WATER SUPPLY & WATER RIGHT MASTER PLAN
Upper Yampa Water Conservancy District

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RESOURCE ENGINEERING INC.

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CERTIFICATION

The attached Water Supply and Water Right Master Plan report dated May 18, 2016, was prepared by and under the direct supervision of R. Scott Fifer, P.H. and Ashley Moffatt, P.E. The water supply planning and water rights recommendations and options presented in this report are provided for the Upper Yampa Water Conservancy District.

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1.0 EXECUTIVE SUMMARY

This document provides the Upper Yampa Water Conservancy District (District) with a framework for the future development of water resources within the Yampa River basin. It consists of two elements: (1) a Water Supply Master Plan (WSMP) that identifies basin water requirements and potential shortages, and (2) a Water Rights Master Plan (WRMP) that assesses the physical and legal availability of water in the basin, and prioritizes the development of the District's conditional water rights to best meet the anticipated demands.

The development of the District's WSMP and WRMP coincided with a period of unprecedented water supply planning throughout the State of Colorado. The catalyst behind this effort was the Governor's initiative to complete a comprehensive statewide water plan. The "Colorado Water Plan" engaged each of the major river basins within the State, and through this process numerous water resource investigations were undertaken, including analyses specific to the Yampa River basin. The study methods and findings contained in the various reports prepared for the State provide a reasonable science-based approach for water supply planning within the District's service area. This information, with exception of streamflow hydrology, was incorporated directly into the District's WSMP process and provided the foundation for assessing the ability of the District's water rights portfolio and water supply facilities to meet future demands (WRMP). The District choose to expand the hydrologic record used in the WSMP to include reconstructed prehistoric flows based on records of tree-ring widths (paleo-hydrology).

1.1 WSMP Study Findings

In order to help process the enormous amounts of information, a streamflow allocation model was used to estimate the availability of water to individual users and projects in the basin based on alternative hydrologic scenarios. StateMod, the CWCB's water allocation and accounting model, as adapted to the Yampa River basin (Yampa River Basin StateMod streamflow model), was used in this study. The Yampa Basin StateMod model is a water rights allocation model that distributes the available physical supplies to various basin users based upon their water rights priority.

The results of the District's WSMP are consistent with the findings outlined in the recent State sponsored studies; the streamflow in the Yampa River basin will be insufficient to meet

expected water demands during future dry year conditions. Water shortages will occur during these periods and there is substantial probability that the basin will come under administration. Storage releases from District facilities will be necessary to help meet the identified demands.

Study findings specific to the District were based on the evaluation of four, 15-year periods that were selected from the 1,000+ year paleo-record, and contained within each of these 15-year periods was a consecutive 5-year dry sequence. These four study periods were chosen by the District for the purpose of evaluating the Yampa River basin under a variety of drought conditions. The recurrence intervals associated with the drought sequences varied from 1/1,000 to 1/100. The findings from this evaluation are highlighted below:

1. Under the four selected study periods, there were multiple years within which the available physical and legal water supplies in the Yampa River dropped well below forecasted demands, and basin water users began to experience pronounced and extended shortages.

2. During the dry years within the four selected study periods, there was significant demand for storage releases from Stagecoach Reservoir to meet the water requirements of the District's contractees, as well as other identified existing and future needs within the District's service area.

3. In all four selected study periods, there were multiple dry years in which the demands on Stagecoach Reservoir exceeded the available inflow. In these instances, the inability to refill the reservoir necessitated the use of carry-over storage. Moreover, the content of Stagecoach Reservoir, in these dry years, dropped below 18,275 (acre-feet) AF – the combined volume of the District's emergency pool and preferred remainder pool.

4. In modeled scenarios where the District's proposed Morrison Creek Reservoir was operated in conjunction with Stagecoach Reservoir, the storage content in Stagecoach Reservoir increased, resulting in a greater firm water supply. In addition, storage levels recovered more quickly, reducing the number of years within a drought sequence that Stagecoach Reservoir was unable to fill to capacity.

1.2 WRMP Study Findings

The study finding related to the WSMP indicate that the District's existing and potential storage facilities can and will play an important role in meeting the identified water shortages that are expected to occur during future, dry year conditions. Based upon these results and the evaluation of the District's water rights portfolio, RESOURCE recommends that the District maintain its full portfolio of absolute and conditional water rights, as necessary to optimize storage facilities and ensure that future demands can reliably be met. This recommendation, however, does not mean that the entirety of the portfolio should be preserved. Portions of several conditional water rights are identified in the WRMP as having an inability to be used due to either a physical or legal constraint. In these instances, RESOURCE recommends that the identified water right be abandoned as there is little probability that it could be made absolute. The WRMP study findings are highlighted below.

5. The District should maintain 3,927.9 AF of its conditional Bear 1st Enlargement water right, which is decreed to store 22,105.8 AF in Stagecoach Reservoir. The current capacity of Stagecoach Reservoir is equal to 36,438.7 AF. RESOURCE has quantified that during the reservoir's first fill 32,510.8 AF of the total volume can consistently be meet by the absolute portion of the District's agricultural ditch rights, Bear Original right, and Pleasant Valley Reservoir rights decreed to Stagecoach Reservoir. It is logical that the Bear 1st Enlargement water right be maintained in order to meet the remaining balance of the first fill, as this water right is specifically decreed for storage at the Stagecoach Reservoir site.

6. The District should then abandon the remaining 18,177.9 AF decreed to its Bear 1st Enlargement water right (22,105.8 AF – 3,927.9 AF). It is improbable that the District could develop the remaining portion of this conditional water right on site or at an alternative location due to physical water supply limitations.

7. The District should maintain the full amount of its 9,246 AF conditional Pleasant Valley Reservoir and Feeder Canal water rights decreed for storage at Stagecoach Reservoir. Of this volume, there is an immediate opportunity to use approximately 1,700 AF for the purpose of replacing evaporative losses. In Case No. 95CW139, the District obtained the ability to use its water rights associated with the Pleasant Valley Project and decreed for storage at Stagecoach Reservoir to offset depletions at

Stagecoach Reservoir that are attributed to evaporative losses. The pro-rata portion of the 300 (cubic feet per second) cfs Feeder Canal water right for 1,700 AF is equal to 11.8 cfs. The remaining conditional balance of 7,546 AF (9,246 AF – 1,700 AF) should also be maintained. The WSMP showed that even with both Stagecoach Reservoir and Morrison Creek Reservoir online, there were shortages in the Yampa River basin. The District's water rights associated with the Pleasant Valley Project at Stagecoach Reservoir are decreed as alternate points of storage and diversion and could be moved to a future storage facility. The pro-rata portion of the 300 cfs Feeder Canal water right for 7,546 AF is equal to 52.4 cfs.

8. The District should maintain the full amount of its 10,620 AF conditional Pleasant Valley Reservoir and Feeder Canal water rights decreed for storage at Morrison Creek Reservoir. The WSMP showed that Morrison Creek Reservoir, when operated in conjunction with Stagecoach Reservoir, improved the firm yield of Stagecoach Reservoir, helped preserve water surface elevations, and facilitated a quicker storage recovery in dry years. The pro-rata portion of the 300 cfs Feeder Canal water right for 10,620 AF is equal to 73.6 cfs.

9. The District should maintain the full amount of its 300 cfs conditional water right decreed to the Pleasant Valley Reservoir Feeder Canal (Feeder Canal). The Feeder Canal was used to determine the physical and legal water availability at the original Pleasant Valley Reservoir site, which in turn allowed the storage component associated with the Pleasant Valley Project to be alternatively stored and/or transferred to other sites, such as Stagecoach Reservoir and Morrison Creek Reservoir. Consequently, the District should maintain the 300 cfs water right in order to preserve its storage rights. As seen in the above findings, RESOURCE has assigned a pro-rata diversion amount between the various portions of the storage supply.

10. The District should maintain the full amount of its 50 cfs conditional Little Morrison Diversion & Alternative Point water right. This direct flow diversion right has the ability to benefit Stagecoach Reservoir in a manner similar to Morrison Creek Reservoir. As such, the Little Morrison Diversion & Alternative Point could be developed, if ongoing assessments of the Morrison Creek Reservoir conclude that it is not practical and/or feasible to construct a reservoir at the proposed site. Alternatively, it may be desirable

to develop and use this right in advance of the Morrison Creek Reservoir project should there be long delay in the development of the reservoir.

11. The District should maintain 1,150 cfs of its Four Counties water rights, which are decreed to divert and/or store a total of 1,620 cfs. The water rights associated with the Four Counties Project have been decreed to be alternatively diverted and/or stored at a number of locations within the District's service area. As such, the District should maximize the use of its Four Counties water rights up to the available physical and legal limitations. RESOURCE has quantified the maximum available water supply to be 1,150 cfs. This amount includes portions of water rights that have already been made absolute. The conditional portions that should be maintained include: 80 cfs associated with Ditch No. 1, 525 cfs associated with Ditch No. 3, and 394 cfs associated with the Ditch No. 3 Extension and Enlargement.

12. The District should then abandon the remaining 470 cfs decreed to its Four Counties Ditch No. 3 Extension and Enlargement (864 cfs – 394 cfs). It is improbable that the District could develop this portion of the Four Counties Project based on physical water supply limitations.

13. Based on the District's accounting records from 2011 through 2015, diversions attributed to the Four Counties water rights peaked in 2011. In total, during the 2011 water year, the District diverted 23.7 cfs under conditional water rights associated with Ditch No. 1 and Ditch No. 3 and 57.4 cfs under conditional water rights associated with the Ditch No. 3 Extension and Enlargement. As a result, these amounts should be claimed absolute in the District's upcoming diligence case.

14. The District should maintain the full amount of its 8,000 AF conditional Second Fill water right decreed for storage at Yamcolo Reservoir. At present time, there are several key factors related to the operation of Yamcolo Reservoir that are uncertain, such as the minimum bypass requirement and the water year associated with the reservoir's accounting. Until these factors become more certain, it is prudent for the District to maintain the ability to refill Yamcolo Reservoir up to the conditional decreed amount of 8,000 AF, as such water supply helps improve the overall reliability of the reservoir.

15. The District should maintain the full amount of its 100 cfs conditional Coal Creek Diversion. Similar to the District's Second Fill storage right at Yamcolo Reservoir, the Coal Creek Diversion can be used to improve the firm yield and overall reliability of the reservoir. In addition, this diversion project has the potential to help stabilize streamflow conditions in the Bear River, during the spring runoff when diurnal fluctuations can cause a flows to change significantly throughout the day.

2.0 INTRODUCTION

2.1 Water Supply Master Plan

The District was created in 1966 under the Water Conservancy Act of the State of Colorado. Its purpose, as outlined in its Mission Statement, is; "to lead water resource management within the District's boundaries by responsibly conserving, protecting, developing, providing and enhancing the water resources of the Yampa River basin. The District will initiate and participate in projects that embody and promote the protection of water rights, provide broad benefits to District constituents and develop projects that provide responsible conservation, responsible growth, beneficial water storage and usage, and public awareness within the Upper Yampa Water Conservancy District." To meet its commitments, the District has obtained several water right decrees and has developed multiple water storage facilities within the Yampa River basin. Moving forward, the District developed a Water Supply Master Plan (WSMP), which has been incorporated into this report. The WSMP quantifies the existing and potential water requirements within the District's water service area and sets forth a path to most efficiently provide and/or develop the necessary water supplies. The WSMP includes consideration of the physical and legal water constraints that are characteristic of the Yampa River basin.

2.2 Water Rights Master Plan

As a companion to the WSMP, the District developed a Water Rights Master Plan (WRMP). The WRMP is a necessary component of the WSMP, as it provides guidance to the District in the development and use of its various water rights in order to best meet the water demands identified in the WSMP. The WRMP identifies shortages or excesses in the District's water rights portfolio and provides recommendations for future acquisition and/or relinquishment of water rights. The WRMP also fulfills the commitments that the District made to the State and Divisions Engineer's office as part of a stipulated decree entered in Case No. 07CW40.

