State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

Utah Water Quality Board Meeting
Via Zoom
Meeting Link

April 28, 2021
Board Work Meeting Begins at 8:30 am

AGENDA

Work Meeting
Presentation of Financial Burden Criteria – Draft Policy Discussion ..... Engineering Section

Water Quality Board Meeting – Roll Call

A. Electronic Meeting Notice ..... Jennifer Grant

B. Minutes:
Approval of Minutes for March 24, 2021 Water Quality Board Meeting ..... Jennifer Grant

C. Executive Secretary's Report ..... Erica Gaddis

D. Funding Requests:
1. Financial Report ..... Krystol Carfaro
2. Millville City – Additional Funding Request ..... Ken Hoffman & Beth Wondimu

E. Aquifer Classification
1. Request for Public Hearing - Bryce Canyon Area Aquifer Classification……..
..... Sarah Ward with Janae Wallace of UGS Presenting the Petition for Groundwater Quality Classification

F. Other
1. Waste Water Operator Certification Council Annual Report For 2020 ..... Chad Burrell, WWOCC Chair
2. Jordan River E. coli total Maximum Daily Load Introduction ..... Sandy Wingert
3. Request for Public Comment – FY 2021 Intended Use Plan..... Krystol Carfaro

G. Public Comment Period

H. Meeting Adjournment

Next Meeting May 26, 2021
8:30 am
Via Zoom
Meeting Link

DWQ-2021-006714
Revised 4/23/2021

In compliance with the American Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Larene Wyss, Office of Human resources, at (801) 536-4281, TDD (801) 536-4284, or by email at lwyss@utah.gov at least five working days prior to the scheduled meeting.

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I, **Jennifer Grant**, Chair of the **Water Quality Board**, have determined that the **April 28th, 2021** meeting of the Water Quality Board will be held electronically without an anchor location.

This determination is based on the following facts:

1. Utah is currently dealing with Covid 19, which has been determined to be a pandemic. Covid 19 is extremely contagious and can be deadly to those who contract it, especially those of advanced age and underlying health conditions.

2. The Agency offices are in Salt Lake County, which is currently in the State's moderate risk category. This limits the size of public gatherings to fewer than 25 people and requires the wearing of masks and social distancing. People are encouraged to stay in their homes.

3. A vast majority of Agency staff and the members of the Water Quality Board are teleworking to avoid unnecessary contact with others.

4. The Board room is insufficient to allow social distancing and reasonably safe accommodation of the Water Quality Board and the public.

5. The Water Quality Board uses an electronic platform which allows interested parties to view the meeting, hear discussions and provide written comment.

Dated this 15th day of April, 2021.

Jennifer Grant
Jennifer Grant (Apr 15, 2021 13:25 MDT)

Jennifer Grant, Chair
Water Quality Board

DWQ-2021-007234

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MINUTES

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
UTAH WATER QUALITY BOARD
Via Zoom

March 24, 2021
8:30 am Board Meeting

UTAH WATER QUALITY BOARD MEMBERS PRESENT

Gregg Galecki	Emily Niehaus
Jennifer Grant	Kim Shelley
Brandon Gordon	James Webb
Mike Luers	

Excused: Steven Earley, James VanDerslice

DIVISION OF WATER QUALITY STAFF MEMBERS PRESENT

Jennifer Berjikian	Samantha Heusser
Harry Campbell	Ken Hoffman
Emily Cantón	Brenda Johnson
Krystol Carfaro	Danielle Lenz
Eric Castrejon	Leanna Littler-Woolf
Skyler Davies	John Mackey
Judy Etherington	Winnie Pan
Erica Gaddis	Andrew Pompeo
Dan Griffith	Lisa Stevens
Angela Gunderson	Sarah Ward
Dan Hall	Beth Wondimu

OTHERS PRESENT

Jared Andersen	Sunrise Engineering
Melissa Reynolds	Holland & Hart LLP
Marian Rice	Salt Lake City Dept of Public Utilities
Kent Wilkerson	Mountain Green
Cliff Linford	Mountain Green
KUTV News	KUTV News
Jay Olsen	UDAF
David Tuckett	Payson City

OTHERS PRESENT (continued)

Travis Jockmusen	Payson City
Mayor Bill Wright	Payson City
Brian Baker	Zion Bank
Mike Keller	Zion Bank
Bill Couts	

Ms. Grant called the Board Meeting to order at 8:30 AM and took roll call for the members of the Board and audience.

Ms. Grant read the Electronic Meeting Notice with regards to the Water Quality Board meeting being held electronically, March 24, 2021 without an anchor location.

APPROVAL OF MINUTES OF FEBRUARY 19, 2021 BOARD WORK MEETING

Motion: **Mr. Gordon moved to approve the minutes of the February 19, 2021 Board work meeting.**

Ms. Niehaus seconded the motion. The motion passed unanimously with Ms. Niehaus, Mr. Galecki and Mr. Gordon recusing themselves as they were not present at the work meeting.

APPROVAL OF MINUTES OF FEBRUARY 24, 2021 BOARD MEETING

Motion: **Ms. Niehaus moved to approve the minutes of the February 24, 2021 Board meeting.**

Mr. Galecki seconded the motion. The motion passed unanimously with Mr. Gordon recusing himself as he was not present at the meeting.

EXECUTIVE SECRETARY REPORT

Dr. Gaddis updated the Water Quality Board regarding the following items.

- Congress passed the Federal $1.9 trillion Stimulus Package, which will bring significant funding to Utah.
- EPA is reviewing both Waters of US Rule and the 401 Rule.
- Upcoming rulemakings include stormwater (March 2021) and a structural revision to R317-8 this summer/fall.
- Significant progress has been made on the Utah Lake Water Quality Study and an update will be presented to the Board this summer.
- There will be a Hardship Criteria Work Meeting in April 2021
- Jeanne Riley will fill vacant Assistant Director position for the next six months.
- Leanna Littler-Woolf will oversee the General Permitting Section for the next six months.
- The Division is working to fill 4 staff vacancies in General Permitting, Watershed Protection, and Engineering.
- Recognized the passing of DWQ employee Svetlana Kopytkovskiy on March 1, 2021. Svetlana joined the DEQ team in 2003 and served as an outstanding engineer throughout her career with the state of Utah. During her time with DEQ, she worked in Air Quality, Drinking Water, and since 2006 for Water Quality. Born and raised in Belarus, Svetlana had experience working as an engineer in both countries and always brought intelligence and integrity to her work. She was

dedicated to engineering principles and always set high professional standards for herself and insisted on the same from others. She was complimented many times for her thoroughness, which in the end served our customers and the waters we protect.

FUNDING REQUESTS

Financial Report: Ms. Carfaro updated the Water Quality Board on the Loan Funds and Hardship Grant Funds as indicated in the packet.

Mountain Green Sewer Improvement District Project Authorization: Mr. Davies presented a request to the Water Quality Board for authorization of funding assistance in the amount of $23,000,000.

Motion: Mr. Luers moved to approve the staff recommendation that the Board authorize a loan to Mountain Green Sewer Improvement District (MGSID) of $7,000,000 at an interest rate of 1.3% repayable over 30 years. The loan will be subject to the following conditions:

1. **MGSID must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).**
2. **MGSID must pursue and retain remaining funding necessary to fully implement the project.**
3. **MGSID must develop and implement an asset management program that is consistent with EPA's Fiscal Sustainability Plan guidance.**

Ms. Niehaus seconded the motion. The motion passed unanimously.

Payson City Wastewater Treatment Project Authorization: Mr. Pompeo presented a request to the Water Quality Board for authorization of $23,000,000.

Motion: Mr. Galecki moved to approve the staff recommendation that the Board authorize: a loan to Payson City of $11,500,000 at an interest rate of 1.11 % repayable over 20 years. The loan will be subject to the following conditions:

1. **Payson must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).**
2. **Payson must pursue and retain remaining funding necessary to fully implement the project.**
3. **Payson must develop and implement an asset management program that is consistent with EPA's Fiscal Sustainability Plan guidance.**

Mr. Gordon seconded the motion. The motion passed unanimously.

RULE MAKING

Request to Adopt Rule Making for R317-8-3, R317-8-4 and R317-8-11, Storm Water Discharges: Ms. Stevens requested to adopt rulemaking for revisions to the Utah storm water discharge rules in Part R317-8.

Motion: Mr. Galecki moved to adopt the revision to R317-8-3, R317-8-4 and R317-8-11.

Ms. Niehaus seconded the motion. The motion passed unanimously.

OTHER BUSINESS

Request to Approve NOV Settlement with South Davis Sewer District: Ms. Littler-Woolf requested that the Board approve the negotiated penalty of $232,831.00.

Penalty Held in Abeyance	$155,221
Penalty to a Mitigation Project	$ 38,805
Penalty Paid to the State of Utah	$ 38,805
Total Civil Penalty	$232,831
Administrative Cost Reimbursement to DWQ	$ 15,345
Total Settlement	**$248,176**

Motion: **Mr. Webb moved to approve the South Davis Sewer District NOV Settlement in the amount of $248,176 with $155,221 penalty held in abeyance for a total civil penalty of $232,831.**

Mr. Luers seconded the motion. The motion passed unanimously.

PUBLIC COMMENTS

No public comments.

MEETING ADJOURNMENT

Motion: **Ms. Niehaus moved to adjourn the meeting.**

Mr. Luers seconded the motion. The motion passed unanimously.

To listen to the full recording of the Water Quality Board meeting.
https://deq.utah.gov/boards/utah-water-quality-board-meetings

Next Meeting – April 28, 2021
Work Meeting begins at 8:30 am
Via Zoom
https://us02web.zoom.us/j/7074990271

Jennifer Grant, Chair
Utah Water Quality Board

LOAN FUNDS FINANCIAL STATUS REPORT APRIL 2021

STATE REVOLVING FUND (SRF)	State Fiscal Year 2021	State Fiscal Year 2022	State Fiscal Year 2023	State Fiscal Year 2024	State Fiscal Year 2025	State Fiscal Year 2026
Funds Available						
Capitalization Grants Awards (FFY18 - 20)	23,958,000	-	-	-	-	-
State Match (FFY18 - 20)	3,534,401	-	-	-	-	-
Future Capitalization Grants (estimated)	8,357,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Future State Match (estimated)	1,671,400	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000
SRF - 2nd Round	43,150,134	53,551,311	18,395,087	5,454,935	15,791,878	45,742,615
Interest Earnings at 0.4252%	45,869	227,700	78,216	23,194	67,147	194,498
Loan Repayments (5255)	3,275,803	18,652,076	17,591,632	20,513,749	20,283,590	20,240,402
Total Funds Available	83,992,606	82,031,087	45,664,935	35,591,878	45,742,615	75,777,515
Project Obligations						
Central Valley Water Reclamation Facility	(8,324,000)	(24,976,000)	(6,800,000)	-	-	-
Duchesne City	(27,295)	-	-	-	-	-
Moab City	(80,000)	-	-	-	-	-
Provo City	(17,230,000)	(28,000,000)	(20,000,000)	(8,800,000)	-	-
South Salt Lake City (A)	(630,000)	(2,160,000)	(234,000)	-	-	-
Loan Authorizations						
Millville City	(1,150,000)	-	-	-	-	-
South Davis Sewer District (with NPS)	-	(7,000,000)	(7,176,000)	-	-	-
Mountain Green		(1,500,000)	(4,000,000)	(1,500,000)		
Payson City			(2,000,000)	(9,500,000)		
Planned Projects						
*Millville	(3,000,000)					
Total Obligations	(30,441,295)	(63,636,000)	(40,210,000)	(19,800,000)	-	-
SRF Unobligated Funds	$ 53,551,311	$ 18,395,087	$ 5,454,935	$ 15,791,878	$ 45,742,615	$ 75,777,515

UTAH WASTEWATER LOAN FUND (UWLF)	State Fiscal Year 2021	State Fiscal Year 2022	State Fiscal Year 2023	State Fiscal Year 2024	State Fiscal Year 2025	State Fiscal Year 2026
Funds Available						
UWLF	20,628,029	13,998,250	15,176,356	11,864,144	14,814,235	18,104,770
Sales Tax Revenue	-	3,587,500	3,587,500	3,587,500	3,587,500	3,587,500
Loan Repayments (5260)	845,972	3,031,806	2,615,488	2,598,791	2,939,235	2,792,353
Total Funds Available	21,474,001	20,617,556	21,379,344	18,050,435	21,340,970	24,484,623
General Obligations						
State Match Transfers	(5,205,801)	(1,600,000)	(1,600,000)	(1,600,000)	(1,600,000)	(1,600,000)
DWQ Administrative Expenses	(412,950)	(1,636,200)	(1,636,200)	(1,636,200)	(1,636,200)	(1,636,200)
Project Obligations						
Kane Co Water Conservancy Dist (Duck Creek)	(400,000)					
South Salt Lake City (B)	(1,457,000)	(2,205,000)	(1,779,000)	-	-	-
Loan Authorizations						
Spanish Fork		-	(4,500,000)	-	-	-
Planned Projects						
None at this time	-	-	-	-	-	-
Total Obligations	(7,475,751)	(5,441,200)	(9,515,200)	(3,236,200)	(3,236,200)	(3,236,200)
UWLF Unobligated Funds	$ 13,998,250	$ 15,176,356	$ 11,864,144	$ 14,814,235	$ 18,104,770	$ 21,248,423

*WQB Agenda Items

LOAN FUNDS FINANCIAL STATUS REPORT APRIL 2021

Total Loan Fund Balance	67,549,560	33,571,443	17,319,079	30,606,113	63,847,385	97,025,938
Project Reserve	-	(5,000,000)	(10,000,000)	(15,000,000)	(20,000,000)	(25,000,000)
Total Available Loan Funds	**67,549,560**	**28,571,443**	**7,319,079**	**15,606,113**	**43,847,385**	**72,025,938**

*WQB Agenda Items

HARDSHIP GRANT FUNDS FINANCIAL STATUS REPORT APRIL 2021

HARDSHIP GRANT FUNDS (HGF)	State Fiscal Year 2021	State Fiscal Year 2022	State Fiscal Year 2023	State Fiscal Year 2024	State Fiscal Year 2025	State Fiscal Year 2026
Funds Available						
Beginning Balance		1,357,178	1,284,717	1,582,115	2,007,093	2,540,936
Federal HGF Beginning Balance (5250)	6,144,774	-	-	-	-	-
State HGF Beginning Balance (5265)	2,183,274	-	-	-	-	-
Interest Earnings at 0.4252%	8,853	5,771	5,463	6,727	8,534	10,804
UWLF Interest Earnings at 0.4252%	21,928	59,521	64,530	50,446	62,990	76,981
Hardship Grant Assessments (5255)	412,912	739,214	1,131,932	1,050,614	1,172,897	775,147
Interest Payments - 5260	131,359	373,034	345,473	317,191	289,421	261,668
Advance Repayments	-	-	-	-	-	-
Total Funds Available	8,903,098	2,534,717	2,832,115	3,007,093	3,540,936	3,665,537
Financial Assistance Project Obligations						
Eagle Mountain City - Construction Grant	(510,000)	-	-	-	-	-
Emigration Sewer Imp Dist - Planning Grant	(26,158)	-	-	-	-	-
Kane Co Water Conservancy Dist (Duck Creek) - Hardship Grant	(3,034,500)	-	-	-	-	-
Lewiston City - Design and Construction	(274,000)	-	-	-	-	-
Millville City - Design and Construction	(1,500,000)	-				
Spanish Fork - Hardship Grant	-	(250,000)	(250,000)	-	-	-
Non-Point Source/Hardship Grant Obligations						
Fitzgerald ARDL interest-rate buy down	(51,056)	-	-	-	-	-
McKees ARDL interest-rate buy down	(55,261)	-	-	-	-	-
Munk Dairy ARDL interest-rate buy down	(16,017)	-	-	-	-	-
(FY12) Utah Department of Agriculture	(277,928)	-	-	-	-	-
(FY15) DEQ - Ammonia Criteria Study	(27,242)	-	-	-	-	-
(FY15) DEQ - Nitrogen Transformation Study	(14,500)	-	-	-	-	-
(FY17) DEQ - Utah Lake Water Quality Study	(348,301)	-	-	-	-	-
(FY20) Wasatch Co Health Dept Ground WQ Study	(18,387)					
BYU - Bioassays to Investigate Nutrient Limitation	(8,603)	-	-	-	-	-
USU - Historic Trophic State/Nutrient Concentrations Paleo	(123,500)	-	-	-	-	-
FY 2018 - Remaining Payments	(64,739)	-	-	-	-	-
FY 2019 - Remaining Payments	(452,985)	-	-	-	-	-
FY 2020 - Remaining Payments	(473,270)	-	-	-	-	-
FY 2021 - Remaining Payments	(769,474)					
Future NPS Annual Allocations		(1,000,000)	(1,000,000)	(1,000,000)	(1,000,000)	(1,000,000)
Planned Projects						
*Millville	500,000					
Total Obligations	(7,545,921)	(1,250,000)	(1,250,000)	(1,000,000)	(1,000,000)	(1,000,000)
HGF Unobligated Funds	$ 1,357,178	$ 1,284,717	$ 1,582,115	$ 2,007,093	$ 2,540,936	$ 2,665,537

*WQB Agenda Items

State of Utah
Wastewater Project Assistance Program
Project Priority List

As of April 7, 2021

Rank	Project Name	Funding Authorized	Total Points	Point Categories			
				Project Need	Potential Improvement	Population Affected	Special Consideration
1	South Davis Sewer District	x	138	50	18	10	60
2	Payson	x	120	35	17	8	60
3	Spanish Fork Water Reclamation Facility	x	117	50	19	8	40
4	Millville City	x	114	45	46	3	20
5	Mountain Green	x	108	50	14	4	40
6	Fairview City		107	50	15	2	40
7	San Juan Spanish Valley SSD	x	86	25	0	1	60
8	Wellington City	x	74	10	21	3	40
9	Lewiston City	x	67	10	16	1	40

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MEMORANDUM

TO: Utah Water Quality Board

THROUGH: Erica Brown Gaddis, PhD
Executive Secretary

FROM: Ken Hoffman, Manager, P. E. & Beth Wondimu
Engineering Section

DATE: April 28, 2021

SUBJECT: Additional Funding Request - Millville City – New Wastewater Collection System Including House Laterals and Septic Tank Abandonment

In March 2020, the Water Quality Board (the Board) authorized a construction assistance funding package in a principal forgiveness grant of $2,000,000 to support for Millville City's (Millville) design and construction of a new sewerage collection system to connect every home within municipal boundaries and a hardship grant of $1,500,000 for assistance in construction of house laterals and septic tank abandonment. Staff's report provided to the Board for this authorization is provided in Attachment 2. The United State Department of Agriculture, Rural Development (USDA-RD) also authorized loan and grant funding in support of the project. USDA-RD authorized a loan of $5,011,000 at an interest rate of 1.5% percent for a 40-year term and grant of $2,949,000 for the project. The total estimated cost at that time was $14.3 million. The city will self-fund the remaining $3,575,000 needed to pay for abandonment of existing septic systems and to run sewer laterals to the new community sewer system.

In April 2021, Millville bid the sewer project and the lowest bid came in over the original construction estimate. Three bids were received in the amount of: $26.9, $31.8, and $34.0 million. These bids are good for 60 days or until May 25, 2021. All the bids have been reviewed by Franson Engineering and the costs have been compared. The analysis of the bids indicated that higher costs are:

- Due to higher pipe material costs ($51.50 per LF)
- Higher labor costs due to market conditions
- Higher cost of manhole materials ($28,634 per connection)
- Higher cost of excavation of depth (due to deep sewers) to install lift station

Due to these increased bids, Franson Engineers re-evaluated the alternatives to construct a new Millville City collection system and connect to either Hyrum City's or Logan City's existing treatment systems.

Using the increased materials, labor, and excavation cost of the $26.9 million bid plus Logan impact fees, Franson Engineers estimate the cost to connect to Logan would be $27.8 million. Therefore, connection to the Hyrum Treatment plant is still considered the preferable alternative for Millville City. In addition, Franson Engineers are examining the bids for any saving which can be realized for reduction in work of to be completed as future projects. One such item the project as bid, included a pair of 10" and 12" force mains from the lift station to connect to Hyrum by eliminating the 10" force main Millville can save $700,000. Last, Franson Engineers are examining the plans for any collection system which could be deferred and required for future development. Franson Engineers are currently looking at connections outside the 300 ft zone of influence of the city well with increasing levels of nitrate. Franson Engineers should have this information at the time of the Board meeting. A comparison of the original cost estimate with today's cost estimate is given in Table 1. The summary of their analysis is as follows:

Table 1 – TOTAL PROJECT COST

Item	**March 2020 Budget**		**April 2021 Budget**	
	Collections	**Laterals**	**Collections**	**Laterals**
Legal/Bonding, Loan Origination	$ 0		$ 0	
Construction – Collections	$ 4,896,000		$15,768,595	
Construction – Pressure Line	$ 1,530,000		$5,763,182	
Laterals		$ 3,150,000		$2,700,000
Septic Tank Abandonment		$ 630,000		$1,000,000
Engineering CMS & Environmental	$1,100,000	$ 350,000	$1,100,000	$ 350,000
Contingency (25% - 2020; 15% 2021)	$ 1,607,000	$ 945,000	$3,229,767	$555,000
Subtotals	$9,225,000	$5,075,000	$25,861,544	$4,605,000
Total Project Costs:		**$ 14,300,000**		**$30,466,544**

A total of $30.5 million is needed to fund the project. The city is requesting supplemental funding from both the Water Quality Board and from USDA-RD. The USDA-RD has stated Millville could apply for a cost overrun authorization to make up the additional funding and has given a potential indication of a 25%/75% for grant/loan ratio with a loan term of 40 years at around 1.75%. USDA-RD does not fund any of the private lateral work.

In March 2020, Board authorized $1,500,000 for laterals and $2,000,000 for principal forgiveness for collection sewer. As required by the Board authorization, Millville developed a Hardship Lateral Grant Program and accepted application in Fall 2020 and 154 qualified applicants applied. At this time, Millville request to utilize $1 million out of $1.5 million for laterals and asks the Board to reauthorize the remaining $500,000 towards the collection system funding. Note staff feels this would be best conducted by unauthorizing $500,000 in Hardship Grant funds and authorizing additional principle forgiveness funds. In addition, Millville is requesting the Board consider authorization of additional principle forgiveness funding.

