

**STEAMBOAT LAKE
WATER AND SANITATION DISTRICT
WATER RIGHTS EVALUATION**

Prepared for

**Steamboat Lake
Water and Sanitation District**

Prepared by

HRS Water Consultants, Inc.

**December, 2014
14-05**

Table of Contents

1.0	Introduction	1
	Purpose.....	1
	Information Used	1
2.0	Basics of Water Rights Administration.....	2
	Water Rights Priorities.....	2
	Water Rights Amounts, Location and Uses.....	3
	Direct Flow Surface Water Rights	3
	Storage Rights	3
	Ground Water Rights	3
	Conditional and Absolute Water Rights.....	4
	Changes of Water Rights.....	4
	Plans for Augmentation.....	5
	Exchanges and Alternate Points of Diversion	5
	Water Rights Administration and Calls	5
3.0	SLWSD Water Requirements	6
	Current Water Uses and Sources	6
	Calculated Consumptive Use	7
	Projected Water Uses, Consumptive Use and Augmentation Requirements	8
4.0	SLWSD Decreed Water Rights	10
	Senior Ditch Water Rights	10
	Red Creek Reservoir - Case No. W-303-72.....	11
	Steamboat Lake Water Diversion Alternate Points 1 and 2 - Case No. W-304-72	11
	Red Creek Diversion - Case No. W-305-72.....	12
	Steamboat Lake Water District Well Nos. 1 & 13 – Case No. W-1057-76.....	13
	Willow Creek Pass Spring No. 1 & Pond No. 1 – Case No. 01CW115.....	13
	SLWSD Lot Wells 124, 84-2 and 63-2 – Case No. 02CW094.....	14
5.0	Plan for Augmentation - Case No. W-1056-76	16
6.0	Water Rights Evaluation and Recommendations	19
	Water Rights Administration and Priorities	19
	Operation and Reliability of the Augmentation Plan.....	20
	Recommendations	20

Table 1 **2010-2013 Monthly Total Water Usage**

Figure 1 **General Location Map**

List of Appendices

Appendix A	Water Rights Summary
Appendix B	Decree in Case No. W-1056-76
Appendix C	Decree in Case No. W-303-72
Appendix D	Decree in Case No. W-304-72
Appendix E	Decree in Case No. W-305-72
Appendix F	Decree in Case No. W-1057-76
Appendix G	Decree in Case No. 01CW115
Appendix H	Decree in Case No. 02CW094
Appendix I	Potential Augmentation Plan Scenarios

1.0 Introduction

At the request of the Steamboat Lake Water and Sanitation District (SLWSD), we have prepared this evaluation of the adequacy of the SLWSD water rights and plan for augmentation to meet future water supply needs and changes in administration.

Purpose

SLWSD has recently had completed a Master Plan, and this report will supplement that planning through an evaluation of the SLWSD water rights and the ability of those existing rights to meet the physical, legal and administrative water needs of the SLWSD. This water rights evaluation will help to satisfy a request by the Water Court and the Division Engineer in connection with diligence applications for certain of the SLWSD conditional water rights. This report also provides the basis for evaluating the SLWSD's conditional water rights and diligence efforts.

Information Used

As part of our evaluation of the SLWSD water rights, we reviewed the following information sources:

- Decrees and other water rights documents provided by SLWSD or the district's water attorney.
- The Water and Wastewater System Master Plans report prepared by McLaughlin Water Engineers/Merrick & Company.
- Well information from the HRS files.
- Water rights and well permit information available from the Colorado Division of Water Resources.
- Water rights call records and diversion records available from the Colorado Division of Water Resources.
- Telephone discussion with Board Director, Kathleen Titus, and SLWSD water rights attorney Claire Sollars.

2.0 Basics of Water Rights Administration

This section is included to assist SLWSD board members in understanding water rights administration in Colorado and some of the terminology used to describe the various types of water rights owned by SLWSD.

Water rights in Colorado are similar to property rights and are obtained through application to and adjudication by special water courts. A water court decree grants the owner the right to divert water from a stream or through a well at a certain rate or in a certain amount, for specific uses and locations of use, and under a specific priority relative to other rights. A decree may also define the operation of various rights together in combination, and certain terms and conditions under which the water rights may be exercised so as to prevent injury to other water rights in the same stream system.

