

Debt Repayment Obligations Created by the Proposed Bear River Development Project

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Symposium

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<https://eeu.utah.edu>

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Utah Code 73-26 [“Bear River Development Act”]-503 (1) states that

“Construction and environmental mitigation costs allocated to municipal or industrial uses shall be entirely repaid by the entities contracting for water designated for those uses”

and 73-26-505 states that

“Interest on the unpaid balance of reimbursable construction and environmental mitigation costs shall be charged at a rate set by the Board [of Water Resources].”

How affordable would this be?

Components of “Combination B”

- Cub River Reservoir
- Fielding Reservoir
- Weber Bay Reservoir
- Cache County Project Facilities
- North Box Elder County Reach Pipeline
- South Box Elder County Reach Pipeline
- Weber County Reach Pipeline
- West Haven WTP
- Weber Basin WCD Pump Station and Pipeline
- Jordan Valley WCD Pump Station and Pipeline



Participation Scenarios

Scenarios	Cache WD	Bear River WCD	Weber Basin WCD	Jordan Valley WCD
1	✓	✓	✓	✓
2	X	✓	✓	✓
3	✓	X	✓	✓
4	✓	✓	X	✓
5	✓	✓	✓	X
6	X	X	✓	✓
7	X	✓	X	✓
8	X	✓	✓	X
9	✓	X	X	✓
10	✓	X	✓	X
11	✓	✓	X	X
12	X	X	X	✓
13	X	X	✓	X
14	X	✓	X	X
15	✓	X	X	X



Features Dropped (Table C)

Scenarios	Water Districts Dropped	Engineering Features Dropped
1	None	None
2	Cache WD	Cub River Reservoir and Cache County Project Facilities
3	Bear River WCD	Cub River Reservoir
4	Weber Basin WCD	Cub River Reservoir, Weber Basin WCD Pump Station and Pipeline
5	Jordan Valley WCD	Cub River Reservoir, Jordan Valley WCD Pump Station and Pipeline
6	Cache WD and Bear River WCD	Fielding Reservoir, Cub River Reservoir, Cache County Project Facilities
7	Cache WD and Weber WCD	Fielding Reservoir, Cub River Reservoir, Cache County Project Facilities, Weber Basin WCD Pump Station and Pipeline
8	Cache WD and Jordan Valley WCD	Fielding Reservoir, Cub River Reservoir, Cache County Project Facilities, Jordan Valley WCD Pump Station and Pipeline
9	Bear River WCD and Weber Basin WCD	Fielding Reservoir, Cub River Reservoir, Weber Basin WCD Pump Station and Pipeline

Features Dropped (Table C)

10	Bear River WCD and Jordan Valley WCD	Fielding Reservoir, Cub River Reservoir, Jordan Valley WCD Pump Station and Pipeline
11	Weber Basin WCD and Jordan Valley WCD	Fielding Reservoir, Cub River Reservoir, West Haven WTP, Jordan Valley WCD Pump Station and Pipeline, Weber Basin WCD Pump Station and Pipeline, Weber County Reach
12	Cache WD, Bear River WCD, Weber Basin WCD	Weber Bay Reservoir, Cub River Reservoir, Weber Basin WCD Pump Station and Pipeline, Cache County Project Facilities
13	Cache WD, Bear River WCD, Jordan Valley WCD	Weber Bay Reservoir, Cub River Reservoir, Jordan Valley WCD Pump Station and Pipeline, Cache County Project Facilities
14	Cache WD, Weber Basin WCD, Jordan Valley WCD	Weber Bay Reservoir, Cub River Reservoir, West Haven WTP, Jordan Valley WCD Pump Station and Pipeline, Weber Basin WCD Pump Station and Pipeline, Cache County Project Facilities, Weber County Reach
15	Bear River WCD, Weber Basin WCD, Jordan Valley WCD	All engineering features except Fielding Reservoir, Collinston Connection, and Cache County Project Facilities, and Weber County Reach



Construction Costs (2010 dollars)

Scenario	2010 \$
1.	1,654,761,940
2.	1,411,348,000
3.	1,588,816,060
4.	1,537,622,060
5.	1,443,110,060
6.	1,352,366,000
7.	1,301,172,000
8.	1,206,660,000
9.	1,478,640,060
10.	1,384,128,060
11.	958,710,060
12.	1,056,774,000
13.	962,262,000
14.	536,844,000
15.	236,450,060



Additional Costs (all adjustable in the spreadsheet)

- Inflation from 3/2010 to 3/2019: *Engineering News-Record* “20 Cities Index” (about 30%)
- Environmental Mitigation: \$100,000 per ‘acre of wetlands inundated’