Staff developed static cost models (Attachment 1) to evaluate scenarios for supplemental funding by the Board for additional principal forgiveness. It is important to note the cost model is examining the cost of the collection system project and is not evaluating the costs of the construction of private laterals.

The construction costs of private laterals will have to be paid by individual home owners. Included in the cost model is additional projected USDA-RD funding. The static models show that in all cases, the sewer rates with current funding will exceed $70.58 per month per ERU or 1.4% in the 2019 MAGI. This project continues to qualify for consideration of grant funding to part of a funding package.

Staff Comments

Staff supports Millville's plan to implement a public sewerage system that will protect a valuable regional drinking water resource and contribute to orderly growth in the area. The recommended alternative would connect the city's sewer to the regional wastewater treatment plant in Hyrum City, linking the regional needs for water quality protection.

Financing the project is challenging because of the high cost of pressure system and collection systems at present. Current growth and rising costs support the need for planning and constructing a public sewerage system now. Staff is hopeful the projected growth in the community which this system will also serve can help reduce the monthly costs, however growth is never guarantied.

At this time the Hardship Grant fund is heavily obligated so staff believes returning $500,000 of funding to this account and instead authorizing it as additional principal forgiveness would be valuable to the Board. Since this project is already being constructed under the requirements of first round funding, staff recommends the Board consider bringing additional principal forgiveness funding to the project. The Capitalization Grant funds available for principal forgiveness are shown below in Table 2.

TABLE 2: Capitalization Grant Funds Available as Principal Forgiveness			
	Minimum	Maximum	Balances
FY17	$695,600 (met)	$2,086,800	$1,108,800
FY 18	$844,300	$2,532,900	$2,532,900
FY 19	$844,300	$2,532,900	$2,532,900
FY 20	$835,800	$3,343,200	$3,343,200
PROJECTED FY21	$835,700	$3,342,800	Not available at this time
	Authorized	**Drawn**	
Provo	$2,000,000	$0	-$2,000,000
South Salt Lake	$2,000,000	$0	-$2,000,000
Millville	$2,000,000	$850,000	-$1,150,000
		Total Available for Authorization	**$4,367,800**

Staff recommends including some amount of 0% loan as this will keep the project under standard bond council review. Staff is highly concerned about the escalating costs of this project, examining the attached cost model staff believes a funding package focused on 2.8% of MAGI is an appropriate goal for the Board to consider this results in a $500,000 loan at 0% for a 30-year term and $2,500,000 in additional principal forgiveness. This potential funding package would bring overall $5,500,000 in grant from the Board and $500,000 in loan. A funding comparison of the authorized and requested funding is shown in Table 3 below. This cost sharing estimate assumes RD can fund 100% of the funding gap for the project.

TABLE 3 - PROJECT FUNDING COMPARISON			
Funding Source	**March 2020 Originally**	**Additional WQB & RD, Funding**	**April 2021 Total**
LATERALS			
Local Contribution	$ 3,575,000		$ 3,605,000
WQB Hardship Grant	$ 1,500,000	(-$500,000)	$1,000,000
COLLECTION SYSTEM			
USDA-RD Loan	$ 5,011,000	$12,948,543 loan & grant	$20,908,544
USDA-RD Grant	$ 2,949,000		
WQB Loan	$0	$500,000	$500,000
WQB Principal Forgiveness Grant	$ 2,000,000	$ 2,500,000	$4,500,000
Total Project Costs:	$ 14,300,000	$15,948,544	$30,513,544

Staff Recommendations

Staff recommends to the Board to: **Unauthorized $500,000 of the Hardship Grant funding from the March 2020 funding package for private laterals. Authorized an additional $3,000,000 in total funding including $500,000 as loan for 30 years at 0% interest and $2,500,000 in principal forgiveness subject to the following special conditions:**

1. Millville must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. As part of the facility planning, Millville must complete a Water Conservation and Management Plan.
3. Millville must pursue and retain remaining funding necessary to fully implement the collection system project.
4. Millville must develop and implement an asset management program that is consistent with EPA's Fiscal Sustainability Plan guidance.

Attachment 1 - STATIC COST MODEL - Millville

Project Costs	Collection	Laterals
Legal/Bonding	$ 42,000	
DWQ Loan Origination Fee	$ 5,000	
Collection Sewers	$ 15,768,595	
Pressure System	$ 5,763,182	
Laterials		S 2,700,000
Septic Tank Abandonment		S 1,000,000
Engineering, CMS, & Environmental	$ 1,100,000	S 350,000
Contingency (approx 15% const. cost)	$ 3,229,767	S 555,000
Subtotals	$ 25,908,544	S 4,605,000
Total Project Cost:		**30,513,544**

Current Customer Base & User Charges	
ERU's	672
MAGI (2019):	$60,500
Affordable Monthly Rate at 1.4%	$70.58
Current Impact Fee (per ERU):	TBD
Current Monthly User Fee (per ERU)	$2.00
Existing O&M expenses Treatment & Collection	$0
New O&M expenses Treatment & Collection	$339,789
Existing Sewer Debt Service	$15,000

Project Funding	Collections	Laterials and Septic
Applicant Contribution		$ 3,605,000
RD funding - Original loan	S 5,011,000	
RD funding - Original grant	S 2,949,000	
WQB Principle forgiveness Grant - Orgial	S 2,000,000	
WQB Hardship Grant - for lateral		S 1,000,000
WQB Hardship Grant - for general project cost	S 500,000	
Additional Funding need	S 15,448,544	
Total Project	**$ 25,908,544**	S 4,605,000

Funding Conditions	
WQB Loan Repayment Term:	30
Reserve Funding Period:	6
USDA-RD Loan Repayment Term:	40

ESTIMATED COST OF SEWER SERVICE* (Lateral on private property are NOT included in the cost model)

2020 WQB Principal Forgiveness	2020 RD Grant Amount	2020 RD Loan Amount	**2021 WQB Principal Forgiveness**	**2021 WQB Loan**	**2021 POTENTIAL RD Grant Amount***	**2021 POTENTIAL RD Loan Amount***	Loan Debt Service	Assumed RD Reserve	Total Annual Sewer Cost	Monthly Sewer Cost/ERU	Sewer Cost as a % of MAGI
2,000,000	2,949,000	5,011,000	**0**	**500,000**	3,862,136	11,586,408	593,537	259,707	1,208,033	149.81	2.97%
2,000,000	2,949,000	5,011,000	**500,000**	**500,000**	3,737,136	11,211,408	580,423	259,707	1,194,919	148.18	2.94%
2,000,000	2,949,000	5,011,000	**1,000,000**	**500,000**	3,612,136	10,836,408	567,308	259,707	1,181,804	146.55	2.91%
2,000,000	2,949,000	5,011,000	**1,500,000**	**500,000**	3,487,136	10,461,408	554,194	259,707	1,168,689	144.93	2.87%
2,000,000	2,949,000	5,011,000	**2,000,000**	**500,000**	3,362,136	10,086,408	541,079	259,707	1,155,575	143.30	2.84%
2,000,000	**2,949,000**	**5,011,000**	**2,500,000**	**500,000**	**3,237,136**	**9,711,408**	**527,965**	**259,707**	**1,142,460**	**141.67**	**2.81%**
2,000,000	2,949,000	5,011,000	**3,000,000**	**500,000**	3,112,136	9,336,408	514,850	259,707	1,129,346	140.05	2.78%
2,000,000	2,949,000	5,011,000	**0**	**1,000,000**	3,737,136	11,211,408	601,256	259,707	1,215,752	150.76	2.99%
2,000,000	2,949,000	5,011,000	**500,000**	**1,000,000**	3,612,136	10,836,408	588,142	259,708	1,202,638	149.14	2.96%
2,000,000	2,949,000	5,011,000	**1,000,000**	**1,000,000**	3,487,136	10,461,408	575,027	259,709	1,189,525	147.51	2.93%
2,000,000	2,949,000	5,011,000	**1,500,000**	**1,000,000**	3,362,136	10,086,408	561,913	259,710	1,176,411	145.88	2.89%
2,000,000	2,949,000	5,011,000	**2,000,000**	**1,000,000**	3,237,136	9,711,408	548,798	259,711	1,163,298	144.26	2.86%
2,000,000	2,949,000	5,011,000	**2,500,000**	**1,000,000**	3,112,136	9,336,408	535,684	259,712	1,150,184	142.63	2.83%
2,000,000	2,949,000	5,011,000	**3,000,000**	**1,000,000**	2,987,136	8,961,408	522,569	259,713	1,137,071	141.01	2.80%
2,000,000	2,949,000	5,011,000	**0**	**2,000,000**	3,487,136	10,461,408	616,694	259,714	1,231,196	152.68	3.03%
2,000,000	2,949,000	5,011,000	**500,000**	**2,000,000**	3,362,136	10,086,408	603,579	259,715	1,218,083	151.05	3.00%
2,000,000	2,949,000	5,011,000	**1,000,000**	**2,000,000**	3,237,136	9,711,408	590,465	259,716	1,204,969	149.43	2.96%
2,000,000	2,949,000	5,011,000	**1,500,000**	**2,000,000**	3,112,136	9,336,408	577,350	259,717	1,191,856	147.80	2.93%
2,000,000	2,949,000	5,011,000	**2,000,000**	**2,000,000**	2,987,136	8,961,408	564,236	259,718	1,178,742	146.17	2.90%
2,000,000	2,949,000	5,011,000	**2,500,000**	**2,000,000**	2,862,136	8,586,408	551,121	259,719	1,165,629	144.55	2.87%
2,000,000	2,949,000	5,011,000	**3,000,000**	**2,000,000**	2,737,136	8,211,408	538,007	259,720	1,152,515	142.92	2.83%

* MODEL ASSUMPTION: RD will be able to fully fund the Collection System Project at a 75%/25% Loan/Grant ratio with a 40 year 1.75% loan terms.

State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

M E M O R A N D U M

TO: Water Quality Board

FROM: Erica Gaddis, PhD
Director, Division of Water Quality

FROM: Sarah Ward
Environmental Scientist III

Dan Hall
Individual Permitting Section Manager

DATE: April 28, 2021

SUBJECT: Request for Authorization to Conduct Public Hearing for an Aquifer Classification Petition for the Bryce Canyon Area, Garfield County, Utah

In Accordance with the provisions of R317-6-5, the Garfield County Commission has requested to submit a petition to the Utah Water Quality Board to classify the ground water of the Bryce Canyon Area in Garfield County, Utah. Attached is a copy of the petition request from Garfield County Commission. The petition was prepared for Garfield County Commission by Janae Wallace and Trevor Schlossnagle of the Utah Geological Survey. Technical review on the draft aquifer classification report and maps were provided by staff of the Division of Water Quality Individual Permits Section.

Based on ground water usage the classification of 1A is requested under R317-6-4(4.2) "Class 1A ground water will be protected to the maximum extent feasible from degradation due to facilities that discharge or would probably discharge to ground water." A copy of R317-4 "Ground Water Class Protection" and the applicable portion of R317-6-5, "Ground Water Classification for Aquifers", are included for your reference. Figure 1 from the petition shows the location and boundaries of the aquifers for which classification is requested.

Aquifer petition rules allows the Board to classify entire aquifers or parts of aquifers according to the quality or use of the ground water contained therein. Boundaries for the class areas are to be delineated and based on hydrogeologic properties and existing ground water quality or usage.

Parts of the same aquifer may be classified differently. When considering an aquifer classification petition, the Board should be aware of the following applications and limitations.

Aquifer Classification is:

1. In the absence of other more site-specific data, a predetermined basis for establishing protection levels and best available control technology in the issuance of ground water discharge permits by the Division of Water Quality.

2. A common ground water quality management objective to be maintained when used as a land use management tool by local agencies.

3. A consolidation of knowledge about a given hydrologic setting from a number of scientific and technical sources.

4. A formal administrative prioritization of the ground water resource.

Aquifer Classification is NOT:

1. A mandatory requirement to take specific action on the part of local government including application of any land use zoning restrictions.

2. An obligation by local government to perform technical assessments, monitoring or ongoing financial investments.

3. An assumption of the state responsibility to enforce or enact county or local ordinances on waste management practices.

The staff has reviewed the petition and supporting information and has determined that the criteria have been met. Therefore, it is recommended that the Board initiate action for aquifer classification. With the Board's approval, the Division of Water Quality will set a date for conducting a public hearing in the county and issue the required public notice. After holding the public hearing and consideration of any comments that are received, information will be returned to the Board for the disposition of the classification petition.

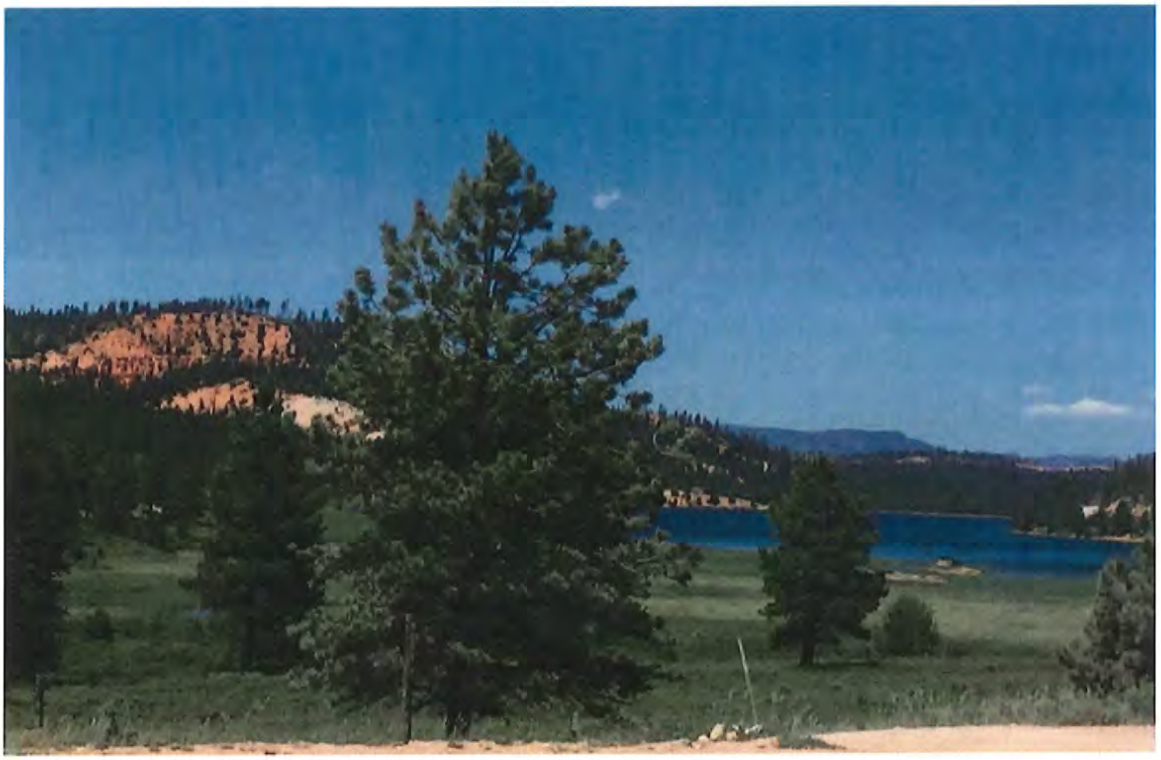
PETITION FOR GROUNDWATER QUALITY CLASSIFICATION, BRYCE CANYON AREA, GARFIELD COUNTY, UTAH

Submitted to Utah Water Quality Board by Garfield County Commission

Prepared by

Janae Wallace and Trevor Schlossnagle
Utah Geological Survey

April 14, 2021



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INTRODUCTION

This is a formal petition to the Utah Water Quality Board submitted by the Utah Geological Survey on behalf of Garfield County to classify groundwater quality in the valley-fill aquifers of Johns and Emery Valleys under "Administrative Rules for Ground Water Quality Protection R317-6, December 1, 2019," Section 317-6-5, Ground Water Classification for Aquifers, Utah Administrative Code.

Johns Valley is in eastern Garfield County, central Utah, between latitudes 37° 24′ and 38° N. and longitudes 112° 15′ and 111° 52′ W. The main focus of the petition (figure 1) is Bryce Canyon City and the gently rolling, forested slope to the northwest and north; the East Fork Sevier River below Tropic Reservoir and associated side drainages, particularly East Creek; and Johnson Bench and Emery Valley, which comprise the southwestern end of Johns Valley. Bryce Canyon City is about 20 miles southeast of the community of Panguitch. The northwest rim of Bryce Canyon itself forms the southeastern study area boundary. Emery Valley is an intermontane basin that is bounded by the Sevier Plateau on the north and east, and the Paunsaugunt Plateau on the southwest, and opens to Johns Valley to the northeast. The East Fork Sevier River flows through Emery Valley from southwest to northeast and continues northeast through Johns Valley. The hand-dug Tropic Ditch taps into the East Fork Sevier River and transports water east through Water Canyon toward Tropic Valley (Davis and Pollock, 2010). Wells serving Bryce Canyon National Park are located in shallow aquifers south of the Ruby's Inn thrust fault. This classification document helps Garfield County recognize the value of their groundwater resource and aligns with their 2019 Economic Plan of planning and preparing for future water issues (Garfield County Economic Development Plan, 2019).

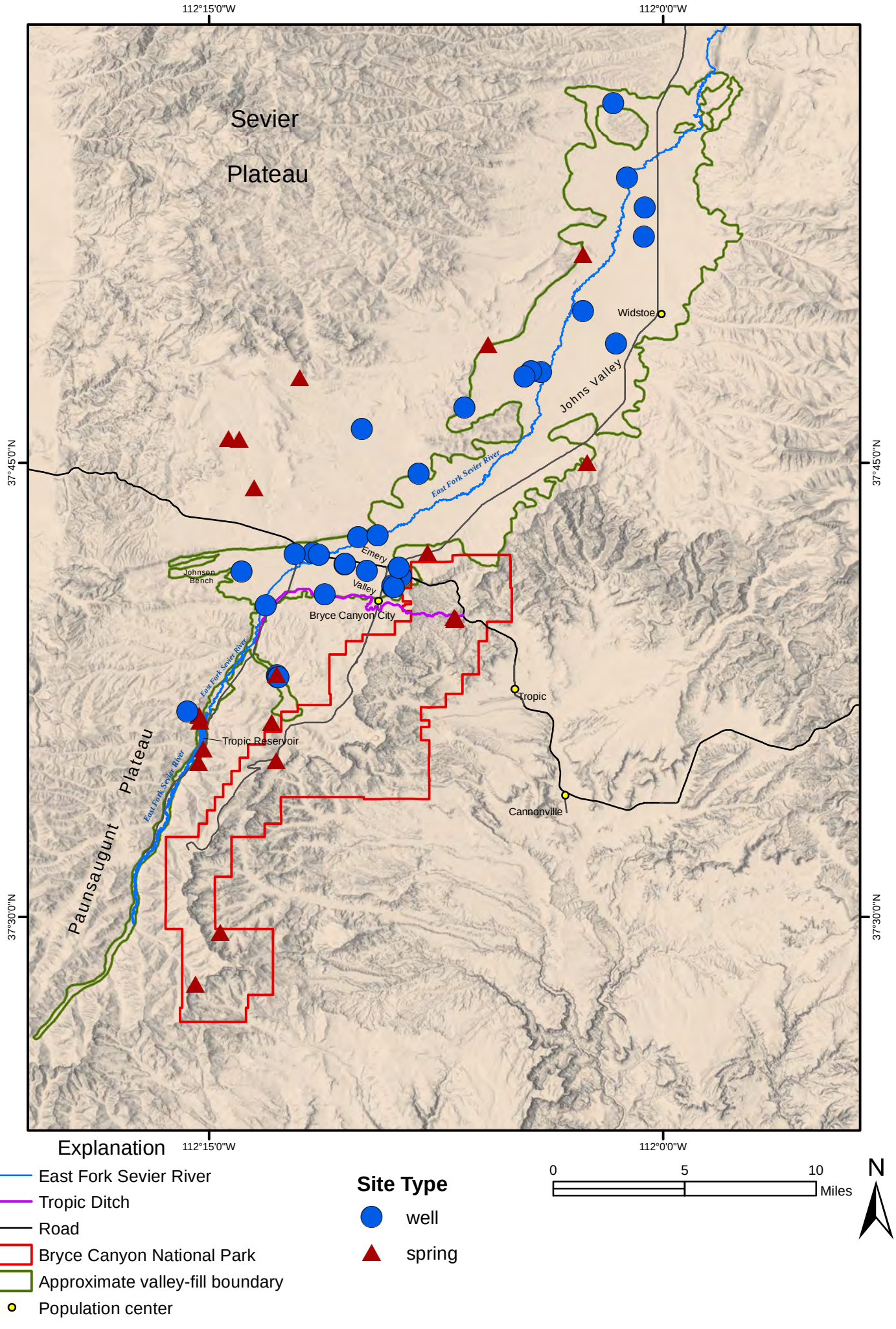

Figure 1. *Location map of Johns and Emery Valleys, Garfield County, showing sampling locations for wells and springs.*

POPULATION AND LAND USE

Garfield County had an estimated 2019 population of 5051 people, making it the least densely populated county in Utah (U.S. Census Bureau, 2019). Most of the population in Johns and Emery Valleys is concentrated in and around Bryce Canyon City. Johns and Emery Valleys also have some second homes, cabins, and resort lodging that are occupied only part of the year. Seasonal population added to the census-derived population increases the mean population. Bryce Canyon City had an estimated projected 2020 population of 232 people (Utah Governor's Office of Management and Budget, 2012). The community of Bryce Canyon City is an area of active tourism, with recreation and leisure activities centered within or near Bryce Canyon National Park (BCNP). The surrounding community of Bryce Canyon City is residential and commercial, and typically revolves around Ruby's Inn and catering to tourism. Some other land uses include irrigated crop lands, small scale animal feeding operations, gravel mining, and waste disposal.

FACTUAL DATA

Sufficient information is available to classify the valley-fill aquifer in the Bryce area. Data required to formally petition the Utah Water Quality Board were partly obtained from previously published studies (listed in the References section of this petition). Most of the information required for classification is presented on maps and in data tables submitted with this petition, including:

- Plate 1 - Groundwater quality map showing total-dissolved-solids concentrations;
- Plate 2 - Groundwater quality classification map showing groundwater quality classification, well locations, and groundwater flow direction; and
- Plate 3 - Potential-contaminant-source map.