There are seven Water Courts in Colorado located in each of seven Water Divisions administered by the Colorado Division of Water Resources. Each Water Division includes a Division Engineer and staff, and smaller administrative subdivisions called Water Districts, which are administered by a Water Commissioner. SLWSD is located within the drainage basins of Willow Creek and the Elk River, which is tributary to the Yampa River. Water rights within the Yampa River basin are administered by the Colorado Division of Water Resources within Colorado Water Division 6, with an office in Steamboat Springs. SLWSD is located within Water District 58 which encompasses the upper Yampa River basin.

Water Rights Priorities

Under Colorado water law, water rights in rivers and creeks are administered based upon priority, or the date at which the water right was first put to use, or an application was filed and approved in the Water Court. Within a given area, the oldest, or most senior water rights, are typically associated with irrigation ditches or mining established in the late 1800s or early 1900s. The next most senior rights may include reservoirs, additional irrigation ditches, and other uses, including municipal which were added as an area developed. The more junior water rights are typically associated with wells, municipal uses, commercial uses (including ski areas), energy development, and "instream flow" water rights for protection of the environment. Any

subsequent additions of water rights for any of these various purposes will receive progressively more junior water right priorities in the order that the rights are filed with the Water Court.

Water Rights Amounts, Location and Uses

In addition to the priority of a water right, a decree will also specify the amount of diversion, the location of the point of diversion at a stream or well, and the proposed uses for the water right, including the location of use. A decree may specify multiple or alternate points of diversion for the same water right, and multiple uses, including: irrigation, domestic, municipal, commercial, industrial, and for augmentation or other uses.

The amount of a water right is usually an instantaneous flow rate in cubic-feet per second (cfs) or for a well, in gallons per minute (gpm). In cases involving a storage right in a pond or reservoir, the amount of the water right may be defined in terms of a storage volume in acre-feet.

Direct Flow Surface Water Rights

Direct flow surface water rights are water rights diverted directly from a river or creek at a specific diversion structure. These may include irrigation ditch headgates, and other diversions to pipelines via surface structures or shallow galleries below the stream. A direct flow right includes a specific instantaneous diversion amount in cfs and a priority date.

Storage Rights

Storage water rights define a specific structure (pond, reservoir or tank) and storage amount for subsequent use. The storage right may be associated with a separate surface diversion right or stand on its own. Storage rights are almost always defined in acre-feet, or the amount of water which covers one acre, one foot deep. Storage rights may include a provision for accounting for evaporations losses.

Ground Water Rights

Ground water rights include wells which pump from a specific ground water source or aquifer, or a claim for a spring which discharges from an aquifer. Diversion amounts may be listed in cfs or gpm. Under current administration, ground water rights may be defined as having

a delayed impact or depletion to a nearby stream, and may be administered either based upon the instantaneous pumping amount or on the delayed depletion amount at the stream.

Conditional and Absolute Water Rights

Water rights are defined as either conditional or absolute. A conditional water right is a proposed water right or a portion of an existing right which has yet to be developed or put to use. A conditional water right has a temporary legal status which must be reestablished or confirmed through a diligence application filed every six years in the water court. An absolute water right defines the amount of a water right which has already been used or put to beneficial use, and is considered to be permanent unless abandoned or changed. A conditional or absolute water right may be legally abandoned and removed as a water right by the water court after an extended period of intentional non-use. The Division Engineer periodically (every 10 years) creates a list of water rights subject to abandonment, and water rights owners may petition to prevent abandonment of a right.

Changes of Water Rights

Decreed water rights may be changed to other uses or locations of use through a Change of Water Right application filed in Water Court. The most typical change of use applications involve the conversion of a senior irrigation water right to other uses such as municipal or commercial, or for the replacement of diversions or stream depletions from more junior water rights through a plan for augmentation. The amount of water available under a change of water right may be limited to the amount of water historically diverted and consumed under operation of the original water right. The consumptive use of a ditch water right is defined by the area of irrigation and crop types, and the amount of irrigation water historically consumed by the plants through evapotranspiration and thus permanently lost from the stream system. The consumptive use credit for a ditch right available for new uses is typically 50 percent or less of the historically diverted amount.