2.2.1 Case No. 07CW0040

On March 28, 2007, the District filed an application with the water court in Case No. 07CW40 for finding of reasonable diligence for various surface and storage rights it owns within the upper Yampa River basin. The subject rights are part of a larger portfolio of rights that support the District's water supply program that has been developed to meet existing and future water demands within its service area. The application and its subsequent amendment were opposed by three parties. However, all of the objectors, with exception of the State and

Division Engineer, withdrew their Statements of Opposition. In an effort to settle its case, the District entered into a Stipulation and Agreement with the State and Division Engineer that committed itself to developing a Water Rights Master Plan that would examine the District's water rights, including all of the conditional rights that were included in Case No. 07CW40. The purposes of the Water Rights Master Plan were to analyze the amount of water reasonably necessary to meet the District's future needs and to identify those conditional water rights not needed to meet the identified demand, if any. The Water Rights Master Plan is to be submitted to the Division Engineer by May 27, 2016. A copy of the final Stipulation and Agreement entered into between the District and the State and Division Engineer in Case No. 07CW40 is included as ***Attachment 1***.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

The District's boundary and water service area includes the Yampa River and its tributaries within portions of Routt and Moffat Counties. The landscape within this area is diverse, ranging from high elevation mountains in the headwater regions to lower elevation steppes and valleys. The high elevation areas are dominated by public lands, primarily associated with the Routt National Forest. In lower elevations, towns and private agricultural lands lie along the valley floors. A map of the District's boundary is shown in ***Figure 1*** and a map of the District's current water service areas that can be served pursuant to its augmentation plans decreed in Case No. 06CW0049 and pending in Case No. 15CW3058 are shown in ***Figure 2***.

3.2 Streamflow Hydrology

The streamflow of the Yampa River is typical of rivers derived from snow dominated, high elevation watersheds. In typical years the headwater regions receive large amounts of snow from prevailing westerly and northwesterly weather patterns that occur during the winter season. Beginning in March and continuing through the spring, the streamflow increase as solar radiation gain and air temperatures increase. Peak flows then typically occur during June, at the height of snowmelt, and begin to recede through the summer as the seasonal snowpack expires. Finally, by the fall / winter season, streamflow levels drop to what is consider to be baseflow conditions, during which the flow is derived almost entirely from groundwater sources. The annual water supply associated with this seasonal pattern varies depending the amount of snowfall. In years when the snowpack is low, the annual streamflow volume is correspondingly low, and conversely, in year when the snowpack is high, the annual streamflow volume is correspondingly greater. ***Figure 3*** displays the annual and seasonal variability of streamflow conditions in the basin as exhibited by a series of annual hydrographs recorded by the USGS gage located on the Yampa River above Stagecoach Reservoir. The streamflow variability underscores the challenge that the District faces in pursuit of its goal to provide its constituents with a reliable water supplies each year, including years within an extended drought.

3.3 Economy

Historically, the agriculture industry was the primary economic driver within the Yampa River basin. More recently, while agriculture remains important to the basin, the economy within

the basin's upper region has become more diverse to include power generation, mining and recreation. Population growth within Steamboat Springs and the surrounding headwaters region has increased in recent years. Initially driven by the development of the ski industry, the scenic region has subsequently attracted a growing number of residents and retirees interested in the year-round quality of life that the area has to offer (BBC Research & Consulting, Doug Jeavons, 2009).

3.4 Water Resources Planning – State Studies

The development of the District's WSMP coincided with a period of time of unprecedented water resources planning efforts taking place throughout the State of Colorado. The origin of the State's most recent planning efforts is linked to the passage of the Colorado Water for the 21st Century Act in 2005 (House Bill 05-1177). The Act created an institutional framework to promote the equitable use of the state's water supply to ensure that there will be an adequate future supply of water for all Coloradoans. To facilitate cooperation and discussion between the major watershed basins within the State, the Act established several Basin Roundtables (BRT), each charged with formulating a water needs assessment, conducting analysis of available unappropriated water, and proposing projects or methods for meeting those needs. As a result of this process, the State, through the Colorado Water Conservation Board (CWCB), has completed several investigations of water resources within the Yampa River basin. The studies were robust and utilized a great amount of information to quantify existing and future water demands in the basin.

3.4.1 Statewide Water Supply Initiative and the State Water Plan

Much of the water resource information incorporated into the BRT studies was generated under the CWCB's Statewide Water Supply Initiative (SWSI) program. SWSI was created in 2003 by the Colorado General Assembly to provide a comprehensive assessment of Colorado's current and future water needs and to examine approaches of how those needs would be met. In 2010, the CWCB completed its second SWSI initiative, which included estimates of water demands in the Yampa River basin through a 2050 planning horizon (CWCB, Updated Statewide Water Supply Initiative-SWSI, 2010). In subsequent sections of this report, the 2010 Updated Statewide Water Supply Initiative is referred to as the "SWSI 2010" report.

The information presented in SWSI 2010 suggests that the State's projected water demands exceed available supplies, and that without a strategic long term plan, severe water shortages

are projected. In response, the Governor issued Executive Order D2013-05 in May 2013 that directed the CWCB to prepare a water plan for the State of Colorado (Colorado Water Plan). The purpose of the Colorado Water Plan is to develop a course of action in order to achieve collaborative, balanced water solutions that will enable Colorado to meet its water needs, both now and in the future.

3.4.2 The State Water Plan & the Yampa Basin Implementation Plan

As part of the Colorado Water Plan, the participating BRT's prepared Basin Implementation Plans (BIP) for their respective basins. The BIP's were developed to inform the Colorado Water Plan of the specific goals and methods proposed by the BRT for meeting future basin needs as mandated under HB05-1177 (Colorado Water for the 21st Century Act). It provided opportunity to convey the local BRT's position regarding overall water development within the State and specifically outline its goals for developing, and protecting water supplies to meet future consumptive and non-consumptive water demands.

In order to help process the information necessary to complete the BIP, the BRT for the Yampa River basin relied on the CWCB's StateMod program. This streamflow allocation and water right accounting model was the preferred method of analysis for various BRTs and other investigators. The Yampa Basin StateMod model distributes the available physical water supply within the basin to various users based upon the priority of the diverting and/or storing water right. During periods of limited streamflow, when the available direct flow water supply is insufficient to meet the demands of all the water users within the basin, shortages occur. The location and amount of shortage within the basin is dependent on the prior appropriation system, as the available water supply is allocated in a senior to junior manner. That is, the demands associated with senior water rights are meet ahead of junior diverters. In StateMod, the spatial component of this allocation process is taken into account by preserving the water supply needed to meet the demands of a downstream senior water right, when calculating the amount of water that is available to divert under the upstream junior water right. If the available direct flow water supply is insufficient to meet that demand, then the junior water right experience a legal shortage. At this point the river is considered to be under administration and representative of a "call period."

The Yampa River BIP was completed in 2015 (amecHydros, 2015). This document is one of several State sponsored studies that have been recently completed in the Yampa River basin for the CWCB. The studies have been performed under the direction of the BRT and together,

provide an impressive and valuable source of information relevant to the District's planning process. Recent investigations addressing water availability and demands in the Yampa River basin include:

- 2010 SWSI Updated Study for the Yampa-White Basins
  (CWCB, Updated Statewide Water Supply Initiative-SWSI, 2010)

- 2011 Yampa-White Agricultural Water Needs Assessment Report
  (CWCB, Yampa-White Agricultural Water Needs Assessment Study, 2011)

- 2011 Energy Development Needs, Phase II
  (amec, 2011)

- 2012 Watershed Flow Evaluation Tool
  (Sanderson, 2012)

- 2014 Yampa-White-Green Projects and Methods Study
  (CDMSmith, 2014)

- 2015 Basin Implementation Plan (BIP)
  (amecHydros, 2015)

- 2015 StateMod Model
  (Wilson Water Group, 2015)

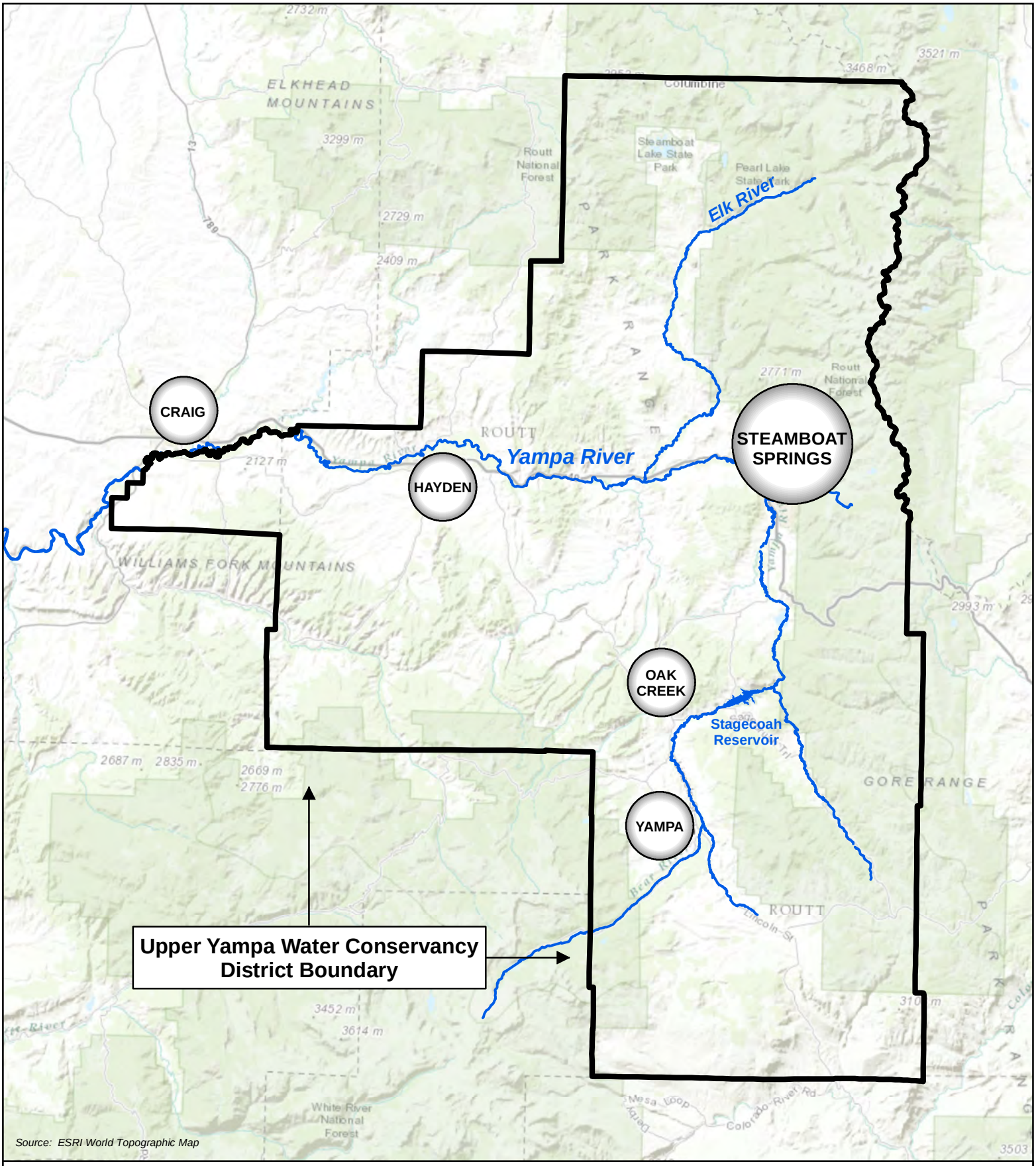

Figure 1
Boundary Map for the Upper Yampa Water Conservancy District
Water Supply & Water Right Master Plan

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Date: 2016-03-09
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Drawn: ANM
Approved: RSF

