
5061	-0.1000	-0.1000	0.19	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	40.22	-0.1000	487	-0.1000	-0.10
5062	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	21.21	-0.1000	293	0.0114	-0.10
5173	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.84	-0.1000	404	-0.1000	-0.10
5174	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	33.61	-0.1000	633	-0.1000	-0.10
5175	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	45.03	-0.1000	375	-0.1000	0.06
5176	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	49.53	-0.1000	386	-0.1000	-0.10
5178	-0.1000	-0.1000	0.31	-0.1000	-0.1000	-0.1000	0.0378	-0.1000	-0.1000	193.83	0.0986	1,152	-0.1000	-0.10
5179	-0.1000	-0.1000	0.41	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	87.85	-0.1000	840	-0.1000	-0.10
5180	4.4851	-0.1000	0.40	-0.1000	0.2695	-0.1000	-0.1000	0.9134	-0.1000	707.27	-0.1000	1,584	-0.1000	0.93
5181	-0.1000	-0.1000	0.14	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	86.82	-0.1000	565	-0.1000	-0.10
5182	0.1772	-0.1000	0.14	-0.1000	-0.1000	0.0268	0.0358	-0.1000	-0.1000	55.19	-0.1000	587	-0.1000	-0.10
5183	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	0.0150	-0.1000	-0.1000	25.95	-0.1000	475	-0.1000	-0.10
5184	0.1238	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.07	-0.1000	255	-0.1000	0.15
5185	-0.1000	-0.1000	0.28	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	203.33	-0.1000	864	-0.1000	-0.10
5196	-0.1000	-0.1000	0.21	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	68.88	-0.1000	626	-0.1000	-0.10
5197	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	57.81	-0.1000	416	-0.1000	-0.10
5198	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	59.61	-0.1000	416	-0.1000	-0.10
5199	-0.1000	-0.1000	0.25	-0.1000	-0.1000	-0.1000	0.0240	-0.1000	-0.1000	210.70	0.0798	1,656	0.0135	-0.10
5200	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.51	-0.1000	389	0.0465	-0.10
5201	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	30.30	-0.1000	429	-0.1000	-0.10
5202	-0.1000	-0.1000	0.29	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	120.33	-0.1000	720	-0.1000	-0.10
5203	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	105.54	-0.1000	554	-0.1000	-0.10
5204	-0.1000	-0.1000	0.12	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	25.49	-0.1000	416	-0.1000	-0.10
5205	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.19	-0.1000	433	-0.1000	-0.10
5206	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	85.59	-0.1000	432	-0.1000	-0.10
5207	-0.1000	-0.1000	0.35	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	245.07	-0.1000	953	-0.1000	-0.10
5208	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	0.0643	-0.1000	-0.1000	185.45	-0.1000	796	-0.1000	-0.10
5209	0.0755	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	0.0717	-0.1000	-0.1000	111.74	-0.1000	696	-0.1000	-0.10
5210	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	0.0320	-0.1000	-0.1000	68.82	-0.1000	413	-0.1000	-0.10
5211	0.1419	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	72.22	-0.1000	308	-0.1000	-0.10
5212	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	0.0194	0.0862	-0.1000	-0.1000	61.04	0.0649	511	-0.1000	-0.10
5261	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	132.15	-0.1000	740	-0.1000	-0.10
5262	-0.1000	-0.1000	0.09	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	126.11	-0.1000	720	-0.1000	-0.10

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5263	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	135.74	-0.1000	734	-0.1000	-0.10

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5264	-0.1000	-0.1000	0.33	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	205.85	-0.1000	999	-0.1000	0.04
5265	0.1368	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	12.62	-0.1000	249	0.0188	-0.10
5266	-0.1000	-0.1000	0.27	-0.1000	-0.1000	-0.1000	0.0105	-0.1000	-0.1000	63.36	-0.1000	623	-0.1000	-0.10
5270	-0.1000	-0.1000	0.26	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	164.83	-0.1000	713	-0.1000	-0.10
5271	-0.1000	-0.1000	0.28	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	148.49	-0.1000	755	-0.1000	-0.10
5272	-0.1000	-0.1000	0.26	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	143.62	-0.1000	737	-0.1000	-0.10
5273	-0.1000	-0.1000	0.29	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	55.21	-0.1000	604	-0.1000	-0.10
5274	-0.1000	-0.1000	0.17	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	33.73	-0.1000	461	-0.1000	-0.10
5275	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	22.86	-0.1000	332	-0.1000	-0.10
5276	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.70	-0.1000	273	-0.1000	-0.10
5277	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	31.46	-0.1000	232	-0.1000	-0.10
5460	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	31.94	-0.1000	378	-0.1000	-0.10
5461	-0.1000	-0.1000	0.90	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	298.98	-0.1000	1,047	-0.1000	-0.10
5462	-0.1000	-0.1000	0.30	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	202.78	-0.1000	778	-0.1000	-0.10
5463	-0.1000	-0.1000	0.26	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	168.25	-0.1000	747	-0.1000	-0.10
5464	-0.1000	-0.1000	0.29	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	226.48	-0.1000	917	-0.1000	-0.10
5465	-0.1000	-0.1000	0.23	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	236.41	-0.1000	889	-0.1000	-0.10
5466	-0.1000	-0.1000	0.27	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	223.70	-0.1000	884	-0.1000	-0.10
5467	-0.1000	-0.1000	0.34	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	215.95	-0.1000	853	-0.1000	-0.10

Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

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Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5024	-0.1000	0.0319	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.3	-0.1000	380.90	-0.1000	1,171	-0.10	7.56	0	0	29.2
5038	-0.1000	0.4473	-0.1000	-0.1000	-0.1000	0.0791	0.9874	-0.1	-0.1000	7.04	-0.1000	348	-0.10	7.93	0	0	5.8
5039	-0.1000	0.3749	-0.1000	-0.1000	-0.1000	-0.1000	0.0469	-0.1	-0.1000	11.95	-0.1000	380	-0.10	7.47	1	0	6.9
5044	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	190.64	-0.1000	734	-0.10	7.58	0	0	16.4
5045	-0.1000	0.1127	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	18.12	-0.1000	277	-0.10	7.79	1	0	5.4
5046	-0.1000	0.1603	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	10.37	-0.1000	267	-0.10	7.59	0	0	5.0
5047	-0.1000	0.0231	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.4	-0.1000	286.76	-0.1000	926	-0.10	7.37	0	0	22.6
5048	-0.1000	0.1340	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	18.53	-0.1000	275	-0.10	7.84	0	0	5.3
5049	-0.1000	0.1198	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	6.89	-0.1000	260	-0.10	7.63	0	0	5.0
5050	-0.1000	0.0464	-0.1000	-0.1000	-0.1000	0.0637	-0.1000	-0.1	-0.1000	32.18	-0.1000	321	-0.10	7.57	0	0	6.2
5051	-0.1000	0.0416	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	19.78	-0.1000	293	-0.10	7.56	0	0	5.7
5052	-0.1000	0.1264	-0.1000	-0.1000	-0.1000	0.0430	-0.1000	-0.1	-0.1000	3.81	-0.1000	248	-0.10	7.56	0	0	4.7
5053	-0.1000	0.1208	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	4.42	-0.1000	240	-0.10	7.56	0	0	4.5
5054	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0241	0.0722	-0.1	-0.1000	344.97	-0.1000	929	-0.10	7.42	0	0	24.1
5055	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	250.25	-0.1000	823	-0.10	7.72	0	0	19.0
5056	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0971	-0.1000	-0.1	-0.1000	54.07	-0.1000	478	-0.10	7.69	0	0	7.3
5057	-0.1000	0.1496	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	30.0	-0.1000	32.42	-0.1000	573	-0.10	7.60	0	0	8.4
5058	0.0132	0.0492	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	139.01	-0.1000	647	-0.10	7.92	0	0	8.6
5059	-0.1000	0.0718	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	23.33	-0.1000	425	0.05	7.97	0	0	9.1
5060	-0.1000	0.0446	-0.1000	-0.1000	-0.1000	0.0216	-0.1000	1.3	-0.1000	68.15	-0.1000	516	0.04	7.84	1	0	10.8
5061	-0.1000	0.0503	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	40.22	-0.1000	487	-0.10	7.52	0	0	8.5
5062	-0.1000	0.1413	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.6	-0.1000	21.21	-0.1000	293	-0.10	7.92	0	0	4.5
5173	-0.1000	0.0338	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	25.84	-0.1000	404	-0.10	8.61	0	0	0.6
5174	-0.1000	0.0842	-0.1000	-0.1000	-0.1000	0.3884	0.0294	-0.1	-0.1000	33.61	-0.1000	633	-0.10	7.05	0	0	10.7
5175	-0.1000	0.0348	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	45.03	-0.1000	375	0.06	7.50	0	0	6.7
5176	-0.1000	0.0256	-0.1000	-0.1000	-0.1000	0.0833	-0.1000	-0.1	-0.1000	49.53	-0.1000	386	-0.10	7.48	0	0	7.0
5178	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.0	-0.1000	193.83	0.0986	1,152	-0.10	8.42	1	0	0.9
5179	-0.1000	0.0202	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.2	-0.1000	87.85	-0.1000	840	-0.10	7.63	1	0	5.2
5180	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	9.4691	9.3838	-0.1	-0.1000	707.27	-0.1000	1,584	0.93	5.87	0	0	37.4
5181	-0.1000	0.0468	-0.1000	-0.1000	-0.1000	0.0500	-0.1000	-0.1	-0.1000	86.82	-0.1000	565	-0.10	7.58	0	0	9.2
5182	-0.1000	-0.1000	-0.1000	0.0268	-0.1000	0.0859	-0.1000	1.0	-0.1000	55.19	-0.1000	587	-0.10	10.27	0	0	0.8
5183	-0.1000	0.0581	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	25.95	-0.1000	475	-0.10	7.39	1	0	8.1
5184	-0.1000	0.0843	-0.1000	-0.1000	0.1186	0.3333	0.0407	-0.1	-0.1000	19.07	-0.1000	255	0.15	8.00	1	1	4.2
5185	-0.1000	0.0205	-0.1000	-0.1000	-0.1000	0.0385	-0.1000	1.9	-0.1000	203.33	-0.1000	864	-0.10	7.50	0	0	16.4
5196	-0.1000	0.0950	-0.1000	-0.1000	0.0552	-0.1000	-0.1000	2.5	-0.1000	68.88	-0.1000	626	-0.10	7.64	1	0	10.4
5197	-0.1000	0.0231	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	57.81	-0.1000	416	-0.10	7.63	0	0	7.7
5198	-0.1000	0.0273	-0.1000	-0.1000	-0.1000	0.0780	-0.1000	-0.1	-0.1000	59.61	-0.1000	416	-0.10	7.69	0	0	7.5
5199	-0.1000	-0.1000	-0.1000	-0.1000	0.0258	-0.1000	-0.1000	8.1	-0.1000	210.70	0.0798	1,656	-0.10	8.22	0	0	4.3
5200	-0.1000	0.3982	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	4.51	-0.1000	389	-0.10	7.78	1	1	6.5
5201	-0.1000	0.0451	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.1	-0.1000	30.30	-0.1000	429	-0.10	7.89	0	0	6.9
5202	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.5	-0.1000	120.33	-0.1000	720	-0.10	7.59	0	0	11.4
5203	-0.1000	0.0522	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.4	-0.1000	105.54	-0.1000	554	-0.10	7.76	0	0	9.0
5204	-0.1000	0.0682	-0.1000	-0.1000	0.0260	0.0277	-0.1000	1.4	-0.1000	25.49	-0.1000	416	-0.10	7.75	0	0	6.5
5205	-0.1000	0.2115	-0.1000	-0.1000	0.0278	-0.1000	-0.1000	2.8	-0.1000	15.19	-0.1000	433	-0.10	7.51	0	0	7.7
5206	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.4	-0.1000	85.59	-0.1000	432	-0.10	7.99	0	0	5.8
5207	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.0279	-0.1000	5.5	-0.1000	245.07	-0.1000	953	-0.10	7.60	1	0	17.3
5208	-0.1000	0.0346	-0.1000	-0.1000	-0.1000	0.0221	-0.1000	1.1	-0.1000	185.45	-0.1000	796	-0.10	7.44	1	0	4.1
5209	-0.1000	0.0208	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	5.5	-0.1000	111.74	-0.1000	696	-0.10	7.53	0	0	4.0
5210	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	68.82	-0.1000	413	-0.10	7.62	0	0	2.4
5211	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	72.22	-0.1000	308	-0.10	7.66	0	0	1.0
5212	-0.1000	0.0737	-0.1000	0.0194	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	61.04	0.0649	511	-0.10	7.62	1	0	2.0
5261	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	132.15	-0.1000	740	-0.10	7.74	1	0	10.7
5262	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.7	-0.1000	126.11	-0.1000	720	-0.10	7.80	1	0	10.3
5263	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.7	-0.1000	135.74	-0.1000	734	-0.10	13.70	0	0	10.8

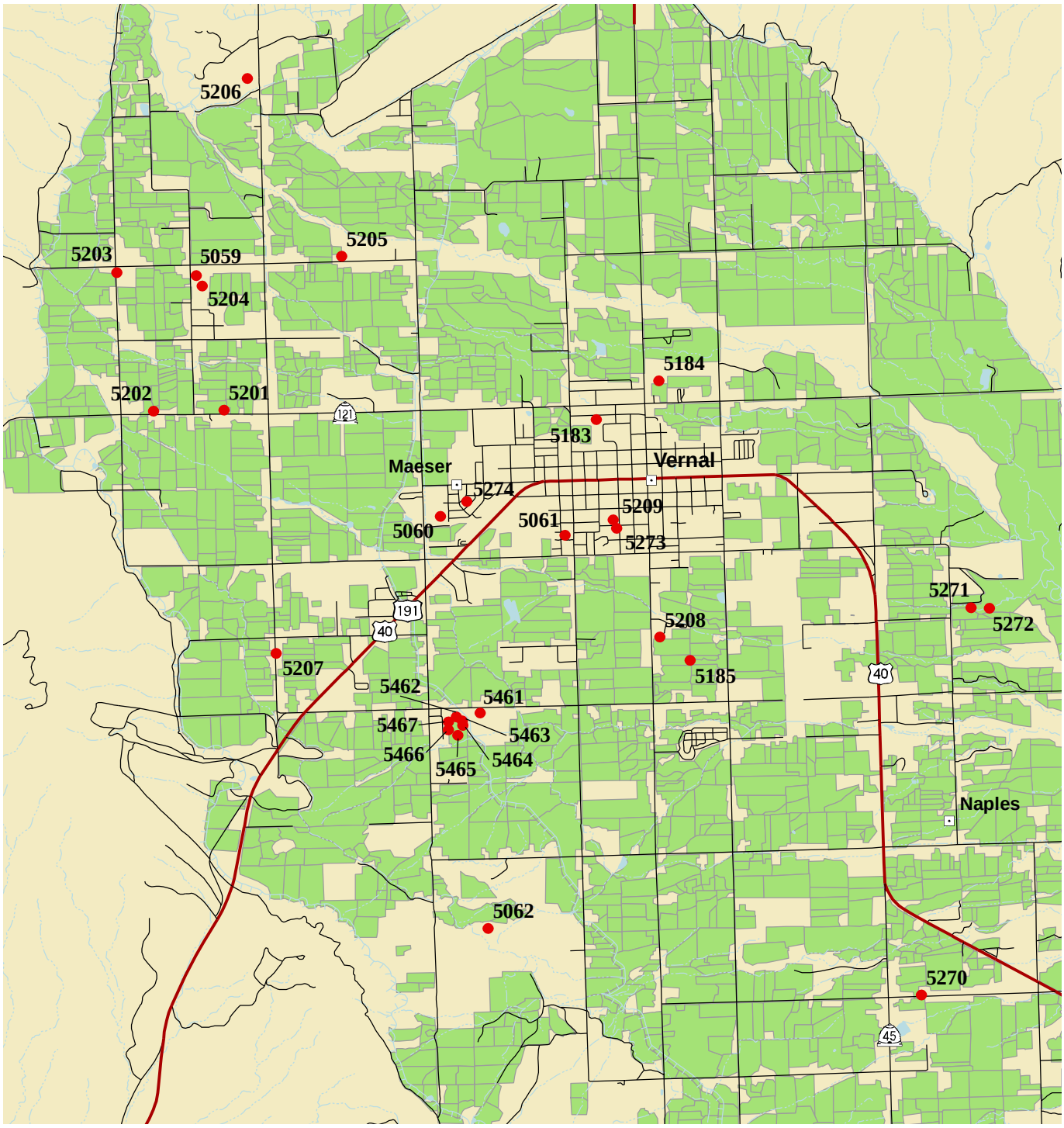
UINTAH COUNTY
SOIL CONSERVATION DISTRICT