Plans for Augmentation

A decreed plan for augmentation is a method for utilization of various water rights in combination for replacement of out-of-priority diversions or depletions by junior water rights, which would otherwise not be allowed to divert at certain times (or at all) under administration of water rights under the priority system. The junior water rights and structures may be of a type, or quality, or in a location which is most efficient for provision of a water supply. In order for a reliable use of the junior rights, other water rights, including changed senior ditch rights or water stored in reservoirs at a different time, may be released to the stream or substituted for the junior rights in a manner which prevents injury to other water rights diverting in priority.

Exchanges and Alternate Points of Diversion

Under a plan for augmentation or other decree, water rights may be exchanged to different points of diversion or storage. Under an exchange, water may be released or left in the stream at a downstream point and re-diverted by exchange at a different location upstream. Under such an exchange, there can be no impact to other rights diverting between the two exchange points.

Under a decreed alternated point of diversion, a water right originally decreed a one point of diversion may be taken at a different point of diversion or structure, at a location either upstream or downstream. A water right cannot be simultaneously diverted at both alternate point locations.

Water Rights Administration and Calls

Water rights are administered by the Division Engineer and Water Commissioner based upon priority and location along a stream system. When river flows drop to a level where all valid water rights cannot be satisfied, junior water rights diversions are curtailed to make water available to a downstream “calling” water right.

3.0 SLWSD Water Requirements

The Steamboat Lake Water & Sanitation District Water and Wastewater System Master Plans provides a comprehensive evaluation of the current SLWSD water sources, supplies, operations and needs from physical operations and engineering perspective. We have utilized this report in our evaluation of the SLWSD water rights and projected water requirements from a water rights operations and administration perspective. Where the master plan describes SLWSD operations in terms of gallons, gallons per day (gpd), or millions of per day (MGD), our evaluation utilizes water rights amounts in cubic feet per second (cfs), gallons per minute (gpm) and acre-feet (ac-ft). Following are some simple conversions for comparison:

- 1 cfs = 449 gpm or 646,000 gpd or 0.646 MGD or 2 ac-ft per day.
- 1 ac-ft = 325, 850 gallons

Current Water Uses and Sources

The SLWSD currently serves 139 homes, of which about 130 were considered active for the analysis of water uses in the Master Plan. Table 1 in the Master Plan report included average monthly water usage in gpd for the 2010 through 2013 calendar years. During the summer months usages ranges from 160 to 240 gpd. Usage during the summer is greater due to higher occupancy rates for homes, and possibly due to minor amounts of outdoor water uses.

Table 1 in this report converts those usage records into monthly acre-foot totals. Over the four-year period, total annual water use averaged 20.33 acre-feet, or 0.156 acre-feet per home. Through discussion with Kathleen Titus, there is very little outdoor irrigation within the SLWSD, and such use is actively discouraged. Our review of aerial photographs indicated that only two or three homes may have significant irrigated lawn areas, therefore, nearly all of the water use within the SLWSD is for indoor uses.

Table 1					
Steamboat Lake Water & Sanitation District					
2010 - 2013 Monthly Total Water Use in Acre-Feet					
	2010	2011	2012	2013	Average
January	1.63	1.32	1.85	1.71	1.63
February	1.47	0.98	1.22	1.27	1.23
March	1.37	0.94	1.22	1.42	1.24
April	1.29	0.90	1.19	1.47	1.21
May	1.15	1.38	1.86	1.43	1.46
June	1.36	1.87	3.03	2.62	2.22
July	2.14	2.06	3.08	2.62	2.47
August	2.39	2.26	2.70	2.15	2.37
September	2.13	1.81	1.83	1.78	1.89
October	1.38	1.70	1.94	1.44	1.62
November	1.64	1.39	1.63	1.09	1.44
December	1.39	1.35	1.52	1.88	1.54
Annual Total	19.35	17.97	23.08	20.88	20.32
Per Home Avg.	0.149	0.138	0.178	0.161	0.156
Note: Per home average use based upon 130 homes.					