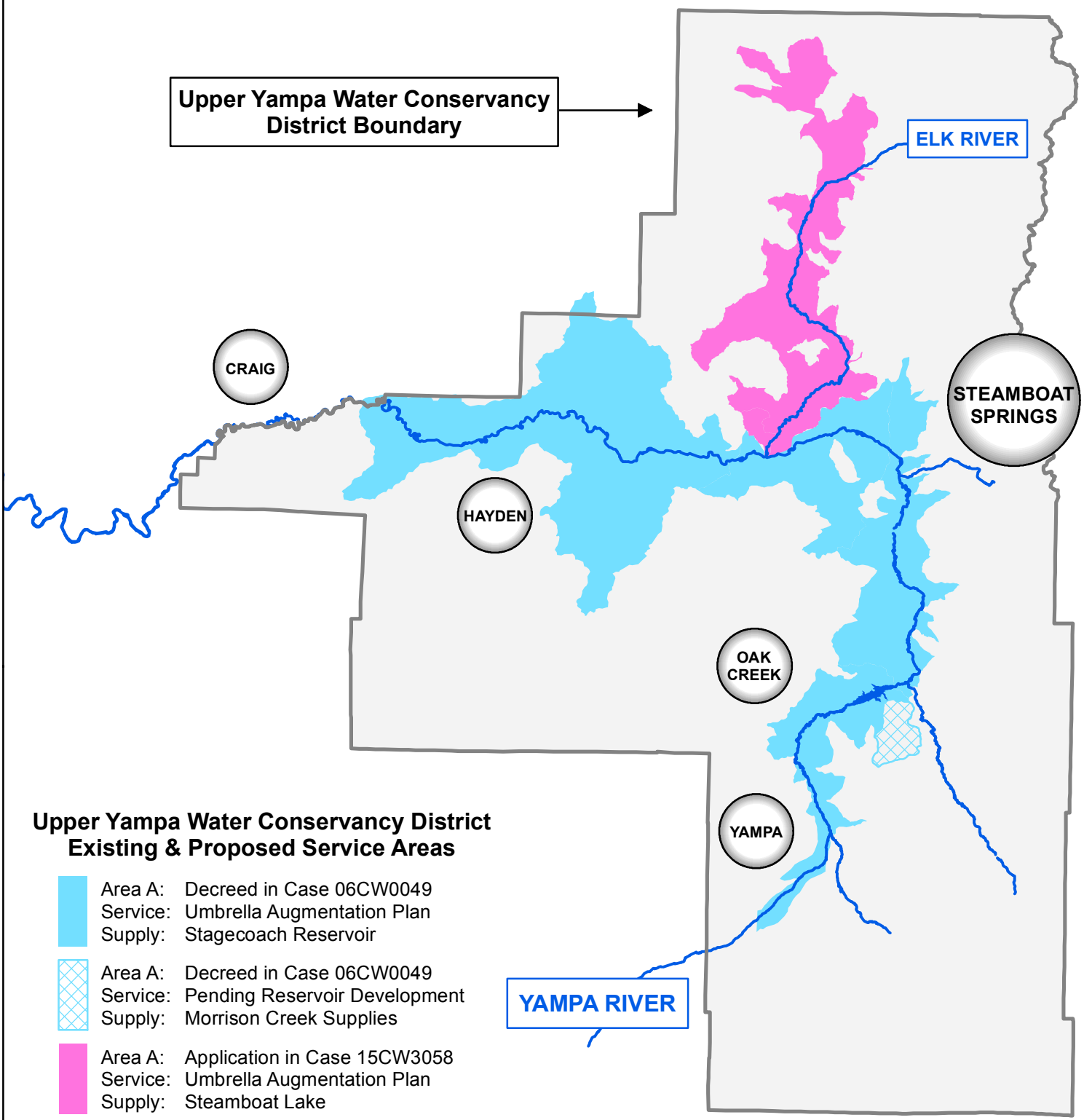

Figure 2
Existing & Proposed Service Area within District Boundary
Water Supply & Water Right Master Plan

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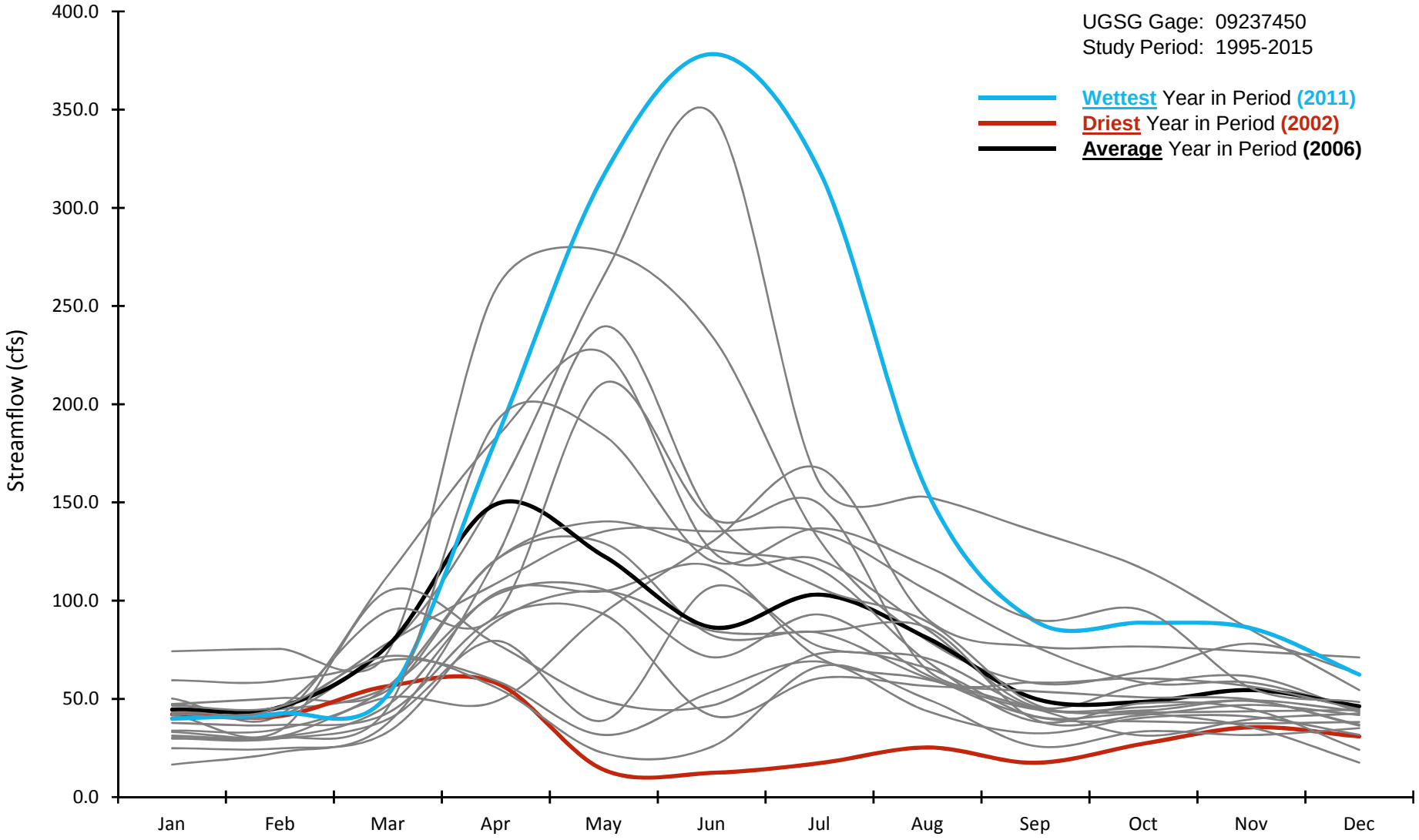
Figure 3
Average Monthly Streamflow of the Yampa River above Stagecoach
Water Supply & Water Right Master Plan



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4.0 WATER DEMAND

The State sponsored studies referenced above identified existing and future water demands in the Yampa River basin over a 35-year planning horizon from 2015 through 2050. These investigations were thorough and the study process involved the public and local and State water officials and organizations. The information and reports generated by these studies provide valuable insight into the Yampa River basin's future water demands. This information was incorporated directly into the District's WSMP process and provides the foundation for assessing the ability of the District's water rights portfolio and water supply facilities to meet future demands.

The water demands identified in the various studies included both consumptive and non-consumptive uses. Water demands are categorized as consumptive when a portion of the supply that is diverted for beneficial use is consumed and not returned back to the stream system. Conversely, water demands are categorized as non-consumptive when the entire diverted supply is returned to the stream system and not consumed. These types of non-consumptive uses are generally referred to as instream flows, as the water supply is often not diverted at all, but left in the stream system. Examples of consumptive uses include: diversion for municipal and industrial (M&I) needs, agricultural irrigation, thermoelectric power, and energy development. Examples of non-consumptive, instream flows include: streamflow conditions sufficient to sustain endangered native fish, riparian plant communities, sport fisheries, recreation boating, and ecological integrity including maintenance of existing water quality.

4.1 Consumptive Water Needs

For the District's WSMP and WRMP the existing and future consumptive water demands within the Yampa River basin were based upon the results of the various State sponsored studies. The 2015 BIP report, in particular, was helpful as it summarized the results of preceding studies and provided more detailed information regarding the location of basin water demands. The water demands that were developed for the various State sponsored studies included scenarios for low, medium, and high population projections. The BIP report, however, focused on modeling the Yampa River basin under existing and future scenarios that assume high demands and dry hydrology. This WSMP, consistent with the BRT's 2015 BIP, focuses on the water demands associated with high growth scenarios and utilizes periods of dry hydrology. The referenced studies have summarized water uses into four categories

including: M&I, self-supplied industrial water users (SSI), thermoelectric power generation and agricultural uses. The existing and future water demands associated with each category were identified as part of the SWSI 2010 study.

4.1.1 M&I Demands

M&I water use includes municipal, residential, commercial, light industry, landscape irrigation and firefighting. The State's various studies determined future M&I needs by projecting future populations and applying estimated per capita water use rates to the population totals (CWCB, Updated Statewide Water Supply Initiative-SWSI, 2010). Population projections were estimated using the same forecasting process and models implemented by the State Demographer's Office (SDO), and per capita water demands were developed based upon water use records provided by representative water providers from various counties. In addition, the State sponsored studies included an assumption that future water demands would be slightly less than projected water demands due to water savings associated with passive water conservation. Passive water conservation is primarily related to demand reductions or water savings associated with the impacts of state and federal policy measures and does not include active conservation measures and programs sponsored by water providers.

The State's water studies conclude that under the high demand scenario, the population and associated water demands associated with Routt and Moffat County will more than double by the year 2050 (CWCB, Updated Statewide Water Supply Initiative-SWSI, 2010). The two Counties presently use approximately 9,100 acre feet (AF) of M&I water annually (2015 BIP, Table 2-3). By the year 2050, the M&I demand is expected to increase to approximately 22,000 AF (amecHydros, 2015). The projected municipal water demands will originate from a few densely populated cities and towns such as Hayden, Craig and Steamboat Springs with the balance coming from smaller communities and farm and ranch lands located throughout the basin. The existing and expected population growth and associated water demands by County over the study period is summarized in ***Table 1***. The future 2050 high demand values were taken from Appendix H of the SWSI 2010 report.

As displayed in ***Table 1***, most of the M&I growth will occur outside of established population centers including Craig, Hayden, and Steamboat Springs. In Moffat County, 64% of the expected growth in M&I use will occur outside of the City of Craig. In Routt County, over 70% of the population will occur outside of Steamboat Springs. This growth area includes the Town

of Hayden and rural small communities and properties located throughout the basin, both above and below Steamboat Springs.

4.1.2 SSI Needs

SSI water needs are associated with large industrial water users that have their own water supplies or lease raw water from others. Water demands for SSI users within the study area include two categories: (1) large industrial demands, and (2) thermoelectric power generation demands. The large industrial users included: snowmaking use at the Steamboat Ski Resort, golf course irrigation within the Yampa River basin and mining use. In 2050, SWSI projects an industrial and SSI water demand within Routt County of approximately 5,600 AF, of which, 570 AF is attributed to snowmaking use at Steamboat Ski Area. The balance of the projected industrial demands are primarily associated with mining activities.

4.1.3 Thermoelectric Power Generation

Most of the water demands associated with SSI needs include thermoelectric power generation from two sources; the Craig power station in Moffat County that is operated by Tri-State and the Hayden Plant located in Routt County that is operated by Xcel Energy. Presently, the two facilities use approximately 17,150 AF of water annually with most of the use, 12,500 AF, occurring at the Craig station (CWCB, Updated Statewide Water Supply Initiative-SWSI, 2010).

Future water demands associated with the thermoelectric industry are considerable. The State projects that the future water demands at the power facilities (2050), with passive conservation, will total 44,000 AF (amecHydros, 2015). Of this total, approximately 26,900 AF will be required at the Craig facility and 17,100 AF will be required at the Hayden facility. The expected water demands associated with thermoelectric power facilities are summarized in ***Table 1***.

4.1.4 Agricultural Needs

The agricultural water demands of the Yampa River basin were quantified in the SWSI 2010 study and are described in detail in a technical memorandum attached to the report (CDM, 2011) (Frantz, 2010). The objective of the technical memorandum was to refine and update previous estimates of current and future agricultural water demands. The studies identified existing agricultural demands by: (1) quantifying the extent of existing and future irrigated agricultural lands within the basin, (2) calculating the irrigation water requirements (IWR) of

the crop, and (3) computing a headgate diversion demand based upon historical water use records and calculated delivery efficiencies.

Irrigated Acreage: The irrigated acreage was identified based upon existing mapping and spatial analyses available from the Colorado Decisions Support System (CDSS) database. The available data was summarized by Water District and included the irrigated area, crop types, and irrigation practices associated with existing diversions structures. The information from the CDSS data base was developed using 1993 aerial photography as a basis to define irrigated acreage. Investigators believed that changes in irrigated lands in the Yampa River basin subsequent to 1993 have been minor and therefore, the 1993 coverage was considered valid (Frantz, 2010). In summary, the extent of existing agricultural irrigated lands within the Yampa River basin totals 74,000 acres.