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5264	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.1140	0.0667	10.0	-0.1000	205.85	-0.1000	999	0.04	8.01	0	0	13.7
5265	-0.1000	0.0717	-0.1000	-0.1000	-0.1000	0.1278	-0.1000	-0.1	-0.1000	12.62	-0.1000	249	-0.10	8.19	1	0	3.3
5266	-0.1000	0.0280	-0.1000	-0.1000	-0.1000	0.1084	-0.1000	-0.1	-0.1000	63.36	-0.1000	623	-0.10	8.74	1	0	6.2
5270	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.6	-0.1000	164.83	-0.1000	713	-0.10	7.51	1	1	14.5
5271	-0.1000	0.0242	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.6	-0.1000	148.49	-0.1000	755	-0.10	7.47	1	0	14.0
5272	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	8.0	-0.1000	143.62	-0.1000	737	-0.10	7.43	1	0	13.8
5273	-0.1000	0.0463	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.0	-0.1000	55.21	-0.1000	604	-0.10	7.59	1	0	9.1
5274	-0.1000	0.0576	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.5	-0.1000	33.73	-0.1000	461	-0.10	7.88	1	0	7.8
5275	-0.1000	0.1587	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.7	-0.1000	22.86	-0.1000	332	-0.10	7.82	0	0	6.2
5276	-0.1000	0.1025	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	15.70	-0.1000	273	-0.10	6.94	1	0	4.5
5277	-0.1000	0.0734	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	31.46	-0.1000	232	-0.10	7.65	0	0	3.7
5460	-0.1000	0.0249	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	31.94	-0.1000	378	-0.10	7.88	0	0	6.2
5461	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.1	-0.1000	298.98	-0.1000	1,047	-0.10	7.68	1	0	18.8
5462	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.4057	0.4404	-0.1	-0.1000	202.78	-0.1000	778	-0.10	8.04	0	0	14.4
5463	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.5757	0.5047	1.3	-0.1000	168.25	-0.1000	747	-0.10	7.92	0	0	13.6
5464	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	3.6991	0.2606	1.3	-0.1000	226.48	-0.1000	917	-0.10	8.00	0	0	18.5
5465	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	7.3906	0.2030	-0.1	-0.1000	236.41	-0.1000	889	-0.10	7.85	0	0	18.3
5466	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.6781	0.1641	1.1	-0.1000	223.70	-0.1000	884	-0.10	7.91	0	0	17.3
5467	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.1200	0.3125	1.6	-0.1000	215.95	-0.1000	853	-0.10	7.82	0	0	15.2

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 38. Uintah County District - Vernal Area

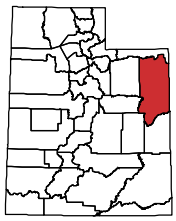


Map Scale 1:63,360 (1 inch = 1 mile)

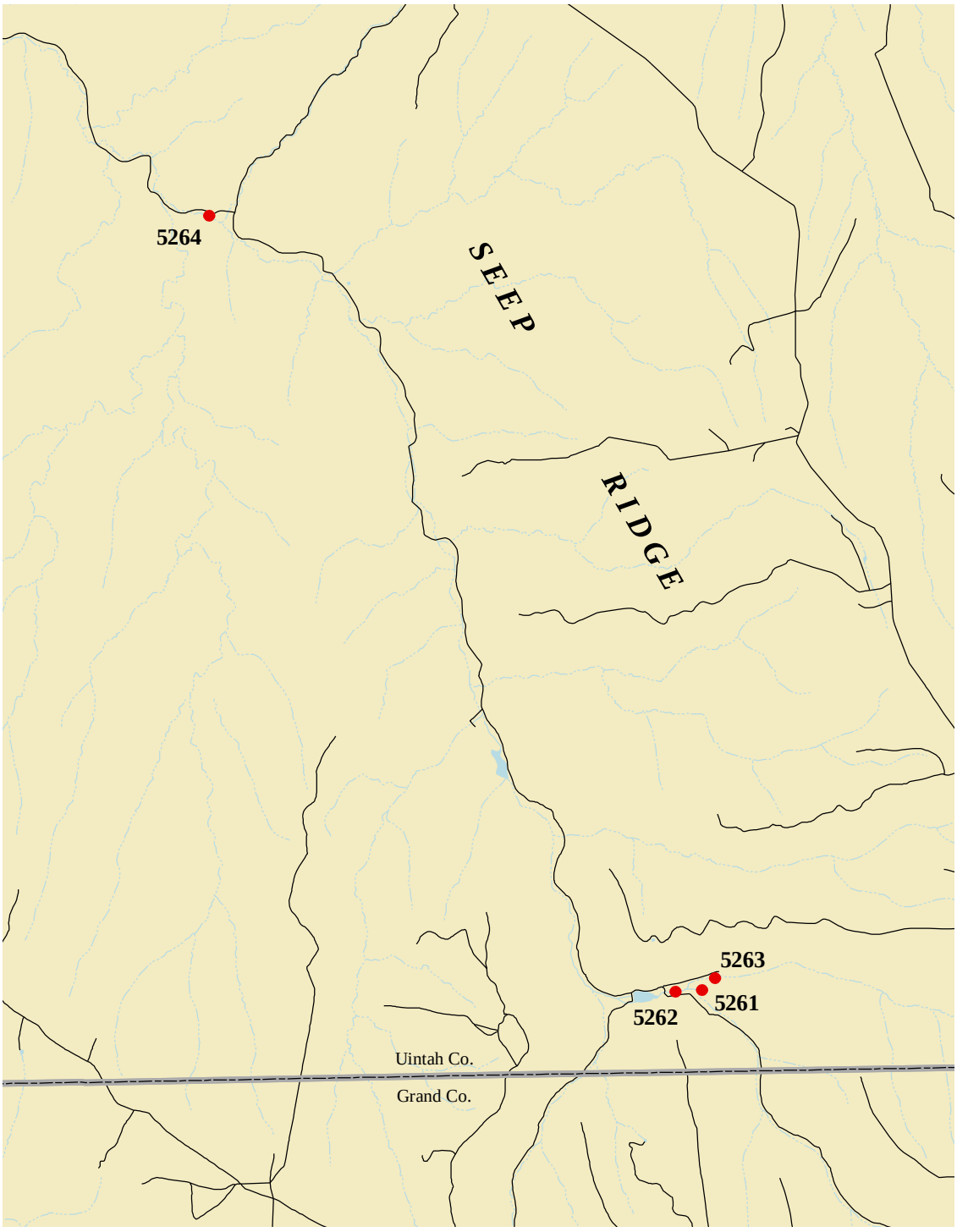
Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map 39. Uintah County District - South Book Cliffs Area