All of the water use within the SLWSD was supplied by three wells:

- Guest Well a.k.a. Steamboat Lake WSD Well No. 13
- Lot 78 Well a.k.a. Steamboat Lake WSD Well No. 1
- Doubec Well a.k.a. Lot 84.2 Well (used only in emergencies)

Figure 1 shows the location of these three wells within the SLWSD. Other wells which have been decreed, but are not currently used for supply, are also shown. The Master Plan report provides a discussion of the status for some of these other wells.

Calculated Consumptive Use

As indicated above, the great majority of water supplied by the SLWSD wells is used for indoor purposes. The majority of lots receiving water service are also served by sewer lines and water is discharged at the SLWSD wastewater treatment plant (refer to Figure 1). Typically, indoor water uses with return flows through a wastewater treatment plant results in a consumptive use rate of about 5 percent. As a conservative estimate, and in order to account for

some outdoor usage, we have assumed a consumptive use rate of 10 percent for the SLWSD. With an average annual water use of 20.33 acre-feet, this results in a consumptive use of about 2.0 ac-ft per year.

Using consumptive use rates defined in the augmentation plan decree in Case No. W-1056-76, which assumes limited occupancy primarily in the summer months, average per home water use is projected to be 0.10 ac-ft per lot, with consumptive use ranging from 10 percent (sewer) and 15 percent (septic). For 130 homes, this method would indicate a current annual consumptive use of about 1.3 acre-feet.

It should also be noted that the limited wastewater treatment plant discharge data for portions of two years are not sufficient to estimate consumptive use.

Projected Water Uses, Consumptive Use and Augmentation Requirements

The total number of homes receiving water service at build out for the SLWSD is estimated to be 305. Using the current average per home water supply based upon pumping records of 0.156 ac-ft per home, the total average annual projected water use at full build out would be 47.6 acre-feet. Using an average consumptive use rate of 10 percent, projected average annual consumptive use would be 4.76 ac-ft per year.

As a conservative approach to estimating maximum annual water use and consumptive use, we applied a 20 percent increase to the average projected use estimates, resulting in a maximum build out water use of 57.0 ac-ft per year, and using a maximum consumptive use of 15 percent, the calculated maximum projected annual consumptive use would be 8.6 ac-ft per year. This represents the projected maximum consumptive use and depletion to the stream system resulting from SLWSD operations at build out, assuming limited outdoor irrigation, use rates similar to current uses, and a conservative estimate of maximum use and consumptive use.

As a comparison, the SLWSD augmentation plan decreed in Case No. W-1056-76 (paragraph 11) utilizes water use rates of 0.10 ac-ft per home, and consumptive use rates of 10% for sewer and 15 percent for septic. These parameters would result in total SLWSD water use of 30.5 ac-ft per year, and consumptive use estimates ranging from 3.1 acre-feet to 4.6 acre-feet per year based upon 305 homes.

Based upon the various methods of projecting build out water use for the SLWSD, annual water use could range from an average of about 48 acre-feet per year up to about 57 acre-feet per year. Consumptive use could range from 3.1 ac-ft per year using the minimal assumptions in the augmentation plan decree up to 8.6 ac-ft per year using high use and consumptive use assumptions. This later amount represents the maximum annual augmentation requirement for home water uses within the SLWSD.

4.0 SLWSD Decreed Water Rights

The following provides a discussion of the various decreed water rights owned by the SLWSD. Appendix A includes a tabular summary of the SLWSD rights for easy reference.

Senior Ditch Water Rights

The SLWSD owns the following senior ditch water rights which are available to be taken at various alternate points of diversion and for use under the SLWSD augmentation plan in Case No. W-1056-76. A copy of the decree is included as Appendix B.