In addition, a previously released publication containing valuable information about the upper Sevier drainage basin, which includes Johns and Emery Valleys, is provided with this petition:

- Ground-Water Hydrology of the Upper Sevier River Basin Beaver Valley Area, South-Central Utah and Simulation of Ground-Water Flow in the Valley-Fill Aquifer in Panguitch Valley (Thiros and Brothers, 1993; https://www.waterrights.utah.gov/cgi-bin/docview.exe?Folder=TP20-6-511&Title=Technical+Publication+102).

GEOLOGIC SETTING

Johns and Emery Valleys are in the Colorado Plateau physiographic province. Johns Valley, situated between the Escalante Mountains and Sevier Plateau, is a topographic depression in which valley-fill sediment has accumulated from the East Fork Sevier River and alluvial fans and side drainages emanating from the surrounding hills. Emery Valley, a southwestern extension of Johns Valley is situated between the Sevier

and Paunsaugunt plateaus. The valley fill forms the principal aquifer of both valleys. Bryce Canyon is a major geologic feature to the south of both valleys.

Geologic units in the study area are Quaternary unconsolidated deposits, Tertiary volcanic and sedimentary rocks, and Cretaceous sedimentary rocks. The predominant geologic units are Quaternary valley fill, the Tertiary Mount Dutton, Brian Head, and Claron Formations, and the Cretaceous Kaiparowits, Wahweap, and Straight Cliffs Formations.

The Quaternary unconsolidated deposits include gravel, sand, and clay derived from adjacent hills and mountains that were deposited in alluvial-fan, fluvial, and mass-movement environments.

The Oligocene-Miocene Mount Dutton Formation is moderately resistant to nonresistant volcanic mudflow breccia consisting of angular to subrounded, matrix-supported, pebble- to boulder-sized clasts of dacitic to andesitic volcanic rock in a muddy to sandy matrix (Mackin and Rowley, 1976; Maldonado and Williams, 1993a, 1993b; Rowley and others, 1994). In the northwestern part of Johns Valley in the Sevier Plateau, Mount Dutton Formation is light- to dark-gray and brown, andesitic to dacitic volcanic mudflow breccia and lesser interbedded volcaniclastic conglomerate and tuffaceous sandstone (Biek and others, 2015). Exposures in the Sevier Plateau are the alluvial facies of the Mount Dutton Formation, re-interpreted as part of the Markagunt gravity slide, about 2000 feet thick on the southern end of the Sevier Plateau (Rowley and others, 1987; Biek and others, 2015).

The Eocene-Oligocene Brian Head Formation is mapped as non-tuffaceous sandstone and conglomerate, volcanic mudflow breccia, mafic lava flows, volcaniclastic

sandstone with minor limestone and chalcedony, ash-flow tuff (Biek and others, 2015). The unit consists dominantly of yellowish-gray and light-gray, cross-bedded, tuffaceous sandstone with interbedded pebble- to boulder-sized conglomerate, sandstone, and minor limestone and mudflow breccia (Maldonado and Moore, 1995).

The Eocene-Paleocene Claron Formation in the study area consists of the white limestone member and pink member. The Claron Formation consists of mudstone, siltstone, sandstone, limestone, and minor conglomerate deposited in fluvial, floodplain, and lacustrine environments of an intermontane basin (Mullet, 1989; Ott, 1999; Biek and others, 2015). The pink member is dominantly fluvial, while the white member is both fluvial and lacustrine (Goldstrand,1994; Bown and others, 1997). The lower white member consists of micritic limestone similar to the upper white limestone interval and forms a cliff or steep, ledgy, white slope. The lower limestone unit has a maximum thickness of about 300 feet at Bryce Point in BCNP (Bowers, 1990), and about 160 feet thick to the north on the southwest flank of the Sevier Plateau (Biek, 2015). Within BCNP at Inspiration Point, the lower limestone member is mostly white, pink, and pale-orange, slope-forming mudstone and siltstone with only minor limestone (Knudsen and others, in preparation).

The upper limestone unit of the white member is white, pale-yellowish-gray, pinkish-gray, and very pale orange micritic limestone and uncommon pelmicritic limestone, and typically about 80 to 100 feet thick on the southern flank of the Sevier Plateau (Biek and others, 2015). The pink member consists of micritic limestone, calcite-cemented sandstone, calcareous mudstone, and minor pebbly conglomerate that weather

to colluvium-covered ledgy slopes. The pink member is about 600 feet thick at Bryce Canyon National Park (Biek and others, 2015).

The Kaiparowits Formation is the light-brown, very fine grained sandstone and gray sandy mudstone (above the capping sandstone member of the Wahweap Formation) southwest of Tropic Reservoir (Bowers, 1990). The Kaiparowits Formation was deposited as an eastward-prograding clastic wedge in a relatively wet, subhumid alluvial plain with periodic to seasonal aridity near the western margin of the Late Cretaceous Western Interior Seaway (Roberts, 2007).

The Late Cretaceous Wahweap Formation overlies the Straight Cliffs Formation in the drainage basin; these two units are very similar, especially near their contact, and are commonly lumped together as an undivided map unit. The Wahweap Formation is mostly fine-grained sandstone, siltstone, and mudstone deposited in braided and meandering river and floodplain environments of a coastal plain (Lawton and others, 2003). Around Tropic Reservoir, because of extensive vegetative cover and poor geomorphic expression, three members of the Wahweap Formation are mapped as undivided, with the exception of the distinctive capping sandstone (Knudsen and others, in preparation).

The Late Cretaceous Straight Cliffs Formation consists of the Drip Tank and John Henry's Members in the study area. On the Paunsaugunt Plateau, the Drip Tank Member is white to light-gray, fine- to medium-grained quartzose sandstone, and, in the upper part of the unit, pebbly sandstone and pebbly conglomerate (Biek and others, 2015). The John Henry Member consists of variegated, gray, brown, and reddish-brown mudstone and thin- to thick-bedded, grayish-orange to yellowish-brown, fine-grained subarkosic

sandstone and forms ledgy slopes on the eastern margin of the BCNP boundary; in the area around Bulldog Hollow near the town of Tropic, the John Henry Member is stacked or amalgamated sandstone in the upper part of the unit. North of Tropic, a prominent 20- to 40-foot coal-rich interval is mapped as a marker bed (Knudsen and others, in preparation).

The principal structural elements of Johns Valley (Biek and others, 2015) include the Paunsaugunt fault zone, a northwest-side-down Quaternary normal fault that strikes northeast through Johns Valley along the eastern margin of the study area; the Pine Hills and Rubys Inn thrust faults, which strike east-west and bound the northern and southern boundaries, respectively, of Emery Valley; and the Johns Valley thrust fault northwest of Flake Mountain, which strikes northeast through the central part of Johns Valley in the northern part of the study area.

GROUNDWATER CONDITIONS

Introduction

Groundwater in Johns and Emery Valleys occurs in two types of aquifers: (1) valley-fill deposits, and (2) bedrock (figure 2). This study focuses on the valley-fill aquifer, which consists primarily of clay, silt, sand, and gravel and ranges in thickness from tens of feet to 200 feet. Tertiary and Cretaceous rocks may also yield water to some wells, but the number of wells screened in and water production from these units before this study were unknown. The limestone of the Claron Formation is part of the bedrock aquifer, along with Cretaceous sandstone formations, in the Emery Valley area. The East Fork Sevier River is sourced in the Paunsaugunt Plateau, enters the study area from the

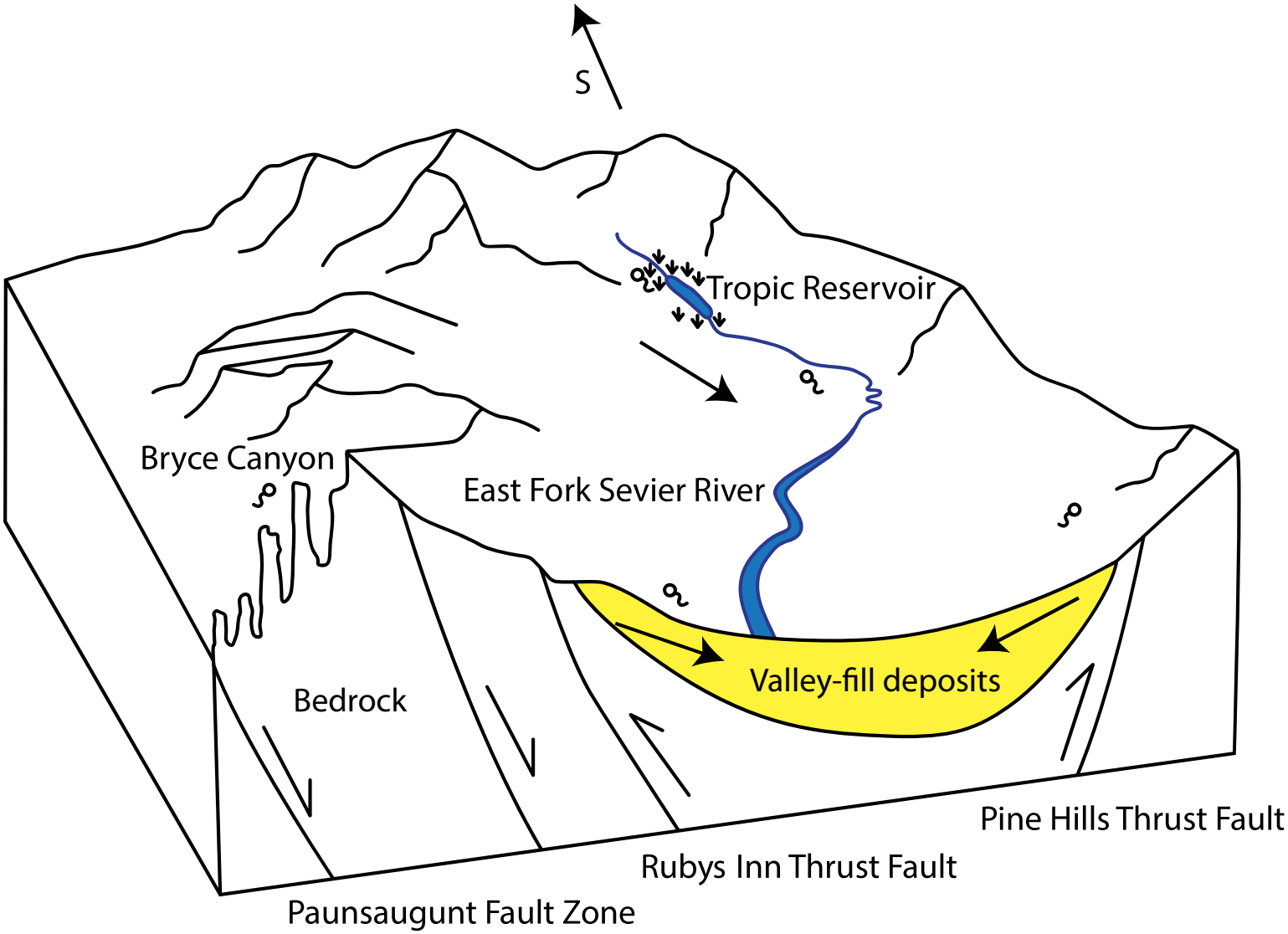

Figure 2. *Schematic block diagram showing groundwater conditions in Johns and Emery Valleys. Arrows indicate groundwater flow direction.*

south, and flows northeast through the study area in Johns and Emery Valleys. During seasonal irrigation (April to October), water from the East Fork Sevier River is diverted to the Tropic Ditch below Tropic Reservoir where it flows within a canal/ditch system toward the community of Tropic to the east.

Valley-Fill Aquifer

Occurrence

The valley-fill aquifer is an important source of drinking water in the Bryce Canyon City area. In general, the valley fill consists predominantly of stream alluvium and alluvial-fan deposits (Thiros and Brothers, 1993), which are generally coarser grained near basin margins, and finer grained along the lower reaches of streams and creeks and along floodplains in the central parts of the basin. Drillers' logs of water wells indicate that some wells intersect clay lenses, but no clay layers are extensive enough to act as a single, continuous confining layer, and the valley-fill aquifer is dominantly unconfined. Based on a review of well logs from the Utah Division of Water Rights database, the valley fill ranges in thickness from tens of feet near the basin margins to more than 100 feet below the valley floor, and up to 200 feet on Johnson Bench. Most valley-fill deposits are Quaternary stream alluvium (map unit Qaly of Biek and others, 2015), which consists of stream alluvium and stream-terrace alluvium and likely has high transmissivity.

Depth to water in the principal aquifer ranges from near surface level along the upper East Fork Sevier River to no greater than 200 feet. Unconfined groundwater is typically less than 10 feet deep adjacent to floodplains and shallow tributary alluvial

valleys, and in low-lying areas where phreatophytes and springs are common. Groundwater flows primarily from recharge areas and from Tropic Reservoir, and generally flows to the north-northeast, parallel to the East Fork Sevier River.

Groundwater Quality

Water quality and the potential for water-quality degradation are critical elements determining the extent and nature of future development in Johns and Emery Valleys. Most development is on unconsolidated valley-fill deposits, the primary source of groundwater. Unlike other Utah communities, the population of Bryce Canyon City decreased between 2010 and 2016, from 198 to 182 residents (Town Charts, 2018; http://www.towncharts.com/Utah/Demographics/Bryce-Canyon-City-town-UT-Demographics-data.html). However, this is an area of active tourism and therefore, potential future growth. Increased demand on drinking water would warrant careful land-use planning and resource management to preserve Johns and Emery Valleys' surface and groundwater resources. A preliminary search of water-quality data for the study area yielded only one sample from the Utah Department of Agriculture and Food (UDAF). A sample from a well in the northeastern corner of the study area taken in 2003 had a total-dissolved-solids (TDS) content of 218 mg/L, a pH of 8.5, and no constituents that exceeded secondary drinking-water or agricultural standards.

GROUNDWATER-QUALITY CLASSIFICATION DATA

To facilitate this groundwater-quality classification, the Utah Geological Survey sampled 32 wells and 22 springs during autumn 2018, spring 2019, autumn 2019, and spring 2021. These sites have water in both alluvial and bedrock material, though the

aquifer classification for this petition is for the valley fill only, we include these other sites to provide a more detailed background for water quality for the entire area.

We measured specific conductance in groundwater from 32 wells and 22 springs, groundwater from 24 wells and 16 springs was analyzed for general chemistry (appendix A), and groundwater from 27 wells and 16 springs was analyzed for nutrients by the Utah Department of Epidemiology and Laboratory Services (appendix A). We augmented our data with 14 sites within the USGS National Water Information System (NWIS) and UDAF databases for dissolved metals and pesticides. Select solutes analyzed for these sites include aluminum, arsenic, boron, barium, bromide, copper, lead, selenium, iron, manganese, fluoride, zinc, lithium, silicon, and uranium. Overall, water quality is characterized as calcium-magnesium bicarbonate type water (figure 3).

Total-Dissolved-Solids Concentrations

The Utah Water Quality Board's drinking-water quality (health) standard for TDS is 2000 mg/L for public-supply wells. The secondary groundwater quality standard is 500 mg/L (U.S. Environmental Protection Agency, 2006) and is primarily due to imparting a potential unpleasant taste to the water (Bjorklund and McGreevy, 1971). Plate 1 shows the distribution of TDS in Johns and Emery Valleys' valley-fill aquifer. Based on data from groundwater samples from 32 wells (26 from TDS and six wells from TDS converted from specific conductance data), TDS concentrations in the valley-fill and bedrock aquifers of Johns and Emery Valleys range from 151 to 530 mg/L, with no wells exceeding 1000 mg/L TDS and an overall average TDS concentration of 282 mg/L (appendix A, plate 1). The TDS concentration of 530 mg/L is from one of three bedrock

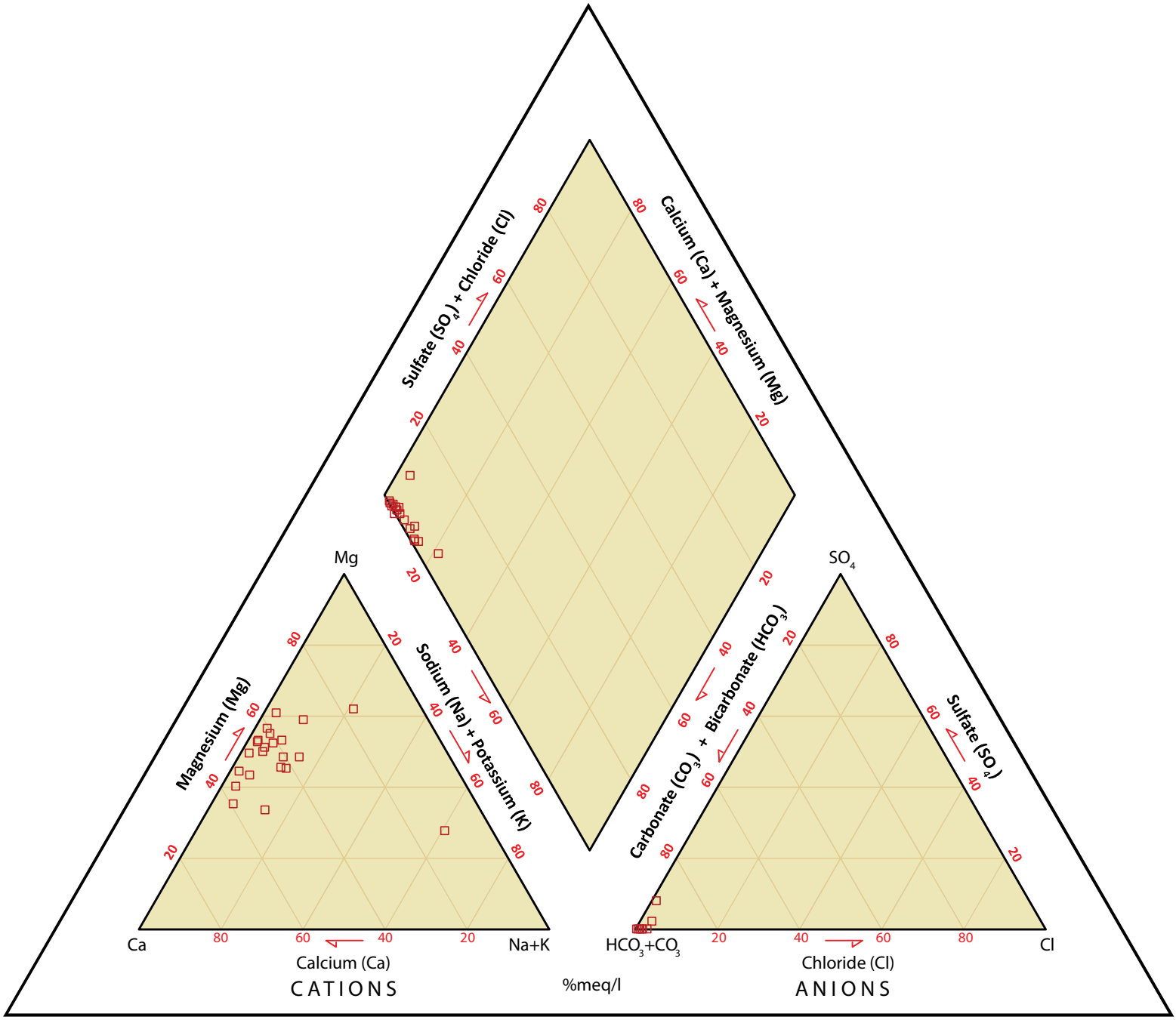

Figure 3. *General chemistry in Johns and Emery Valleys characterized by an overall calcium-magnesium bicarbonate water type.*

wells perforated in bedrock only, which is not classified as part of this aquifer petition (the other bedrock wells yield TDS of 192 and 416 mg/L). One well has a TDS of 514 mg/L (site 48; plate 1) that has perforations in both the alluvium and bedrock, just above the 500 mg/L Pristine quality cutoff, but because a single well cannot be classified, the overall valley-fill aquifer remains Class IA. The range of specific conductance for 54 wells and springs is from 240 to 884 µS/cm. We computed TDS concentrations from specific conductance measurements using a conversion factor of 0.63. This conversion factor was calculated by comparing TDS and specific conductance data collected in this study (figure 4). Using this conversion factor, we calculated TDS values for six wells and six springs sampled for this study. The converted TDS values range from 151 to 377 mg/L; all of these samples are below 500 mg/L and are classified as Pristine water quality as defined by the Utah Water Quality Board.

