

# Drinking Water Board Packet

July 3, 2019

# Agenda



State of Utah

GARY R. HERBERT  
Governor

SPENCER J. COX  
Lieutenant Governor

Department of  
Environmental Quality

Alan Matheson  
Executive Director

DIVISION OF DRINKING WATER  
Marie E. Owens, P.E.  
Director

**Drinking Water Board**  
Betty Naylor, *Chair*  
Roger G. Fridal, *Vice-Chair*  
Kristi Bell  
Brett Chynoweth  
Jeff Coombs  
Tage Flint  
Eric Franson, P.E.  
Alan Matheson  
David Stevens, Ph.D.  
Marie E. Owens, P.E.  
*Executive Secretary*

DRINKING WATER EMERGENCY TELECONFERENCE BOARD MEETING

July 3, 2019 – 1:00 p.m.

Multi Agency State Office Building  
Arches North Conference Room

195 North 1950 West, Salt Lake City, Utah 84116

Teleconference Phone No: 1-877-820-7831 - Participant Passcode: 878776#

Marie Owens' Cell Phone #: (801) 505-1973

1. Call to Order
2. Roll Call – Marie Owens
3. Financial Assistance Committee Report
  - A. SRF Applications
    - i. FEDERAL:
      - a) Hildale City – Heather Pattee
    - ii. Other:
4. Public Comment Period
5. Open Board Discussion
6. Other
7. Next Board Meeting:

Date: Tuesday, August 27, 2019  
Time: 1:30 p.m.  
Place: Davis Conference Center  
Meridian B Room  
1651 North 700 West  
Layton, Utah 84041

8. Adjourn

*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) 297-3828, TDD (801) 903-3978, at least five working days prior to the scheduled meeting.*

# Agenda Item

3(A)(i)(a)

**DRINKING WATER BOARD  
BOARD PACKET FOR CONSTRUCTION LOAN**

**APPLICANT'S REQUEST:**

Hildale City has a project consisting of a feasibility study to determine options for resolving the current radium contamination. The study will include treatment options for contaminated sources as well as new source development. The cost of the project is estimated at \$113,789. Hildale is contributing \$13,789 towards the project.

**STAFF COMMENTS:**

The local MAGI for Hildale City is approximately \$21,964 (48% of the state MAGI), the after project water bill would be \$77.25 which is 4.22% of the local MAGI. Therefore they do qualify as a hardship community to receive principal forgiveness.

**FINANCIAL ASSISTANCE COMMITTEE RECOMMENDATION:**

The Drinking Water Board authorize \$100,000 in Principal Forgiveness to Hildale City.

**APPLICANT'S LOCATION:**

Hildale City is located in Washington County 25 miles South East of Hurricane.

**MAP OF APPLICANT'S LOCATION:**



**PROJECT DESCRIPTION:**

Hildale City was authorized funding to complete a Master Plan in November 2018. The Master Plan was to fill critical gaps in infrastructure knowledge, water production requirements and expected future costs. The scope of work also includes developing a long-term water quality plan to address Radium and other quality issues. During the time the City was working with their engineer to complete the Master Plan, the City was issued a Notice of Violation for Radium levels in their Power Plant Well. The Power Plant Well provides roughly 60% of the City's water production capacity, which means resolving this issue will likely require a major infrastructure development. Considering the scale of this challenge, the City felt the Master Plan would not adequately address this dire situation and determined it would be advisable to request additional SRF money to fully vet possible solutions to address this Notice of Violation.

The study will include treatment options for contaminated sources as well as new source development. A copy of the scope of work provided by the engineering firm is included as part of this packet for your review.

**POPULATION GROWTH:**

Projected populations and number of connections are shown in the table below:

Year	Population	Connections
2020	7,000	1049
2025	7,500	1,145
2030	9,500	1,200
2035	12,000	2,000
2040	18,000	2,200

**COST ALLOCATION:**

The cost allocation proposed for the project is shown below:

<u>Funding Source</u>	<u>Cost Sharing</u>	<u>Percent of Project</u>
DWB Principal Forgiveness	\$100,000	88%
System contribution	\$13,789	12%

**CONTACT INFORMATION:**

APPLICANT:

Hildale City  
520 East Newell Avenue, PO Box 840490  
Hildale, UT 84784  
435-874-2323  
[hildale@hildalecity.com](mailto:hildale@hildalecity.com)

PRESIDING OFFICIAL &  
CONTACT PERSON:

Donia Jessop  
Mayor  
520 East Newell Avenue, PO Box 840490  
Hildale, UT 84784  
435-874-2323  
[hildale@hildalecity.com](mailto:hildale@hildalecity.com)

CONSULTING ENGINEER:

Todd Olsen  
Bowen Collins and Associates  
20 North Main St, ste 107  
St. George, Utah 84770

RECORDER:

Vincent Barlow  
435-874-2323  
[hildale@hildalecity.com](mailto:hildale@hildalecity.com)



## DRINKING WATER BOARD FINANCIAL ASSISTANCE EVALUATION

SYSTEM NAME: Hildale City  
 COUNTY: Washington  
 PROJECT DESCRIPTION: Feasibility study

FUNDING SOURCE: Federal SRF

**100 % Loan & 0 % P.F.**

ESTIMATED POPULATION:	7,500	NO. OF CONNECTIONS:	910 *	SYSTEM RATING:	APPROVED
CURRENT AVG WATER BILL:	\$120.98 *			PROJECT TOTAL:	\$113,789
CURRENT % OF AGI:	6.61%	FINANCIAL PTS:	72	LOAN AMOUNT:	\$100,000
ESTIMATED MEDIAN AGI:	\$21,964			PRINC. FORGIVE.:	\$0
STATE AGI:	\$45,895			TOTAL REQUEST:	\$100,000
SYSTEM % OF STATE AGI:	48%				

	@ ZERO % RATE 0%	@ RBBI MKT RATE 4.56%		AFTER REPAYMENT PENALTY & POINTS 1.28%
<b><u>SYSTEM</u></b>				
ASSUMED LENGTH OF DEBT, YRS:	5	5		5
ASSUMED NET EFFECTIVE INT. RATE:	0.00%	4.56%		1.28%
REQUIRED DEBT SERVICE:	\$20,000.00	\$22,817.26		\$20,774.51
*PARTIAL COVERAGE (15%):	\$0.00	\$0.00		\$0.00
*ADD. COVERAGE AND RESERVE (10%):	\$2,000.00	\$2,281.73		\$2,077.45
<b>ANNUAL NEW DEBT PER CONNECTION:</b>	<b>\$24.18</b>	<b>\$27.58</b>		<b>\$25.11</b>
O & M + FUNDED DEPRECIATION:	\$387,500.00	\$387,500.00		\$387,500.00
OTHER DEBT + COVERAGE:	\$396,975.00	\$396,975.00		\$396,975.00
REPLACEMENT RESERVE ACCOUNT:	\$36,254.00	\$36,394.86		\$36,292.73
<b>ANNUAL EXPENSES PER CONNECTION:</b>	<b>\$901.90</b>	<b>\$902.05</b>		<b>\$901.94</b>
TOTAL SYSTEM EXPENSES	\$842,729.00	\$845,968.85		\$843,619.69
TAX REVENUE:	\$440,933.00	\$440,933.00		\$440,933.00
<b><u>RESIDENCE</u></b>				
MONTHLY NEEDED WATER BILL:	\$77.17	\$77.47		\$77.25
% OF ADJUSTED GROSS INCOME:	4.22%	4.23%		4.22%

\* Equivalent Residential Connections

June 6, 2019

Harrison Johnson  
Managing Director  
Hildale/Colorado City Utility Departments  
P.O. Box 840490  
Hildale, UT 84784

**Subject: Proposed Scope of Services for Hildale City Groundwater Source Development Feasibility Study**

Dear Harrison:

In accordance with your request, this letter has been prepared for your review and consideration. Below is a scope of services and an associated fee from Bowen Collins & Associates (BC&A) to provide a feasibility study for the development of a new groundwater source in the Navajo Sandstone aquifer. The scope of services presented herein describes the individual tasks that will be performed to accomplish this objective. The tasks are summarized as follows:

Task	Description
Task 1	Kickoff Meeting and Site Visit
Task 2	Compile and Evaluate Existing Hydrogeologic Information
Task 3	Water Rights Evaluation
Task 4	Water Quality/Age Dating Analysis
Task 5	Geophysical Investigation Survey
Task 6	Groundwater Modeling
Task 7	Document Results in Groundwater Supply Feasibility Report

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## **PROPOSED SCOPE OF SERVICES**

### ***Task 1: Kickoff Meeting and Site Visit***

BC&A's Team will prepare for and conduct a project kickoff meeting with Hildale representatives. The purpose of the meeting is to review the scope, budget, and schedule and begin the data collection task. We request that Hildale provide BC&A with copies of existing pertinent project information, such as previous hydrogeologic studies and reports, well logs, water rights, water system maps and GIS data. A site visit will be conducted to tour the existing Hildale spring collection systems in the Navajo Formation.