Ekhart Ditch

Source: Elk River

Amount: 2.0 cfs out of total 4.7 cfs

Priority Date: May 15, 1886 (original adjudication)

Historically Irrigated Area: 60 acres

Historical Consumptive Use Amount: 47 ac-ft per year

Historical Irrigation Period: May 14 through October 27

Uses: Irrigation, Municipal, augmentation and other uses at alternate points

Folden Ditch

Source: Willow Creek

Amount: 2.0 cfs out of total 3.0 cfs

Priority Date: October 22, 1922 (April 5, 1937 adjudication)

Historically Irrigated Area: 30 acres (no longer in use)

Historical Consumptive Use Amount: 23.4 ac-ft per year

Historical Irrigation Period: June 1 through August 1

Uses: Municipal, augmentation and other uses at alternate points

The augmentation plan decree in Case No. W-1056-76 (discussed below) allows for the Ekhart and Folden Ditch rights to be taken at multiple alternate points of diversion for the SLWSD water supply, including storage in Red Creek Reservoir. The Folden Ditch is no longer used for irrigation and diversions may be credited up to the 23.4 ac-ft historical consumptive use amount at any alternate point of diversion or stored. The Ekhart Ditch is still in use, and diversions at the ditch headgate must be reduced in proportion to the use of the water right at alternate points of diversion or storage. Under one augmentation scenario, diversions at the Ekhart ditch headgate would need to be discontinued. The total amount of historical use credit for the two ditch rights is 70.4 acre-feet per year.

Red Creek Reservoir - Case No. W-303-72

Red Creek Reservoir is a proposed water storage facility located on Red Creek to the northwest of the current SLWSD service area. The location for this water right is depicted on Figure 1. The reservoir has not been constructed and to our knowledge no specific designs have been developed. A copy of the decree is included in Appendix C. Following is a summary of the water right:

Source:	Red Creek
Amount:	1,030 acre-feet (conditional)
Priority Date:	July 21, 1972
Uses:	Municipal and other uses by direct use or exchange

The decree allows for the relocation of the reservoir upstream or downstream of the decreed point, provided that the reservoir area and volume are not increased. Red Creek Reservoir is included in the augmentation plan decree in Case No. W-1056-76.

Steamboat Lake Water Diversion Alternate Points 1 and 2 - Case No. W-304-72

The Steamboat Lake Water Diversion is a proposed surface diversion with two alternate points of diversion: Alternate Point 1 located to the north of the current SLWSD service area on Willow Creek; and Alternate Point 2 located south of the SLWSD on the Elk River. The locations for both points of diversion are depicted on Figure 1. Neither of these points of

diversion have been constructed. A copy of the decree is included in Appendix D. Following is a summary of the water right:

Source: Willow Creek (Alt. Pt 1), Elk River (Alt. Pt 2)
Amount: 6.0 cfs (conditional)
Priority Date: June 27, 1972
Uses: Municipal and other uses

The Steamboat Lake Water District Diversion is included in the augmentation plan decree in Case No. W-1056-76.

Red Creek Diversion - Case No. W-305-72

Red Creek Diversion is a proposed surface diversion located on Red Creek to the northwest of the current SLWSD service area. The location for this water right is depicted on Figure 1 and is coincident with the decreed location for Red Creek Reservoir. The Red Creek Diversion has not been constructed. A copy of the decreed is included in Appendix E. Following is a summary of the water right:

Red Creek Diversion

Source: Red Creek
Amount: 3.0 cfs (conditional)
Priority Date: July 21, 1972
Uses: Municipal and other uses

The decree allows for the relocation of the Red Creek Diversion upstream or downstream of the decreed point, depending on the location of Red Creek Reservoir. The Red Creek Diversion is included in the augmentation plan decree in Case No. W-1056-76.

Steamboat Lake Water District Well Nos. 1 & 13 – Case No. W-1057-76

Steamboat Lake Water District Well Nos. 1 and 13 currently provide the majority of the water supply for the SLWSD. These wells were decreed simultaneously with the SLWSD augmentation plan in Case No. W-1056-76 and are included under that plan.

Following are summaries of the water rights. A copy of the decree is included as Appendix F and the locations are shown on Figure 1.