Nitrate Concentrations

The groundwater quality (health) standard for nitrate is 10 mg/L (U.S. Environmental Protection Agency, 2006). More than 10 mg/L of nitrate in drinking water can result in a condition known as methemoglobinemia, or "blue baby syndrome" (Comley, 1945; Fan and others, 1987; Bouchard and others, 1992) in infants under six months old and can be life threatening without immediate medical attention (U.S. Environmental Protection Agency, 2002). This condition is characterized by a reduced ability for blood to carry oxygen. Studies involving lab rats ingesting a combination of nitrate and heptamethyleneimine in drinking water reported an increase in tumor occurrence (Taylor and Lijinsky 1975). However, epidemiological investigations

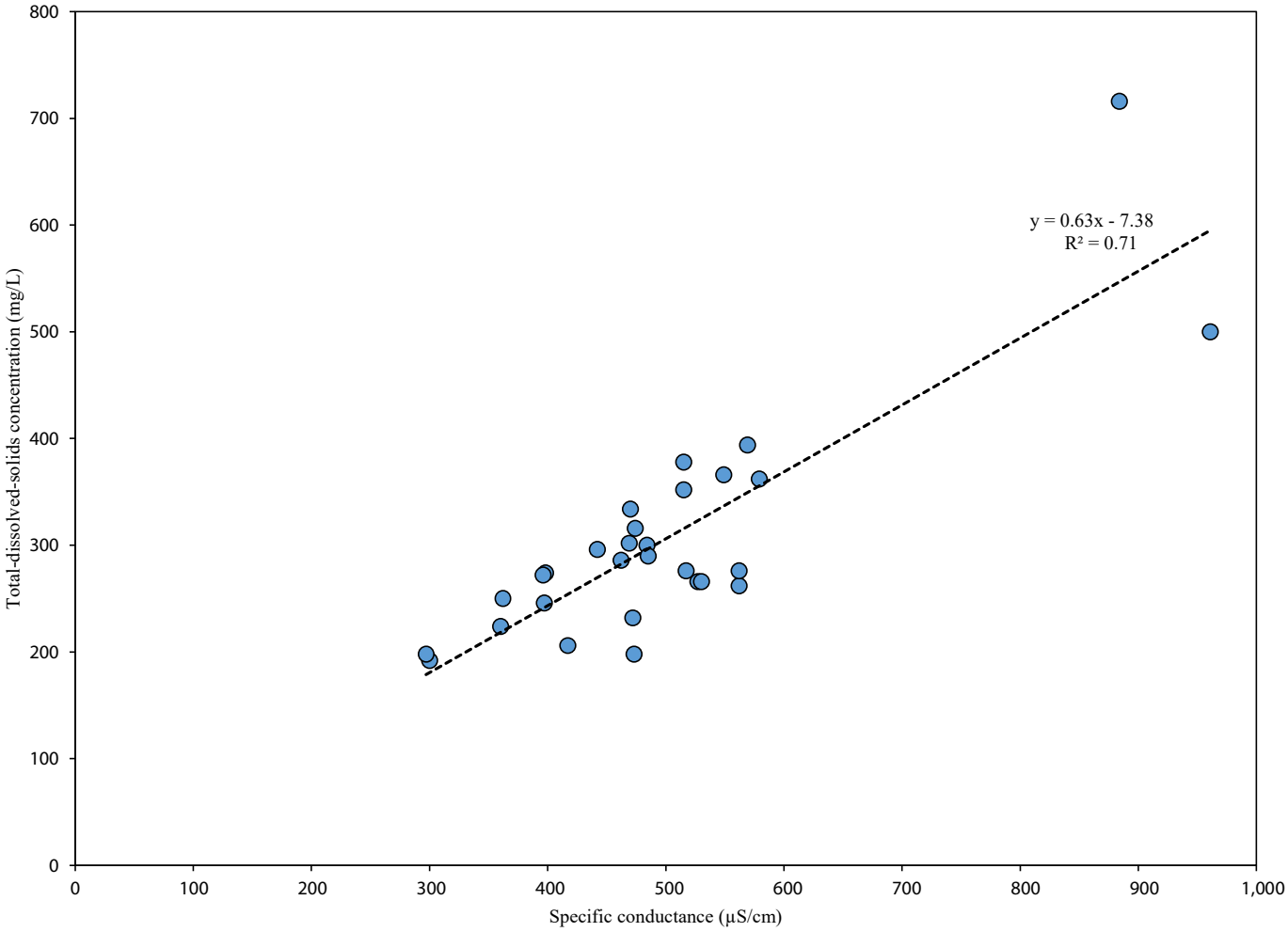

Figure 4. *Specific conductance versus total-dissolved-solids concentration data for 29 wells in Johns and Emery Valleys. R-squared is 0.71. Based on Hem's (1985) equation for estimating TDS from specific conductance: KA=S, where K=specific conductance, S=TDS, A ranges from 0.4 to 0.8 with an average A=0.63 (slope) used as the conversion factor to compute TDS in the study area.*

involving human beings have shown conflicting evidence. Stomach cancer in human beings associated with nitrate from drinking water has been reported in Columbia and Denmark (Cuello and others, 1976, Fraser and others, 1980). Conversely, investigations in the United Kingdom and other countries indicate no correlation exists between nitrate levels and cancer incidence (Forman, 1985; Al-Dabbagh and others, 1986; Croll and Hayes, 1988, Taneja, 2017).

Based on data from groundwater samples from 27 wells and 16 springs, nitrate-as-nitrogen concentrations range from less than 0.1 to 1.47 mg/L, with 42% of wells and springs yielding groundwater having concentrations below 0.1 mg/L, and an overall average nitrate concentration of 0.35 mg/L (appendix A). No apparent trend in the distribution of nitrate concentrations exists; the highest concentrations (1.06 and 1.47 mg/L) are likely attributed to proximity to stables/corrals and downgradient from septic systems (plate 3). All but one well had ammonia concentrations below the detection limit (0.05 mg/L); the well having a detectable ammonia concentration is below the Utah and EPA standard (appendix A).

Other Constituents

Based on the data presented in appendix A, no water from wells exceeded primary water-quality standards.

PROPOSED CLASSIFICATION

Under "Administrative Rules for Ground Water Quality Protection R317-6, December 1, 2019," Section 317-6-3, Ground Water Classes, Utah Administrative Code,

Utah's groundwater quality classes are based on TDS concentrations as shown in table 1. Two other classes, IB and IC, are not based on groundwater chemistry. Class IB groundwater, called Irreplaceable groundwater, is a source of water for a community public drinking-water system for which no reliable supply of comparable quality and quantity is available because of economic or institutional constraints; this class has not been considered as part of this petition. Class IC groundwater, called Ecologically Important groundwater, is a source of groundwater discharge important to the continued existence of wildlife habitat. Groundwater protection levels for classes IA and IB, as set under "Administrative Rules for Ground Water Quality Protection R317-6, December 1, 2019," Section 317-6-4, Ground Water Class Protection Levels, Utah Administrative Code, are more stringent than for other groundwater quality classes.

Garfield County is petitioning the Utah Water Quality Board to classify the principal valley-fill aquifer in Johns and Emery Valleys as shown on plate 2. The classification is based on data from groundwater from the 32 wells we sampled for TDS and augmented by UDAF and NWIS data from wells presented in appendix A. Where insufficient data exist, extrapolation of groundwater quality conditions is required. We based the extrapolation on local geologic characteristics.

Class IA- Pristine groundwater: TDS concentrations in the valley fill of Johns and Emery Valleys range from 151 to 512 mg/L (appendix A). Class IA areas are mapped throughout all of Johns and Emery Valleys (plate 2). Areas having Pristine water quality cover 100% of the total valley-fill material.

Table 1. *Groundwater quality classes under the Utah Water Quality Board total-dissolved-solids (TDS)-based classification system (modified from Utah Division of Water Quality, 1998).*

Groundwater Quality Class	**TDS Concentration**	**Beneficial Use**
Class IA/IB[1]/IC[2]	Less than 500 mg/L[3]	Pristine/Irreplaceable/ Ecologically Important
Class II	500 to less than 3000 mg/L	Drinking Water[4]
Class III	3,000 to less than 10,000 mg/L	Limited Use[5]
Class IV	10,000 mg/L and greater	Saline[6]

[1]Irreplaceable groundwater (Class IB) is a source of water for a community public drinking-water system for which no other reliable supply of comparable quality and quantity is available due to economic or institutional constraints; it is a groundwater quality class that is not based on TDS.
[2]Ecologically Important groundwater (Class IC) is a source of groundwater discharge important to the continued existence of wildlife habitat; it is a groundwater quality class that is not based on TDS.
[3]For concentrations less than 7000 mg/L, mg/L is about equal to parts per million (ppm).
[4]Water having TDS concentrations in the upper range of this class must generally undergo some treatment before being used as drinking water.
[5]Generally used for industrial purposes.
[6]May have economic value as brine.

CURRENT BENEFICIAL USES

In the study area, groundwater from the valley-fill aquifer is an important source of domestic and municipal culinary water for people living within the valley (Burden and others, 2007). Domestic use of municipal groundwater supply in 2018 was 2.3%; commercial use was 93.1%, and institutional use was 4.7% (Utah Division of Water Rights, 2019). Countywide, the three public-supply systems located in Johns and Emery Valleys use about 18.1% of total Garfield County municipal water supply (286 acre-feet compared to 1586 acre-feet of water by the entire county during 2018).

WATER-SUPPLY WELLS

There are 50 approved water wells in Johns and Emery Valleys based on Utah Division of Water Rights records, nine of which are public-supply wells (Deidre Beck, Division of Drinking Water, personal communication, February 2019). The location of all wells is shown on plate 2.

POTENTIAL CONTAMINANT SOURCES

We mapped potential groundwater contaminant sources including facilities related to mining, manufacturing, agricultural practices, and wastewater-treatment facilities (plate 3; appendix B). We mapped 104 potential contaminant sources in the following categories in Johns and Emery Valleys:

(1) Mining, which includes abandoned and active gravel mining operations and borrow pits that potentially contribute metals, solvents, and petroleum products.

(2) Agricultural practices, which consist of irrigated and non-irrigated crops, irrigation wells, active and abandoned animal feedlots, corrals, and stables/barnyards that potentially contribute nitrate.

(3) Industrial facilities that potentially contribute pesticides, metals, solvents, petroleum products, and polychlorinated biphenyl (PCB) spills associated with a variety of sources such as transportation facilities, salt storage facilities, transformer (power) stations, and cell towers.

(4) Small businesses, such as hotels, restaurants, retail shops, and commercial shooting ranges, some of which may contribute pollutants such as metals and solvents.

(5) Large lawns, including parks and cemeteries, that may contribute fertilizer and pesticides.

(6) Service stations including auto shops and gas stations that may contribute petroleum products, antifreeze, and solvents, and junkyard/salvage operations that may contribute pollutants such as metals and solvents.

(7) Waste-disposal sites that may contribute pollutants such as solvents, metals, and nitrate.

(8) Above-ground storage tanks that may contribute pollutants such as petroleum, metals, and solvents.

In addition to the above-described potential contaminants, septic tank soil-absorption systems are also present in Johns and Emery Valleys. Since 1978, 39 wastewater permits have been issued or are in process in our study area (Jeremy Roberts, Southeastern Utah Public Health Department, verbal/written communication, August 15,

2019). Outside of towns and cities, septic-tank systems in Garfield County, until recently, have been widely spaced. Within Bryce Canyon National Park, a few septic tanks still exist (Moyle Jones, personal communication, November, 2020) but were likely more prevalent historically within the Bryce Canyon City community. These domestic wastewater facilities could have contributed to nitrate concentrations in groundwater in the vicinity of town. Septic-tank systems may contribute contaminants such as nitrate and solvents.

EXISTING POLLUTION SOURCES

Existing pollution sources include those contaminants that have been documented and/or are currently being treated; potential contaminants address pollutants that have the potential to degrade groundwater. There are no known existing pollution sources in Johns and Emery Valleys.

GROUNDWATER FLOW

To construct potentiometric surfaces, we measured water levels in wells at four different times: autumn 2018, spring 2019, autumn 2019, and spring 2020. We calculated the elevation at most wells using a Trimble high-precision GPS having vertical accuracy of 10 centimeters. Water-level elevation at each well was determined by subtracting the measured depth to water from the land-surface elevation obtained from the GPS. The potentiometric surface for the autumn 2018 season shows conditions with water levels at their lowest measurement levels (in most wells); we use data from this potentiometric surface map to determine groundwater flow direction— perpendicular to contours on the

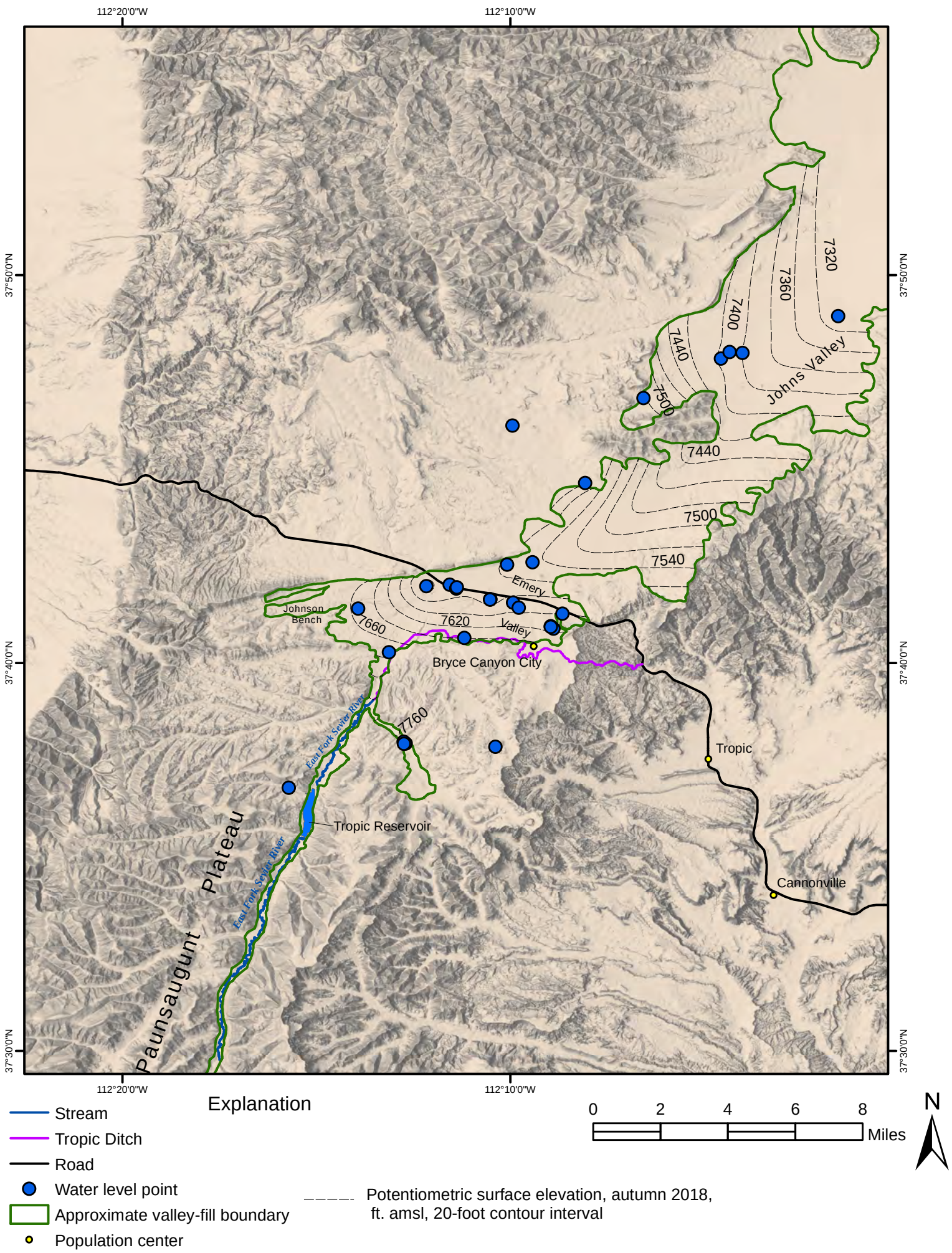

Figure 5. *Potentiometric surface map of water wells from autumn 2018. Overall direction of groundwater flow is to the north-northeast.*

potentiometric surface map (figure 5; plate 2). Groundwater flows from Tropic Reservoir to the north and from the valley margins toward the valley center, along the East Fork Sevier River, and eventually downstream (north and then northeast) toward Black Canyon where the East Fork Sevier River exits Johns Valley (figure 5; plate 2).

SUMMARY

Groundwater is the principal source of drinking water in Johns and Emery Valleys. While most of the development in Bryce Canyon City is on community sewer and public-water systems, most development in the county portion has single-family homes, with each lot-owner typically using their privately owned water well for water supply and a septic-tank system for wastewater disposal. These septic-tank systems are on valley-fill deposits, which are a major drinking-water aquifer for the valley residents. Groundwater quality classification is a tool that can be used in Utah to manage potential groundwater contamination sources and protect the quality of groundwater resources. The results of the proposed groundwater quality classification for the valley indicate that the valley-fill aquifer contains mostly high-quality groundwater resources that warrant protection. One hundred percent of the valley-fill in the area is classified as having Class IA groundwater based on chemical analyses of water from 54 wells and springs sampled during autumn 2018, spring 2019, and spring 2021.

ACKNOWLEDGMENTS

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APPENDIX A

WATER-QUALITY DATA

(Site ID numbers shown on plate 1)

Appendix A. *Water quality data for Johns and Emery Valleys, Garfield County, Utah.*

Site ID	Site Type	Site Name	pH	pH Lab	Temp (°C)	Conductivity Field (µS/cm)	Conductivity Lab (µS/cm)	TDS (mg/L)	Phosphate (mg/L)	Ammonia(N) (mg/L)	Nitrite + Nitrate (mg/L)	TSS (mg/L)	Ca (mg/L)	Mg (mg/L)
BC6S	spring	Dipping Vat	7.9	7.07	8	470	449	226	0.0035	<0.05	0.352	<4	43.6	33.5
BC3S	spring	Hatch	8.12	7.07	11.4	428	414	214	0.0202	<0.05	0.504	199	48.9	25
BC15S	spring	Lower Berry	7.94	6.82	12.5	398	448	268	0.031	<0.05	<0.1	<4	56.8	17.9
BC8S	spring	Swamp	7.72	-	7.3	590	-	338	-	-	<0.1	-	-	-
BC10S	spring	NPS Bryce Spring 1	7.69	-	8.8	517	-	315	-	-	-	-	-	-
BC31S	spring	Tom Best Spring	7.92	6.82	10.8	332	333	198	0.159	<0.05	0.105	<4	40.4	15.6
BC2S	spring	Tropic 1	8.09	7.68	8.7	530	519	254	0.0042	<0.05	0.249	<4	39	47.8
BC4S	spring	Tropic 2	8.45	7.03	10.4	360	517	220	0.0032	<0.05	0.143	<4	34.4	35.2
BC17S	spring	Upper Berry	8.1	7.47	12.5	569	670	394	0.032	<0.05	-		64.1	45.2
BC62S	spring	Whiteman Spring	7.54	7.80	10.5	560	561	294	0.0198	<0.05	<0.1	152	61.6	41
BC34S	spring	Mossy Spring 1	7.65	6.77	10.6	479	481	266	-	-	-	490	45.6	35.5
BC35S	spring	Mossy Spring Cave	8.3	8.08	7.8	472	455	232	0.018	<0.05	0.367	65.6	42.3	35.2
BC36S	spring	Mossy Spring 3	7.97	-	10.1	531	-	324	-	-	-	-	-	-
BC11S	spring	NPS 4	7.45	6.87	8.2	510	504	254	0.0043	<0.05	<0.1	<4	54.8	37.4
BC53S	spring	Waterstop	7.8	7.68	7.6	455	441	220	<0.003	<0.05	0.223	<4	42.2	35.6
BC27W	well	Airport	8.13	8.02	14.3	469	517	262	0.0033	<0.05	0.111	<4	55.5	37.9
BC24W	well	BLM 2	8.2	7.04	-	365	1840	186	-	-	<0.1	10	28.8	23.5
BC19W	well	Kings Campground	8.45	7.07	9.2	371	371	192	<0.003	<0.05	<0.1	<4	34.3	28.2
BC28W	well	Landfill 1	7.57	6.82	10.2	426	426	234	0.033	<0.05	0.991	<4	35.9	28.7
BC29W	well	Landfill 2	7.67	6.99	10.8	561	561	308	0.034	<0.05	0.702	12.8	50.7	36.7
BC30W	well	Landfill 3	7.91	7.26	9.6	540	540	282	0.0151	<0.05	0.292	<4	55.3	39.1
BC13W	well	Poe	7.13	6.65	9.9	884	884	530	0.147	<0.05	<0.1	215	118	50.8
BC26W	well	Rich	8.01	7.13	12	585	585	310	0.024	<0.05	0.416	<4	55.8	36.1
BC7W	well	Ruby 4	8.18	6.85	16.3	345	333	182	-	-	0.602	-	50.9	13.7
BC20W	well	Ruby 1	-	7.06	-	542	546	286	<0.003	<0.05	<0.1	5.6	-	-
BC21W	well	Ruby 2	7.85	7.24	7.4	530	548	286	<0.003	<0.05	<0.1	<4	56.8	40.6
BC22W	well	Ruby 3	8	7.07	7.1	555	548	282	0.0031	<0.05	<0.1	<4	56.2	40.7
BC25W	well	UDOT	7.87	7.48	12.9	520	506	252	0.0045	<0.05	0.43	<4	48.8	34.4
BC12W	well	USFS Daves Hollow	7.51	7.07	8.1	664	619	324	0.0036	<0.05	<0.1	<4	69.8	43.5
BC37W	well	Ruby 5	8.33	6.78	12.7	309	328	192	0.0048	0.164	1.01	13.6	48.7	14.6
BC38W	well	Ruby 6	7.8	7.06	9.2	390	377	194	-	-	0.958	<4	50.3	15.7
BC39W	well	Ruby 7	-	-	-	-	-	-	-	-	0.953	-	-	-
BC40W	well	Elgin Elk Preserve	7.55	7.06	8.8	466	446	224	0.0074	<0.05	1.47	<4	32.8	31.2
BC44W	well	NPS 1	7.62	7.06	7.9	536	508	254	0.0039	<0.05	<0.1	<4	49.8	35.9
BC45W	well	NPS 3	7.21	-	7.8	594	-	362	-	-	-	-	-	-
BC46W	well	NPS 2	7.77	-	11.6	568	-	346	0.0045	<0.05	<0.1	-	-	-
BC48W	well	SITLA	7.72	6.55	9.2	928	931	512	0.0118	<0.05	0.312	<4	37.5	84.7
BC49W	well	Cottonwood	10.8	7.79	10.8	782	761	416	0.0043	<0.05	<0.1	4.8	70.5	58.8
BC51W	well	Bristlecone	7.47	7.78	9.4	515	674	354	0.021	<0.05	1.06	<4	55	43.4
BC61S	spring	Showalter Spring	-	8.01	-	536	620	384	-	-	-	<4	87.3	21.9

Appendix A. *Water quality data for Johns and Emery Valleys, Garfield County, Utah.*