Construction Costs, Updated

Scenario	2010 \$	2019 \$ & Env. Mit.
1.	1,654,761,940	2,934,000,000
2.	1,411,348,000	2,768,000,000
3.	1,588,816,060	3,000,000,000
4.	1,537,622,060	2,947,000,000
5.	1,443,110,060	2,824,000,000
6.	1,352,366,000	2,547,000,000
7.	1,301,172,000	2,492,000,000
8.	1,206,660,000	2,371,000,000
9.	1,478,640,060	2,723,000,000
10.	1,384,128,060	2,601,000,000
11.	958,710,060	2,061,000,000
12.	1,056,774,000	1,504,000,000
13.	962,262,000	1,382,000,000
14.	536,844,000	842,000,000
15.	236,450,060	453,000,000



More Additional Costs (all adjustable in the spreadsheet)

- Operations & Maintenance: \$50/AF (likely an underestimate)
- Interest Rate: 4%
- Debt Repayment Term: 30 years (level payments)

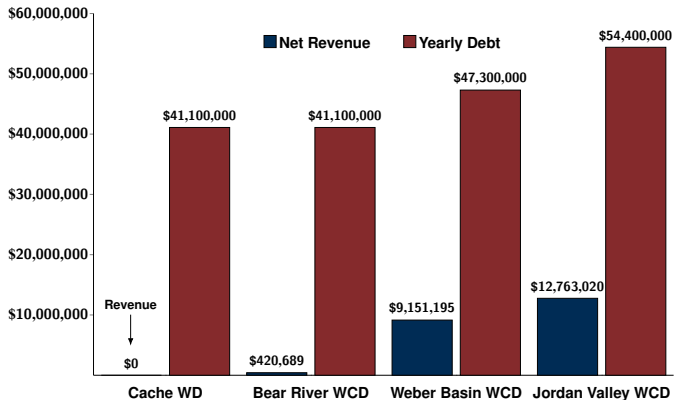
Annual Debt Repayments, inclusive of all costs

Sc.	Cache WD	Bear River WCD	Weber Basin WCD	Jordan Valley WCD	Total
1.	41,100,000	41,100,000	47,300,000	54,400,000	183,900,000
2.	0	47,600,000	52,700,000	59,800,000	160,100,000
3.	52,600,000	0	56,900,000	64,000,000	173,500,000
4.	49,800,000	49,800,000	0	70,800,000	170,400,000
5.	49,800,000	49,800,000	63,700,000	0	163,300,000
6.	0	0	70,100,000	77,200,000	147,300,000
7.	0	62,600,000	0	81,500,000	144,100,000
8.	0	62,600,000	74,500,000	0	137,100,000
9.	69,900,000	0	0	87,600,000	157,500,000
10.	69,900,000	0	80,500,000	0	150,400,000
11.	59,600,000	59,600,000	0	0	119,200,000
12.	0	0	0	87,000,000	87,000,000
13.	0	0	79,900,000	0	79,900,000
14.	0	48,700,000	0	0	48,700,000
15.	26,200,000	0	0	0	26,200,000



Annual Revenues and Debt Repayments, inclusive of all costs: Scenario 1

**Water District Net Revenues vs. Annual Debt Payments
For Bear River Development**



Cache WD and Bear River WCD in Scenario 1

Per capita annual debt service:

- Cache WD: $\$50,200,000/127,068$ (2018 population est.) = **\$323/person** currently living in Cache Co.
- Bear River WCD: $\$50,200,000/54,950$ (2018 population est.) = **\$748/person** currently living in Box Elder Co.

Caveats:

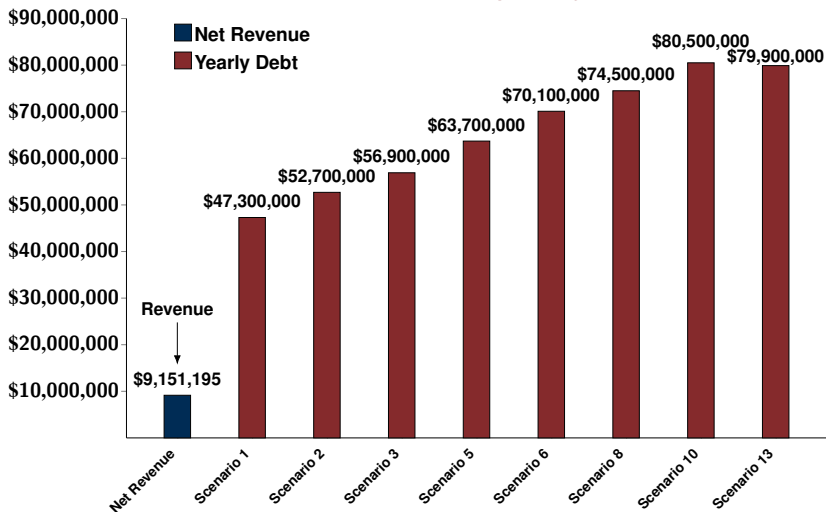
- the water district may not serve the entire county;
- the water district serves businesses as well as households;
- the water districts have various means of raising money;
- the population in the future may be different.