The investigators also identified the extent of future irrigated lands within the Yampa River basin. Statewide, the various studies associated with the SWSI process estimate a decrease in the number of irrigated acres as the result of urbanization and municipal to agricultural transfers. In the Yampa River basin, however, the investigators did not forecast a reduction in irrigated area within Water Districts 57 and 58 and actually forecast an increase in irrigated acreage in Water District 44 under the high growth scenario. The studies estimated that 7,400 to 14,805 acres may be developed along the oxbows of the Yampa River within Water District 44 (CWCB, Updated Statewide Water Supply Initiative-SWSI, 2010) (amecHydros, 2015). The extent of existing and future irrigated acreage by Water District is summarized in ***Table 1***.

Irrigation Water Requirements: The irrigation water requirement (IWR) is defined as that portion of the crop's potential evapotranspiration (ET) that would come from irrigation water under a full water supply. Generally, IWR represents that portion of potential ET that is not satisfied by precipitation (CDMSmith, Yampa-White Basin Roundtable Projects and Methods Study, 2014). Within the various basin studies, IWR is calculated using the State's CDSS consumptive use tool called StateCU. The StateCU tool estimates the crop's monthly ET using the SCS TR-21 modified Blaney-Cridle procedure. This procedure uses developed climatic and crop growth coefficients to estimate monthly consumptive use. High altitude crop coefficients developed by Denver Water are used at elevations above 6,500 feet. Calculated ET values will differ from year to year depending upon the annual climatic conditions occurring within the area of interest, primarily temperature and precipitation. When modeled over a

series of years, the results from StateCU serve as an input to generate overall crop irrigation requirements (consumptive use) within a basin. The IWR by Water District is summarized in ***Table 1***.

Headgate Diversion Demand: Once the extent of basin irrigation and the associated IWR's have been identified, the total water requirements at the respective headgate locations can be calculated, as follows:

$$\begin{pmatrix} Water\ Requirement \\ Headgate\ Diversion \end{pmatrix} = \begin{pmatrix} Irrigated \\ Area \end{pmatrix} \times \begin{pmatrix} The\ \text{"Explicit" Demand} \\ or \\ The\ \text{"Implicit" Demand} \end{pmatrix}$$

$$The\ Explicit\ Demand = \frac{Irrigation\ Water\ Requirement}{Historical\ Diversion\ Record}$$

$$The\ Implicit\ Demand = \frac{Irrigation\ Water\ Requirement}{Assumed\ Irrigation\ Efficiency}$$

The function of dividing the IWR by an "explicit" or "implicit" factor is to take into account the irrigation efficiency associated with each headgate or combination of headgates within the basin. First, the "explicit" demand is calculated by dividing the IWR for a certain type of crop that is being irrigated by the ditch of interest by that ditch's historic diversion records. This calculation allows each ditch to be assessed based upon its historic operation and diversion demands and reflects physical limitations, if any, such as ditch capacity, soil type, or general topography (legal considerations related to water rights are discussed in later sections of this report). This "explicit" demand can then be carried forward to other modeled years of interest in order to obtain estimates of the long-term irrigation water requirement. Secondly, the "implicit" demand is calculated by dividing the IWR for a certain type of crop that is being irrigated by the ditch of interest by an assumed irrigation efficiency. The assumed irrigation efficiencies, in the SWSI 2010 study, varied from 30% to 50%. The headgate diversion demand for a particular ditch is defined as the irrigated area multiplied by the maximum of either the "explicit" or "implicit" demand. This method is used in the study process as a way to ensure that the headgate diversion demand that is calculated under the "explicit" approach (based on actual diversion records) is not being limited by water shortages rather than system efficiencies. In summary, the projected headgate irrigation demand within the study area

totals 400,000 AF/Yr. and 465,000 AF/Yr. respectively for existing and future conditions. The total headgate irrigation demand by Water District is summarized in ***Table 1***.

4.2 Non-Consumptive Water Needs

Non-consumptive water needs include the quantification of streamflow levels that are necessary to support environmental and recreational flows in the Yampa River and various tributaries. The amount of water necessary and available to support these levels were evaluated through the P&M Study and the use of a streamflow analytical tool known as the Watershed Flow Evaluation Tool (WFET) (Sanderson, 2012). The WFET applies a set of criteria to existing and projected streamflow levels to quantitatively measure and compare water availability to desired river conditions. Streamflow deficiencies, if any, are identified by stream reach for key resources including: federal and state threatened endangered fish, important riparian habitat, Colorado Water Conservation Board (CWCB) instream flow requirements, fishing, boating and waterfowl hunting.

The results of the non-consumptive needs assessment indicate that in the future, there is often insufficient flows available to meet the needs of key environmental and recreational flow targets within or near the District's service area. Within the reach of the Yampa River extending from Stagecoach Reservoir to the city of Steamboat Springs, streamflow levels were determined to be insufficient to sustain the Steamboat Springs Recreational In-Channel Diversions (RICD), the CWCB's instream flow targets, and a key ecological flow indicator (cottonwood abundance). Lower in the Yampa River basin near Craig, CO, the studies identified streamflow deficiencies in ability to meet endangered fish flow targets and recommended whitewater boating flows. The magnitude and duration of the flow deficiencies are displayed in graphic and tabular format in the 2015 BIP (amec-Hydros, 2015).

4.2.1 Water Quality Protection, Steamboat Springs

The City of Steamboat Springs has expressed interest in releasing some, or all, of its contract supply in Stagecoach Reservoir for non-consumptive municipal purposes. Specifically, the releases would be made during the summer and fall period for the purpose of reducing the stream temperature of the Yampa River in proximity to the City's wastewater treatment facility (WWTF) discharge pipeline. The WWTF is located downstream, and west of the Steamboat Springs downtown area. This segment of the Yampa River is part of a larger stream reach within which the State Water Quality Control Commission has designated as impaired due to seasonally high stream temperatures. The City is motivated to maintain or reduce stream

temperature through this reach in an effort to comply with state water quality standards and avoid costly upgrades or reconstruction of its WWTF. In this regard, the storage releases become part of the City's municipal wastewater treatment process.

The City has received a grant to further study the relationship between streamflow and water temperature of the Yampa River between Stagecoach Reservoir and the WWTF. The results will provide an improved science-based determination of the volume of water that would be necessary to best protect and/or improve water quality conditions. Until further information is available, the City is projecting a need to obtain storage releases from District supplies during late summer and early fall sufficient to maintain a flow rate of approximately 100 cfs in the Yampa River through the City. In addition, according to the City, the storage releases for municipal purposes would also provide water to the City's RICD water right and help maintain favorable conditions for boating and tubing through the City.

Table 1
Existing and Future Water Demands in the Yampa River Basin
Water Supply & Water Right Master Plan

Municipal & Industrial Demand

Future = 2050

	M&I Demand (AF/yr)		Population		
	Existing Demand	***Future*** Demand	Existing Population	***Future*** Population	
Craig	2,169	2,169			
Rural Areas	755	3,831			
Moffat County	**2,924**	**6,000**	**14,600**	**31,000**	
Steamboat Springs	4,332	4,332			** Includes Mt. Werner Water*
Rural Areas	1,342	8,575			** Rural near Steamboat*
Hayden & Rural Area	484	3,093			** Rural above Craig*
Routt County	**6,158**	**16,000**	**23,800**	**63,000**	
	9,082	**22,000**	38,400	94,000	

Notes 1.) **Population:** Values taken from Table 2-4 of the 2015 BIP, and are consistent with the 2010 Basin Assessment Report.
2.) **Existing M&I:** Values taken from the 2015 Yampa Basin StateMod Model, which generally reflects Table 2-3 of the 2015 BIP.
3.) **Future M&I:** Values taken from Appendix H of the SWSI 2010 Report.

Thermoelectric Power Demand

Future = 2050

	Power Demand (AF/yr)		
	Existing Demand	***Future*** Demand	
Moffat County	12,483	26,900	** Craig Power Station, Tri-State Electric*
Routt County	4,665	17,100	** Hayden Power Station, Xcel Energy*
	17,148	**44,000**	

Notes 1.) **Existing Power:** Values taken from Table 4-7 of the SWSI 2010 Report.
2.) **Future Power:** Values taken from Table 2-9 of the 2015 BIP.

Agricultural Demand

Future = 2050

	Headgate Demand (AF/yr)		IWR Demand (AF/yr)		Irrigated Area (ac)	
	Existing Demand	***Future*** Demand	Existing Demand	***Future*** Demand	Existing Acreage	***Future*** Acreage
Water District 44	155,000	220,000	55,003	83,083	29,000	43,805
Water District 57	55,000	55,000	16,556	16,556	10,500	10,500
Water District 58	190,000	190,000	71,933	71,933	34,500	34,500
	400,000	**465,000**	143,492	**171,572**	74,000	**88,805**

Notes 1.) **Headgate Demand:** Values taken from the 2014 Yampa-White Roundtable Projects and Methods Study (CDM Smith), and are consistent with Figure 2-8 of the 2015 BIP.

2.) **Irrigation Water Requirement (IWR):** Values taken from Table 2-12 of the 2015 BIP, and are consistent with the SWSI 2010 Report.

3.) **Irrigated Area:** Values taken from Technical Memorandum (Appendix I) of the SWSI 2010 Report. For District's 57 & 58, the report projects no additional irrigated area. For District 44, however, the future demand-high growth scenario projects an increase of 14, 805 acres within Yampa River oxbow areas.

* 2015 BIP = Yampa-White-Green Basin Implementation Plan (amec/Hydros, 2015)
* SWSI 2010 = Yampa-White Basin Needs Assessment Report (SWSI, 2010)

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5.0 WATER RESOURCE PLANNING

In water resource planning, water demands are evaluated against the available water supply in order to determine the reliability of an existing or contemplated water supply system. This evaluation typically examines both existing and future demand scenarios under a variety of streamflow conditions, particularly dry year sequences. It also includes physical constraints related to the size and/or capacity of the infrastructure and legal limitations related to the prior appropriation system. A similar water supply planning process was followed for the District's WSMP.

The water demands projected to occur in the Yampa River basin, as described in Section 4.0 above, provide a reasonable basis for water supply planning purposes. These demands were quantified through a science-based process and subsequently incorporated into the Colorado Water Plan; a comprehensive, statewide planning document that addresses the management of water supplies and water resource operations within each river basin. The supporting data, analyses, and study findings presented in the Colorado Water Plan are publicly available and set forth a foundation from which planning efforts can be facilitated. As such, the District chose to integrate much of this available information into its own WSMP, including the projections of existing and future water demands and the use of the CWCB's Yampa Basin StateMod model. The District, however, chose to evaluate its water resource operations over a longer streamflow period than that used in the development of the Colorado Water Plan. For its WSMP, the District utilized tree ring analyses which provided reconstructed streamflow records of the Yampa River dating back to the year 1000. The basis for this expanded period of study and its impact on the WSMP is described in the following sub-sections.

5.1 Projected Water Demands

The WSMP examines the District's water resource operations under both existing and future conditions, as it is important to understand water supply deficiencies (if any) that may occur in the near-term, and in the future when demands levels have increased. In determining these current and future conditions, the District relied on projected demands levels that were incorporated into the Colorado Water Plan. More specifically, the District integrated data from several State sponsored studies that were part of the SWSI 2010 study. This data represents conditions expected to occur over a 35-year study period extending from 2015 through 2050.

The District's WSMP also examines basin water demands and supplies through the year 2050, consistent with the State's SWSI 2010 study process. Due to the parallel planning periods, the District was able to directly incorporate the State's findings regarding projected water demands, water shortages, and opportunities to help mitigate the identified "gap" in water supplies.

5.2 High Demand vs. Medium Demand vs. Low Demand

As discussed in Section 4.0, the SWSI 2010 report projected future water requirements for low, medium, and high growth scenarios. Similar to the BRT's decision regarding its 2015 Basin Implementation Plan, the District chose to incorporate the high demand scenario into its planning process. The high demand scenario was selected as the District did not want to underestimate the future water requirements that might originate from within its water service area. Furthermore, the projected water demands in the high growth scenario appeared reasonable as there was only a modest difference between the high demands and the demands associated with the medium and low growth scenarios. By way of example, SWSI's 2050 high water demand for thermoelectric power generation in the basin totals 44,000 AF annually; the 2050 medium water demand for power generation is 40,500 AF and the 2050 low water demand is projected to be 37,700 AF. The high growth scenario is therefore less than 10% greater than the medium growth scenario (8.6%). Also, SWSI's 2050 high water demand for M&I use in Routt County totals 16,000 AF annually; the 2050 medium water demand for M&I use is 14,000 AF and the 2050 low water demand is projected to be 13,000 AF. Again, the high growth scenario is only slightly greater than the medium growth scenario (14%). The similarities between the alternative demands suggest that the high demand scenario provides a reasonable and prudent planning basis for the development of the District's WSMP. The District, as with other water providers, has a responsibility to provide its constituents with a dependable water supply.