Site ID	Site Type	Site Name	pH	pH Lab	Temp (°C)	Conductivity Field (µS/cm)	Conductivity Lab (µS/cm)	TDS (mg/L)	Phosphate (mg/L)	Ammonia(N) (mg/L)	Nitrite + Nitrate (mg/L)	TSS (mg/L)	Ca (mg/L)	Mg (mg/L)
BC60S	spring	Middle Berry	-	8.22	-	-	467	282	0.058	<0.05	0.325	15.6	58.1	17.1
BC64S	spring	Mossy Trail	8.3	8.20	10.4	453	486	246	0.0036	<0.05	0.349	16.4	47.3	36.6
BC65W	well	Sitla 2	8.03	7.64	11.9	411	430	210	0.033	<0.05	0.564	54.4	42	29
BC66W	well	Smith	7.66	7.03	10.6	478	478	256	0.0174	<0.05	0.231	<4	63.1	22.7
BC67W	well	Anderson	7.62	6.94	9.5	605	608	356	0.0088	<0.05	<0.1	7.6	60.4	40.5
BC68S	spring	Yovimpa	7.52	7.07	6.5	475	455	236	-	-	0.182	<4	57.8	29.1
BC70S	spring	Iron	6.74	-	8.9	596	-	364	-	-	<0.1	-	-	-
BC77S	spring	Ingram	7.77	-	6.7	503	-	307	-	-	0.3	-	-	-
BC84W	well	Highway 12 North Well	-	7.06	-	435	404	198	-	-	<0.1	<4	49.4	18.4
BC115W	well	SITLA Cottonwood Creek Well	-	-	8.4	240	-	151	-	-	-	-	-	-
BC116W	well	16068 Stock Well	-	-	7.7	523	-	329	-	-	-	-	-	-
BC117W	well	432226 Stock Well	-	-	7.4	447	-	282	-	-	-	-	-	-
BC118W	well	16066 Stock Well	-	-	7.1	250	-	158	-	-	-	-	-	-
BC119S	spring	Reynolds Spring	-	-	8.4	408	-	257	-	-	-	-	-	-
BC120W	well	432247 Stock Well	-	-	8.3	485	-	306	-	-	-	-	-	-
3250	well	UDAF site*	8.5	-	9.8	364	-	218	nd	nd	nd	-	28.86	27.18
374205112091501	well	NWIS** site	8.1	-	-	-	-	168	-	-	-	-	-	-
374205112091501	well	NWIS site	8.1	-	12	439	-	238	-	-	-	-	-	-
374205112091501	well	NWIS site	7.7	-	15	426	-	226	-	-	-	-	-	-
374205112091501	well	NWIS site	7.6	-	10	415	-	251	-	-	-	-	-	-
374205112091501	well	NWIS site	7.2	-	19.3	536	-	287	-	-	-	-	-	-
374205112091501	well	NWIS site	7.5	-	18.1	542	-	245	-	-	-	-	-	-
374855112054501	spring	NWIS site	-	-	-	445	-	271	-	-	-	-	-	-
374846112055001	well	NWIS site	7.8	-	10	408	-	246	-	-	-	-	-	-
374846112055001	well	NWIS site	-	-	10	375	-	233	-	-	-	-	-	-
374501112022901	well	NWIS site	7.7	-	7.5	440	-	224	-	-	-	-	-	-
373237112162101	well	NWIS site	7.8	-	5.7	445	-	34	-	-	-	-	-	-
373237112162101	well	NWIS site	7.7	-	6	410	-	214	-	-	-	-	-	-
373456112133501	well	NWIS site	8	-	6	455	-	243	-	-	-	-	-	-
373508112151701	well	NWIS site	7.5	-	6.5	435	-	28	-	-	-	-	-	-
373508112151701	well	NWIS site	7.6	-	7	475	-	255	-	-	-	-	-	-
373533112150901	well	NWIS site	7.6	-	6.5	390	-	6	-	-	-	-	-	-
373638112151801	well	NWIS site	7.6	-	7	485	-	297	-	-	-	-	-	-
373638112151801	well	NWIS site	7.5	-	7.5	505	-	271	-	-	-	-	-	-
373754112123901	well	NWIS site	7.5	-	7	520	-	267	-	-	-	-	-	-
374245112123901	well	NWIS site	7.5	-	-	840	-	422	-	-	-	-	-	-
374150112111501	well	NWIS site	7.4	-	-	480	-	260	-	-	-	-	-	-
374120112084201	well	NWIS site	7.8	-	9.5	305	-	167	-	-	-	-	-	-

Appendix A. *Water quality data for Johns and Emery Valleys, Garfield County, Utah.*

Site ID	Na (mg/L)	K (mg/L)	Cl (mg/L)	SO4 (mg/L)	Alkalinity (mg/L CaCO3)	CO3 solids(mg/L)	HCO3 (mg/L)	CO2(mg/L)	Hardness (mg/L)	Turbidity (NTU)	Al (mg/L)	As (µg/L)	B (µg/L)	Ba (mg/L)	Be (mg/L)	Br (µg/L)
BC6S	7.07	<1	6.17	<20	232	139	283	39.7	247	0.15	-	-	-	-	-	-
BC3S	5.04	<1	8.62	<20	196	118	239	33.6	225	25.2	-	-	-	-	-	-
BC15S	14.7	<1	8.74	<20	205	123	250	62.2	216	1.41	-	-	-	-	-	-
BC8S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC10S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC31S	11.3	1.4	3.59	<20	161	96.4	196	49	165	0.933	-	-	-	-	-	-
BC2S	3.93	<1	4.15	<20	273	164	333	11.4	294	0.485	-	-	-	-	-	-
BC4S	2.59	<1	3.5	<20	220	132	268	40.7	231	0.636	-	-	-	-	-	-
BC17S	21.9	3.86	15.2	<20	336	202	410	23	346	93.9	-	-	-	-	-	-
BC62S	3.23	<1	3.57	<20	298	179	363	9.4	323	119	-	-	-	-	-	-
BC34S	5.19	1.82	8.18	<20	253	152	309	86.9	260	237	-	-	-	-	-	-
BC35S	4.47	1.82	6.88	<20	236	141	288	3.9	251	83.3	-	-	-	-	-	-
BC36S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC11S	2.93	<1	3.5	<20	265	159	323	71.5	291	0.302	-	-	-	-	-	-
BC53S	2.94	<1	3.56	<20	230	138	281	9.49	252	0.365	-	-	-	-	-	-
BC27W	3.36	<1	3.5	<20	270	162	329	5.06	295	0.23	-	-	-	-	-	-
BC24W	10.6	1.98	9.13	<20	165	99.2	202	30.3	169	14.1	-	-	-	-	-	-
BC19W	3.04	1.99	4.45	<20	181	109	221	31	202	0.392	-	-	-	-	-	-
BC28W	15.6	1.46	8.6	<20	206	123	251	62.1	208	0.33	-	-	-	-	-	-
BC29W	14.3	2.02	9.54	<20	270	162	329	55.4	278	2.68	-	-	-	-	-	-
BC30W	6.27	1.38	6.11	<20	270	162	329	29.5	299	0.214	-	-	-	-	-	-
BC13W	7.27	1.37	10.1	111	358	215	437	162	504	133	-	-	-	-	-	-
BC26W	16.9	1.21	20.8	<20	264	158	322	38.7	288	0.828	-	-	-	-	-	-
BC7W	2.68	<1	3.5	<20	160	95.8	195	45.1	184	0.485	-	-	-	-	-	-
BC20W	-	-	3.64	<20	292	175	356	50.3	-	2.4	-	-	-	-	-	-
BC21W	2.88	<1	3.53	<20	288	173	351	33.1	309	0.284	-	-	-	-	-	-
BC22W	2.71	<1	3.5	<20	273	164	333	46.6	308	0.143	-	-	-	-	-	-
BC25W	9.06	1.23	8.3	<20	241	145	295	15.9	254	0.339	-	-	-	-	-	-
BC12W	2.73	<1	3.55	<20	322	193	393	55.1	353	16.1	-	-	-	-	-	-
BC37W	2.94	<1	9.84	<20	155	93.1	189	51.5	182	1.72	-	-	-	-	-	-
BC38W	3.49	<1	12.1	<20	169	102	207	29.4	190	0.49	-	-	-	-	-	-
BC39W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC40W	11.9	1.07	10.6	<20	203	132	248	35.3	210	0.566	-	-	-	-	-	-
BC44W	2.93	<1	3.5	<20	268	161	326	46.5	272	0.451	-	-	-	-	-	-
BC45W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC46W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC48W	53.2	2.89	29.3	34	417	250	509	234	443	<0.1	-	-	-	-	-	-
BC49W	16.4	1.29	12.4	<20	385	231	470	12.3	418	32.7	-	-	-	-	-	-
BC51W	22	1.13	47.3	<20	266	159	324	8.73	316	2.43	-	-	-	-	-	-
BC61S	15.1	5.3	9.38	<20	319	191	389	6.13	308	2.02	-	-	-	-	-	-

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BC60S	12.2	<1	10.5	<20	221	133	270	2.61	216	6.55	-	-	-	-	-	-
BC64S	5.22	1.94	7.39	<20	248	149	302	3.11	269	2.29	-	-	-	-	-	-
BC65W	7.04	1.56	3.76	<20	213	128	260	9.85	224	3.01	-	-	-	-	-	-
BC66W	5.77	1.12	6.84	<20	240	144	293	45.3	251	0.486	-	-	-	-	-	-
BC67W	21.4	2.07	8.49	<20	304	183	371	70.7	318	13.7	-	-	-	-	-	-
BC68S	2.03	<1	3.5	<20	244	147	298	41.9	264	0.117	-	-	-	-	-	-
BC70S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC77S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC84W	5.86	1.69	7.71	<20	190	114	232	33	199	13.9	-	-	-	-	-	-
BC115W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC116W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC117W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC118W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC119S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC120W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3250	4.78	1.07	nd	2.97	-	-	3.76	-	3.3	-	nd	nd	nd	0.31	nd	-
374205112091501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
374205112091501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
374205112091501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
374205112091501	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-
374205112091501	-	-	-	-	-	-	-	-	-	-	-	0.31	-	-	-	0.035
374205112091501	-	-	-	-	-	-	-	-	-	-	-	0.62	-	-	-	0.037
374855112054501	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-
374846112055001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
374846112055001	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
374501112022901	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
373237112162101	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
373237112162101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
373456112133501	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
373508112151701	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
373508112151701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
373533112150901	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
373638112151801	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-
373638112151801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
373754112123901	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
374245112123901	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
374150112111501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
374120112084201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A. *Water quality data for Johns and Emery Valleys, Garfield County, Utah.*

Site ID	Cd (mg/L)	Co (mg/L)	Cr (mg/L)	Cu (mg/L)	F (mg/L)	Fe (µg/L)	Li (mg/L)	Mn (µg/L)	Mo (µg/L)	Pb (mg/L)	Se (µg/L)	Si (mg/L SiO2)	U (µg/L)	V (mg/L)	Zn (mg/L)	Pesticides
BC6S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC3S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC15S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC8S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC10S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC31S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC2S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC4S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC17S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC62S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC34S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC35S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC36S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC11S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC53S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC27W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC24W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC19W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC28W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC29W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC30W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC13W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC26W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC7W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC20W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC21W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC22W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC25W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC12W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC37W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC38W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC39W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC40W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC44W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC45W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC46W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC48W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC49W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC51W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC61S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Site ID	Cd (mg/L)	Co (mg/L)	Cr (mg/L)	Cu (mg/L)	F (mg/L)	Fe (µg/L)	Li (mg/L)	Mn (µg/L)	Mo (µg/L)	Pb (mg/L)	Se (µg/L)	Si (mg/L SiO2)	U (µg/L)	V (mg/L)	Zn (mg/L)	Pesticides
BC60S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC64S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC65W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC66W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC67W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC68S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC70S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC77S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC84W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC115W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC116W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC117W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC118W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC119S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BC120W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3250	nd	nd	nd	nd	-	nd	0.13	nd	nd	nd	nd	-	-	nd	nd	see footnote
374205112091501	-	-	-	-	0.1	160	-	-	-	-	-	12	-	-	-	-
374205112091501	-	-	-	-	-	100	-	-	-	-	-	8.8	-	-	-	-
374205112091501	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-
374205112091501	-	-	-	-	0.1	580	-	25	-	-	< 1	9	-	-	-	-
374205112091501	-	-	-	-	0.13	5	-	< 0.16	0.38	-	0.34	7.61	1.59	-	-	-
374205112091501	-	-	-	-	0.17	< 10	-	0.21	0.364	-	0.31	7.86	1.63	-	-	-
374855112054501	-	-	-	-	0.3	20	-	< 10	-	-	-	27	-	-	-	-
374846112055001	-	-	-	-	0.2	-	-	-	-	-	-	30	-	-	-	-
374846112055001	-	-	-	-	0.3	8	-	< 1	-	-	< 1	29	-	-	-	-
374501112022901	-	-	-	-	0.2	< 10	-	< 1	-	-	-	7.4	-	-	-	-
373237112162101	-	-	-	-	0.1	10	-	-	-	-	-	6.3	-	-	-	-
373237112162101	-	-	-	-	0.2	< 9	-	< 3	-	-	-	6.1	-	-	-	-
373456112133501	-	-	-	-	0.2	< 10	-	< 1	-	-	-	6.8	-	-	-	-
373508112151701	-	-	-	-	0.2	20	-	-	-	-	-	7.1	-	-	-	-
373508112151701	-	-	-	-	0.3	10	-	< 3	-	-	-	6.9	-	-	-	-
373533112150901	-	-	-	-	0.2	< 10	-	-	-	-	-	6.4	-	-	-	-
373638112151801	-	-	-	-	0.2	< 10	-	< 1	-	-	-	6.8	-	-	-	-
373638112151801	-	-	-	-	0.3	< 9	-	< 3	-	-	-	6.7	-	-	-	-
373754112123901	-	-	-	-	0.5	< 10	-	-	-	-	-	6.9	-	-	-	-
374245112123901	-	-	-	-	0.4	< 10	-	-	-	-	-	9.3	-	-	-	-
374150112111501	-	-	-	-	0.2	100	-	50	-	-	-	7.9	-	-	-	-
374120112084201	-	-	-	-	0.6	30	-	-	-	-	-	7.2	-	-	-	-

TDS = total dissolved solids
TSS = total suspended solids
NTU = nephelometric turbidity units
nd = non-detect

*Well water was analyzed for these pesticides by the Utah Department of Agriculture and Food having no detect: 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
**Data from USGS National Water Information System

APPENDIX B

POTENTIAL CONTAMINANT INVENTORY DATA

Appendix B. *Potential contaminant inventory for Johns and Emery Valleys, Garfield County, Utah.*

FIELD ID	TYPE	Description of potential contaminant	Pollutant
1	AFO[1]	equestrian campground	fertilizers, manure, nitrates
2	Waste Disposal	RV dump station	metals, solvents, nitrates
3	AFO	horse corral	fertilizers, manure, nitrates
4	Former AFO	abandoned corral	fertilizers, manure, nitrates
5	AFO	corral	fertilizers, manure, nitrates
6	Service station	service station	solvents, petroleum
7	Business	RV park	metals, solvents, nitrates
8	AFO	horse corral	fertilizers, manure, nitrates
9	Junk Yard/Salvage	junk site	metals, solvents, petroleum
10	AFO	corral	fertilizers, manure, nitrates
11	Business	hotel, restaurant	solvents
12	AFO	horse corral, rodeo arena	fertilizers, manure, nitrates
13	AFO	corral	fertilizers, manure, nitrates
14	AFO	corral	fertilizers, manure, nitrates
15	Government	rest area	solvents, nitrates
16	Government	guard station	metals, solvents, petroleum
17	AFO	corral	fertilizers, manure, nitrates
18	Junk Yard/Salvage	personal junk yard	metals, solvents, petroleum
19	Former AFO	abandoned corral	fertilizers, manure, nitrates
20	Junk Yard/Salvage	junk site	metals, solvents, petroleum
21	Former AFO	abandoned corral	fertilizers, manure, nitrates
22	Mining	inactive borrow pit	metals, solvents, petroleum
23	Former AFO	abandoned corral	fertilizers, manure, nitrates
24	Business, AFO	wildlife museum, ATV storage, exotic animal corral	fertilizers, manure, nitrates
25	Mining	inactive borrow pit	metals, solvents, petroleum
26	Mining	inactive borrow pit	metals, solvents, petroleum
27	Business	hotel, restaurant	solvents
28	AFO	mule/horse corral	fertilizers, manure, nitrates
29	Former AFO	abandoned corral	fertilizers, manure, nitrates
30	Government	waste disposal, automotive storage/scrap yard	metals, solvents, petroleum
31	Junk Yard/Salvage	junk site	metals, solvents, petroleum
32	Mining	gravel pit	metals, solvents, petroleum
33	Government	maintenance yard, paint shop, automotive repair	metals, solvents, petroleum
34	Mining	inactive borrow pit	metals, solvents, petroleum
35	Waste Disposal	sewage lagoons	metals, solvents, nitrates
36	Government	radio towers	metals, solvents
37	Industry	power sub station	PCBs
38	Former AFO	abandoned corral	fertilizers, manure, nitrates
39	Junk Yard/Salvage	junk site	metals, solvents, petroleum
40	AFO	coral	fertilizers, manure, nitrates
41	Business	hotel, restaurant	solvents
42	Service station	abandoned service station	metals, solvents, petroleum
43	AFO	elk preserve	fertilizers, manure, nitrates
44	Waste Disposal	RV dump station	metals, solvents, nitrates
45	Mining	inactive borrow pit	metals, solvents, petroleum
46	AFO	horse corral	fertilizers, manure, nitrates
47	AFO	corral	fertilizers, manure, nitrates
48	Mining	inactive borrow pit	metals, solvents, petroleum
49	Junk Yard/Salvage	auto scrap yard/storage	metals, solvents, petroleum
50	AFO	horse corrals	fertilizers, manure, nitrates
51	Business	RV park	metals, solvents, nitrates
52	Waste Disposal	RV dump station	metals, solvents, nitrates
53	Waste Disposal	sewage lagoons	metals, solvents, nitrates
54	Business, Large Lawn	hotel, large lawns	pesticides, fertilizer
55	Mining	inactive borrow pit	metals, solvents, petroleum
56	Government	fire station	metals, solvents, petroleum
57	Business	maintenance yard, automotive repair	metals, solvents, petroleum
58	Business	restaurants	solvents
59	Service station	service station	solvents, petroleum
60	Large Lawn	park	pesticides, fertilizer

Appendix B. *Potential contaminant inventory for Johns and Emery Valleys, Garfield County, Utah.*

FIELD ID	TYPE	Description of potential contaminant	Pollutant
61	Waste Disposal	RV dump station	metals, solvents, nitrates
62	Business	gift shop, restaurants	solvents
63	AFO	horse corral	fertilizers, manure, nitrates
64	Junk Yard/Salvage	personal junk yard	metals, solvents, petroleum
65	Industry	airport	metals, solvents, petroleum
66	Business	hotel, restaurants	solvents
67	Business, Large Lawn	restaurant, large lawn	pesticides, fertilizer
68	AFO	corral, rodeo grounds	fertilizers, manure, nitrates
69	Business, Large Lawn	hotel, large lawn	solvents, pesticides, fertilizers
70	Business	hotel	solvents
71	Industry	power sub station	PCBs
72	Business	abandoned restaurant	metals, solvents
73	Large Lawn	cemetary	pesticides, fertilizer
74	Business	RV park	metals, solvents, nitrates
75	Shooting range	shooting range	metals
76	Industry	cell tower	metals, solvents
77	AFO	corral	fertilizers, manure, nitrates
78	Junk Yard/Salvage	junk site	metals, solvents, petroleum
79	Former AFO	abandoned corral	fertilizers, manure, nitrates
80	Industry	cell tower	metals, solvents
81	Waste Disposal	landfill	metals, solvents, petroleum
82	Former AFO	abandoned corral	fertilizers, manure, nitrates
83	Junk Yard/Salvage	junk site	metals, solvents, petroleum
84	Former AFO	abandoned corral	fertilizers, manure, nitrates
85	Junk Yard/Salvage	junk site	metals, solvents, petroleum
86	Former AFO	abandoned corral	fertilizers, manure, nitrates
87	AFO	corral	fertilizers, manure, nitrates
88	AFO	corral	fertilizers, manure, nitrates
89	AFO	corral	fertilizers, manure, nitrates
90	Former AFO	abandoned corral	fertilizers, manure, nitrates
91	Mining	gravel pit	metals, solvents, petroleum
92	AFO	corral	fertilizers, manure, nitrates
93	AFO	corral	fertilizers, manure, nitrates
94	AFO	corral	fertilizers, manure, nitrates
95	AFO	corral	fertilizers, manure, nitrates
96	Former AFO	abandoned corral	fertilizers, manure, nitrates
97	AFO	corral	fertilizers, manure, nitrates
98	Former AFO	abandoned corral	fertilizers, manure, nitrates
99	Junk Yard/Salvage	personal junk yard	metals, solvents, petroleum
100	AFO	corral	fertilizers, manure, nitrates
101	AST[2]	above-ground storage tank	metals, solvents, petroleum
102	AST	above-ground storage tank	metals, solvents, petroleum
103	AST	above-ground storage tank	metals, solvents, petroleum
104	AST	above-ground storage tank	metals, solvents, petroleum