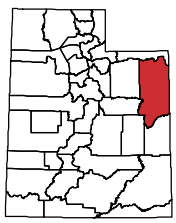


Map Scale 1:70,000 (1 inch = 1.1 miles)

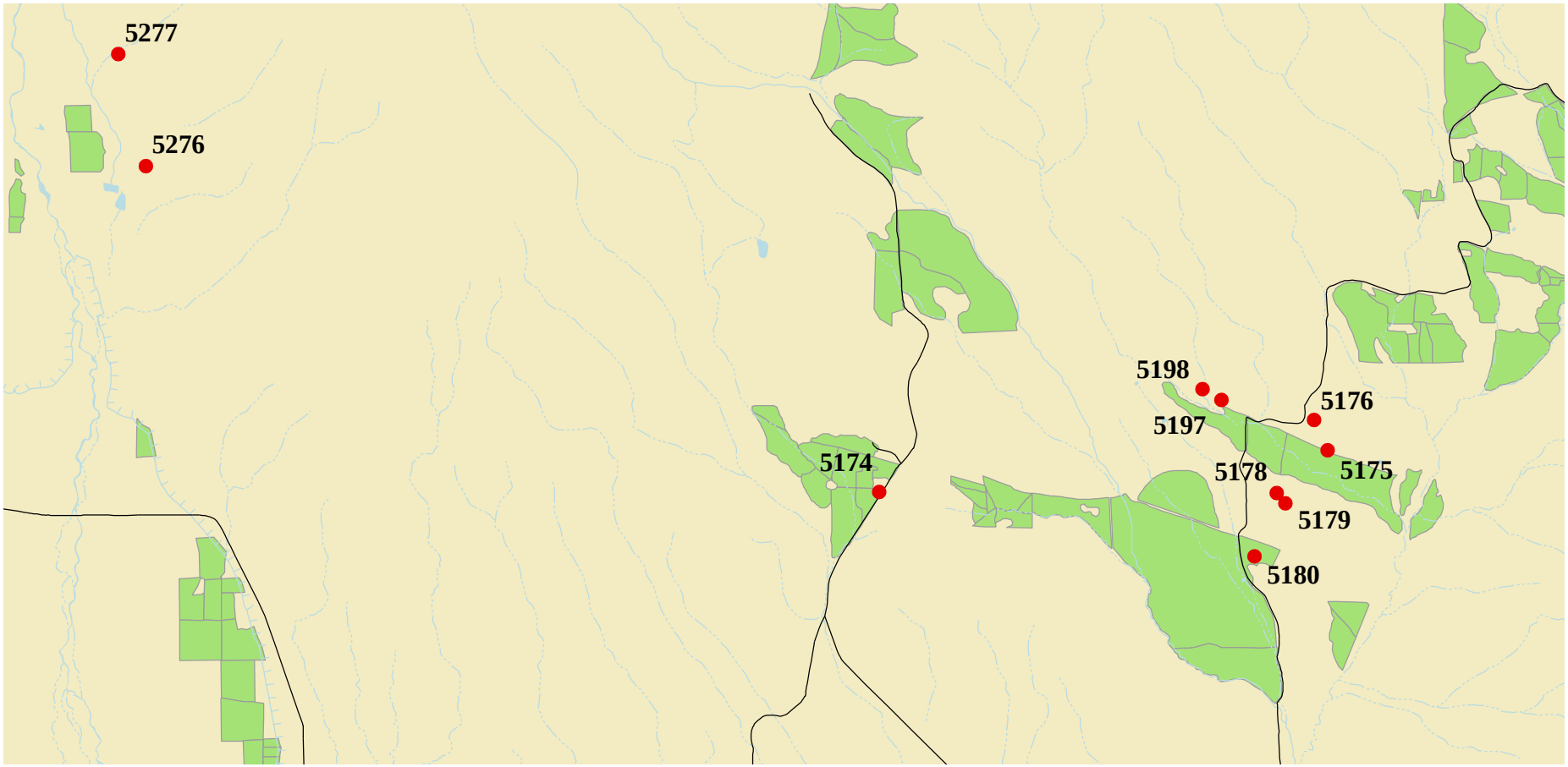
Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Map 40. Uintah County District - Whiterocks Area

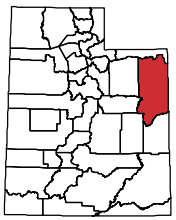


Map Scale 1:63,360 (1 inch = 1.0 miles)

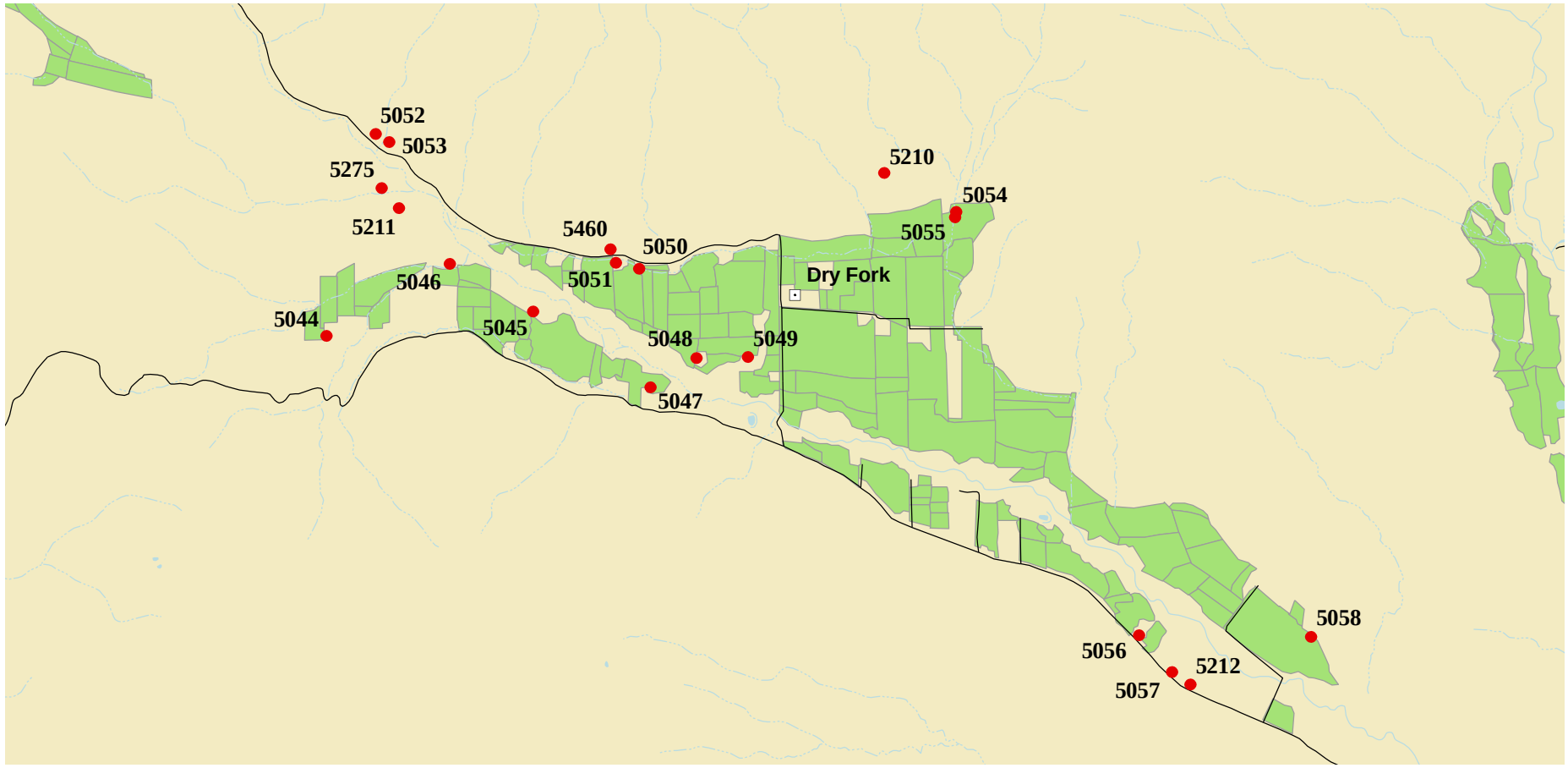
N

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Map 41. Uintah County District - Dry Fork Area