5.3 Water Availability

In 2012, as part of its WSMP process, the District hired the consulting firm AMEC to modify the CWCB's Yampa Basin StateMod model to include an expanded streamflow dataset. The study effort was coordinated with CDM-Smith's Projects and Methods Analysis that was concurrently being completed for the Yampa-White BRT. The BRT study utilized the Yampa Basin StateMod model as a basis of analysis. AMEC's modeling effort incorporated most of the same water resources information used by the BRT in its studies; however, it expanded the hydrologic record to include the "paleo-record". The purpose of expanding the streamflow

data set in this manner was to allow the District to evaluate water availability in the Yampa River basin under drought conditions that could potentially be more severe than those that have been observed in the more recent historical record.

Traditionally, hydrologists and water resource planner's project future streamflow conditions based upon an analysis of historic record. In many instances, however, the records are of limited duration; generally less than 50 years. Consequently, the selected study period does not reflect the long-term, hydro-climatic variability that is likely to re-occur in future years. Increasingly, scientists are using the study of tree rings to generate streamflow datasets that describe flow conditions that have occurred over past centuries. This study process is documented in the Journal of the American Water Resources Association (Stephen Gray, 2011) and in AMEC's summary report prepared for the District (AMEC, 2013).

The tree ring studies have found that in certain watersheds there is a good correlation between historical streamflow records and the thickness of the annual growth rings found in representative study trees. Generally, thicker tree rings reflect wet years (higher streamflow), and narrow tree rings are indicative of dry years (low streamflow). The established correlation is used to synthesize annual streamflow volumes over an extended period of time based upon the measurement of the annual growth between rings associated with trees that are centuries old. This information is extremely important to water resource managers and consultants as it provides a broader range of hydro-climatic scenarios than is offered by gage records alone. The reconstructed paleo-record provides evidence that the Yampa River basin has experienced periods of wetter and dryer cycles that were more extreme than what is reflected in the more recent gaged record.

5.4 The Paleo Streamflow Record

The amount of water physically available in the Yampa River and its tributaries was quantified using the Yampa Basin StateMod streamflow model as expanded to include the reconstruction of prehistoric flows based on records of tree-ring widths. In the Yampa River basin, the U.S. Geological Survey gage near Maybell, Colorado (USGS #09251000) was used as a basis for tree-ring correlation and model calibration. From these analyses, investigators were able to reconstruct the annual streamflow volume in the Yampa River extending over a 1,000+ years beginning in the year 1000.

Consultants for the District then disaggregated the annual paleo-streamflow volumes reconstructed at the Maybell gage site into monthly streamflow volumes. This distribution was based upon historical streamflow behavior, as reflected in the more recent record observed at the Maybell gage site. More specifically, each year of the historical gage record was categorized by the magnitude of the annual streamflow volume: extremely dry, dry, average, or wet. Similarly, each year in the paleo-record was also classified by the type of water year. The monthly distribution for a "dry" year in the historical record could then be applied to a "dry" year in the paleo-record. For example, if 12 years within the 60 year historical gage record at Maybell were classified as dry, then the monthly distribution of one of those 12 years would have been assigned to a "dry" year within the paleo-record. Moreover, the specific "dry" year within the historical record that was assigned to the paleo-record was randomly selected from the 12 year dataset. As a result, there are multiple monthly distribution patterns derived from the historical record at the Maybell gage site that could potentially be applied to the various year type within the paleo-record.

The disaggregated monthly streamflow volumes derived at the Maybell gage site for the paleo-record were then used to develop streamflow volumes at 95 additional upstream sites located within the Yampa River basin (AMEC, 2013) (WWG, 2015). The volume and monthly distribution of streamflow at these other upstream sites was distributed (disaggregated) based upon the historical streamflow relationships between the upstream site and Maybell site. For each month, the recorded streamflow volume at a particular site was divided by the total annual volume recorded at the Maybell site. The resulting percentages produced 12 monthly coefficients for each year at each gage location in the basin and provided a basis to allocate the paleo-streamflow volumes reconstructed at Maybell gage site to various upstream sites located throughout the Yampa River basin.

5.5 Yampa Basin StateMod Update

In 2015, the State of Colorado retained Wilson Water Group (WWG) for the purpose of updating the CWCB's Yampa Basin StateMod model. This process involved: revising the rules/logic associated with several nodes already included in the model, adding additional nodes of interest to the model, improving the documentation, and updating the model platform to a higher quality program that could be accessed by the public through the Colorado Decision Support System (CDSS). Following the completion of the State's 2015 update, the District retained WWG to adapt the new CDSS Yampa Basin StateMod framework to be used in its WSMP process. This process involved: integrating an expanded water availability

component based on the developed paleo-streamflow record, linking additional basin water demands within the District's service area to Stagecoach Reservoir , adding additional nodes to the model that represent the basin's future 2050 water demands (SWSI 2010), and assisting the District and RESOURCE with the implementation and interpretation of various model outputs.

5.5.1 Selected Study Periods

With the integration of the paleo-streamflow record into the District's version of StateMod, the study period for the WSMP spanned a total of 1,014 years from 1000 to 2013. The amount of data associated with a study period of this length is immense and challenging to summarize in a concise and meaningful way. As a result, the District chose to focus on the model results from several selected study periods within the paleo-record.

In recent Colorado history, the annual streamflow volume that occurred from 2001 through 2005 represented one the worst drought periods within the historical record. This period, or selected years within this period, are often used by water resource managers and consultants in an effort to identify and secure a firm yield supply capable of delivering water through an extended drought. The use of the paleo-record in the District's WSMP provides opportunity to assess the severity of the 2001 through 2005 drought, as well as other extended dry periods within the context of the last 1000+ years of projected natural streamflow.

Examination of the paleo-record substantiates that the 2001 through 2005 drought was one of the severest dry periods within the last 1,014 years. In fact, this consecutive 5-year period was the 3rd driest within the paleo-record. There were two drier 5-year consecutive periods within the paleo-record that occurred from: 1147 through 1151 and 1580 through 1584. Together, these three periods of drought became the focus of the District's investigation for the purpose of assessing physical water availability in the Yampa River and its tributaries. Each of these consecutive 5-year periods was embedded within an extended 15-year study period. This longer 15-year period was helpful in assessing the ability of the District's storage facilities to recover following the critical 5-year drought sequence. RESOURCE selected this duration based upon its direct experience with the 2001 through 2005 drought. The three extended study periods include: 1146 to 1160, 1580 to 1594 and 1998 to 2012.

In order to help place the selected "5-year" drought sequences in perspective, a statistical analysis of the paleo-streamflow record was completed, which included examining the mean

annual streamflow and then quantifying the expected recurrence interval of each 5-year sequence. Understanding the recurrence interval of a selected drought period was important to the District as it provided an estimate of the likelihood that such an event would occur in the future. For example, a drought period with a calculated 100-year recurrence interval indicates that, based upon historical streamflow data, a drought of this magnitude would occur, on average, once in 100 years. That is, a drought of this magnitude has a 1% chance of happening in any given year (1/100 years).

In determining the recurrence interval of the three selected 5-year drought sequences, the mean annual streamflow at the inlet node associated with Stagecoach Reservoir in the District's StateMod model was used as the basis. A 5-year moving average of the expected streamflow volume was then calculated over the period 1004 through 2013; creating a dataset containing 1,010 possible occurrences. The results indicate that a five year period as dry as 2001 through 2005 will occur, on average, once in 200 years (1/200). The recurrence interval for the other study periods are calculated to be 1/1000 (1146 through 1160) and 1/250 (1580 through 1584).

Based upon review of the above statistics, a fourth study period was added to represent a recurrence interval of 1/100. The consecutive 5-year period from 1500 through 1504 has a calculated recurrence interval of 1/100 and was selected for this purpose. Similar to the other selected study periods, this 5-year sequence was embedded within an extended 15-year study period to help assess the ability of the District's storage facilities to recover following the drought sequence. This fourth study period was added to provide the District with a variety of possible drought conditions, each representing a slightly different level of risk and probability of occurrence.

A summary of the key statistics related to all four evaluated study periods is presented as follows:

Key Statistics	Number of Years	Mean Streamflow	Recurrence Interval
Paleo Record (1004-2013)	1,014	88,323 AF	--
1147-1151	5	55,985 AF	1/1000
1580-1584	5	62,026 AF	1/250
2001-2005	5	62,157 AF	1/200
1500-1504	5	66,640 AF	1/100

6.0 WATER SUPPLY MASTER PLAN

The water resource planning process, detailed in Section 5.0, was the basis for the District's Water Supply and Water Right Mater Plans. Through this process, the 2015 CDSS Yampa Basin StateMod model was modified to include: (1) existing and future water demands within the District's service area that were identified through State planning efforts, (2) an expanded (1,000-year) paleo-streamflow record that was developed through tree ring analyses, and (3) the addition of modeling rules / logic specific to the District's water supply operations. The District's version of StateMod was then run with consideration of the physical constraints and legal limitation that are characteristic of the Yampa River basin. The details related to the District's water supply operations and the results pertaining to the District's WSMP are summarized in the following sub-sections.

6.1 Future Operations, Stagecoach Reservoir

The operation of Stagecoach Reservoir and its associated water rights are incorporated into the 2015 CDSS Yampa Basin StateMod model. All versions of the StateMod model allocate the available water supply based on the prior appropriation system. The water supply at the inlet to Stagecoach Reservoir is therefore stored based on the position of the District's water rights in comparison to the priorities of other water users within the basin that could benefit from the same supply. This water right hierarchy also contributes to the need for storage releases from Stagecoach Reservoir. When a water user that is associated with the District (diversion node linked to reservoir node) cannot meet its full demand with direct diversions from the river system, due to either physical and/or legal limitations, releases are made from storage. This scenario typically occurs in dry year sequences, when the demand within the basin is greater than the physical supply.

In the District's modified version of StateMod, the water right component associated with Stagecoach Reservoir remained the same. The number of contract users (nodes) linked to the operational component, however, was broadened to include future water demands located within the District's service area. These "future" nodes were assigned to an operating pool within the reservoir and modeled under the same constraining factors that limit the District's existing water users. The storage pools and operating criteria specific to how the District modeled Stagecoach Reservoir in its modified version of StateMod are discussed in more detail below.

Stagecoach Reservoir is located on the Yampa River approximately 16 miles south of Steamboat Springs. The reservoir has a storage capacity of 36,439 AF of which 33,164 AF can be easily regulated. The District has classified the total storage volume into seven distinct pools including:

Reservoir Pools:	**Volume**
1) 1A: Tri-State Energy	7,000 AF
2) 1B: Municipal / Industrial	2,000 AF
3) 2A: Augmentation	2,000 AF
4) 3A: Exchange	4,000 AF
5) 4A: 4 ft. Raise	3,164 AF
6) 5A: Preferred Remainder	3,275 AF
7) 6A: Emergency	15,000 AF
	36,439 AF

Of the reservoir's 36,439 AF capacity, 18,164 AF is available for contract by various industrial, municipal and private water users. The volume associated with the available contract pool excludes the preferred remainder pool and the emergency pool.

For water right accounting and administrative purposes, Stagecoach Reservoir operates on a March-April water year with a start of fill date set as March 1st. On this date, the carry-over storage supply from the previous administrative year is re-assigned to pools in numerical order (No. 1 filled first, then No. 2, etc.) based on the District's fill policy. The pools then continue to fill in this manner as the available water supply is stored in Stagecoach Reservoir. By way of example, under the District's current fill policy, the first 7,000 AF residing and/or stored in the reservoir is assigned to Pool No. 1: Tri-State Energy. Once filled, the next 2,000 AF residing and/or stored in the reservoir is assigned to Pool No. 2: Municipal / Industrial (M&I). In this sequencing, the emergency remainder pool is the last pool to be filled each year. A more detailed description of the various storage pools follows.

