



## **WATER CONSERVATION PLAN (2016 UPDATE)**

(HAL Project No.: 394.01.100)

**February 2016**

# **BLUFFDALE CITY**

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## CONTENTS

EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	1
WATER SYSTEM DESCRIPTION.....	1
WATER CONSERVATION GOAL.....	2
PROGRESS TOWARD GOAL.....	2
FUTURE WATER USE.....	4
EXISTING WATER CONSERVATION MEASURES.....	4
PROPOSED WATER CONSERVATION MEASURES.....	5
POTENTIAL WATER CONSERVATION MEASURES.....	6
WATER CONSERVATION RESOURCES.....	6
IMPLEMENTATION PLAN.....	6
EVALUATION PROCESS.....	6
ADOPTION OF PLAN.....	7
REFERENCES.....	7

APPENDIX A: DATA AND CALCULATIONS

APPENDIX B: UTAH CODE 73-10-32

## **EXECUTIVE SUMMARY**

Bluffdale's per-capita potable-water consumption was 21% less in 2014 than in 2000. This represents considerable progress toward the City's goal of saving 25% by 2025. The City will continue to monitor and promote water conservation among all its water customers and will pursue additional measures to meet or exceed the goal.

## **INTRODUCTION**

Recognizing the need for proactive planning to meet the water needs of its citizens, Bluffdale City (the City) has prepared this 2016 Update of its Water Conservation Plan (Plan). The original plan was completed in 2004 and was updated in 2009. The Plan describes the City's water system, reviews historical water use, sets goals to conserve water, and identifies existing and proposed water conservation measures to be implemented. Its purpose is to guide water management and conservation activities for the next five years.

This Plan is submitted to the Utah Division of Water Resources under the requirements of Section 73-10-32 of the Utah Code (Appendix B).

## **WATER SYSTEM DESCRIPTION**

Located along the Jordan River corridor in southern Salt Lake County, Bluffdale has grown steadily during its transition from rural land use to residential subdivisions. The population has more than doubled in the last 15 years, from 4,700 in 2000 to 9,887 in 2014 (U.S. Census Bureau 2015). Build-out population is projected to be about 39,000 (Horrocks Engineers 2015).

Bluffdale owns and operates a public water system serving 2,493 connections (Utah Division of Water Rights 2015). These connections include domestic (2,358), commercial (98), and institutional (37) customers with both indoor and outdoor water uses. In 2013, 59% of the water use was domestic, 8% was commercial, and 33% was institutional. See Figure 1.

### **Figure 1: Bluffdale Water Use by Sector, 2013**

All potable water is purchased from Jordan Valley Water Conservancy District (JVWCD), which delivers water through six metered connections. The City has water storage capacity in four tanks, three of which it shares with JVWCD.

Seven local canals or irrigation companies provide secondary water to some residents and businesses. Portion of the City has a secondary water system and most new subdivisions are required to install a secondary water system to alleviate demand for potable water during the summer. Since not all secondary water is metered, secondary water is excluded from this report.

## **WATER CONSERVATION GOAL**

Bluffdale aims to reduce per-capita water consumption 25% by 2025, using the year 2000 as a benchmark. This is consistent with a statewide goal set by the Utah Division of Water Resources and the Governor’s Water Conservation Team (Utah Division of Water Resources 2015). JVVCD has the same goal. The state’s original goal was 25% by 2050, but better-than-expected progress by 2013 prompted an accelerated schedule which the City has also adopted.

Bluffdale’s water use in 2000 was 223 gallons per capita per day (gpcd); the goal is to reduce consumption to 167 gpcd by 2025.

## **PROGRESS TOWARD GOAL**

Data for this Plan were obtained from Bluffdale City (2015), JVVCD (2015) and the U.S. Census Bureau (2015). JVVCD provided a summary of its Bluffdale water deliveries since 2000. Population data from the 2000 and 2010 census were available, as well as estimates for 2011–2014; population from 2001 to 2009 was linearly interpolated. Dividing the water use by the population gives the per-capita water use, the metric for assessing water conservation. See Appendix A for details.

The results are encouraging. Potable-water use in 2014 was 21% less than in 2000 (176 gpcd vs. 223 gpcd). Figure 2 shows the goal trajectory and the City’s actual progress. With the majority of observations falling below the trajectory, the City is ahead of schedule and may meet the 167 gpcd goal before 2025.