[1] - Animal Feed Operation

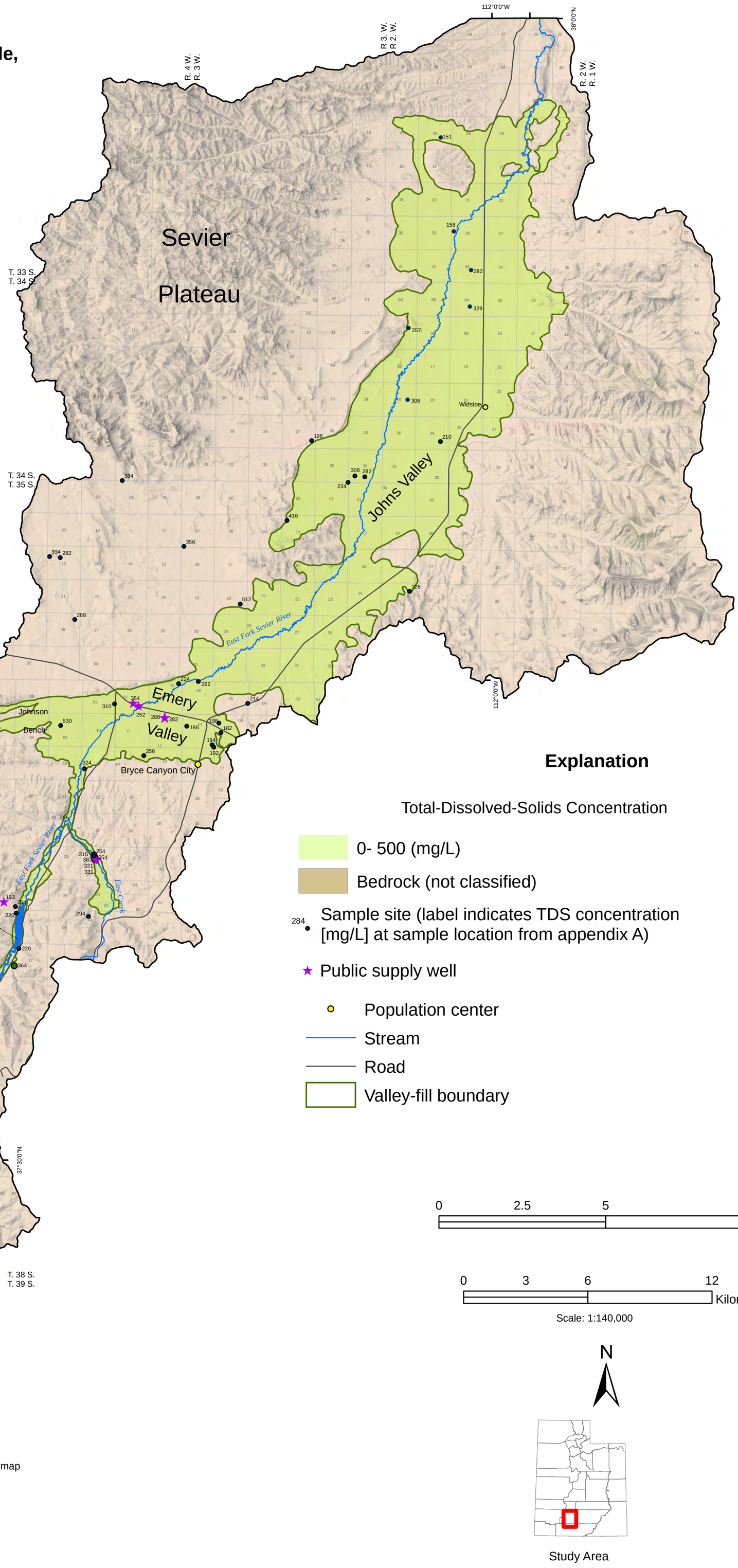
[2] - Above-ground Storage Tank

Plate 1

Total Dissolved Solids, Johns and Emery Valleys, Garfield County, Utah

By
Janae Wallace and Trevor Schlossnagle,
Utah Geological Survey

2021



Explanation

Total-Dissolved-Solids Concentration

- 0- 500 (mg/L)
- Bedrock (not classified)
- 284 Sample site (label indicates TDS concentration [mg/L] at sample location from appendix A)
- ★ Public supply well
- Population center
- Stream
- Road
- Valley-fill boundary

0 2.5 5 10 Miles

0 3 6 12 Kilometers

Scale: 1:140,000

N

Study Area

UTAH DNR GEOLOGICAL SURVEY

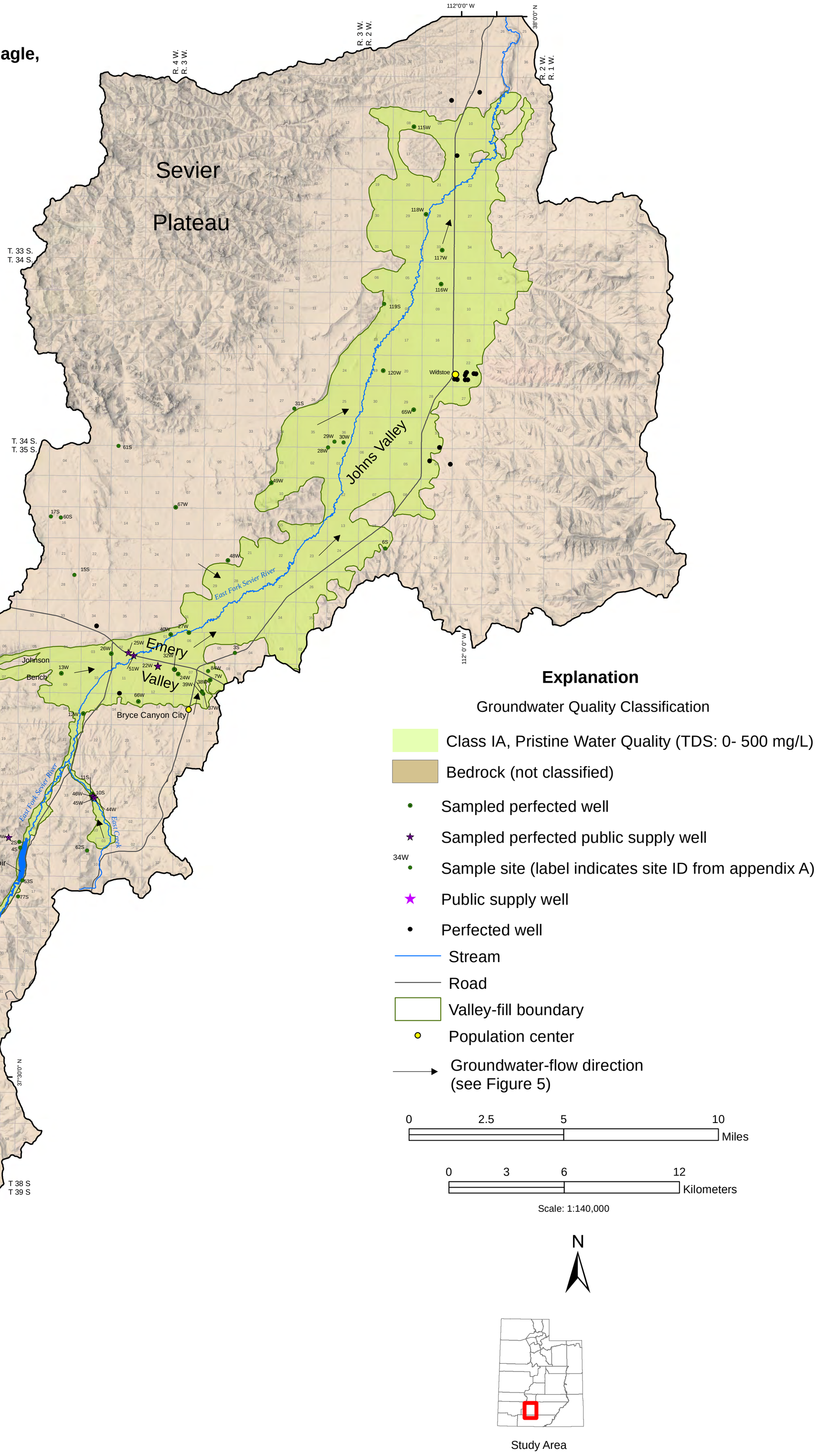
This map was created from GIS files. Basemap constructed from features obtained from the Utah AGRC.
Projection: UTM
Datum: NAD 83 Zone 12N
Cartography by Nathan Payne

Plate 2

Groundwater Quality Classification, Johns and Emery Valleys, Garfield County, Utah

By
Janae Wallace and Trevor Schlossnagle,
Utah Geological Survey

2021



Explanation

Groundwater Quality Classification

- Class IA, Pristine Water Quality (TDS: 0- 500 mg/L)
- Bedrock (not classified)
- Sampled perfected well
- Sampled perfected public supply well
- 34W — Sample site (label indicates site ID from appendix A)
- Public supply well
- Perfected well
- Stream
- Road
- Valley-fill boundary
- Population center
- Groundwater-flow direction (see Figure 5)

0 2.5 5 10 Miles

0 3 6 12 Kilometers

Scale: 1:140,000

N

Study Area

UTAH DNR GEOLOGICAL SURVEY

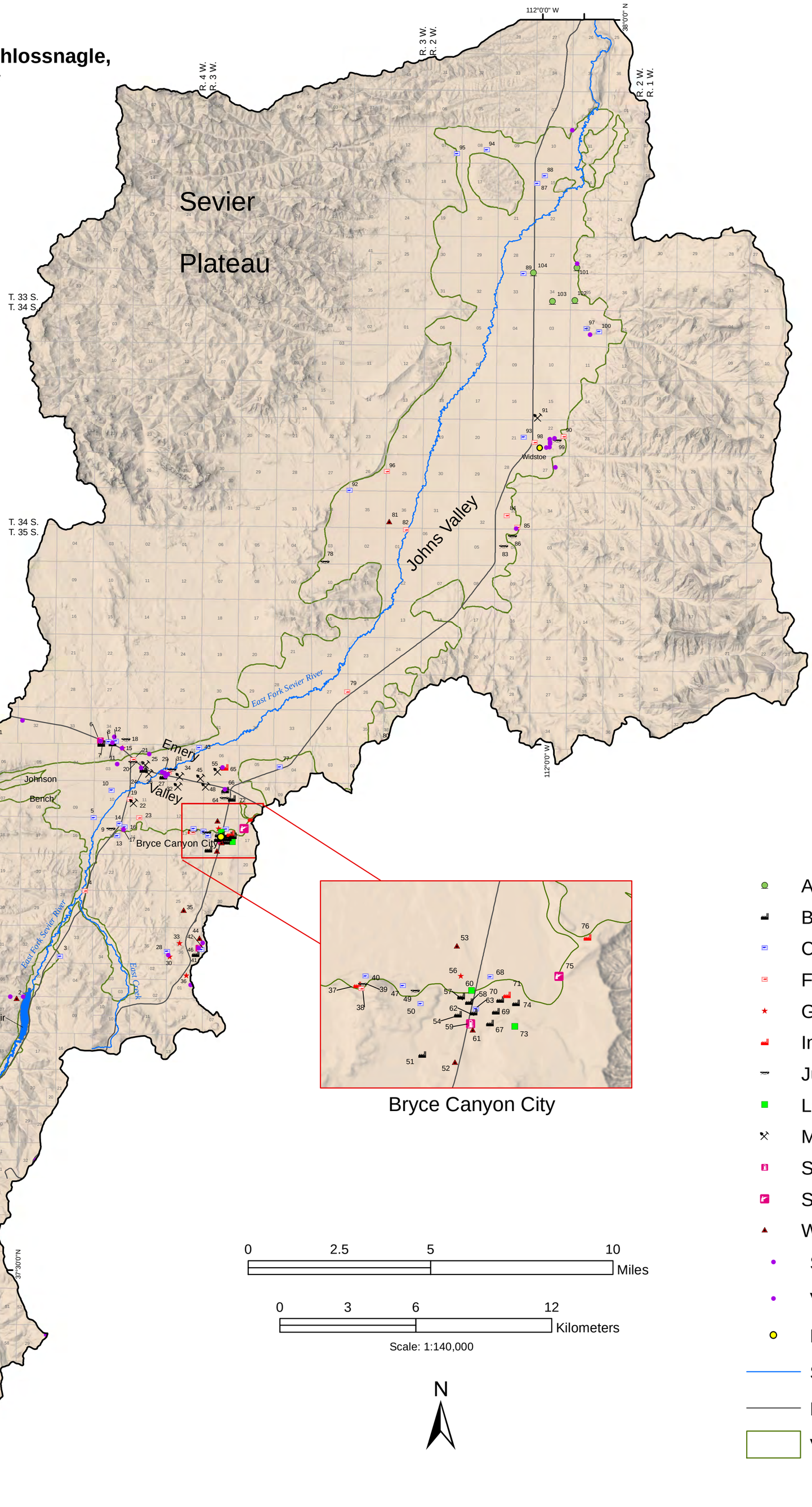
This map was created from GIS files. Basemap constructed from features obtained from the Utah AGRC.
Projection: UTM
Datum: NAD 83 Zone 12N
Cartography by Nathan Payne

Plate 3

Potential Contaminant Sources, Johns and Emery Valleys, Garfield County, Utah

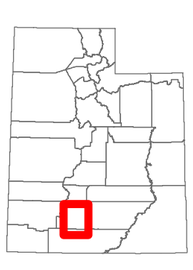
By
Janae Wallace and Trevor Schlossnagle,
Utah Geological Survey

2021



Potential Contaminants
(see appendix B for description
of numbered contaminants)

- Above-ground storage tank
- Business
- Current animal feed operation
- Former animal feed operation
- Government
- Industry
- Junk yard/salvage
- Large lawn
- Mining
- Service station
- Shooting range
- Waste disposal
- Septic system
- Vault toilet
- Population center
- Stream
- Road
- Valley-fill boundary



Study Area

This map was created from GIS files. Basemap constructed from features obtained from the Utah AGRC.
Projection: UTM
Datum: NAD 83 Zone 12N
Cartography by Nathan Payne

DWQ-2021-006975

State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

M E M O R A N D U M

TO: Utah Water Quality Board

THROUGH: Eric Brown Gaddis, PhD
Division Director

FROM: Judy Etherington
Wastewater Certification Program Coordinator

DATE: April 28, 2021

SUBJECT: Presentation of the Utah Wastewater Operator Certification Program 2020 Annual Report to the Water Quality Board

The Utah Water Quality Board has requested a yearly report of the wastewater operator certification program activities. The Utah Wastewater Operator Certification Program 2020 Annual Report is being presented by Mr. Chad Burrell, who currently serves as Chair of the Council. The information contained within the attached report is for the 2020 calendar year.

Attachment: Utah Wastewater Operator Certification Council 2020 Annual Report

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FILE: WWOCC/ANNUAL REPORT 2020
DWQ-2021-007648

195 North 1950 West • Salt Lake City, UT
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www.deq.utah.gov

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY

Utah Wastewater Operator Certification Program 2020 Annual Report

Various Training Resources Were Used in 2020

Prepared by
The Division of Water Quality

April 2021

UTAH WASTEWATER OPERATOR CERTIFICATION PROGRAM 2020 ANNUAL REPORT

Prepared by

Judy Etherington

Wastewater Operator Certification Program Coordinator

Utah Department of Environmental Quality
Division of Water Quality
195 North 1950 West
Salt Lake City, UT 84116

Presented to the Water Quality Board on April 28, 2021

by the Utah Wastewater Operator Certification Council

CONTENTS

Introduction

In March of 1991, following over 20 years of voluntary certification, wastewater works operator certification became mandatory. Wastewater operator certification is administered by the Division of Water Quality under rules adopted by the Utah Water Quality Board. The Board established the Utah Wastewater Operator Certification Council to provide guidance and stakeholder involvement in the program. During 2014, the Board adopted major revisions to Rule R317-10 that incorporated changes required by Senate Bill 21 (2012 General Session) which changed the duties and responsibilities of the environmental boards, their executive secretaries, and division directors. In response to those changes, the Board approved a revision of the rule that organizes the Utah Wastewater Operator Certification Council with members appointed by the Board to work in an advisory capacity to the director of the Division of Water Quality for the certification program.

THE UTAH WASTEWATER OPERATOR CERTIFICATION COUNCIL

On January 31, 2020, the terms of two council members expired. During the January 2020 Utah Water Quality Board meeting, the Board approved re-appointments of both Dr. Jennifer Weidhaas and Phil Harold to fill the vacancies for the next 3-year term. The Council members serving during 2020 were:

Brent Justensen, Chair, represented wastewater collection operators. He is the Operation Manager for Central Davis Sewer District and is certified as both a Grade IV Wastewater Treatment Operator and Grade IV Collection Operator. His term expires January 31, 2021.

Blaine Shipley, Vice-Chair, represented certified wastewater collection operators. He is employed as Plant Superintendent for Price River Water Improvement District and is certified as both a Grade IV Collection Operator and Grade IV Wastewater Treatment Operator. His term expires January 31, 2022.

Giles Demke, represented the management of municipal wastewater systems. He is the Facility Manager at the Orem City Water Reclamation Facility and is certified as a Grade IV Wastewater Treatment Operator. His term expires January 31, 2022.

Paul Fulgham represented certified wastewater treatment operators. He is Public Works Director and Wastewater Treatment Manager for Tremonton City and is certified as both a Grade IV Wastewater Treatment Operator and Grade IV Collection Operator. His term expires January 31, 2021.

Phil Harold represented vocational training. He is the wastewater circuit rider for the Rural Water Association of Utah and is certified as both restricted Grade II Collection Operator and restricted Small Lagoon System Operator. His term expires January 31, 2023.

Brian Lamar represented certified wastewater treatment operators. He currently works at North Davis Sewer District and is certified as a Grade IV Wastewater Treatment Operator, Grade IV Collections Operator, and Grade II Biosolids Land Application Operator. His term expires January 31, 2022

Dr. Jennifer Weidhaas represented Utah universities. She is an Associate Professor in the Department of Civil and Environmental Engineering at the University of Utah who teaches and does research in wastewater treatment and waterborne pathogen detection. Her term expires January 31, 2023.

The council held only two meetings during the year to evaluate requests for continuing education courses, consider reciprocity requests, plan for administering exams, review exam scores and comment forms, and discuss ways to improve the certification program. Due to COVID-19, most communications with the program coordinator were done virtually—striving for majority consensus before any actions were taken.

Examinations

The Divisions of Water Quality and Drinking Water continued to maintain combined membership as a certifying authority with the Association of Boards of Certification (ABC), an environmental control testing service headquartered in Ankeny, Iowa. The role of ABC is to provide examination services to the certification program, which includes exam development, scoring, and compilation of exam results. A contract for exam services between ABC and the Division of Water Quality was in effect for state fiscal years 2019-23. Exams were offered in conjunction with the Rural Water Association of Utah's Annual and Fall Conferences. However, the regularly scheduled Spring exams were cancelled just prior to the application deadline due to COVID-19 restrictions. After waiting to see how the pandemic might develop, the decision was made to try offering exams late in the Summer at multiple locations where the COVID-19 protocols could be maintained. This was also the first time that an attempt was made to offer web-based (WBT) exams in locations that had facilities to accommodate them. Two wastewater treatment plants, North Davis Special Service District and Central Valley Water Reclamation Facility, offered a total of 15 WBT exams. All other sessions were the standard paper-based format (PBT).

The registration and attendance of the 2020 exam sessions are shown in Table 1. These totals include the newer voluntary exams as well as the traditional mandatory ones.

Table 1 - 2020 Exam Registration and Attendance

	Spring Exam Session		**Fall Exam Session**	
	February	August (Make-up for April)	October	November
Locations	St. George (in conjunction with RWAU Annual Conference	By Appointment (20 locations, 30 different sessions)	Layton (in conjunction with RWAU Fall Conference	Bluffdale (SVSD)
				Ogden
				Provo
				Richfield
				Salt Lake
				St. George
				Vernal
Applications Received	86	164	89	172
Total Scored*	83	131	78	168

* Some individuals did not show up to take the exams

EXAMINATION PROCEDURES

Exam sessions were proctored by members of DWQ staff, DEQ District Engineers, current Council members, or other individuals delegated by Council members. An exception was made during the August testing where individuals working with the operators were allowed to proctor since "outside" individuals often were not allowed into the facilities. Having a proctor who may be vested in the examinee's results is not the recommended practice.

All examinations, regardless of grade, consist of 100 scored questions using a multiple-choice format. Answer sheets for PBT format are shipped to ABC for scoring. ABC compiles the results and returns them to DWQ by electronic format for recording in the database and dissemination to the examinees. The WBT exams allow the examinee's results to be immediately available upon completion of the exam, and a copy is electronically sent to DWQ for recording at the same time. Each examinee is provided an individual statistical report, and several

variations of summary reports showing the cumulative results of the general areas detailed in the need-to-know criteria for all Utah examinees taking the same test during that session. Current ABC exams use a cut score of 70 for passing an exam.

EXAM CONTENT

The exams used in 2020 were compiled from ABC's data bank, including the Small Lagoon System exam, which is a customized exam using questions from the same data bank, but developed with 50 Wastewater Treatment I and 50 Collection I items to meet the need of smaller wastewater systems in Utah. The wastewater treatment and collection exams are "ABC 2019 standardized" exams which meet ISO 17024 standard to ensure the validity, reliability, and legal defensibility of the certification exams. Exam questions are reviewed by ABC's technical committees on a regular basis to ensure applicability to current wastewater technologies and processes. The Collection and Wastewater Treatment exams also have ten unscored, unidentified questions that are being pre-tested to see whether they would be good questions to use in future exams.

Three voluntary classifications of wastewater related certifications were again offered in 2020. They include Biosolids Land Applier Grades I - II, Wastewater Laboratory Analyst Grades I - IV, and Plant Maintenance Technologist Grades I - III. Mandatory exams include Collections Grades I - IV, Wastewater Treatment Grade I - IV, and Small Lagoons System Grade I. Cumulative Totals for the 2020 mandatory wastewater exam classifications are shown in Table 2.

Table 2 - Cumulative 2020 Exam Scores (Mandatory)

Exam-Grade	Total Examinees	High Score	Low Score	#Pass (≥70%)	Pass %
C-I	29	93	38	17	59
C-II	63	85	33	22	35
C-III	42	86	44	9	21
C-IV	101	89	44	26	26
SLS-I	21	80	53	11	52
T-I	54	82	44	16	30
T-II	56	80	25	14	25
T-III	34	74	14*	2	6
T-IV	64	82	33	8	13
Totals	**464**			**125**	**27**

*Partially complete exam – took multiple exams during session

This is the first year using the 2019 version standardized exams that are based on the same need-to-know criteria as the previous 2017 version. As predicted by ABC, the overall passing rates may dip when the new forms are introduced, but without any prerequisites for testing, there is really no basis for comparison.

Table 3 - Passing Rate Comparison for Mandatory Exams in 2018, 2019, and 2020

Exam-Grade	2018 Pass %	2019 Pass %	2020 Pass %
C-I	57	62	59
C-II	34	46	35
C-III	10	24	21
C-IV	16	20	26

Exam-Grade	2018 Pass %	2019 Pass %	2020 Pass %
SLS-I	65	71	52
T-I	21	23	30
T-II	20	26	25
T-III	6	13	6
T-IV	10	19	13
Overall	**23**	**29**	**27**

EXAMINATION REVIEW

No further changes have been made to the certification rule since it was amended to remove the option of a post-exam review of actual questions and answers by the examinees that became effective January 24, 2018. The rule still provides the opportunity for the Council to review the questions, along with the ABC accepted answers, for any questions for which a comment form was submitted during the testing sessions. This provides an opportunity for the Council to respond directly to the examinee's comment and also evaluate whether a recommendation should be made to ABC regarding the validity of the question in future exams. Responses from the Council to those comments are sent to the individuals following the review. Each individual has previously been provided a statistical breakdown of their proficiency in the areas of testing as described in the published need-to-know criteria. The examinee, as well as those assisting them in their exam preparations, are able to use those results to focus study efforts for future testing opportunities.