Participation Scenarios without the Cache WD or Bear River WCD

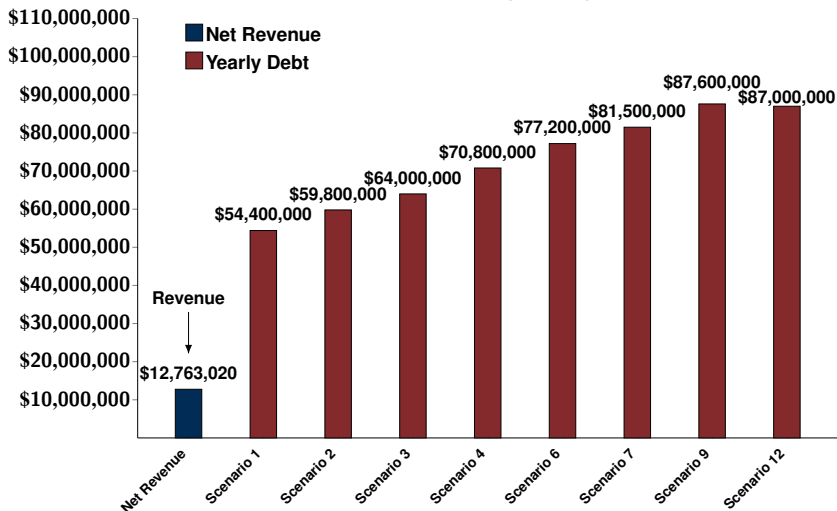
Scenarios	Cache WD	Bear River WCD	Weber Basin WCD	Jordan Valley WCD
1	✓	✓	✓	✓
2		✓	✓	✓
3	✓		✓	✓
4	✓	✓		✓
5	✓	✓	✓	
6			✓	✓
7		✓		✓
8		✓	✓	
9	✓			✓
10	✓		✓	
11	✓	✓		
12				✓
13			✓	
14		✓		
15	✓			



Weber Basin WCD Current Annual Revenues vs. Annual Debt from Bear River Development by Scenario



Jordan Valley WCD Current Annual Revenues vs. Annual Debt from Bear River Development by Scenario



Weber Basin WCD and Jordan Valley WCD in Scenario 6

Per capita annual debt service:

- Weber Basin WCD: $\$73,700,000/620,000 =$
\$113/person currently served
people served: <https://weberbasin.com/index.php/about-us/about-us>
- Jordan Valley WCD: $\$73,700,000/700,000 =$
\$110/person currently served
people served: page 08 of <https://jvwcd.org/file/940d06aa-fbce-4eb3-804f-a6ba678384ce/2018-Annual-Report.pdf>

Caveats:

- the water district may not serve the entire county;
- the water district serves businesses as well as households;
- the water districts have various means of raising money;
- the population in the future may be different.



Debt Service Coverage Ratios (Cache ≈ 0)

	Bear River WCD	Weber Basin WCD	Jordan Valley WCD
Scenario 1	0.01	0.19	0.23
Scenario 2	0.01	0.17	0.21
Scenario 3		0.16	0.20
Scenario 4	0.01		0.18
Scenario 5	0.01	0.14	
Scenario 6		0.13	0.17
Scenario 7	0.01		0.16
Scenario 8	0.01	0.12	
Scenario 9			0.146
Scenario 10		0.11	
Scenario 11	0.01		
Scenario 12			0.147
Scenario 13		0.11	
Scenario 14	0.01		
Scenario 15			



Scenario 12, impact on cities, proportional to projected 2060 water deficits

Water System	Annual Payments for Bear River Development	Total Debt from Bear River Development
Bluffdale	\$5,150,000	\$79,200,000
Draper City Water	\$2,650,000	\$40,700,000
Water Pro	\$4,380,000	\$67,300,000
Granger-Hunter ID	\$8,470,000	\$130,200,000
Herriman	\$6,160,000	\$94,700,000
Kearns ID	\$15,790,000	\$242,700,000
Magna Water	\$6,520,000	\$100,200,000
Midvale City Water	\$1,450,000	\$22,300,000
Riverton Water	\$6,870,000	\$105,600,000
South Jordan	\$12,700,000	\$195,200,000
South Salt Lake Water	\$1,230,000	\$18,900,000
Taylorsville-Bennion ID	\$3,810,000	\$58,600,000
West Jordan City Water	\$11,820,000	\$181,700,000
Total	\$87,000,000	\$1,337,000,000



Caveats & Future Work

- Underestimation of operations & maintenance expenses
- Underestimation of environmental mitigation expenses
- Overestimation of cost of remaining infrastructure under opt-out scenarios
- Future work: water rate increases (requires population growth projections)
- The effect of water rate increases on water demand
- Non-level repayment patterns.



For More Information

Visit

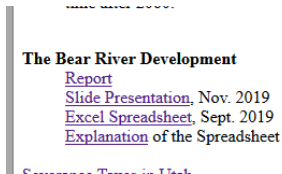
www.economics.utah.edu/lozada ,

click on

"Miscellaneous Research Materials,"

and find the section on

"The Bear River Development."



Utah Water Use