Steamboat Lake Water District Well No. 1 – a.k.a. Lot 78 Well

Permit No.: 30396-F-R
Source: ground water tributary to Willow Creek
Amount: 0.167 cfs (74.98 gpm) conditional
Priority Date: March 21, 1972
Uses: Municipal and other uses

Steamboat Lake Water District Well No. 13 – a.k.a. Guest Well

Permit No.: 16777-F-R
Source: ground water tributary to Willow Creek
Amount: 0.0612 cfs (27.5 gpm) absolute; 0.3842 cfs (172.5 gpm) conditional
Priority Date: July 7, 1972
Uses: Municipal and other uses

Willow Creek Pass Spring No. 1 & Pond No. 1 – Case No. 01CW115

The Willow Creek Pass Spring No. 1 is a natural spring located near the center of the developed portion of the SLWSD, and Willow Creek Pass Pond No. 1 is located below the spring near the main road. Both are within an unnamed drainage which flows south along the county road to the Elk River. Neither water right has been developed and incorporated into the SLWSD system. Following are summaries of the rights and a copy of the decree is attached as Appendix G. Locations are indicated on Figure 1.

Willow Creek Pass Spring No. 1

Source: unnamed tributary to Elk River
Amount: 1.0 cfs (conditional)
Priority Date: October 25, 2001
Uses: Municipal and other uses, irrigation of 10 acres

Willow Creek Pass Pond No. 1

Source: unnamed tributary to Elk River
Amount: 25.0 acre-feet (conditional)
Priority Date: October 25, 2001
Uses: Municipal and other uses, irrigation of 10 acres

Use of these water rights within the SLWSD municipal system would require treatment as with a surface water source. However, these rights may be useful for irrigation of a park or other common area.

SLWSD Lot Wells 124, 84-2 and 63-2 – Case No. 02CW094

The decree in Case No. 02CW094 includes three wells and associated conditional water rights for Lot Wells 124, 84-2 and 63-2. Of the three wells, on Lot 84-2 Well is connected to the municipal system and is used as a backup. This well is also referred to as the Doubec Well in the Master Plan report. The Lot 84-2 Well is limited to a pumping rate of 12 gpm. The other two wells have conditional water rights of 25 gpm each, but did not produce enough yield to be connected to the system and have been converted to monitoring wells. We have not included those wells in our water rights evaluation, although the water rights are still being considered valid. The locations of all three wells are included on Figure 1 and a copy of the decree is included as Appendix H. The provisions of the permit and the decree include Lot Well 84-2 in the plan for augmentation in Case No. W-1056-76, although this well has a 2002 priority which would be junior to other SLWSD water rights.

Steamboat Lake WSD Lot Well 84-2 a.k.a. Doubec Well

Permit No.: 63591-F

Source: ground water tributary to Willow Creek

Amount: 12 gpm conditional

Priority Date: July 1, 2002

Uses: Municipal and other uses

5.0 - Plan for Augmentation - Case No. W-1056-76

The plan for augmentation decreed in Case No. W-1056-76 is an essential component in the operation and utilization of all of the SLWSD's decree water rights. The augmentation plan was filed in 1976 and a decree was issued in 1978. The plan for augmentation allows for the operation of SLWSD's wells and other points of diversion when those sources would otherwise be out-of-priority.

A Plan for Augmentation can be relatively simple: an example would be a junior water right holder builds a separate pond to store water when a call is not in place (typically during spring run-off season) and when a call is placed, the junior water right holder releases water from the augmentation pond (either through a low-level outlet installed in the pond or by pumping) into the stream system to replace the water used by the junior water right. This allows the junior water right holder to continue using its junior water right even though a call is in place that would otherwise prevent continued diversion and use.

SLWSD's Augmentation Plan is far more complex but the concept remains the same – when the system is under administration, senior water rights or stored water rights can be used to replace “junior” water rights that are being diverted and consumed.

The primary sources of water to be used for augmentation are two senior ditch rights: 2.0 cfs out of a total of 4.7 cfs in the Ekhart Ditch on the Elk River south of the SLWSD; and 2.0 cfs out of a total 3.0 cfs in the Folden Ditch on Willow Creek north of the SLWSD. The locations of the points of diversion for both ditches are indicated on Figure 1. The decree in W-1056-76 includes changes of use for the two ditch rights and determination of historical consumptive use amounts which are made available at alternate points of diversion and for augmentation.