Training

COOPERATION WITH TRAINING PROVIDERS

During 2020, many of the usual in-person training came to a halt due to COVID-19 protocols. Modifications were made to most of the certification-related training classes offered through cooperative efforts with the Rural Water Association of Utah or the Water Environment Association of Utah so that they could be delivered virtually. Division of Water Quality staff and Certification Council members participated as instructors and presenters at conferences, seminars, and training sessions which provided training to wastewater personnel. The objective of these training opportunities was to facilitate compliance with UPDES permits, review subject matter in preparation for operator examinations, and earn required continuing education credits for renewals.

Some council members and staff also participated with the Utah Water and Wastewater Training Coalition to provide a centralized calendar of seminars and training to make it easier for water and wastewater professionals to obtain needed training and continuing education for their respective fields. The council continued to support participation in an "on-line" calendar format. This calendar has greatly improved the communication and coordination between the members of the Coalition as well as the operators. Division of Water Quality staff and representatives of the member organizations maintain their respective calendar information. Members of the Coalition are: Division of Drinking Water, Division of Water Quality, American Water Works Association, Water Environment Association of Utah, Rural Water Association of Utah, American Backflow Prevention Association, and Rural Community Assistance Corporation.

Individual wastewater facility owners and managers went to great effort to continue to provide updated training for their personnel. Often training was done through virtual meeting platforms allowing interactive participation by all—even if it wasn't in person. Dedication and ingenuity were definitely observed while meeting compliance, certification, and safety requirements.

Renewal and Compliance

Wastewater Operator Certifications may be valid for up to three years. Certifications will expire on December 31st of the expiration year unless they have been renewed. Continuing education during the three-year period prior to the expiration date, in wastewater-related subject matter, is a prerequisite for renewal. The number of credits required is dependent upon the grade of certification being renewed. Reinstatement of the certificate is also allowed within the year following expiration, provided that the operator has earned the required training credits prior to the certificate's expiration. All publicly-owned wastewater works are required to have adequately certified individuals "in charge" of both the wastewater treatment and collection systems as specified in Rule R317-10 Certification of Wastewater Works Operators. The statistics in Table 3 represent the certification actions taken during 2020 to comply with various aspects of the certification rule.

Table 4 - Certification Actions for 2020

Action	Number
Number of “new operators” added to wastewater certification database during 2020	109
Certificates expired December 31, 2019– final notices mailed September 2020	126
Certificates expired 2019, reinstated prior to December 31, 2020 deadline	79
Certificates expired 2019, reinstated with "Change in Status" prior to December 31, 2020 deadline	1
“Change in Status” certificates issued for current certifications	11
Certificates expiring December 31, 2020 – notices mailed February 2020	589
Certificates expiring December 31, 2020 – notices mailed September 2020	492
Certificates expiring 2020 renewals received prior to December 31, 2020	347
Certificates expiring 2020, renewed along with “Change in Status” requests	11
Early renewals for certificates expiring after 2020	5
Early renewal with "Change in Status" for certificates expiring after 2020	3
Certificates issued by “reciprocity” (equivalent certification from another state)	5
Issued Letter-of-Intent to issue certificate by “reciprocity” (not employed in Utah)	0
Number of “reciprocity” requests denied in 2020	1
Number of "active" individuals in database (participated in certification within last 3 years)	1,722
Number of certified wastewater operators as of January 1, 2021(all categories)	1,265
Number of certified “treatment” operators	488
WW Treatment Grade I	108
WW Treatment Grade II	138
WW Treatment Grade III	43
WW Treatment Grade IV	233
Number of certified “collection” operators	852
Collection Grade I	109
Collection Grade II	263
Collection Grade III	79
Collection Grade IV	433
Number of certified “small lagoon system” operators	137
Total number of current wastewater operator certifications as of January 1, 2021	1,629
Number of operators holding two classes of certifications, but not more than two during 2020	258
Number of operators holding three classes of certifications	27
Total number of current voluntary certifications (Biosolids Land Applier, WW Laboratory, Plant Maintenance)	84
Total number of publicly owned wastewater collection systems	195

Action	Number
Municipal Collection Class I systems	99
Municipal Collection Class II systems	49
Municipal Collection Class III systems	27
Municipal Collection Class IV systems	20
Total number of publicly owned wastewater treatment facilities	123
Municipal Treatment Class I facilities	75
Municipal Treatment Class II facilities	10
Municipal Treatment Class III facilities	21
Municipal Treatment Class IV facilities	17
Municipal Small Lagoon System I facilities (combination Treatment I & Collection I included in the above numbers)	67

As an alternative to employing a certified operator as Direct Responsible Charge (DRC), the owner of a municipal wastewater system may choose to contract with an individual or another entity with an appropriately certified operator to meet the certification requirement. New contracts to meet the requirements for Direct Responsible Charge (DRC) operators were submitted and approved for Little Mountain Service Area.

Systems with no certified DRC operator of record as of January 1, 2021, are Mexican Hat Special Service District #1, Panguitch Lake S. S. D., Wellsville City, and Ticaboo Utility Improvement District. Mexican Hat Special Service District #1 had a contract in place until December 31, 2019, but the operator has retired and they are arranging for the Blanding operator to take over. No contract has been submitted as of this publication. Panguitch Lake S. S. D. lost the DRC operator in May 2020, and the replacement has not applied to test. Wellsville City's previously designated DRC operator left in November 2020, but another individual has since become certified. The manager for Ticaboo UID has had difficulty hiring another qualified individual to operate the system, and is attempting to again become recertified himself.

Certification Council Meetings

There were two Council meetings held during 2020. The following items may be of special note:

- The Council moved to use the 2019 ABC Standardized Exams for Collection and Wastewater Treatment. These exams are based on the same 2017 version Need-to-Know Criteria as the previous exams and still have 100 pre-selected, scored questions, but also have 10 additional unidentified questions that are being Beta tested for future use. This is to facilitate having validated questions that may be used in the future for questions that are not performing as well as expected. The over-all scores dropped slightly, but not as much as when we changed to the 2017 version exams.
- The newer Small Lagoon System exam format seems to better evaluate the overall competency of the operators since it includes 50 collection and 50 treatment questions from the Grade I Standardized exams. The new exams were first used during the Fall 2017 exam sessions.
- Due to the cancellation of the April exam sessions due to COVID-19, the Council was able to provide web-based testing for a few operators during the August make-up sessions. Only two facilities were able to provide a secure setting for those exams, although others were willing to provide space, but did not have secure computers that they were willing to make available to others. Limited resources continue to be a major factor in being able to offer the alternative testing methods. Whenever an alternative is offered, there would need to be a way to cover the cost of the testing space, computer, and proctor over and above the traditional costs for paper-based testing.
- Changes in the certification fees were proposed by the Division of Water Quality and comments accepted during the department's public notice period in late 2020. The current fees have remained the same since July 2009. These changes would be presented to the 2021 legislature for approval. The following table shows the changes in red. They would be effective July 1, 2021 and include:

Certification Action	Current Fee	Proposed Fee
Certification Examination	$50.00	$100.00
Renewal of Certificate or New Certificate Change in Status	$25.00	$50.00
Renewal of Lapsed Certificate plus Renewal (per month) (Maximum $150)	$25.00	$50.00
Duplicate Certificate	$25.00	$25.00
Certification by reciprocity with another state	$50.00	$100.00
(Grandfather Certificate is eliminated)	$20.00	NA

- Accommodations were made by council members and staff to administer a couple exams orally in conjunction with regular testing dates.
- The Council discussed trying to find a better way to inform the operators of how difficult the exams are so that they will put more effort into preparing for them rather than simply testing repeatedly.
- More continuing education was done using technology for communications, rather than the traditional in-person training sessions. This relies more on the honesty of those participating, as well as those instructing and facilitating the on-line meetings. The picture on the cover of the report shows a sampling of providers and methods used for reporting the training.
- The second Council meeting was conducted both in person and virtually to accommodate meeting limitations due to COVID-19 protocols. It allowed for discussion of the necessary agenda items, but also limited travel for the participants.

DWQ-2021-007422

State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

M E M O R A N D U M

TO: Water Quality Board

THROUGH: Erica Brown Gaddis, Director, Division of Water Quality

FROM: Sandy Wingert, Watershed Protection Section

DATE: April 28, 2021

SUBJECT: Preliminary Briefing of the Jordan River Watershed-wide *E. coli* Total Maximum Daily Load Study

The Utah Division of Water Quality (DWQ) is developing a Jordan River Watershed-wide Total Maximum Daily Load (TMDL) Study to address impairments of the drinking water and recreational beneficial uses due to *E. coli*. This study addresses *E. coli* exceedances that resulted in Clean Water Act (CWA) Section 303(d) impairment listings of several assessment units in the Jordan River watershed in the 2006 through 2014 Integrated Reports. Staff will present an overview of the TMDL development strategy, analyses completed to date, and a timeline for completion to the Water Quality Board during the meeting scheduled for April 28, 2021.

Watershed Description

The Jordan River watershed is a part of the Great Salt Lake Basin which incorporates much of northern and western Utah as well as portions of Idaho, Wyoming, and Nevada. The total area of the Great Salt Lake Basin is about 35,000 mi^2. The Jordan River watershed comprises the downstream end of the Provo/Jordan River Basin and is one of three river basins that contribute flow to the Great Salt Lake. It has been heavily hydrologically modified to convey water across the valley predominantly for agricultural and municipal uses. Utah Lake is the single largest source of flows to the Jordan River. Other tributaries contribute flow from both east and west, but these, are subject to a complex network of diversions, return flows from canals, stormwater discharge, and exchange agreements between culinary and agricultural users. The Jordan River watershed incorporates all of Salt Lake County and some of the most densely populated areas of Utah.

Impaired Waterbodies

The 2016 Integrated Report states that 16% of the river miles assessed within the Jordan River watershed are failing to protect at least one of their designated uses; Beneficial Use Class 1C

(drinking water) and 2B (infrequent primary contact recreation) due to elevated levels of *E. coli*. These impaired river miles are located within 13 assessment units (AUs) and include both east and west side tributaries and the main stem of the Jordan River from the confluence of Little Cottonwood Creek to the Great Salt Lake (Table 1 and Figure 1). These AUs are deemed a high priority for TMDL development due to the high recreational use, culinary use, ongoing TMDL studies and watershed planning, waterborne pathogen pollutant, and a combination of both point and non-point sources of pollution.

Figure 1. *E. coli* impaired assessment units within the Jordan River watershed.

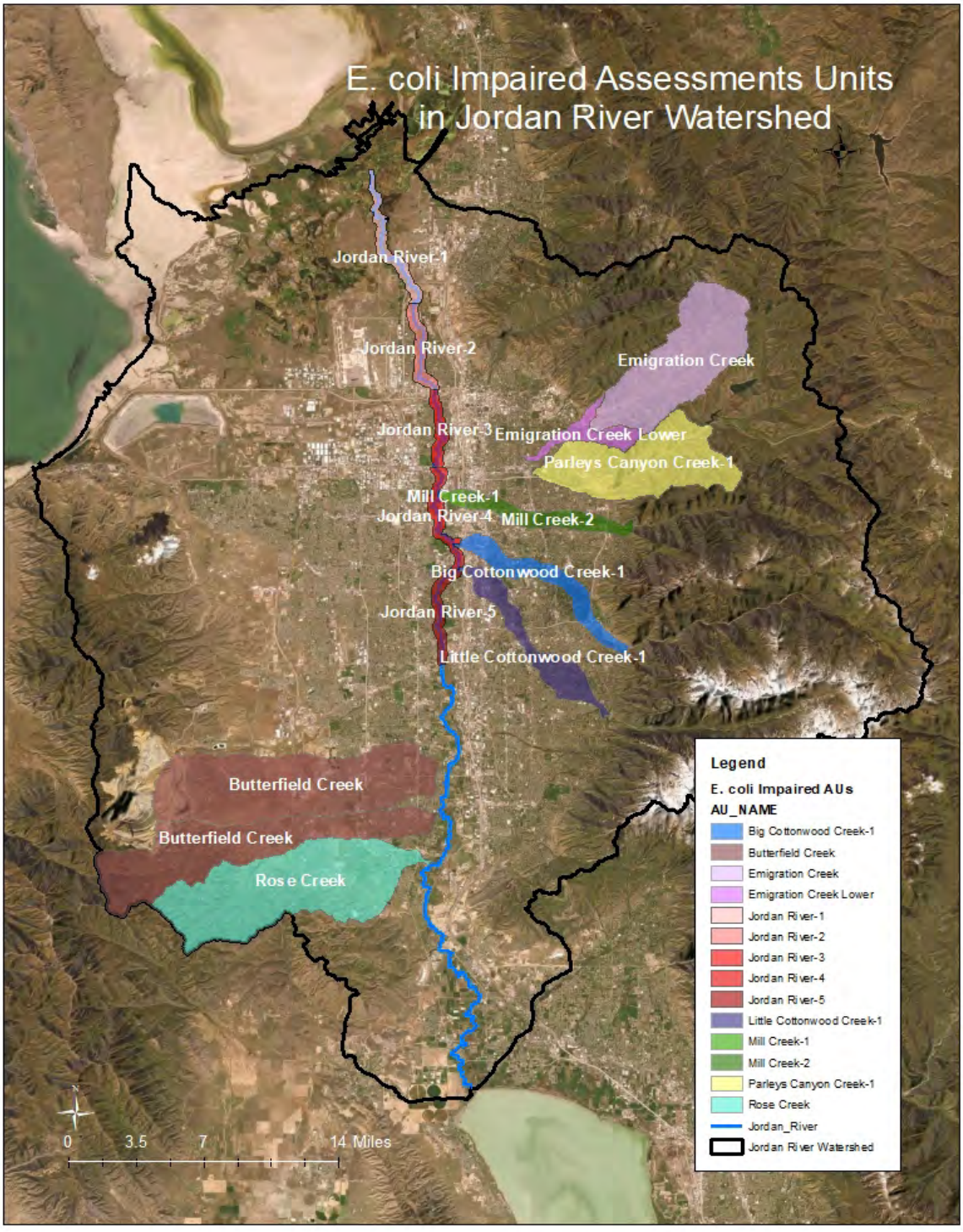

Table 1. *E. coli* impaired assessment units within the Jordan River watershed.

Assessment Unit	Description	Impaired Beneficial Use	Year Listed
Jordan R-1	Jordan River from Farmington Bay upstream contiguous with the Davis County line	2B	2010
Jordan R-2	Jordan River from Davis County line upstream to North Temple Street	2B	2006
Jordan R-3	Jordan River from North Temple to 2100 South	2B	2006
Jordan R-4	Jordan River from 2100 South to the confluence with Little Cottonwood Creek	2B	2014
Jordan R-5	Jordan River from the confluence with Little Cottonwood Creek to 7800 South	2B	2006
Mill Creek-1	Mill Creek from confluence with Jordan River to Interstate 15 crossing	2B	2014
Mill Creek-2	Mill Creek and tributaries from Interstate 15 to USFS Boundary	2B	2008 (FC)
Little Cottonwood -1	Little Cottonwood Creek and tributaries from Jordan River confluence to Metropolitan WTP	2B	2014
Big Cottonwood-1	Big Cottonwood Creek and tributaries from Jordan River to Big Cottonwood WTP	2B	2014
Lower Emigration	Emigration Creek and tributaries from below Westminster College) to stream gage at Rotary Glen Park	2B	2014
Parley's-1	Parleys Canyon Creek and tributaries from 1300 East to Mountain Dell Reservoir	1C/2B	2010
Rose	Rose Creek and tributaries from confluence with Jordan River to headwaters	2B	2014
Butterfield/Midas	Butterfield Creek and tributaries from confluence with Jordan River to headwaters	2B	2014

Approach

Per requirements of Section 303(d) of the CWA, states assess water quality and identify impaired waters. The purpose of developing TMDLs for these impaired waters is to restore, protect, and maintain the quality of waters of the state for their designated beneficial uses. It is the Division of Water Quality's policy to develop plans and strategies through a locally led, collaborative process with the Jordan River Commission, Jordan River Watershed Council, Salt Lake County Stormwater Coalition and other stakeholders.

TMDLs include a thorough assessment of defined beneficial uses and their associated water quality standards, a determination of the pollutant loading capacity of impaired waters, excess pollutant loads, significant sources of pollutant loading, and an allocation of pollutant loads to those sources. The pollutant loading evaluation includes both point and nonpoint sources in addition to defining a margin of safety to account for the analytical uncertainty associated with the development of the TMDL.

E. coli, unlike other pollutants, are living organisms and can multiply and persist in soil and water environments. Use of watershed models for estimating relative loads is warranted for these analyses given the intensive hydrological modifications, diverse pollutant sources, and permitted point sources allocations within the drainage. The technical approach includes using the Bacteria Source Load Calculator to characterize bacteria source inputs for a larger watershed scale model, Hydrological Simulation Program – FORTRAN (HSPF). This dynamic model allows for the simulation of land and soil contaminant runoff processes with in-stream hydraulic and sediment-chemical interactions. Model outputs can then be used to determine appropriate pollutant loads and reductions necessary to protect Jordan River watershed's beneficial uses.

Following the analysis of water quality data, a project implementation plan will be prepared that outlines strategies to decrease pollutants where feasible, attain water quality standards, and restore the river to full support status. The project implementation plan will also include an evaluation of existing best management practices and completed implementation projects in the watershed. The implementation plan will satisfy requirements for obtaining federal 319 funding and provide reasonable assurance that the non-point source load reductions identified in the TMDL will be achieved.

Schedule

DWQ Staff and cooperators (Salt Lake County) have collected water quality data throughout the Jordan River watershed to support these studies since 2006. In 2019, staff met with key stakeholders (Jordan River Watershed Council, Salt Lake County Stormwater Coalition) to determine possible sources and direct future monitoring efforts. The official kick-off meeting was held on February 5, 2019 at the Jordan River Watershed Council meeting where staff introduced the background information of assessment listings and TMDL development. Model selection and development occurred in 2020. Future stakeholder meetings will focus on data summaries, watershed characterization, and model introduction. Monitoring is on-going.

September 2022 is the goal date for submission to EPA for final approval (Table 2).

Table 2. Jordan River watershed E. coli TMDL development schedule.

Date	Schedule
February 5, 2019	Kickoff Stakeholder Meeting (Jordan River Watershed Council)
March 21, 2021	Salt Lake County Stormwater Coalition: TMDL Update
April 21, 2021	Salt Lake County Stormwater Coalition: TMDL Tracking Tool Update
April 28, 2021	Water Quality Board Introduction
June 2021	HSPF Model Update Complete
June 2021	Jordan River Commission Technical Advisory Committee: TMDL and Model Introduction
Summer 2021	HSPF Model Calibration and Validation
Fall 2021	HSPF Model Scenario, Report Writing
Fall 2021	Stakeholder Meeting: Model Scenario Discussion
Winter 2021	Model Report, TMDL Report Writing
Winter 2021	Stakeholder Meeting (if necessary)
1st Quarter 2022	Internal Draft Report
2nd Quarter 2022	Stakeholder meeting & Stakeholder Draft Due
June 2022	Water Quality Board preliminary approval & initiate rule-making
July 2022	30-day rulemaking process
August 2022	Address public comments
September 2022	Water Quality Board request for formal adoption into rule Submit to EPA for final approval

State of Utah

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Kimberly D. Shelley
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

MEMORANDUM

TO: Utah Water Quality Board

THROUGH: Erica Brown Gaddis, PhD

FROM: Krystol Carfaro

DATE: April 28, 2021

SUBJECT: Request for Public Comment on the FY 2021 Intended Use Plan

The Division of Water Quality is requesting approval from the Utah Water Quality Board to go to public comment for feedback regarding the FY 2021 Intended Use Plan (IUP).

As a condition of CWSRF funding, the U.S. Environmental Protection Agency requires that the State of Utah provide an annual IUP. The IUP identifies both long and short-term goals and addresses specific program requirements such as additional subsidy, green project reserve, and proportionality of state match. The IUP also contains the Project Priority List which shows current projects ranked using criteria like project need, potential improvement, and population affected. However, due to the dynamic nature of wastewater projects, the documents will be updated on an ongoing basis throughout the fiscal year. The Water Quality Board will be apprised of these updates by way of the Financial Status Report, the Project Priority List, and feasibility reports.

The Division of Water Quality will publish a notification in the newspaper to advertise the IUP. Staff will post the document on the Division of Water Quality's website for public review and comment.

Following the public comment period, the IUP will be submitted to EPA as part of the 2021 CWSRF Capitalization Grant application.

DWQ-2021-005867

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY

Intended Use Plan FY21

Prepared by
The Division of Water Quality

March 2021

INTENDED USE PLAN FY21

Prepared by
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Utah Department of Environmental Quality
Division of Water Quality
195 North 1950 West
Salt Lake City, UT 84116
March 25, 2021

CONTENTS

CHAPTER 1. Introduction

The Intended Use Plan is used by the Department to apply for the EPA Capitalization Grant. The primary purpose of the Plan is to identify current and projected projects that may be awarded funding from federal grant awards. The federal award for FY21 is estimated to be $8,357,000. See Table 2 for a list of State Revolving Fund projects. In addition, the Plan identifies current and projected projects that may be awarded from State monies, including the Utah Wastewater Loan Program and Hardship Grant Funds. See Table 3 and 4 for a list of these respective projects.

As required under Sections 606(c) and 610(b) of the Clean Water Act, the State of Utah has prepared an Intended Use Plan (IUP) for the Clean Water State Revolving Fund (CWSRF) program. The purpose of the IUP is to facilitate the negotiation process for the Fiscal Year 2021 CWSRF Capitalization Grant agreement. This IUP outlines the short-term and long-term goals of the program and proposes a schedule of payment between the Department of Environmental Quality – Division of Water Quality and the Environmental Protection Agency – Region 8. This document also describes the intended uses for: The State Revolving Fund (SRF), the Utah Wastewater Loan Fund (UWLF), and the Hardship Grant Funds (HGFs). All data provided in the 2021 IUP are projections of funding for the listed projects. Ultimately, the Utah Water Quality Board will determine loan amounts and financing terms are projects are presented for authorization.