#### ***Deliverables:***

- Meeting Agenda
- Meeting Notes with action items

### ***Task 2: Compile and Evaluate Existing Hydrogeologic Information***

BC&A will compile existing hydrogeologic information from public sources such as the USGS, Utah Geologic Survey, and the Divisions of Water Rights and Oil, Gas & Mining. BC&A will compile existing well logs from the Utah Division of Water Rights and from the Arizona Department of Water Resources. Data gathering will include published hydrogeologic studies, geologic studies/maps, well drillers logs, and GIS shapefiles. BC&A will evaluate the information and prepare a technical memorandum on the findings as part of Task 7. Interim deliverables will include tables and figures summarizing the data. BC&A will gather information on the existing spring sources and their collection systems. We anticipate that this will include discussions or interviews with Hildale City personnel that are familiar with their original construction and operation.

#### ***Deliverables:***

- Tables and figures summarizing hydrogeologic data (interim deliverables pending the Feasibility Study Report as Task 7)

### ***Task 3: Water Rights Evaluation***

BC&A will compile and conduct an evaluation of Hildale's water rights that are available or potentially available for development of new Navajo aquifer sources. The goal of the water rights evaluation is to identify the water rights, their volume or amount, and place and type of use. From this, an assessment into the total quantity of available water rights and need for change applications will be performed. The evaluation is not an in-depth assessment of the legal standing or other complexities of the water rights.

#### ***Deliverable:***

- Table summarizing available water rights

### ***Task 4: Water Quality/Age Dating Analysis***

BC&A will compile and evaluate existing water quality information for the Navajo Sandstone Formation. BC&A will collect water samples from the existing 2 spring sources completed in the Navajo Formation for age dating analyses. The goal is to better understand the spring flow and local precipitation/climate data to define the vulnerability of the springs to drought and climate change. BC&A will utilize the University of Utah Dissolved and Noble Gas Laboratory and Dr. Kip Solomon for the specialty analytical work. BC&A's scope for this task is the data evaluation and reporting. Analytical and reporting costs from the University of Utah have a budgetary cost estimate of \$6,000 at this time. The analyses will include dissolved and noble gases (14 parameters), tritium, helium, chlorofluorocarbons (CFC's), and common ions. The lab typically requires several months to complete most of the isotope analyses. The geochemistry data will be used for determining the groundwater time of travel to the springs and infer the recharge elevation of the source water. We assume that a total of 2 samples (Jans Canyon and Maxwell Canyon Springs) will be collected for the study. If available, BC&A will also compile the available spring flow records and compare them to local recent meteorological data (precipitation records) to evaluate the relationship and vulnerability of spring flow to climate changes, with the knowledge gained from the geochemistry study. The results of the age dating analyses will be summarized in a Technical Memorandum report.

#### ***Deliverable:***

- Technical Memorandum Report on Age Dating Analyses

***Task 5: Geophysical Investigation Survey***

The intent of this task is to perform a geophysical survey(s) to investigate the Navajo Sandstone Formation for preferential flow paths due to fractures, joints, bedding planes, and contact with the Kayenta Formation. This information would be used to further the hydrogeologic characterization of the Navajo Formation and for the site selection and design of future water supply wells. It is recommended that the scoping and selection of the geophysical survey technique be made after the existing hydrogeologic information is compiled and evaluated. BC&A will solicit a proposal from Willow Stick, a geophysical survey company located in Sandy, Utah. Willow Stick has previous experience with surveys of the Navajo Formation. We have contacted Willow Stick and obtained a budgetary cost estimate of \$60,000 at this time. BC&A will coordinate the survey work performed by Willow Stick. A report on the findings of the geophysical survey will be prepared by Willow Stick.

***Deliverable:***

- Geophysical Survey Report

***Task 6: Groundwater Modeling***

BC&A will develop a conceptual hydrogeologic model of the Navajo Sandstone aquifer. We are currently not aware of a published USGS numerical groundwater flow model (MODFLOW model) for the site. We understand that Sunrise Engineering may have previously developed a numerical model of the aquifer. If so, it would be helpful to obtain a copy of it. BC&A will develop a basic numerical model (MODFLOW) of the Navajo aquifer. BC&A will use the MODFLOW model to make predictive simulations of groundwater extraction (groundwater pumping) for the purpose of assessing the feasibility and sustainability of developing an adequate water supply for Hildale. It is anticipated that there is limited existing well information and that developing a robust, calibrated model will not be possible or feasible.