In addition to the senior ditch rights, the augmentation plan decree also lists the following water rights for diversion under the plan:

- Red Creek Diversion for 3.0 cfs (Case No. W-305)
- Steamboat Lake Water District Diversion - Alt. Pts 1 and 2 for 6.0 cfs
- Red Creek Reservoir 1,030 ac-ft (Case No. W-303)
- Steamboat Lake Water District Wells 1 and 13 (Case No. W-1057-76)

The decree designates additional alternate points of diversion for the various water rights as follows:

- Alternate Points 1 and 2 previously described
- Alternate Point 3 - on Willow Creek
- Alternate Point 4 Red Creek Diversion - at Red Creek Reservoir outlet
- Alternate Point 5 - Well 13
- Alternate Point 6 - Well 1
- Additional well which may be constructed in the future within the SLWSD

The decree provides a method for calculation of consumptive uses (paragraph 11) for SLWSD use as previously described. (Note: These projected uses are smaller than the current SLWSD per home use, but were anticipated for a development encompassing 4,000 homes or more.) The consumptive use estimates are only relevant when the SLWSD's wells or other diversions would be used out-of-priority.

Paragraph 13 of the augmentation plan decree provides for three protective conditions or operating alternatives to prevent injury to other water rights as follows:

Alternative 1 (Paragraph 13(a) in the decree) - When SLWSD wells or other junior points of diversions are out-of-priority during the irrigation season, SLWSD may use the Folden Ditch and Ekhart Ditch rights at the alternate points of diversion (subject to reduction or curtailment of Ekhart Ditch at those times).

Alternative 2 (Paragraph 13(b) in the decree) - If the Folden or Ekhart Ditch rights are also out-of-priority (or presumably out of season) then the SLWSD may make releases from Red Creek Reservoir to offset depletions. Depletions would be calculated based upon amounts specified in decree Paragraph 11.

Alternative 3 (Paragraph 13(c) in the decree) - In addition to Alternatives to 1 and 2, the SLWSD may elect to permanently discontinue irrigation use and diversion at the Ekhart Ditch of the SLWSD portion of the ditch right, and claim an annual credit of up to 70.4 acre-feet (less any water placed in storage) left in the streams to offset the SLWSD's annual depletions as calculated in decree Paragraph 11. This method would operate on an annual basis and ignore specific periods of out-of-priority diversions, including for the senior ditch rights.

Please note that the annual historical consumptive use credit of 70.4 acre-feet greatly exceeds the projected annual SLWSD depletions in the range of 3.1 to 8.6 acre-feet per year, depending on the calculation method used.

6.0 Water Rights Evaluation and Recommendations

As discussed above, the SLWSD has multiple water rights at its disposal which greatly exceed the projected water use and depletions for the district. Most of the water rights have not been developed and it is unlikely that SLWSD would ever need to develop all of the various structures and alternate points of diversion. Before making any determination of the future status of any particular water right, we thought it would be useful to evaluate the context of administration within which the SLWSD water supply and plan for augmentation will operate.

Water Rights Administration and Priorities

In the past few years, the Division Engineer for Division 6 has designated the Upper Yampa River basin and the Elk River as over-appropriated, meaning there may be times when the total of decreed water rights may exceed the available supply at times in the rivers. This action has come about as a result of more intensive administration of water rights around the state, the filing of large new water rights in the basins which may place calls, and the administration of fairly junior instream flow water rights owned by state.

We have evaluated water rights calls for recent years which would potentially impact the SLWSD water rights. The only calls which we identified were 1977 priority calls for instream flow rights on Willow Creek and the Elk River, typically in the late summer and fall. All of the existing SLWSD well rights decreed in the augmentation plan are senior to the instream flow rights and these calls are expected to have little impact. Some of the instream flow calls, however, may occur outside of the historical irrigation period, during which time the SLWSD's senior ditch rights would not be available to be taken through an alternate point of diversion, or as a direct augmentation credit. During such times, there is the potential for new wells developed by the District to be out of priority relative to the instream flow rights or other downstream calls. Pumping of junior wells might need to be curtailed, or out-of-priority diversions replaced using augmentation plan Alternatives 2 or 3 discussed above.