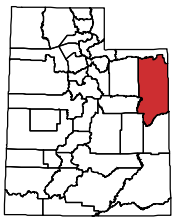


Map Scale 1:37,000 (1 inch = 0.6 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



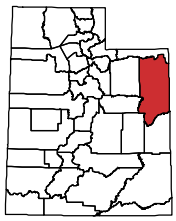
Map 42. Uintah County District - Lapoint Area

Map Scale 1:157,000 (1 inch = 2.5 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

N

District Location



Daggett District

General:

Four (4) samples were collected in the Daggett District. Sampled water temperatures range from 7.6 °C to 12.7 °C, with a mean of 10.6 °C. The pH for the district ranges from 7.62 to 9.65 with a mean of 8.36.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. All samples in this district exceeded the salinity standard of 750 µmhos/cm. None of the samples exceeded the severe-injury level of 3,000 µmhos/cm, which would affect most plants.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Samples 5268 and 5269 have elevated SAR values. Sample 5269 is extremely high with a value of 49.5.

Bicarbonate (HCO3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah. Sample 5269 exceeds the 8.5 level.

Some specific elements can be toxic to plants. Sample 5268 has elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

No other elements were found in concentrations harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Sample 5459 has elevated molybdenum.

Sulfate (SO_4) is shown on chemical analyses for sulfur (S). Sulfur as sulfate can cause water to be off flavored and produces diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Samples 5268 and 5459 have elevated sulfur at concentrations which exceed the livestock standard for sulfur.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district varies from very soft to moderately hard, with grains per gallon (gpg) ranging from 0.1 to 14.3 with a mean of 8.1. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. Samples 5268, 5269, and 5459 exceed the EPA aesthetic standard of 500 ppm. At this level the water may be off-

flavored, but it is not a health problem until TDS reaches 2,000 ppm. None of the samples exceeded the health standard for total dissolved solids.

Two elements iron (Fe), and manganese (Mn), were found to exceed the aesthetic drinking water quality standard. Sample 5269 has high iron. This can cause discoloration of plumbing fixtures and promote the growth of iron bacteria, which stain anything they contact. Again, this is an aesthetic issue, not a health concern.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Sample 5269 has high manganese concentrations.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Samples 5268 and 5469 have high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5267, 5269, and 5459 are contaminated with coliform bacteria. Samples 5269 and 5459 are also contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

DAGGETT COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5267	-0.1000	82.87	2.98	-0.1000	33.77	31.87	-0.10	7.62	10.9	472
5268	-0.1000	135.49	19.25	0.1617	53.72	382.92	-0.10	7.62	7.6	1266
5269	-0.1000	1.10	51.75	-0.1000	0.27	223.04	0.31	9.65	11.3	898
5459	-0.1000	165.31	4.63	0.2241	78.50	144.54	-0.10	8.54	12.7	1021

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5267	-0.1000	0.27	32.59	0.00	-0.1000	-0.1000	6.18	-0.1000	-0.1000	-0.10	0.7	787
5268	-0.1000	0.73	102.28	0.00	-0.1000	-0.1000	6.50	-0.1000	-0.1000	0.20	7.0	2,110
5269	-0.1000	-0.10	13.42	1.00	-0.1000	0.3756	9.20	0.0686	-0.1000	-0.10	49.5	1,497
5459	-0.1000	0.34	27.45	0.00	-0.1000	-0.1000	3.79	-0.1000	-0.1000	-0.10	2.3	1,701

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5267	-0.1000	-0.1000	0.27	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	17.34	-0.1000	472	-0.1000	-0.10
5268	-0.1000	-0.1000	0.73	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	338.92	-0.1000	1,266	-0.1000	0.20
5269	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	34.97	-0.1000	898	-0.1000	-0.10
5459	-0.1000	-0.1000	0.34	-0.1000	-0.1000	-0.1000	0.0135	-0.1000	-0.1000	263.27	-0.1000	1,021	-0.1000	-0.10

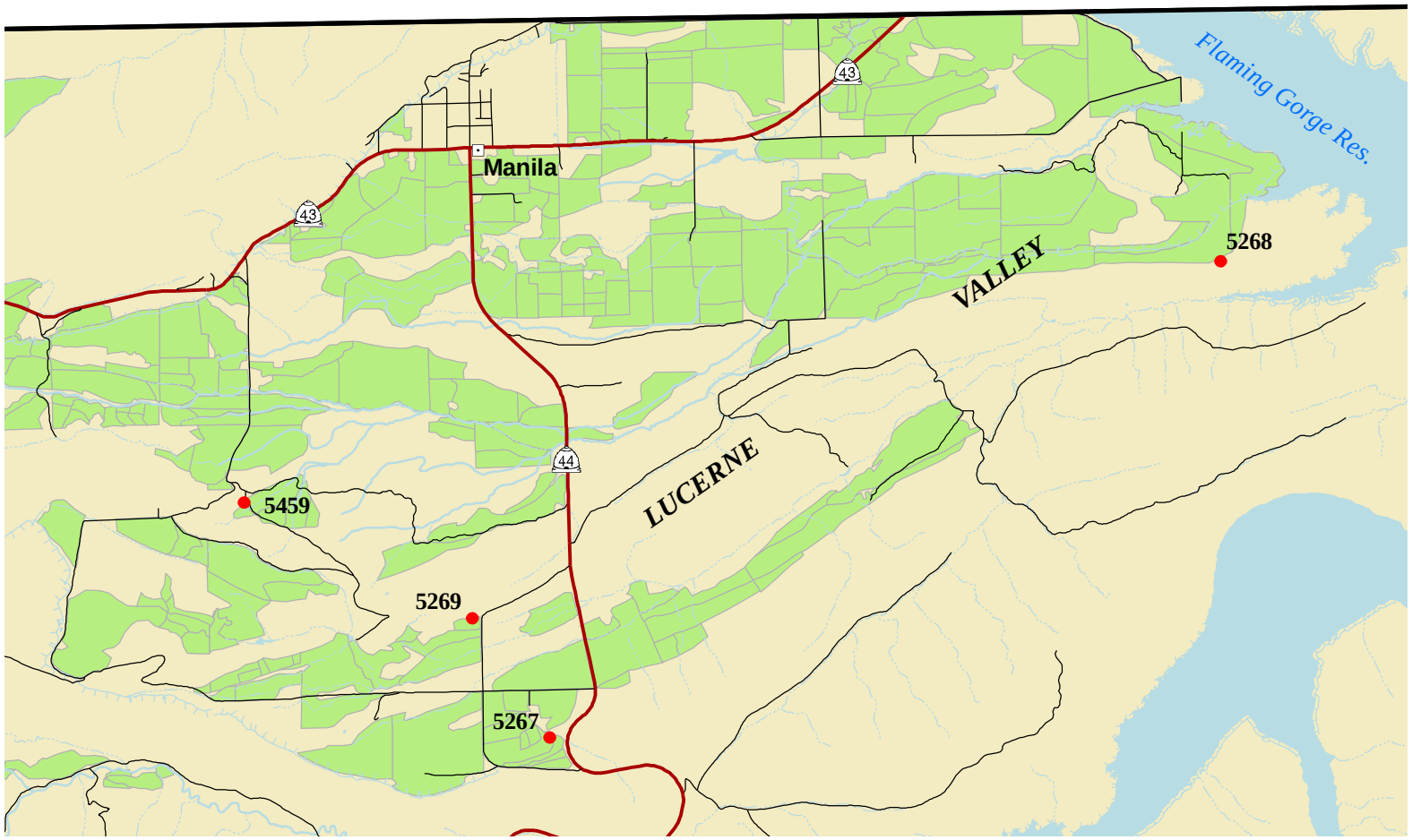
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5267	-0.1000	0.0331	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.7	-0.1000	17.34	-0.1000	472	-0.10	7.62	1	0	6.8
5268	-0.1000	0.0203	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	338.92	-0.1000	1,266	0.20	7.62	0	0	11.1
5269	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	0.3756	0.0686	-0.1	-0.1000	34.97	-0.1000	898	-0.10	9.65	1	1	0.1
5459	-0.1000	0.0207	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	4.8	-0.1000	263.27	-0.1000	1,021	-0.10	8.54	1	1	14.3