Tri-State Pool: This 7,000 AF storage pool is currently contracted exclusively to Tri-State Generation and Transmission (Tri-State) for use at its Craig Power Plant (Craig Station)[1]. Craig Station also has contracted for storage water in Elkhead Reservoir. Therefore, when the streamflow in the Yampa River is insufficient to meet the projected water demands at the Craig Station's point of diversion, water can be released from either of these reservoirs. When WWG updated the Yampa Basin StateMod model for the State in 2015, it established a protocol for releasing water from these two storage sources: Stagecoach Reservoir 1st, Elkhead Reservoir 2nd. This protocol was based upon consultation with Tri-State representatives, the operating agent for the Craig Station. Generally, as long as low streamflow conditions / shortages can be anticipated at the Craig power plant diversion site, Craig Station will call for the release of water first from Stagecoach Reservoir and then from Elkhead Reservoir. Craig Station prefers this sequence as the released storage supply from Stagecoach Reservoir improves streamflow conditions upstream on the Yampa River, including the reach through Steamboat Springs and several critical instream flow reaches. If, however, Craig Station needs supplemental water supplies at its diversion site more immediately, it will request release from Elkhead Reservoir, which is closer in proximity to the power plant. For purposes of the WSMP/WRMP, the District assumed that low streamflow conditions at the Craig power plant diversion site could be reliably forecasted such that storage releases would predominately originate from Stagecoach Reservoir. As such, the District's modified version of StateMod, reflects the protocol developed by WWG in its 2015 update for the State.

Municipal / Industrial Pool: This 2,000 AF storage pool is currently designated by the District to be used for municipal and industrial (M&I) purposes. Of the total M&I storage supply, 13 water users have contracted for a total of 1,900 AF with the majority of that contracted amount distributed between several municipal water providers: the City of Steamboat Springs, Morrison Creek Metropolitan Water and Sanitation District, Tree Haus Metropolitan District, Mt. Werner Water and Sanitation District, Alpine Mountain Ranch Metropolitan District and the Town of Hayden. The balance of the contracted amount is distributed between individual users and industrial entities, including the Peabody Coal Company.

[1] The water diverted at the Craig Station is primarily used for thermoelectric power generation. If Tri-State were to relinquish any part of its contract rights of storage, the District would likely assign the relinquished portion to M&I use (Tom Sharp, verbal, 4-20-2016).

In periods of drought, when streamflow conditions decrease and water shortages are more likely to occur, the water supply that is both physically and legally available to meet the contract demands associated with the District's M&I users is expected to be insufficient and require supplemental releases from storage. This analysis of water availability and the subsequent release of storage supplies is explicitly modeled for many of the M&I contract users in the District's modified version of StateMod. That is, these contract users are represented by one or more "node(s)" in the StateMod model, and embedded within the node is the monthly demand schedule associated with each contract user. Then, as basin shortages occur, the storage supplies available in the M&I Pool are released to satisfy the water requirement at the contract user's "node" that is not being met directly from the river system. Contracts in the M&I Pool that are explicitly modeled in the District's version of StateMod include: the City of Steamboat Springs and Mt. Werner Water and Sanitation District. The balance of the M&I contract users that are not explicitly modeled in the District's version of StateMod are implicitly modeled as an aggregate node located in the lower reach of Water District 57 (above Craig, CO). The 2015 CDSS Yampa Basin StateMod model did not establish an individual node for every diverter in the basin, as the cost and cumbersome amount of data associate with such a process out weighted the potential benefit. In an effort, however, to incorporate the total demand within the basin, water users not given an individual node were consolidated into aggregate nodes. These aggregate nodes combined the demand of several diverters with similar patterns of use and governing logic into a single structure. The District chose to rely on this already set aggregate structure in its version of StateMod, as opposed to developing new, individual nodes for all of its contractees not explicitly modeled. In this manner, the storage supplies available in the M&I Pool are released to satisfy the aggregate, existing municipal and industrial water requirements in Water District 57, when the river system in unable to meet the full demand.

Moreover, the District directed WWG to develop additional aggregate nodes that represent the future, 2050 M&I and SSI demands in Water Districts 57 & 58. These aggregate nodes incorporate a monthly schedule that was based on the high demand scenario identified in the SWSI 2010 report. The 2050 demands were then adjusted to reduce the portion of the future demand that is already modeled as existing and to exclude the portion of the future demand that is outside of the District's service area. The three future aggregate nodes added by WWG are linked to multiple pools in the Stagecoach Reservoir: the M&I Pool, the Exchange Pool, and the Raise Pool. When the demand from these nodes cannot be fully satisfied from the

river system, due to either a physical or legal shortage, available storage supplies from first the M&I Pool, then the Exchange Pool, and finally the Raise Pool are released.

Augmentation Pool: In Water Court Case No. 06CW49, the District decreed an "umbrella" augmentation plan designed to provide individual water users within the District an efficient option for obtaining a legal source of water supply to help firm their individual water rights.

In order to model this umbrella plan in StateMod, the District directed WWG to add a future augmentation node in its version of the model. RESOURCE then developed a monthly demand schedule for the entire study period (1000-2013). The basis for this schedule began with a monthly pattern of use that was derived from historical data associated with a similar augmentation program operated by the Basalt Water Conservancy District in the Roaring Fork River basin. The monthly pattern was then adjusted annually based on a review of releases from the M&I Pool, the Exchange Pool, and the Raise Pool. It was assumed that when contractees associated with these three pools needed supplemental storage supplies that the contractees included in the District's umbrella augmentation plan would also need water to be released from Stagecoach Reservoir. This assumption, in effect, mimics a "call" scenario in which the District would need to provide replacement water under its umbrella augmentation plan. While StateMod operates within the context of the prior appropriation system, it is difficult (if not impossible) to directly identify the "calling" water right. By developing a set schedule for the Augmentation Pool based on observed releases for similar contractees, the District is, therefore, able to model its umbrella plan without having to identify a specific calling water right.

Exchange Pool: This 4,000 AF storage pool became available following the recent reduction of the Tri-State Pool from 11,000 AF to 7,000 AF. Since this adjustment, the District has contracted water from the Exchange Pool for industrial, agricultural, and instream flow purposes. Currently, a total of 1,192 AF is under contract, with a majority of that supply (1,000 AF) belonging to Southwestern Energy. For planning purposes, both existing and future demands associated with the Exchange Pool are assumed to be modeled through the 2050 M&I and SSI nodes that were added to the District's version of StateMod. As detailed in the description of the M&I Pool, these aggregate nodes were developed based on the high demand scenario presented in the SWSI 2010 report. When these nodes, as adjusted to account for the District's boundary and for demands already included in the model, cannot be fully satisfied from the river system, due to either a physical or legal shortage, available

storage supplies from first the M&I Pool, then the Exchange Pool, and finally the Raise Pool are released.

4 Foot Raise Pool: This 3,164 AF pool was created when Stagecoach Reservoir was enlarged to its current capacity in 2010. Since then, the District has contracted water from the Raise Pool for instream flow purposes. Most recently, in 2015, a total of 1,185 AF was contracted to the Colorado Water Trust (CWT) for the purpose of benefiting the instream flow reach between Stagecoach Reservoir and Lake Catamount. In a manner similar to the how the Exchange Pool is modeled, existing and future demands associated with the Raise Pool are assumed to be modeled through the 2050 M&I and SSI nodes that were added to the District's version of StateMod. As detailed in the description for both the M&I Pool and the Exchange Pool, when the demand at these aggregate nodes cannot be fully satisfied from the river system, due to either a physical or legal shortage, the available storage supplies from first the M&I Pool, then the Exchange Pool, and finally the Raise Pool are released.

6.2 Alternatives Analyzed

The WSMP examined the ability of the District to meet existing and future water demands under two scenarios: (1) Storage releases were made to help meet shortages related to existing demands and future M&I and SSI demands, and (2) Storage releases were made to help meet shortages related to both existing and future demands, as well as non-consumptive municipal demands associated with the City of Steamboat Spring's wastewater treatment facility. In order to model this non-consumptive demand, the District directed WWG to add a node in its version of StateMod near the City of Steamboat Spring's wastewater treatment facility. Under the model's logic, when the physical supply at the wastewater node is less than 100 cfs, available storage supplies are released as necessary to bring the flows up to the target level. The water is released first from the Exchange Pool and secondly, from the Raise Pool.

Under each of the two demand scenarios described above, the District examined two operating alternatives: (A) Operation of Stagecoach Reservoir only, and (B) Operation of Stagecoach Reservoir, supplemented by the import of water from nearby Morrison Creek via the proposed Morrison Creek Reservoir. The second alternative was added in order to provide additional storage supplies to help meet future demands and to help maintain reservoir levels during prolonged drought periods. The described study scenarios are summarized as follows:

- Scenario 1A: Release for M&I + SSI Demands
  Stagecoach Reservoir Only
- Scenario 1B: Release for M&I + SSI Demands
  Stagecoach Reservoir & Morrison Creek Reservoir
- Scenario 2A: Release for M&I + SSI + Non-Consumptive Demands
  Stagecoach Reservoir Only
- Scenario 2B: Release for M&I + SSI + Non-Consumptive Demands
  Stagecoach Reservoir & Morrison Creek Reservoir

Each of the four reservoir operating scenarios were examined under the four selected study periods: 1146 through 1160, 1497 through 1511, 1580 through 1594 and 1998 through 2012.

6.3 Study Results

The District's study of water resources and water supply operations in the Yampa River basin, indicates that under the SWSI 2010 high demand scenario, significant water shortages are probable in dry years, and during these water short periods there is substantial probability that the basin will come under administration. Storage releases from District facilities will therefore be necessary to help meet the identified demands. A summary of the general study findings appears below followed by a more in-depth discussion regarding the probable impacts on the District's reservoir operations.

Baseline Scenario – Historical Conditions:

- Historically, there have not been shortages to M&I and SSI demands due to adequate streamflows and basin storage.
- There exists some shortages to agricultural users during dry years.
- There exists average and dry year shortages to various non-consumptive demands including, decreed in-stream flow reaches, the City of Steamboat Spring's RICD demand, and municipal non-consumptive use associated with the City of Steamboat Springs wastewater treatment facility.

Dry Future Scenario – High & Dry:

- M&I and SSI shortages develop and agricultural shortages worsen.
- Non-consumptive water shortages will increase within decreed instream flow reaches, the City of Steamboat Spring's RICD demand, and the City's municipal non-consumptive uses associated with its wastewater treatment facility.
- The District's existing Stagecoach Reservoir and proposed Morrison Creek Reservoir are well positioned to help meet much of the future identified water demands.

Under all four study periods, there are multiple years within which the available physical and legal water supplies drop well below forecasted demands and basin water users begin to experience pronounced and extended shortages. During these periods, there is a significant need for storage releases from Stagecoach Reservoir to meet shortages associated with the District's existing contract demands, as well as shortages associated with future demands projected to occur within the District's service area. Moreover, in all four study periods, there are dry year sequences in which the demand for reservoir releases exceeded the available inflow, necessitating the use of carry-over storage. During these multi-year periods there is a continuing decline in the storage content of the reservoir, and in each instance, including the 1/100 drought sequence, the content of Stagecoach Reservoir dropped below the reservoir's 18,275 AF combined emergency and preferred remainder pools.

When non-consumptive demands are added to the study sequence (Scenarios 2A and 2B), reservoir levels declined further and in some instances drew the reservoir down to minimal storage volumes.

In instances where the proposed Morrison Creek Reservoir is operated in conjunction with Stagecoach Reservoir (Scenarios 1B and 2B), Stagecoach Reservoir exhibited higher storage content and quicker recovery coming out of the drought sequence.

A comparison of the 4 study periods is summarized in ***Table 2*** and ***Figures 4 and 5***. Specific findings associated with each modeled scenario for the various study periods is summarized in ***Figures 6 through 21***.

6.3.1 Study Period 1146 – 1160

This period contains the 1147 through 1151 drought sequence. On average, there will occur a 5-year drought sequence as severe as that which occurred during this period once every 1,000 years. (Recurrence Interval of 1/1000).

Scenario 1A: Release for M&I + SSI Demands
Stagecoach Reservoir Only
Refer to ***Figure 6***

Scenario 1B: Release for M&I + SSI Demands
Stagecoach Reservoir & Morrison Creek Reservoir
Refer to ***Figure 7***

Scenario 2A: Release for M&I + SSI + Non-Consumptive Demands
Stagecoach Reservoir Only
Refer to ***Figure 8***

Scenario 2B: Release for M&I + SSI + Non-Consumptive Demands
Stagecoach Reservoir & Morrison Creek Reservoir
Refer to ***Figure 9***

6.3.2 Study Period 1580 – 1594

This period contains the 1580 through 1594 drought sequence. On average, there will occur a 5-year drought sequence as severe as that which occurred during this period once every 250 years. (Recurrence Interval of 1/250).

Scenario 1A: Release for M&I + SSI Demands
Stagecoach Reservoir Only
Refer to ***Figure 10***

Scenario 1B: Release for M&I + SSI Demands
Stagecoach Reservoir & Morrison Creek Reservoir
Refer to ***Figure 11***

Scenario 2A: Release for M&I + SSI + Non-Consumptive Demands
Stagecoach Reservoir Only
Refer to ***Figure 12***

Scenario 2B: Release for M&I + SSI + Non-Consumptive Demands
Stagecoach Reservoir & Morrison Creek Reservoir
Refer to ***Figure 13***

6.3.3 Study Period 1998 – 2012

This period contains the 1998 through 2012 drought sequence. On average, there will occur a 5-year drought sequence as severe as that which occurred during this period once every 200 years. (Recurrence Interval of 1/200).