Water use fluctuates from year to year due to several factors, some of which are beyond the City’s control. High water uses in 2007 and 2012, for example, correspond to years in which precipitation was at least 30% below average (National Weather Service 2015). For such reasons, water conservation efforts are best measured by longer-term trends. A least-squares linear regression indicates a substantial decline in the City’s per-capita water use since 2000, and this trend is expected to continue. See Appendix A.

**Figure 2: Bluffdale City Per-Capita Potable-Water Use, 2000–2014**

## **WATER AUDIT**

Every water system loses some water or at least cannot account for the fate of all water produced. Mechanisms for water loss include leaks, breaks, hydrant flushing, construction water, waste pumping, and unmetered uses. According to the EPA (2013), water loss in public water systems averages 16%; some Utah systems have identified losses of 30% or more. Lost water is also lost energy and lost revenue, so preventing and mitigating water loss should be a priority if losses are excessive.

In Bluffdale, water loss is about 12%. This estimate is based on a comparison of JVVCD's water deliveries and the City's water billing data from July 2014 to June 2015 (JVVCD 2015b; Bluffdale City 2015). See Appendix A for details. This means that the City was able to bill for almost all of the water it provided. Though there is room for improvement, a 12% loss is better than the national average of 16% and better than many Utah systems. In Bluffdale, the only unmetered uses of potable water are those associated with fire hydrants. The Public Works Department also attributes the low water loss to standard design, construction, and inspection procedures for new pipes and connections. Aged pipes will be replaced in coming years to further reduce water loss.

**FUTURE WATER USE**

Assuming the baseline water use of 223 gpcd were to apply to the projected build-out population of 39,000, the annual potable-water demand would be 9,742 ac-ft. Assuming build-out with the conservation goal 167 gpcd, the annual potable-water demand would be 7,295 ac-ft. Conservation could therefore eliminate the need for an estimated 2,446 ac-ft per year of potable water.

**EXISTING WATER CONSERVATION MEASURES**

**Tiered Water Rates**

Bluffdale has enacted tiered rates for its potable-water sales (<http://www.bluffdale.com/utilities>). See Table 1. Tiered rates, “where the cost per unit of water increases as the consumer uses more water, is considered the most effective conservation rate structure” since it discourages excessive water use (Alliance for Water Efficiency 2010).

**Table 1: Current City Monthly Water Rates**

Category	Rate
Base Residential	\$12
Base Commercial	\$30
1,000–10,000 gal	\$1.75/1,000 gal
10,001–50,000 gal	\$2.15/1,000 gal
50,001–100,000 gal	\$2.85/1,000 gal
100,001 gal and over	\$3.50/1,000 gal

## **Water Metering**

Bluffdale has replaced all old water meters with new, continuous-read water meters. The City has also established a fixed-network meter-reading system and bills its users monthly. All delivered potable-water is metered. The City requires water meters for all new active secondary water connection. Fire hydrants are not metered.

## **Water Conservation Garden**

The City has installed a water conservation garden on the southwest side of Bluffdale City Park, showing how citizens can install and enjoy water-efficient landscapes.

## **Public Awareness Program**

A City newsletter, *Bluffdale Times*, is mailed monthly to every household. The newsletter often includes water conservation tips and practices. The City also promotes water conservation at its annual celebration, Old West Days.

## **Secondary Water System**

New developments in Bluffdale are typically required to install a pressurized irrigation system. These secondary systems provide water for outdoor irrigation and reduce demand on the potable-water system. The City's long-term plan is to facilitate interconnectivity of the individual secondary systems. The City is also seeking to use available resources to supply the secondary water.

## **Water Master Plan**

The City is currently preparing a Water Master Plan to guide the development of water infrastructure as Bluffdale continues to grow. The plan will address sources, storage, and distribution improvements for both potable and secondary water.

## **Water Reuse**

The City is reusing cooling water supplied to the Utah Data Center. The City was able to secure funding to recapture and distribute un-used water from the Utah Data Center. A water tank, a mixing facility and a feeder pipe were built to deliver secondary water to a portion of Bluffdale and the City Park.

The City is also working with JVVCD to secure re-use water from the South Valley Sewer District plant effluent. This source of water would alleviate the City demands of irrigation/secondary water during the summer months. The City installed pipes in Loumis Parkway to deliver this water to other parts of the City.