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

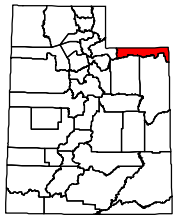
Map 43. Daggett District



Map Scale 1:60,000 (1 inch = 0.95 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Zone 7

UACD Zone 7 consists of five districts in four counties, including San Juan, Grand, Emery, and Carbon counties. Sampling testing may not have been done in all the districts or counties listed in Zone 3

Eleven (11) sites were sampled in two districts of Zone 7 during the spring, summer, and fall of 2005. There were four (4) in the San Juan County District, and seven (7) in the Price River Watershed District. A separate narrative report is presented for each district with maps showing the location of the sample sites. Each report covers three categories of water quality criteria: irrigation, livestock, and culinary. Data are presented in four tables for each zone, grouped according to district, general parameters (temperature, pH, total dissolved solids (TDS), and chemicals for which there are no standards); irrigation, livestock and drinking water parameters.

San Juan County District

General:

Four (4) samples were collected in the San Juan County District. Sampled water temperatures range from 12.9 °C to 15.8 °C, with a mean of 14.9 °C. The pH for the district ranges from 7.76 to 8.46 with a mean of 8.18.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. Samples 5474 and 5475 collected in this district exceed the salinity standard of 750 µmhos/cm.

The sodium absorption ratio (SAR) measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. Sample 5474 has a high SAR value at 39.3. None of the other samples have values greater than the 3 standard.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

No other elements were found in concentrations harmful to plants.

Livestock:

No water quality standards for livestock were exceeded.

Culinary:

Water in this district tested slightly hard, with grains per gallon (gpg) ranging from 0.1 to 11.6 with a mean of 4.8. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. The EPA aesthetic standard for TDS is 500 ppm. At this level the water may be off-flavored but it is not a health problem until TDS

reaches 2,000 ppm. Samples 5474 and 5475 exceed the 500 ppm aesthetic standard. None of the samples exceeded the health standard of 2,000 ppm.

EPA has set an aesthetic standard of 0.05 ppm for manganese (Mn). Water with high concentrations may cause discoloration of plumbing fixtures and have poor flavor. Samples 5476 and 5477 have high manganese levels.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5475, 5476, and 5477 were contaminated with coliform bacteria. None of the samples from this district were found to have E. coli bacterial contamination.

SAN JUAN COUNTY
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5474	-0.1000	1.60	2.82	0.1778	0.47	219.84	-0.10	8.42	12.9	602
5475	-0.1000	169.89	1.82	-0.1000	28.35	59.97	-0.10	7.76	15.8	685
5476	-0.1000	42.64	6.63	0.0512	38.31	58.43	-0.10	8.07	15.2	401
5477	-0.1000	29.00	6.17	-0.1000	19.03	37.61	-0.10	8.46	15.6	271

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5474	-0.1000	0.13	8.85	0.00	-0.1000	0.1209	7.78	-0.1000	-0.1000	0.14	39.3	1,004
5475	-0.1000	0.11	107.20	0.00	-0.1000	-0.1000	5.10	-0.1000	-0.1000	0.16	1.1	1,141
5476	-0.1000	0.11	6.43	0.00	-0.1000	0.1826	5.80	0.1454	-0.1000	-0.10	1.6	668
5477	-0.1000	0.08	5.18	0.00	0.0217	0.0482	3.50	0.0584	-0.1000	-0.10	1.3	451

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5474	-0.1000	-0.1000	0.13	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	19.63	-0.1000	602	-0.1000	0.14
5475	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	61.21	-0.1000	685	-0.1000	0.16
5476	-0.1000	-0.1000	0.11	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	26.00	-0.1000	401	-0.1000	-0.10
5477	-0.1000	-0.1000	0.08	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	15.44	-0.1000	271	-0.1000	-0.10

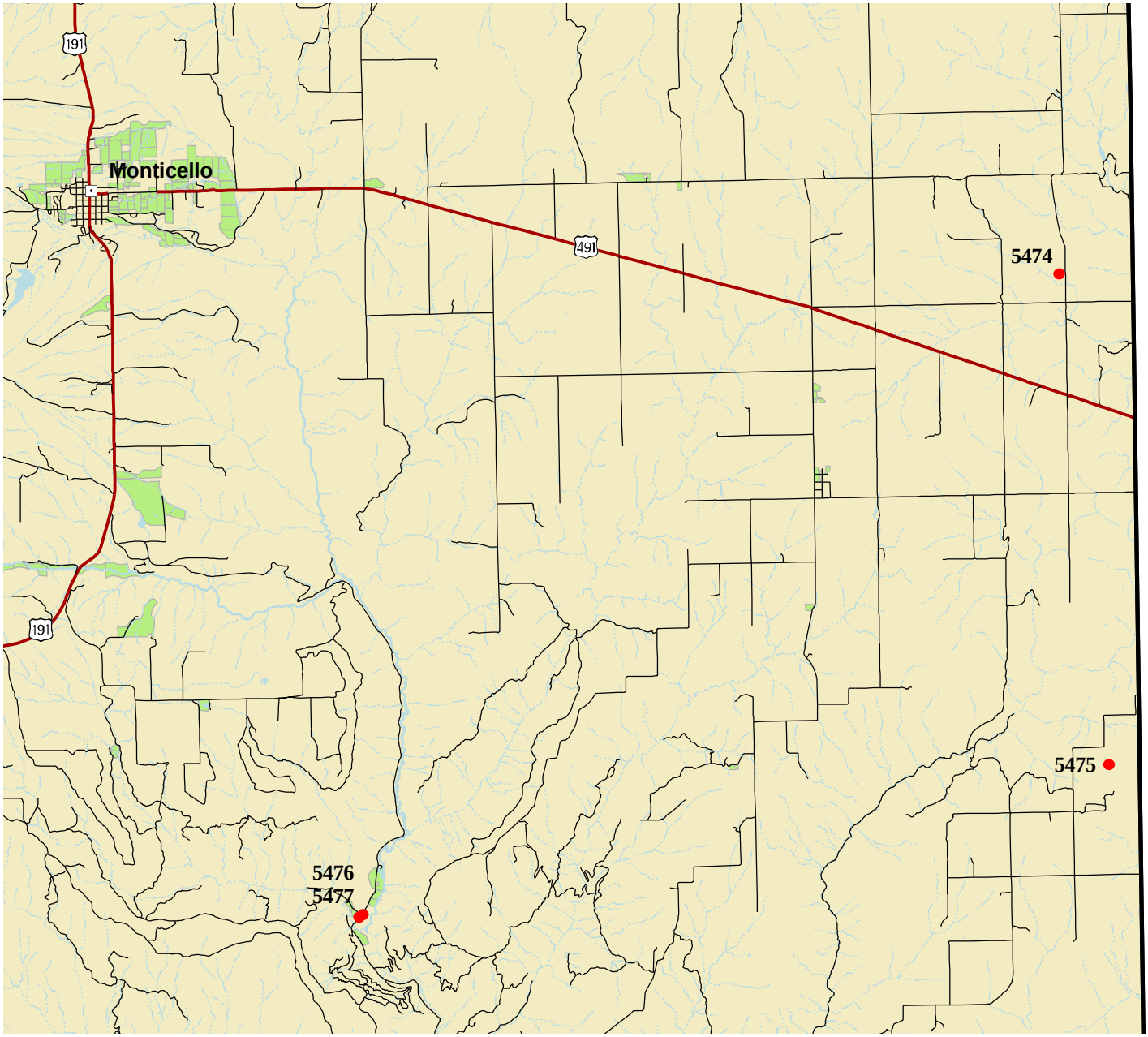
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5474	-0.1000	0.0295	-0.1000	-0.1000	-0.1000	0.1209	-0.1000	-0.1	-0.1000	19.63	-0.1000	602	0.14	8.42	0	0	0.1
5475	-0.1000	0.2028	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	6.0	-0.1000	61.21	-0.1000	685	0.16	7.76	1	0	11.6
5476	-0.1000	0.0676	-0.1000	-0.1000	-0.1000	0.1826	0.1454	-0.1	-0.1000	26.00	-0.1000	401	-0.10	8.07	1	0	4.7
5477	-0.1000	0.0453	-0.1000	-0.1000	0.0217	0.0482	0.0584	-0.1	-0.1000	15.44	-0.1000	271	-0.10	8.46	1	0	2.8

Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

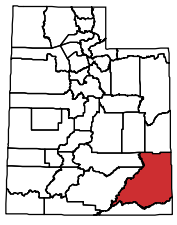
Map 44. San Juan County District



Map Scale 1:155,000 (1 inch = 2.45 miles)

Sample location
Major road
Other road
Stream
Ditch or canal
Aqueduct
Intermittent stream
Water body
Irrigated cropland
SCD boundary

District Location



Price River Watershed District

General:

Seven (7) samples were collected in the Price River Watershed District. Sampled water temperatures range from 8.6 °C to 10.9 °C, with a mean of 9.7 °C. The pH for the district ranges from 7.75 to 8.26 with a mean of 7.97.

Irrigation:

Salinity is a measurement of the concentration of ionic salts dissolved in water. For irrigation water, it is measured as electrical conductivity (EC), in µmhos/cm. Higher conductivity values indicate higher concentrations of dissolved salts. Water high in dissolved salts increases osmotic pressures, making it difficult for plants to get necessary water for growth. Generally when EC exceeds 750 µmhos/cm, salt-sensitive plants begin to be affected. When EC exceeds 3,000 µmhos/cm, most plants would be severely injured. All of the samples except 5387 and 5388 exceeded the salinity standard of 750 µmhos/cm. None of the samples from this district exceeded the severe salinity standard of 3,000 µmhos/cm.

SAR measures how much sodium (Na) is in solution compared to calcium (Ca) and magnesium (Mg). Excessive sodium in the soil causes soil particles to repel each other. This destroys the structure of the soil, preventing air, and water movement. SAR values greater than 3 marks the beginning of problems and values greater than 9 indicate severe problems. No samples exceeded the SAR standard of 3.

Bicarbonate (HCO_3) is an ion that commonly occurs in water solutions. It can be hazardous to plants in excessive amounts, especially when used in sprinkler irrigation. Bicarbonate also causes white deposits on plants and their fruits, which degrades their visual appeal and market value. Bicarbonate also increases the effect of sodium when both are present. Special attention is needed when using water with excessive bicarbonate. With sensitive plants minor problems appear with bicarbonate concentrations in excess of 1.5 meq/l and severe problems appear when it exceeds 8.5 meq/l. All of the samples have high bicarbonate, which is common for water in Utah.

Some specific elements can be toxic to plants. Sample 5472 has elevated boron (B), which is toxic to sensitive plants when it exceeds concentrations of 0.7 ppm. Boron causes severe injury at 10.0 ppm. However, boron in trace amounts is required for proper plant growth. It is important to monitor this element because the margin separating health from toxicity is small.

No elements were found in concentrations harmful to plants.

Livestock:

Livestock eating plants irrigated with water that has molybdenum (Mo) concentration greater than 0.01 ppm may be harmed. High concentrations of molybdenum interfere with copper nutrition in livestock. Sample 5472 has elevated molybdenum.

Sulfate (SO_4) is shown on chemical analyses for sulfur (S). Sulfur as sulfate can cause water to be off flavored and produces diarrhea in animals not used to drinking it. Problems start when the sulfur level in water exceeds 167 ppm. Sample 5470 has elevated sulfur at concentrations which exceed the livestock standard for sulfur.

No other elements were above concentrations that are harmful to livestock.

Culinary:

Water in this district tested slightly-hard to moderately hard, with grains per gallon (gpg) ranging from 5.1 to 10.1 with a mean of 8.1. Dissolved salts in water are measured in the field as Electrical Conductivity (EC). Culinary standards, however, are designated as Total Dissolved Solids (TDS), calculated from EC. No samples exceed the EPA aesthetic standard of 500 ppm above which the water may be off-flavored, but it is

not a health problem until TDS exceeds 2,000 ppm. Samples 5470 through 5473 exceeded the aesthetic drinking water standard of 500 ppm. None of the samples exceeded the 2,000 ppm health standard.

Sulfate is a soluble form of sulfur that can cause flavor problems in drinking water if there is more than 83 ppm sulfur (S). Bacteria in the water metabolize sulfur and produce hydrogen sulfide gas (rotten egg gas). The bacteria that produce this compound can live in plumbing fixtures and even hot water heaters. It is not uncommon to get strong odors when the hot water is turned on in areas where there is high sulfate. Generally, people cannot tolerate the odor from this gas. Even if the gas is not present, high sulfate concentrations can cause diarrhea in people not used to drinking it. Samples 5470 through 5473 have high sulfur.

The most serious problem with drinking water from private water systems is bacterial contamination. Because disease-causing organisms are rare, non-parasitic coliform bacteria that are found in association with parasitic bacteria are used as indicators to assess whether water could be contaminated with harmful bacteria. Coliform bacteria can occur naturally in the soil, whereas E. coli, a type of coliform, develops only in the digestive systems of mammals. Presence of coliform bacteria indicates that surface water, soil, or other contaminants are entering the well. Presence of E. coli in well water, on the other hand, indicates that mammalian fecal material is entering the well. Bacterial contamination is commonly the result of well construction problems. Contamination may result from inadequate capping, a leaking well casing, improper grouting, or lack of a casing. E. coli contamination can result from defective septic systems, manure operations or septic systems too close to wells, leaky sewer systems, or shallow water tables.

Samples 5387, 5388, 5470, 5471, and 5472 are contaminated with coliform bacteria. None of the samples from this district are contaminated with E. coli bacteria. Wells from which these samples were collected should be inspected carefully to determine the source of contamination and should not be used for culinary purposes until the problem is corrected.

PRICE RIVER
SOIL CONSERVATION DISTRICT

General

Id #	Be	Ca	K	Li	Mg	Na	P	pH	°C	TDS
5386	-0.1000	70.64	6.25	-0.1000	60.40	5.93	-0.10	7.75	10.3	484
5387	-0.1000	63.52	0.51	-0.1000	23.65	4.24	-0.10	7.84	8.6	315
5388	-0.1000	78.57	1.58	-0.1000	18.20	9.01	-0.10	7.93	8.7	355
5470	-0.1000	92.20	1.99	-0.1000	74.94	133.89	-0.10	8.15	9.0	857
5471	-0.1000	85.35	2.04	-0.1000	72.85	82.42	-0.10	8.26	10.9	721
5472	-0.1000	90.57	3.58	0.0760	82.32	136.04	-0.10	8.02	10.6	820
5473	-0.1000	90.64	2.40	-0.1000	70.37	92.83	-0.10	7.83	10.1	713

Values of -0.1 are below detection limits of testing procedure.