Scenario 1A: Release for M&I + SSI Demands
Stagecoach Reservoir Only
Refer to ***Figure 14***

Scenario 1B: Release for M&I + SSI Demands
Stagecoach Reservoir & Morrison Creek Reservoir
Refer to ***Figure 15***

Scenario 2A: Release for M&I + SSI + Non-Consumptive Demands
Stagecoach Reservoir Only
Refer to ***Figure 16***

Scenario 2B: Release for M&I + SSI + Non-Consumptive Demands
Stagecoach Reservoir & Morrison Creek Reservoir
Refer to ***Figure 17***

6.3.4 Study Period 1500 – 1504

This period contains the 1500 through 1504 drought sequence. On average, there will occur a 5-year drought sequence as severe as that which occurred during this period once every 100 years. (Recurrence Interval of 1/100).

Scenario 1A: Release for M&I + SSI Demands
Stagecoach Reservoir Only
Refer to ***Figure 18***

Scenario 1B: Release for M&I + SSI Demands
Stagecoach Reservoir & Morrison Creek Reservoir
Refer to ***Figure 19***

Scenario 2A: Release for M&I + SSI + Non-Consumptive Demands
Stagecoach Reservoir Only
Refer to ***Figure 20***

Scenario 2B: Release for M&I + SSI + Non-Consumptive Demands
Stagecoach Reservoir & Morrison Creek Reservoir
Refer to ***Figure 21***

Table 2
Summary of Key Reservoir Statistics related to the Four Selected Study Periods
Water Supply & Water Right Master Plan

	Scenario 1.A	Scenario 1.B	Scenario 2.A	Scenario 2.B
Study Period: 1146-1160	**Demands: M&I + SSI**		**Demands: M&I + SSI + Non-Consumptive**	
5 Year Recurrance Interval (1/1,000)	**Stagecoach Only**	**w/ Morrison Creek**	**Stagecoach Only**	**w/ Morrison Creek**
Annual Storage Release: Maximum	13,236 AF (1149)	13,503 AF (1149)	17,052 AF (1149)	16,931 AF (1149)
Annual Storage Release: Average	5,648 AF	5,633 AF	7,174 AF	7,539 AF
Consecutive Years w/out Full Storage Recovery	**7 Years** (47-53)	**2 Years** (50-51)	**8 Years** (47-54)	**4 Years** (49-52)
Minimum Content in Stagecoach Reservoir	**6,000 AF**	**11,000 AF**	**2,500 AF**	**6,000 AF**
Approximate Shortage to M&I / SSI Pool	1,400 AF (1151)	160 AF (1150)	8,400 AF (1150)	3,050 AF (1151)
Study Period: 1580-1594	**Demands: M&I + SSI**		**Demands: M&I + SSI + Non-Consumptive**	
5 Year Recurrance Interval (1/250)	**Stagecoach Only**	**w/ Morrison Creek**	**Stagecoach Only**	**w/ Morrison Creek**
Annual Storage Release: Maximum	14,627 AF (1584)	14,627 AF (1584)	17,256 AF (1584)	17,263 AF (1584)
Annual Storage Release: Average	7,115 AF	7,001 AF	9,948 AF	9,590 AF
Consecutive Years w/out Full Storage Recovery	**4 Years** (84-87)	**2 Years** (84-85)	**4 Years** (84-87)	**2 Years** (84-85)
Minimum Content in Stagecoach Reservoir	**12,000 AF**	**13,000 AF**	**6,500 AF**	**7,250 AF**
Approximate Shortage to M&I / SSI Pool	380 AF (1584)	380 AF (1584)	2,050 AF (1584)	2,080 AF (1584)
Study Period: 1998-2012	**Demands: M&I + SSI**		**Demands: M&I + SSI + Non-Consumptive**	
5 Year Recurrance Interval (1/200)	**Stagecoach Only**	**w/ Morrison Creek**	**Stagecoach Only**	**w/ Morrison Creek**
Annual Storage Release: Maximum	14,279 AF (2002)	14,325 AF (2002)	16,878 AF (2002)	17,220 AF (2002)
Annual Storage Release: Average	5,733 AF	5,762 AF	7,288 AF	7,299 AF
Consecutive Years w/out Full Storage Recovery	**6 Years** (01-06)	**3 Years** (02-04)	**7 Years** (00-07)	**3 Years** (02-04)
Minimum Content in Stagecoach Reservoir	**10,500 AF**	**15,500 AF**	**5,500 AF**	**11,000 AF**
Approximate Shortage to M&I / SSI Pool	380 AF (2002)	380 AF (2002)	1,500 AF (2002)	1,400 AF (2002)
Study Period: 1497-1511	**Demands: M&I + SSI**		**Demands: M&I + SSI + Non-Consumptive**	
5 Year Recurrance Interval (1/100)	**Stagecoach Only**	**w/ Morrison Creek**	**Stagecoach Only**	**w/ Morrison Creek**
Annual Storage Release: Maximum	15,093 AF (1500)	15,095 AF (1500)	17,739 AF (1500)	17,748 AF (1500)
Annual Storage Release: Average	5,700 AF	5,505 AF	8,118 AF	8,064 AF
Consecutive Years w/out Full Storage Recovery	**3 Years** (00-02)	**2 Years** (00-01)	**9 Years** (00-08)	**3 Years** (00-02)
Minimum Content in Stagecoach Reservoir	**10,500 AF**	**16,000 AF**	**5,000 AF**	**9,500 AF**
Approximate Shortage to M&I / SSI Pool	380 AF (1500)	380 AF (1500)	650 AF (1500)	650 AF (1500)

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Figure 4: Study Period Comparison - Scenarios 1.A & 2.A

Recurrence Interval		Scenario 1.A	Scenario 2.A		
1/1000	Study Period: 1147-1151			55,985 AF	Mean Streamflow
1/250	Study Period: 1580-1584	*Not Shown*		62,026 AF	
1/200	Study Period: 2001-2005			62,157 AF	
1/100	Study Period: 1500-1504			66,640 AF	

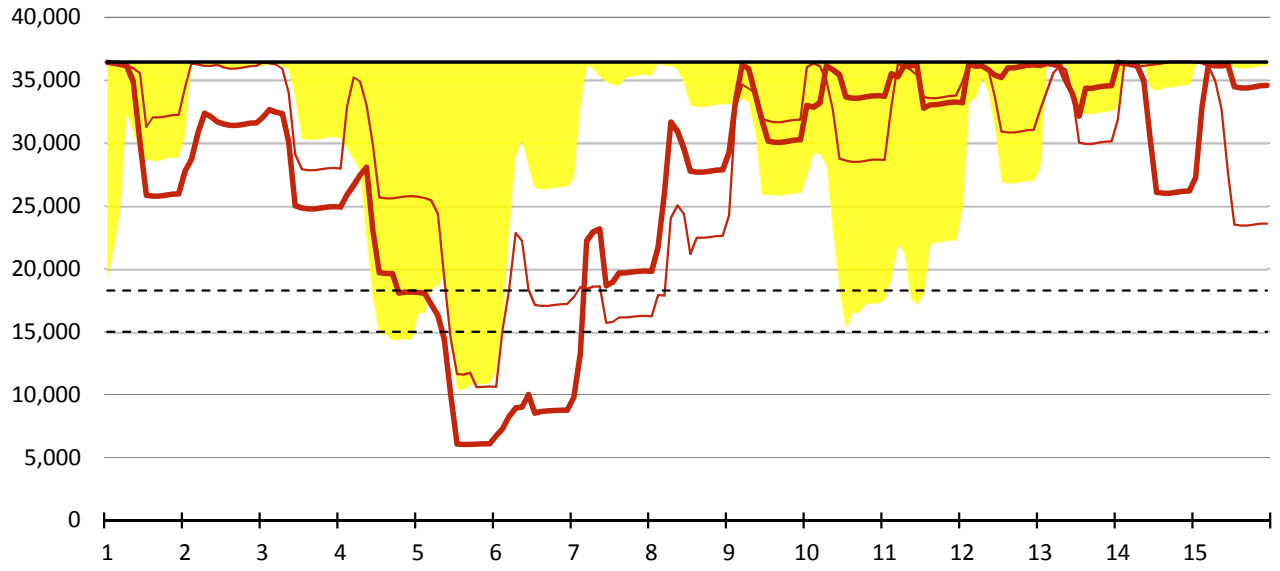
Scenario 1.A: Paleo Hydrology + SWSI 2050 Demands

Reservoir Capacity **36,439 AF**

Preferred Remainder 3,275 AF

Emergency Remainder 15,000 AF

18,275 AF



Scenario 2.A: Paleo/SWSI + Municipal Non-Consumptive Release

Reservoir Capacity **36,439 AF**

Preferred Remainder 3,275 AF

Emergency Remainder 15,000 AF

18,275 AF

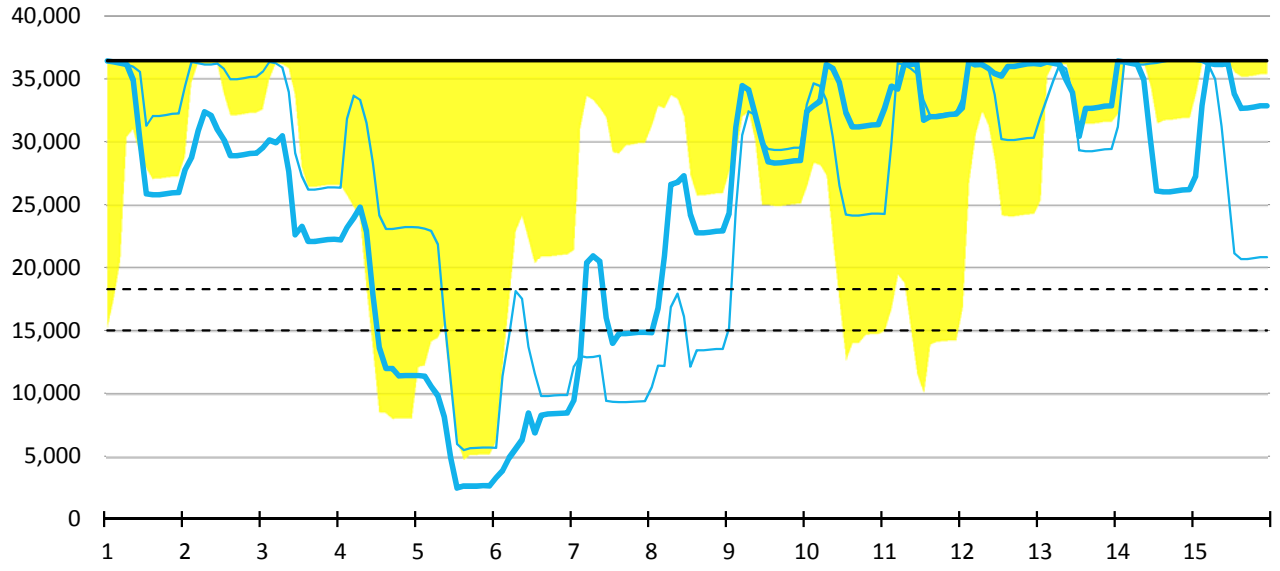


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Figure 5: Study Period Comparison - Scenarios 1.B & 2.B

Recurrence Interval		Scenario 1.B	Scenario 2.B		
1/1000	Study Period: 1147-1151			55,985 AF	Mean Streamflow
1/250	Study Period: 1580-1584	*Not Shown*		62,026 AF	
1/200	Study Period: 2001-2005			62,157 AF	
1/100	Study Period: 1500-1504			66,640 AF	