## **PROPOSED WATER CONSERVATION MEASURES**

The following activities are proposed:

- Re-evaluate the tiered pricing to further promote water conservation.
- Continue to fix leaks promptly.
- Proactively notify customers of leaks detected by the City's E-Coder water meters.
- Encourage residents to participate in conservation programs sponsored by JWCD, Utah Division of Water Resources, and others.
- Direct residents to existing water conservation resources (see Water Conservation Resources below).

## **POTENTIAL WATER CONSERVATION MEASURES**

In addition to the existing and proposed activities described above, the City may consider the following measures:

- Maintain and evaluate customer classes based on water use and adjust rates accordingly.
- Develop and implement a water education program in public schools and throughout the community.
- In buildings older than 1992, encourage replacement of plumbing fixtures with more water-efficient options.
- Appoint a water conservation coordinator who can oversee the City's water conservation efforts and provide regular feedback to the City Council and Public Works Department.
- Consider adopting a landscape ordinance to promote water-efficient landscaping and advanced irrigation systems in new commercial, institutional, industrial, and multifamily residential developments.

## **WATER CONSERVATION RESOURCES**

Many resources and programs are available to help the City and residents conserve water. The City will direct residents and business to these resources:

- JWCD Water Conservation Programs, <https://jvwcd.org/public/conservation>
- Slow the Flow, <http://slowtheflow.org/>
- Utah Division of Water Resources Conservation Program, <http://www.conservewater.utah.gov/materials.html>
- Utah Water Conservation Forum, <http://utahwaterconservationforum.org/>
- Free Water Checks, <http://www.slowtheflow.org/index.php/forms/free-water-check>
- Water Wise Utah, <http://waterwiseutah.org/>
- Water-Wise Plants, <http://www.waterwiseplants.utah.gov/>

## **IMPLEMENTATION PLAN**

The City's current water conservation measures have been effective, as observed from the decline in water use since 2000. Over the next five years, the City will continue expanding its

secondary water system, installing secondary meters, and pursuing the other existing measures described. The proposed measures will begin immediately. The City will also consider further potential measures to conserve water. The measures described here may be funded through City budgets or JWCD's Water Conservation Grant Program.

## **EVALUATION PROCESS**

The City will evaluate its progress toward the goal annually. The evaluation will also include a review of the effectiveness of each conservation measure. This Plan will be updated every five years.

## **ADOPTION OF PLAN**

Subsections 73-10-32(2)(a) and (3)(b) of the Utah Code prescribe how the Plan should be adopted or amended. See Appendix B. The City's governing body shall devote part of at least one regular meeting every five years to discussion and formal adoption of the Water Conservation Plan. Minutes of such meetings shall be included as an appendix to the Plan. The City shall also provide media access to the Plan and allow public comment on it. These actions serve to increase awareness of the Plan and encourage public involvement in its implementation, leading to a more effective water conservation effort.

## **REFERENCES**

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# **APPENDIX A**

## DATA AND CALCULATIONS

### Bluffdale City Potable-Water Use, 2000–2014

Year	Population	Potable-Water Deliveries (ac-ft)	Potable-Water Use (gpcd)
2000	4,700	1,172	223
2001	4,990	1,227	220
2002	5,280	1,086	184
2003	5,569	1,149	184
2004	5,859	1,245	190
2005	6,149	1,207	175
2006	6,439	1,488	206
2007	6,729	1,693	225
2008	7,018	1,487	189
2009	7,308	1,407	172
2010	7,598	1,622	191
2011	7,771	1,513	174
2012	7,977	1,817	203
2013	8,395	1,777	189
2014	9,887	1,947	176

### Water Audit, July 2014–June 2015

	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Total
JVWCD Supply (ac-ft)	342.3	248.1	221.2	154.4	80.8	78.6	77.3	75.8	97.7	147.6	147.7	294.1	1,965.4
JVWCD Supply (MG)	111.5	80.8	72.1	50.3	26.3	25.6	25.2	24.7	31.8	48.1	48.1	95.8	640.4
City Billed (kgal)	110,821	73,795	63,244	51,526	20,760	29,292	16,423	16,371	27,005	46,139	43,108	71,870	570,354
City Billed (MG)	110.8	73.8	63.2	51.5	20.8	29.3	16.4	16.4	27.0	46.1	43.1	71.9	570.4
Calculated Water Loss	0.7%	9.5%	14.0%	-2.4%	26.8%	-12.5%	53.4%	50.8%	17.8%	4.2%	11.7%	33.3%	<b>12.3%</b>