***Deliverable:***

- Basic MODFLOW model of the Navajo Aquifer and up to 3 predictive groundwater extraction simulations

***Task 7: Groundwater Supply Feasibility Report***

BC&A will prepare a report summarizing the data and results from the study and above described tasks. The report will focus on recommendations for potential development of new water supply from the Navajo aquifer and include recommendations for a test drilling program (horizontal/vertical), and conceptual well drilling cost estimates. In addition, any critical flaws or issues associated with the development of groundwater in the Navajo aquifer identified at this point will be included.

***Deliverable:***

- Draft and Final Groundwater Supply Feasibility Study Report

**PROPOSED SCHEDULE**

BC&A proposes to complete this feasibility study within a time period of approximately 6 months. Table 1 shown below provides the estimated time required to complete each task outlined in the scope of services.

*Table 1. Proposed Project Schedule*

Hildale Source Development Feasibility Study								
Task	Task Item	Duration (Weeks)	Month					
Objective	Objective Description		1	2	3	4	5	6
1	Kickoff Meeting and Site Visit	1	█					
2	Compile and Evaluate Hydrogeologic Information	5	█	█	█			
3	Water Rights Evaluation	3			█			
4	Water Quality/Age Date	18			█	█	█	█
5	Geophysical Investigation Survey	4			█	█		
6	Groundwater Modeling	7			█	█	█	
7	Groundwater Supply Feasibility Report	5						█

**COST SUMMARY**

BC&A has tabulated the estimated man-hours and costs to complete each task outlined in the previously defined scope of services. As presented in the attached exhibit, we propose to complete the scope of services for a fee not to exceed \$113,379. This fee includes the budgetary cost estimates for the geophysical survey and water quality/age dating services.

We are willing to negotiate the scope of work, schedule, and fee if there is something in this proposal that does not meet the needs of Hildale City. We look forward to working with Hildale City on this feasibility study. We are available to start work immediately. Please call if you have any questions or if you need additional information.

Sincerely,

BOWEN COLLINS AND ASSOCIATES



Todd Olsen, P.E.  
 Project Manager

Attachment

**Groundwater Supply Feasibility Study**  
**Hildale City**  
**Engineering Man-hours and Fee Estimate**



6/6/2019

		Office		Engineers					Subtotal Hours	Subtotal Labor	Subtotal Expenses	Total Cost
Labor Category		Account	Editor	Eng 3	Eng 1	Eng 3	PM	Sr Hydro				
Staff		Buhler	Hilbert	Anderson	Trow	DeKorver	Olsen	Mikell				
Task	Task Description											
<b>Groundwater Supply Feasibility Study</b>												
1	Kickoff Meeting and Site Visit	1			8	8	4	6	27	\$ 3,810	\$ 525	\$ 4,335
2	Compile and Evaluate Hydrogeologic Information	1		8	40	40	2	8	99	\$ 12,750	\$ 923	\$ 13,673
3	Water Rights Evaluation			2		4	2	8	16	\$ 2,610	\$ -	\$ 2,610
4	Water Quality/Age Date				3				3	\$ 342	\$ -	\$ 342
5	Geophysical Investigation Survey	1		2	16		2	4	25	\$ 3,222	\$ 563	\$ 3,785
6	Groundwater Modeling			2	50	24	4	12	92	\$ 12,024	\$ -	\$ 12,024
7	Groundwater Supply Feasibility Report	1	4	4	24	24	4	16	77	\$ 10,496	\$ 525	\$ 11,021
<b>TOTAL HOURS</b>		<b>4</b>	<b>4</b>	<b>18</b>	<b>141</b>	<b>100</b>	<b>18</b>	<b>54</b>	<b>339</b>		<b>\$ 2,535</b>	<b>\$ 47,789</b>
	Geophysical Survey										\$ 60,000	\$ 60,000
	Water Quality/Age Dating Sampling										\$ 6,000	\$ 6,000
<b>TOTAL OUTSIDE EXPENSES</b>												<b>\$ 66,000</b>
<b>TOTAL COST NOT TO EXCEED</b>										<b>\$ 45,254</b>	<b>\$ 68,535</b>	<b>\$ 113,789</b>

Expenses include:

- Mileage reimbursement at \$0.75/mile
- Travel per diem
- 10% Markup on other project related expenses