The CWSRF is a financial assistance program that provides low-cost financing for treatment works, sewerage systems, storm water projects, decentralized systems, and nonpoint source projects. The operation of Utah's CWSRF program is coordinated between the Utah Water Quality Board (the Board) and the Department of Environmental Quality – Division of Water Quality. Projects financed through the State Revolving Fund may receive funding from the following sources: (a) SRF Capitalization Grants; (b) SRF loan repayments; and (c) State matching funds.

Occasionally, an SRF-eligible project will be financed through the Utah Wastewater Loan Program or Hardship Grant Funds.

The Division of Water Quality maintains the SRF Project Priority List comprised of projects for which funding applications have been submitted. The Project Priority List is a numeric calculation used to prioritize projects which will remedy the most severe water quality problems and provide funds for the most beneficial protection of public health and water quality improvement. Projects are listed on the Project Priority List prior to being presented to the Water Quality Board for authorization. Projects will be considered for funding according to their priority and readiness to proceed. If an SRF-eligible project does not proceed or is funded by SRF, UWLF, HGF, or another source, it will be removed from the Project Priority List. The Intended Use Plan includes projects listed on the most recent FY 2021 Project Priority List.

The Division of Water Quality conducts the Municipal Wastewater Planning Program (MWPP) survey to project the potential Utah Statewide funding needs for wastewater treatment and wastewater collections systems. Participation in the MWPP is required for all political subdivisions which have received funding from the SRF, UWLF, or HGF. In addition, all wastewater agencies Statewide are encouraged to voluntarily participate. In 2019, 168 responses were received to the MWPP survey which represents 77% of the distributed surveys. Results from the MWPP survey for projected wastewater capital improvement projects are listed below showing a projected 2040 year Statewide need of more than $4.4 billion. It should be noted; agency estimation accuracy diminishes with greater timelines so the 2025 estimation is believed to be fairly accurate, while the 2040 need is probably greater than estimated.

2019 MWPP survey results – Statewide Wastewater Capital Improvement Projects			
2020-2025	2026-2030	2031-2035	2036-2040
$2,226,897,735	$866,816,182	$595,764,499	$725,204,242

CHAPTER 2. Program Operations

Since its inception in 1989, Utah's CWSRF program has received appropriations from the federal government through capitalization grants. For FY21 Utah estimates its capitalization grant award will be approximately $8,357,000.

In addition to federal dollars, The Department of Environmental Quality – Division of Water Quality is required to provide a twenty percent (20%) state match. Utah has met the state match requirement by using money from the Utah Wastewater Loan Fund (UWLF). Revenues into the UWLF are comprised of principal repayments from state loans and from a state sales tax allocation. For FY21, Utah anticipates receiving its full measure of sales tax dollars, which is $3,587,500. The entire 20% state matching amount will be used toward eligible project costs before draws are made from the capitalization grant. Once the requirement is met, draws will be made from the federal award as a 100% federal share.

The Department of Environmental Quality – Division of Water Quality will use SRF administrative funds of up to $400,000 for costs associated with administering the program. In addition, loan origination fees, equal to 1% of the principal loan amount, are charged to loan recipients. That revenue may also be used for program administration expenses. The Division of Water Quality estimates that $1,501,730 will be collected from loan origination fees by the end of Fiscal Year 2021.

2.1 Transfer of Clean Water State Revolving Funds

The Water Quality Board and Division of Water Quality reserve authority to transfer funds from the Clean Water SRF program to the Drinking Water SRF (DWSRF) program. The amount reserved for future transfers is up to 33% of the DWSRF capitalization grant award. The table below indicates the reserved transfer amount by award year.

For FY21, the projected amount of funds to be transferred is $0, with no short- or long-term impacts on the fund. Justification for any transfers to the Drinking Water SRF program, including amount, type of funds, and fund impact, will be documented in a future Intended Use Plan (IUP).

The intended use plan will reserve the authority to transfer funding to the DWSRF program. A Memorandum of Understanding between the divisions to process the actual transfers will require the Water Quality Board approval.

TABLE 1 – TRANSFER AMOUNTS

Award Year	DWSRF Capitalization Grant Award	Reserved Transfer Amount
2019	$11,103,000	$3,663,990
2020	$11,011,000	$3,633,630
2021	$11,001,000	$3,630,330
Total		$10,957,950

2.2 Extended Financing Terms

As of July 1, 2020, the Utah Water Quality Board has authorized extended financing to two SRF recipients: San Juan Spanish Valley and Mountain Green Sewer Improvement District. The Division of Water Quality estimates that the long-term impact of extended financing on the SRF program is less than a 1% revolving level reduction over 60 years. This estimate does not include an adjustment for inflation.

In cases of extreme hardship, the maximum affordable loan amount may not provide sufficient capital to cover project costs. In these cases, the Board would be requested to provide hardship grant funds to make these projects feasible. Extended-term financing can increase the loan amount that a community qualifies for
under the 1.4% median adjusted gross household income (MAGI) affordability guideline. The extended terms also benefit the SRF program by replacing an award of grant dollars with additional loan repayments, albeit in years 21- 30.

2.3 Additional Subsidization

The FY21 capitalization grant may allow states to provide additional subsidization in the form of principal forgiveness and negative interest loans. A minimum of $835,700 and a maximum amount of $3,342,800 additional subsidization amounts will be outlined in the programmatic terms and conditions of the award. The Water Quality Board uses principal forgiveness agreements as its mechanism for awarding additional subsidization.

Additional subsidy may be provided to disadvantaged communities, communities addressing water-efficiency or energy-efficiency goals, communities mitigating storm water runoff, or to encourage sustainability. For the Water Quality Board to qualify a community as disadvantaged, the community must have a demonstrated hardship based on its cost of sewer service relative to 1.4% of the MAGI, unemployment, poverty level, or economic trends. Table 2: FY21 List of SRF Projects identifies those projects that may meet any additional subsidization requirement. However, the Water Quality Board may authorize principal forgiveness to additional projects presented for authorization during the year.

2.3 Green Project Reserve

The FY 21 capitalization grant allocation requires that, to the extent that there are sufficient eligible projects applications, not less than 10% of the SRF funds shall be used for projects that address green infrastructure, water or energy efficiency improvements, or other environmentally innovative activities. The required amount for FY21 is $835,700. The State of Utah will meet this objective by identifying projects that meet green infrastructure requirements and providing funding, in whole or in part, as they proceed to construction. Table 2: FY21 List of SRF Projects identifies projects that may meet the Green Project Reserve requirement.

2.4 Program Assurances

The State of Utah must comply with its Operation Agreement with EPA and Utah Administrative Code, R-317-102, Utah Wastewater State Revolving Fund (SRF). Assurances include:

- Section 602(a)-Environmental Reviews
- Section 602(b)(3)-Certify binding commitments within one year
- Section 602(b)(4)-Certify expeditious and timely expenditures
- Section 602(b)(5)-First use for enforceable requirements

The Division of Water Quality will complete the one-page worksheet through the Clean Benefits Reporting database for all binding commitments in the quarter that they are made.

CHAPTER 3. CWSRF Project Funding

Eligible projects to be funded by the SRF include loans closed with remaining draws, authorized loans, and anticipated loans. Loans closed with remaining draws are projects that are currently under construction. Authorized loans are projects that have been authorized by the Utah Water Quality Board and are in the design phase. Anticipated loans are projects that are in the beginning stages of planning.

Funding through the SRF can include federal dollars from the capitalization grant awards, principal repayments, interest payments, and investment fund interest earnings. Table 2 shows the projects that are expected to be funded from the Clean Water SRF. Projects must meet specific programmatic requirements including federal cross cutters and "super cross-cutters," Davis-Bacon wages, American Iron and Steel (AIS), NEPA-like environmental review, Single Audit Act, Disadvantaged Business Enterprise (DBE), and Architectural and Engineering Services procurement.

As determined by the Utah Water Quality Board, SRF loan recipients may be charged a hardship grant assessment in lieu of interest. Upon collection, the hardship grant assessment will be placed into the Federal Hardship Grant Fund. If a hardship grant assessment is derived from a loan funded directly by EPA Capitalization Grant monies, the assessment shall be used for purposes identified in 40 CFR Part 31.25. If a hardship grant assessment is derived from a loan funded by SRF loan repayments, the assessment may be used to provide grants to communities for projects that are economically unfeasible without grant assistance.

3.1 Long Term Goals

1. Provide a permanent funding source for water quality construction projects that supplements a community's own resources and/or other funding sources.
2. Distribute SRF funds to projects with the highest water quality and infrastructure needs by evaluating and prioritizing proposed projects throughout the state.
3. Support EPA's Sustainability Policy by balancing a community's economic and water quality needs with the perpetuity of the SRF program.
4. Assist communities with all phases of a project, including sufficient planning, project design, environmental work, and construction.

3.2 Short Term Goals

1. Present eligible projects to the Water Quality Board for authorization and assist communities through the application and award process.
2. Collaborate with other agencies (e.g., Utah Permanent Community Impact Board, U.S. Department of Agriculture Rural Development, and U.S. Army Corps of Engineers) to sufficiently fund projects.
3. Solicit and fund eligible nonpoint source and storm water projects.
4. Provide funding, equal to at least ten percent (10%) of the capitalization award, for energy efficiency and recycled water and water reuse projects to the extent such projects exist.
5. Increasing the profile of the SRF program as a potential funding source for low income and rural Utah communities.

TABLE 2 – LIST OF FY21 SRF PROJECTS

LOAN RECIPIENT	PERMIT NUMBER	NEEDS CATEGORY	ASSISTANCE AMOUNT	FUNDING TYPE	INTEREST RATE	TERM (YRS)	ADDITIONAL SUBSIDY AMOUNT (Principal Forgiveness)	GREEN PROJECT RESERVE AMOUNT	BINDING COMMITMENT / CONSTRUCTION START	INITIATION OF OPERATION
Duchesne City	UT0020095	I-Secondary Treatment	$2,700,000	1st Round	0.25%	30	$400,000	$262,295	17-May	19-Jul
Logan City	UT002199920	II-Advanced Wastewater Treatment	$69,131,000	2nd Round	0.75%	20	-	-	16-Mar	22-Jan
Logan City	UT002199920	II-Advanced Wastewater Treatment	$20,000,000	2nd Round	1.50%	30	-	-	18-Dec	22-Jan
Moab City	UT0020419	I-Secondary Treatment	$14,200,000	1st Round	1.15%	20	-	$502,937	17-Apr	19-Nov
Salem City	UT0020249	I-Secondary Treatment	$20,000,000	1st & 2nd Round	1.15%	30	-	-	18-Jul	22-Aug
San Juan Spanish Valley SSD	See Moab	IVa-New Collectors	$968,000	1st Round	0%	30	$1,997,000	-	19-Jan	20-Jan
San Juan Spanish Valley SSD	See Moab	IVa-New Collectors	$360,000	2nd Round	0%	30	-	-	19-Jan	20-Jan
Central Valley WRF	UT0024392	I-Secondary Treatment	$65,100,000	1st & 2nd Round	1.50%	20	-	-	18-Dec	24-Dec
Provo City	UT0021717	II- Advanced Treatment	$75,800,000	1st & 2nd Round	0.50%	20	$2,000,000	-	18-Dec	25-Jan
South Davis Sewer Dist	UT0021628	II-Advanced Treatment	$14,176,000	1st & 2nd Round	0.25%	20	-	$13,176,000	21-Dec	24-Dec
South Salt Lake City	See CVWRF	I-Secondary Treatment	$2,413,000	1st Round	0%	20	$2,000,000	-	18-Dec	24-Dec
Millville City	UT0023205	Iva-New Collectors	$0.00	1st Round	-	-	$2,000,000	-	20-Mar	20-Dec
Mountain Green	UT0024732	I-Secondary Treatment	$7,000,000	2nd Round	1.30%	30	-	-	22-Jan	24-Jan
Payson City	UT0020427	I-Secondary Treatment	$11,500,000	2nd Round	1.11%	20	-	-	22-Feb	25-Jan
TOTAL			**$303,348,000**				**$8,397,000**	**$13,941,232**		

CHAPTER 4. Utah Wastewater Loan Program

The Utah Wastewater Loan program is a state-funded loan program similar to the SRF. Revenue for the Utah Wastewater Loan program is derived from sales tax dollars and principal repayments. Monies may be authorized in the form of loans or interest-rate buy downs.

Projects eligible for funding through the Utah Wastewater Loan program have been divided into three categories: closed loans with remaining draws, authorized loans, and anticipated loans. Closed loans with remaining draws are projects that have held loan closing and are currently under construction. Authorized loans are those projects which have received authorization from the Utah Water Quality Board but have not yet held loan closing and are still in the planning or design phase. Anticipated loans are those projects that may be presented to the Utah Quality Board for authorization in the next fiscal year.

Please refer to Table 3 for a list of projects to be funded from the Utah Wastewater Loan Fund.

TABLE 3 – LIST OF FY21 UTAH WASTEWATER LOAN PROGRAM PROJECTS

LOAN RECIPIENT	ASSISTANCE AMOUNT	INTEREST RATE	TERM (YEARS)	BINDING COMMITMENT	CONSTRUCTION START	CONSTRUCTION END
LOAN CLOSED WITH REMAINING DRAWS						
KCCWD-Duck Creek	$1,000,000	0%	30	Aug-18	May-20	Nov-22
South Salt Lake	$6,835,000	0%	20	Dec-18	Feb-20	Jun-24
AUTHORIZED LOANS						
Spanish Fork City	$4,500,000	1.12	20	TBA	TBA	Dec-24
ANTICIPATED LOANS						
N/A						
TOTAL $12,335,000						

CHAPTER 5. Hardship Grant Funds

The State of Utah provides hardship grants for several types of projects. First, hardship grant funds may be authorized as planning advances or grants and design advances. Advances are repaid once construction funding has been secured through a loan closing. Second, funds may be awarded as hardship construction grants to entities that may not otherwise be able to afford to complete an eligible project. The Water Quality Board may consider authorizing a hardship grant when the estimated annual cost of sewer service exceeds 1.4% of the local MAGI. Third, hardship grants may be awarded for water quality improvement projects such as non-point source, water quality studies, and educational outreach efforts. Projects eligible for Hardship Grant Funds may be added to the list once authorization has been received from the Board.

Please refer to Table 4 for a list of projects to be funded from the Hardship Grant Funds.

TABLE 4 – LIST OF FY21 HARDSHIP GRANT FUND PROJECTS

Recipient	Assistance Amount Balance	Type
HARDSHIP GRANTS		
Eagle Mountain City (White Hills)	$510,000	Construction Grant
Emigration SID	$26,158	Planning Grant
Kane County WCD (Duck Creek)	$3,034,500	Design/Construction Grant
Lewiston City	$274,000	Design/Construction Grant
Millville City	$1,500,000	Design/Construction Grant
Spanish Fork	$500,000	Construction Grant
NON-POINT SOURCE GRANTS		
Utah Department of Agriculture	$288,442	NPS Grant
DEQ - Ammonia Criteria Study	$27,242	NPS Grant
DEQ - Nitrogen Transformation Study	$14,500	NPS Grant
DEQ - Utah Lake Water Quality Study	$348,301	NPS Grant
Wasatch Co Health Dept Ground WQ Study	$18,387	NPS Grant
BYU - Bioassays to Investigate Nutrient Limitation	$8,603	NPS Grant
USU - Historic Trophic State/Nutrient Concentrations Paleo	$123,500	NPS Grant
FY18 – FY21 Remaining Payments	$1,762,998	Various NPS Grants
TOTAL	**$8,436,631**	

CHAPTER 6. Payment Schedule

Utah's Clean Water SRF has met "first use" requirements of Section 602(b) (5). SRF funds will be distributed using the method, criteria, and eligible activities that are outlined in Section R-317-101 and 102 of the Utah Administrative Code. The methods and criteria provide affordable assistance as well as maximum benefit to the long-term viability of the fund.

If the dollar amount of projects in the FY21 Intended Use Plan exceeds the actual amount of funds available during the planning period, one of the following may occur:

- Projects listed may not be funded.
- Projects may be funded using available credit enhancement techniques.
- Projects may need to be delayed until funds are available.

Please see the CASH FLOW PROJECTIONS for the detail of revenue and expenses for the State Revolving Fund, Utah Wastewater Loan Fund, and Hardship Grant Funds.

6.1 Cash Flow Projections – State Revolving Fund

TABLE 5 – FY21 STATE REVOLVING FUND

STATE REVOLVING FUND (SRF)			
Funds Available	**2021**	**2022**	**2023**
Capitalization Grants Awards (FFY18 - 20)	24,589,401	-	-
State Match (FFY18 - 20)	3,343,000	-	-
Future Capitalization Grants (estimated)	8,358,000	8,000,000	8,000,000
Future State Match (estimated)	1,671,600	1,600,000	1,600,000
SRF - 2nd Round	51,939,078	65,831,397	29,403,500
Interest Earnings at 0.5534%	95,810	364,311	162,719
Loan Repayments (5255)	3,275,803	17,243,792	16,240,097
Total Funds Available	93,272,692	93,039,500	55,406,316
Project Obligations			
Central Valley Water Reclamation Facility	-8,324,000	-24,976,000	-6,800,000
Duchesne City	-27,295	-	-
Moab City	-80,000	-	-
Provo City	-17,230,000	-28,000,000	-20,000,000
South Salt Lake City (A)	-630,000	-2,160,000	-234,000
Loan Authorizations			
Millville City	-1,150,000	-	-
San Juan Spanish Valley SSD		-	-
South Davis Sewer District (with NPS)	-	-7,000,000	-7,176,000
Mountain Green		-1,500,000	-4,000,000
Payson City			-2,000,000
Total Obligations	-27,441,295	-63,636,000	-40,210,000
SRF Unobligated Funds	$65,831,397	$29,403,500	$15,196,316

6.2 Cash Flow Projections – Utah Wastewater Loan Fund

TABLE 6 – FY21 UTAH WASTEWATER LOAN FUND

UTAH WASTEWATER LOAN FUND (UWLF)			
Funds Available	**2021**	**2022**	**2023**
UWLF	20,920,514	14,111,186	15,289,292
Sales Tax Revenue	-	3,587,500	3,587,500
Loan Repayments (5260)	882,972	3,031,806	2,615,488
Total Funds Available	21,803,486	20,730,492	21,492,280
General Obligations			
State Match Transfers	-5,014,600	-1,600,000	-1,600,000
DWQ Administrative Expenses	-820,700	-1,636,200	-1,636,200
Project Obligations			
Kane Co Water Conservancy Dist (Duck Creek)	-400,000		
South Salt Lake City (B)	-1,457,000	-2,205,000	-1,779,000
Loan Authorizations			
Spanish Fork		-	-4,500,000
Total Obligations	-7,692,300	-5,441,200	-9,515,200
UWLF Unobligated Funds	$14,111,186	$15,289,292	$11,977,080

6.2 Cash Flow Projections – Hardship Grant Funds

TABLE 7 – FY21 HARDSHIP GRANT FUND

HARDSHIP GRANT FUNDS (HGF)			
Funds Available	**2021**	**2022**	**2023**
Beginning Balance		847,576	792,606
Federal HGF Beginning Balance (5250)	6,120,157	-	-
State HGF Beginning Balance (5265)	2,183,129	-	-
Interest Earnings at 0.5534%	15,317	4,690	4,386
UWLF Interest Earnings at 0.5534%	38,591	78,091	84,611
Hardship Grant Assessments (5255)	412,912	739,214	641,688
Interest Payments - 5260	136,009	373,034	345,473
Total Funds Available	8,906,114	2,042,606	1,868,765
Financial Assistance Project Obligations			
Eagle Mountain City - Construction Grant	-510,000	-	-
Emigration Sewer Imp Dist - Planning Grant	-26,158	-	-
Kane Co Water Conservancy Dist (Duck Creek) - Hardship Grant	-3,034,500	-	-
Lewiston City - Design and Construction	-274,000	-	-
Millville City - Design and Construction	-1,500,000	-	
Salina City - Planning Grant/Advance	-		
Spanish Fork - Hardship Grant	-	-250,000	-250,000
Non-Point Source/Hardship Grant Obligations			
Fitzgerald ARDL interest-rate buy down	-51,056	-	-
McKees ARDL interest-rate buy down	-55,261	-	-
Munk Dairy ARDL interest-rate buy down	-16,017	-	-
(FY12) Utah Department of Agriculture	-288,442	-	-
(FY15) DEQ - Ammonia Criteria Study	-27,242	-	-
(FY15) DEQ - Nitrogen Transformation Study	-14,500	-	-
(FY17) DEQ - Utah Lake Water Quality Study	-348,301	-	-
(FY20) Wasatch Co Health Dept Ground WQ Study	-18,387		
BYU - Bioassays to Investigate Nutrient Limitation	-8,603	-	-
USU - Historic Trophic State/Nutrient Concentrations Paleo	-123,500	-	-
FY 2018 - Remaining Payments	-64,739	-	-
FY 2019 - Remaining Payments	-454,089	-	-
FY 2020 - Remaining Payments	-473,270	-	-
FY 2021 - Remaining Payments	-770,474		
Future NPS Annual Allocations		-1,000,000	-1,000,000
Total Obligations	-8,058,538	-1,250,000	-1,250,000
HGF Unobligated Funds	$847,576	$792,606	$618,765

CHAPTER 7. Project Priority List (PPL)

State of Utah
Wastewater Project
Assistance Program Project
Priority List

As of March 2020

TABLE 8 – FY21 PROJECT PRIORITY LIST

Rank	Project Name	Funding Authorized	Total Points	Point Categories			
				Project Need	Potential Improvement	Population Affected	Special Consideration
1	South Davis Sewer District	x	138	50	18	10	60
2	Payson	x	120	35	17	8	60
3	Spanish Fork Water Reclamation Facility	x	117	50	19	8	40
4	Millville City	x	114	45	46	3	20
5	Mountain Green	x	108	50	14	4	40
6	Fairview City		107	50	15	2	40
7	San Juan Spanish Valley SSD	x	86	25	0	1	60
8	Wellington City	x	74	10	21	3	40
9	Lewiston City	x	67	10	16	1	40

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