We do not anticipate calls which would be senior to the SLWSD two senior ditch rights, although that is conceivably a possibility. This and other rare, but potential scenarios are discussed in Appendix I.

Operation and Reliability of the Augmentation Plan

An analysis of the SLWSD water rights indicates that the consumptive use credit associated with the two senior ditch rights (70.4 acre-feet) is more than adequate to offset even the full-year projected depletion amount. However, there could be short periods, as described above, when augmentation water will be required.

It is anticipated that Alternative 1, as described in Section 5.0, will be more than adequate to cover any calls and out-of-priority depletions occurring during the irrigation season by operating wells or other diversion structures as alternate points of diversion to the senior ditch rights.

It is anticipated that Alternative 2 can be utilized for a call occurring when the ditch rights are out of season (or out of priority), provided that storage water is available in Red Creek Reservoir. Given the limited potential for out-of-priority depletions, a 1,000 acre-foot reservoir would not be needed, but a much smaller alternative in the range of 10 to 50 acre-feet capacity would guarantee the availability of augmentation water at these times.

It appears that any and all augmentation scenarios can be covered under Alternative 3 in the decree, provided that the SLWSD has shut down diversions of the SLWSD portion of the Ekhart Ditch water right at the ditch headgate.

Based upon this evaluation, it is our opinion that the SLWSD Plan for Augmentation is both reliable and can be utilized to cover any anticipated call scenarios provided that the SLWSD either builds a minimal storage facility on Red Creek or agrees to permanently discontinue irrigation diversions of the SLWSD portion of the Ekhart Ditch water right.

Recommendations

Following are our recommendations for development and operation of the SLWSD water rights and augmentation plan to secure a reliable water supply capable of providing a full build out water supply of 305 homes within the current service area.

- We concur with the conclusion in the Master Plan that one additional well should be added to the SLWSD system to provide a backup supply and provide maximum

flexibility of operation. This well should be permitted under the existing augmentation plan under the provision for adding additional wells. It may be necessary to file a separate water right application for the new well and a claim should be made to assign a 1976 priority to the well based upon the plan for augmentation priority.

- We do not recommend that SLWSD file any amendment to the existing augmentation plan, as it is our opinion that the existing plan provides for a more than adequate supply of replacement for the SLWSD potential depletions.
- We recommend that the SLWSD develop or update accounting to cover operation of the plan for augmentation in anticipation of additional reporting requirements from the Division Engineer's Office, and the potential that a call may affect the SLWSD rights at some time.
- We recommend that SLWSD explore the status of the Ekhart Ditch and whether the SLWSD water right is still being diverted for irrigation by the other owner(s) in the ditch. Depending on that status SLWSD may want to enter into a discussion of how the SLWSD portion of the water right can be jointly administered, including the option to permanently discontinue diversion of the SLWSD's portion of the rights as prescribed (Alternative 3) in the plan for augmentation. The SLWSD might also enter into an agreement for lease of a portion of the right when not needed by the district.
- We recommend that, in the future, SLWSD should evaluate the priority to maintain diligence on all or a portion of the SLWSD conditional water rights based upon the following relative priorities (1 being the highest priority).
 1. Wells 1 and 13 (Alternate Points of Diversion 5 and 6) are already being utilized in the SLWSD water supply and should be retained with the possibility of making additional diversion amounts absolute.
 2. Red Creek Reservoir (for potential augmentation storage at a much smaller volume and/or possible development with another user needing storage).
 3. Willow Creek Pass Spring and Pond - it may be possible that this combination is adequate to fill in priority and provide augmentation storage and release when needed.

4. Lot wells 124, 84-2 and 63-2.
5. Steamboat Lake WD Alternate Point 1 - this diversion point is closest to the SLWSD in the event a surface water source and treatment become feasible.
6. Steamboat Lake WD Alternate Point 2 - this diversion point on the Elk River is probably impractical due to pumping lift costs for use in the SLWSD.
7. Alternate Points of Diversions 3 and 4 are likely not needed as surface diversions unless Alternate Point 1 is not feasible.