Irrigation

Id #	Al	B	Cl	CO3 meq/l	Cu	Fe	HCO3 meq/l	Mn	Se	Zn	SAR	EC umhos/cm
5386	-0.1000	0.10	-0.10	0.00	-0.1000	-0.1000	5.26	-0.1000	-0.1000	0.56	0.1	807
5387	-0.1000	-0.10	-0.10	0.00	-0.1000	-0.1000	4.86	-0.1000	-0.1000	-0.10	0.1	525
5388	-0.1000	-0.10	17.99	0.00	-0.1000	-0.1000	8.02	-0.1000	-0.1000	-0.10	0.2	592
5470	-0.1000	0.16	12.28	0.00	-0.1000	-0.1000	6.09	-0.1000	-0.1000	-0.10	2.5	1,428
5471	-0.1000	0.15	23.37	0.00	-0.1000	-0.1000	4.67	-0.1000	-0.1000	-0.10	1.6	1,201
5472	-0.1000	0.87	10.30	0.00	0.0269	-0.1000	9.86	-0.1000	-0.1000	-0.10	2.5	1,367
5473	-0.1000	0.17	14.40	0.00	-0.1000	-0.1000	7.60	-0.1000	-0.1000	-0.10	1.8	1,189

Underlined values exceed irrigation standards. Shaded values indicate severe risks. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Livestock

Id #	Al	As	B	Cd	Co	Cr	Mo	Ni	Pb	S	Se	TDS PPM	V	Zn
5386	-0.1000	-0.1000	0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	32.12	-0.1000	484	-0.1000	0.56
5387	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.85	-0.1000	315	-0.1000	-0.10
5388	-0.1000	-0.1000	-0.10	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	10.54	-0.1000	355	-0.1000	-0.10
5470	-0.1000	-0.1000	0.16	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	177.28	-0.1000	857	-0.1000	-0.10
5471	-0.1000	-0.1000	0.15	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	147.63	-0.1000	721	-0.1000	-0.10
5472	-0.1000	-0.1000	0.87	-0.1000	-0.1000	-0.1000	0.0143	-0.1000	-0.1000	117.14	-0.1000	820	-0.1000	-0.10
5473	-0.1000	-0.1000	0.17	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	110.63	-0.1000	713	-0.1000	-0.10

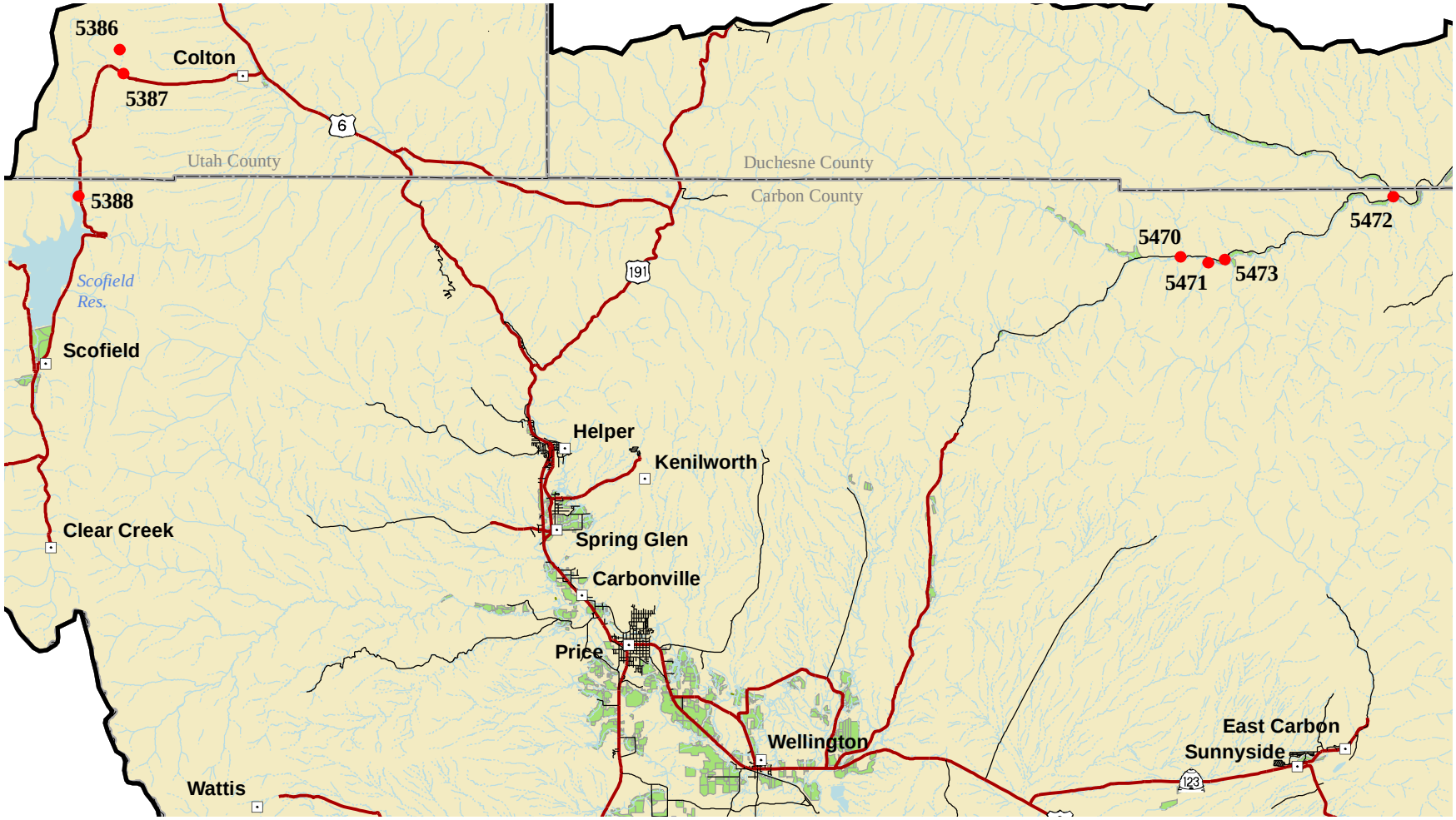
Underlined values indicate minor health problems (particularly smaller and younger animals). Shaded values indicate a serious health risk. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure.

Culinary

Id #	As	Ba	Cd	Cr	Cu	Fe	Mn	NO3-N	Pb	S	Se	TDS PPM	Zn	pH	Col	Ecoli	Hardness gpg
5386	-0.1000	0.0568	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	32.12	-0.1000	484	0.56	7.75	0	0	7.7
5387	-0.1000	0.0876	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.2	-0.1000	2.85	-0.1000	315	-0.10	7.84	1	0	5.1
5388	-0.1000	0.0635	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	10.54	-0.1000	355	-0.10	7.93	1	0	5.7
5470	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1	-0.1000	177.28	-0.1000	857	-0.10	8.15	1	0	9.8
5471	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	2.1	-0.1000	147.63	-0.1000	721	-0.10	8.26	1	0	9.3
5472	-0.1000	0.0276	-0.1000	-0.1000	0.0269	-0.1000	-0.1000	1.0	-0.1000	117.14	-0.1000	820	-0.10	8.02	1	0	10.1
5473	-0.1000	0.0200	-0.1000	-0.1000	-0.1000	-0.1000	-0.1000	1.0	-0.1000	110.63	-0.1000	713	-0.10	7.83	0	0	9.4

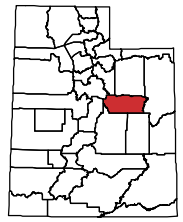
Underlined values exceed Secondary (aesthetic) standards. Shaded values exceed Primary (health) standards. All values are mg/l unless labeled differently. Values of -0.1 are below detection limits of testing procedure. For Col and Ecoli 1 = present 0 =absent.

Map 45. Price River Watershed District



Map Scale 1:320,000 (1 inch = 5.1 miles)

- Sample location
- Major road
- Other road
- Stream
- Ditch or canal
- Aqueduct
- Intermittent stream
- Water body
- Irrigated cropland
- SCD boundary

N

District Location