## **APPENDIX B**

UTAH CODE 73-10-32

**73-10-32. Definitions -- Water conservation plan required.**

- (1) As used in this section:
  - (a) "Board" means the Board of Water Resources created under Section [73-10-1.5](#).
  - (b) "Division" means the Division of Water Resources created under Section [73-10-18](#).
  - (c) "Retail" means the level of distribution of culinary water that supplies culinary water directly to the end user.
  - (d) "Retail water provider" means an entity which:
    - (i) supplies culinary water to end users; and
    - (ii) has more than 500 service connections.
  - (e) "Water conservancy district" means an entity formed under [Title 17B, Chapter 2a, Part 10, Water Conservancy District Act](#).
  - (f) "Water conservation plan" means a written document that contains existing and proposed water conservation measures describing what will be done by retail water providers, water conservancy districts, and the end user of culinary water to help conserve water and limit or reduce its use in the state in terms of per capita consumption so that adequate supplies of water are available for future needs.
- (2)
  - (a) Each water conservation plan shall contain:
    - (i) a clearly stated overall water use reduction goal and an implementation plan for each of the water conservation measures it chooses to use, including a timeline for action and an evaluation process to measure progress;
    - (ii) a requirement that each water conservancy district and retail water provider devote part of at least one regular meeting every five years of its governing body to a discussion and formal adoption of the water conservation plan, and allow public comment on it;
    - (iii) a requirement that a notification procedure be implemented that includes the delivery of the water conservation plan to the media and to the governing body of each municipality and county served by the water conservancy district or retail water provider; and
    - (iv) a copy of the minutes of the meeting and the notification procedure required in Subsections [\(2\)\(a\)\(ii\)](#) and [\(iii\)](#) which shall be added as an appendix to the plan.
  - (b) A water conservation plan may include information regarding:
    - (i) the installation and use of water efficient fixtures and appliances, including toilets, shower fixtures, and faucets;
    - (ii) residential and commercial landscapes and irrigation that require less water to maintain;
    - (iii) more water efficient industrial and commercial processes involving the use of water;
    - (iv) water reuse systems, both potable and not potable;
    - (v) distribution system leak repair;
    - (vi) dissemination of public information regarding more efficient use of water, including public education programs, customer water use audits, and water saving demonstrations;
    - (vii) water rate structures designed to encourage more efficient use of water;

- (viii) statutes, ordinances, codes, or regulations designed to encourage more efficient use of water by means such as water efficient fixtures and landscapes;
    - (ix) incentives to implement water efficient techniques, including rebates to water users to encourage the implementation of more water efficient measures; and
    - (x) other measures designed to conserve water.
  - (c) The Division of Water Resources may be contacted for information and technical resources regarding measures listed in Subsections (2)(b)(i) through (2)(b)(x).
- (3) (a) Before April 1, 1999, each water conservancy district and each retail water provider shall:
  - (i) (A) prepare and adopt a water conservation plan if one has not already been adopted; or
  - (B) if the district or provider has already adopted a water conservation plan, review the existing water conservation plan to determine if it should be amended and, if so, amend the water conservation plan; and
  - (ii) file a copy of the water conservation plan or amended water conservation plan with the division.
- (b) Before adopting or amending a water conservation plan, each water conservancy district or retail water provider shall hold a public hearing with reasonable, advance public notice.
- (4) (a) The board shall:
  - (i) provide guidelines and technical resources to retail water providers and water conservancy districts to prepare and implement water conservation plans;
  - (ii) investigate alternative measures designed to conserve water; and
  - (iii) report regarding its compliance with the act and impressions of the overall quality of the plans submitted to the Natural Resources, Agriculture, and Environment Interim Committee of the Legislature at its meeting in November 2004.
- (b) The board shall publish an annual report in a paper of state-wide distribution specifying the retail water providers and water conservancy districts that do not have a current water conservation plan on file with the board at the end of the calendar year.
- (5) A water conservancy district or retail water provider may only receive state funds for water development if they comply with the requirements of this act.
- (6) Each water conservancy district and retail water provider specified under Subsection (3)(a) shall:
  - (a) update its water conservation plan no less frequently than every five years; and
  - (b) follow the procedures required under Subsection (3) when updating the water conservation plan.
- (7) It is the intent of the Legislature that the water conservation plans, amendments to existing water conservation plans, and the studies and report by the board be handled within the existing budgets of the respective entities or agencies.