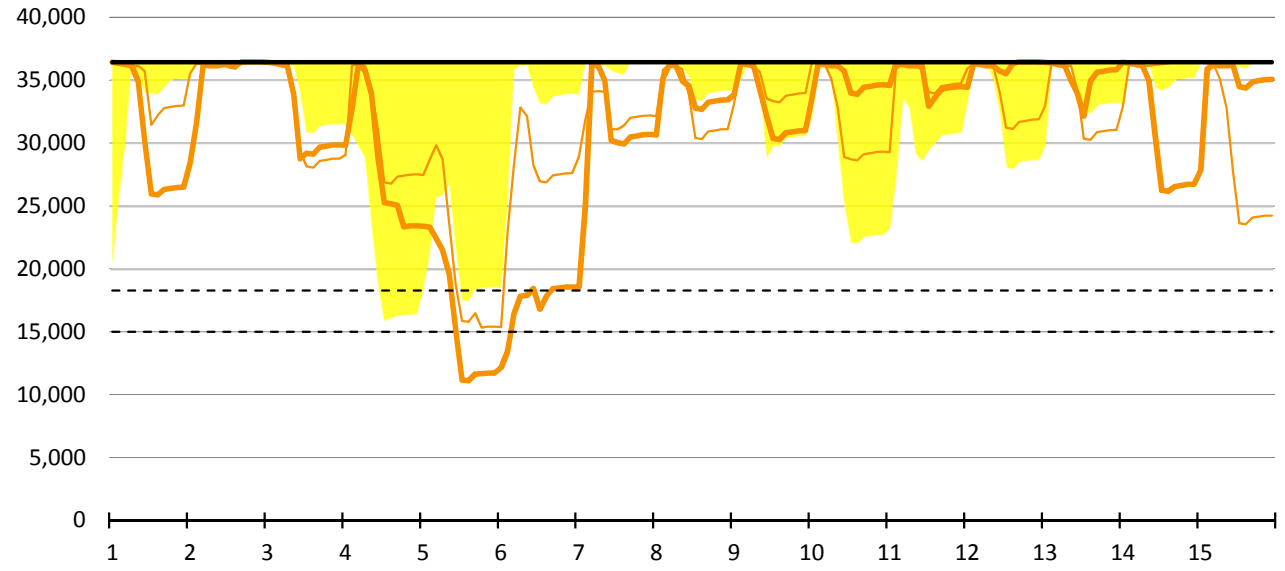
Scenario 1.B: Paleo/SWSI + Morrison Creek Reservoir

Reservoir Capacity **36,439 AF**

Preferred Remainder 3,275 AF

Emergency Remainder 15,000 AF

18,275 AF



Scenario 2.B: Paleo/SWSI + Municipal NC Release + Morrison Creek Reservoir

Reservoir Capacity **36,439 AF**

Preferred Remainder 3,275 AF

Emergency Remainder 15,000 AF

18,275 AF

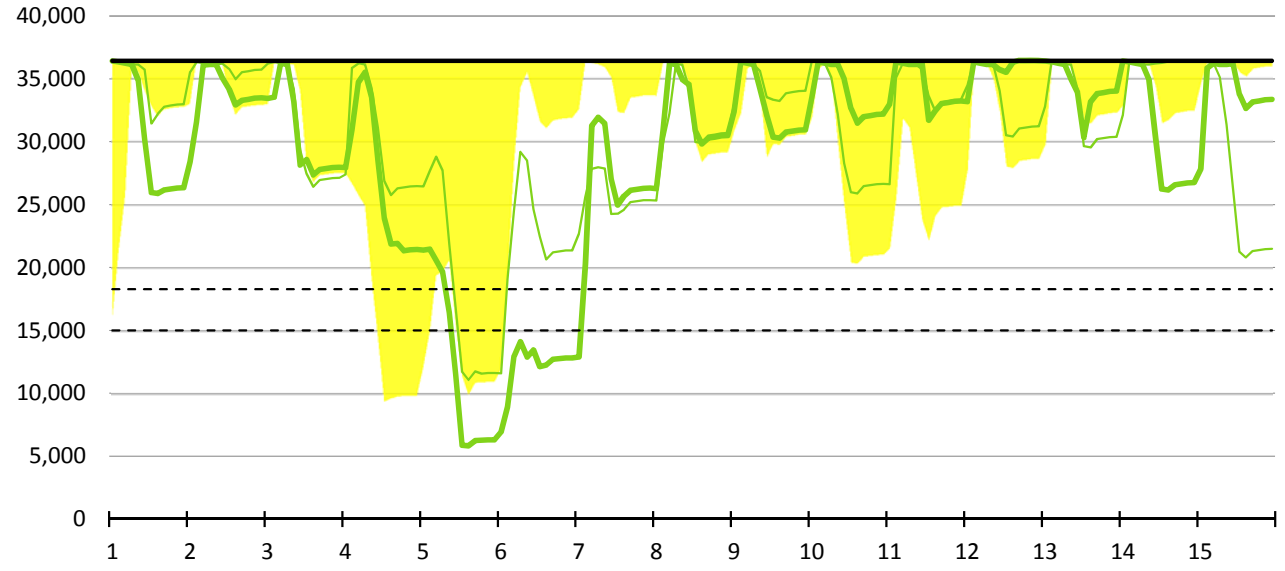


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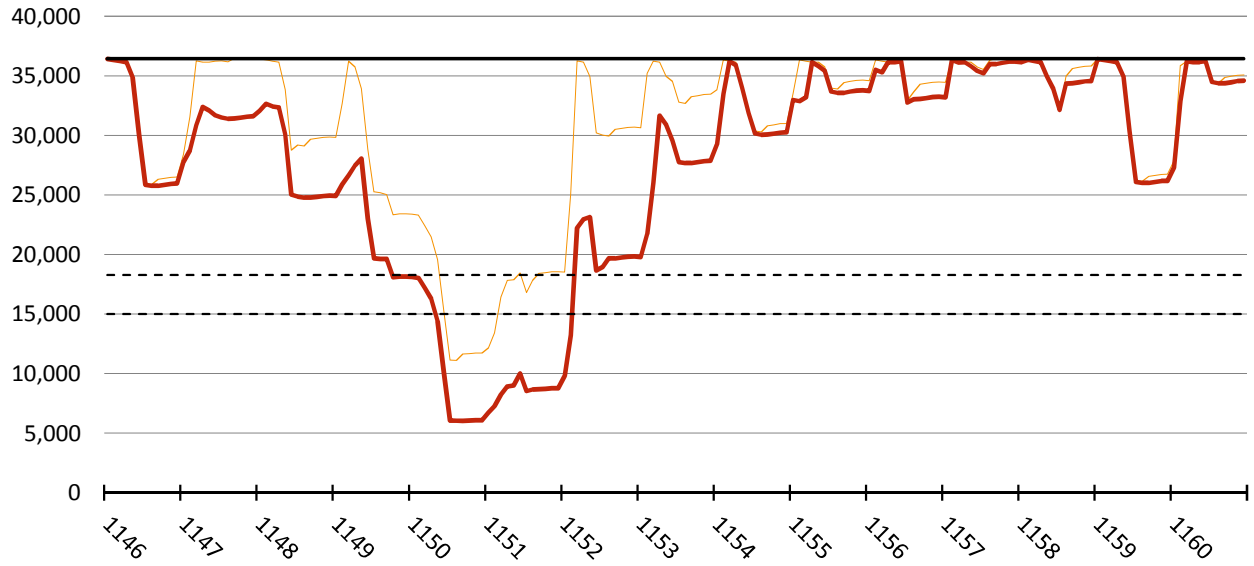
Figure 6: Water Supply & Water Right Master Plan

1146-1160

Scenario 1.A: Paleo Hydrology + SWSI 2050 Demands

Reservoir Content: End-of-Month SCENARIO 1.A; End-of-Month SCENARIO 1.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	Raise Pool No. 7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1146	10,013	5,307	2,201	798	1,707	0		
1147	178	178	0	0	0	0		
1148	6,843	2,941	1,974	566	1,362	0		
1149	**13,236**	**5,704**	**3,029**	**1,131**	**3,372**	**0**		
1150	**12,169**	**5,307**	**2,201**	**1,232**	**3,429**	**0**		
1151	**4,833**	**972**	**3,063**	**798**	**0**	**0**		
1152	6,843	2,941	2,402	566	934	0		
1153	3,994	200	1,988	798	1,008	0		
1154	5,407	178	2,218	798	2,213	0		
1155	1,729	178	852	232	467	0		
1156	3,749	2,165	885	232	467	0		
1157	178	178	0	0	0	0		
1158	3,879	178	2,277	798	626	0		
1159	9,941	5,235	2,268	798	1,640	0		
1160	1,729	178	852	232	467	0		
Avg.	5,648							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1146	0	0	0	0	0	0
1147	0	0	0	0	0	0
1148	0	0	0	0	0	0
1149	**0**	**0**	**0**	**0**	**0**	**0**
1150	**270**	**0**	**270**	**0**	**0**	**0**
1151	**1,401**	**0**	**0**	**0**	**0**	**1,401**
1152	0	0	0	0	0	0
1153	0	0	0	0	0	0
1154	0	0	0	0	0	0
1155	0	0	0	0	0	0
1156	0	0	0	0	0	0
1157	0	0	0	0	0	0
1158	0	0	0	0	0	0
1159	0	0	0	0	0	0
1160	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 7: Water Supply & Water Right Master Plan

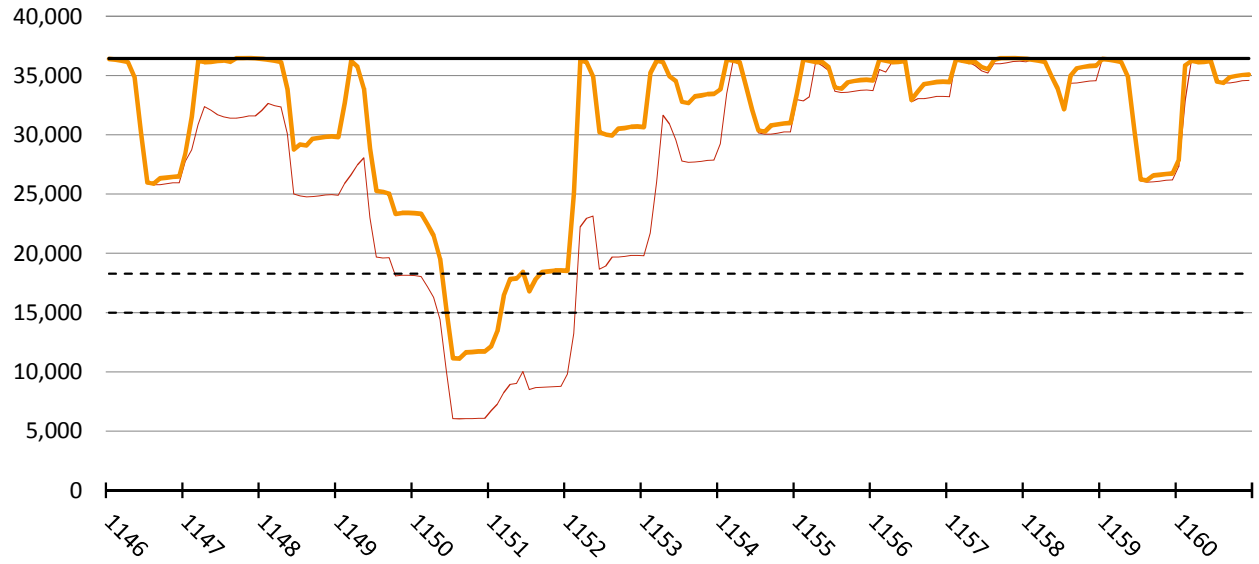
1146-1160

Scenario 1.B: Paleo/SWSI + Morrison Creek Reservoir

Reservoir Content:

End-of-Month SCENARIO 1.A
End-of-Month SCENARIO 1.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1146	10,006	5,300	2,201	798	1,707	0		
1147	178	178	0	0	0	0		
1148	6,843	2,941	1,975	566	1,361	0		
1149	**13,503**	**5,420**	**2,579**	**1,250**	**3,948**	**306**		
1150	**12,155**	**5,307**	**2,226**	**1,232**	**3,390**	**0**		
1151	**5,852**	**590**	**3,063**	**798**	**1,401**	**0**		
1152	6,843	2,941	2,402	566	934	0		
1153	2,978	178	1,796	537	467	0		
1154	5,407	178	2,271	798	2,160	0		
1155	1,729	178	852	232	467	0		
1156	3,590	2,006	885	232	467	0		
1157	178	178	0	0	0	0		
1158	3,705	178	2,262	798	467	0		
1159	9,797	5,091	2,268	798	1,640	0		
1160	1,729	178	852	232	467	0		
Avg.	5,633							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1146	0	0	0	0	0	0
1147	0	0	0	0	0	0
1148	0	0	0	0	0	0
1149	**0**	**0**	**0**	**0**	**0**	**0**
1150	**166**	**0**	**166**	**0**	**0**	**0**
1151	**0**	**0**	**0**	**0**	**0**	**0**
1152	0	0	0	0	0	0
1153	0	0	0	0	0	0
1154	0	0	0	0	0	0
1155	0	0	0	0	0	0
1156	0	0	0	0	0	0
1157	0	0	0	0	0	0
1158	0	0	0	0	0	0
1159	0	0	0	0	0	0
1160	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 8: Water Supply & Water Right Master Plan

1146-1160

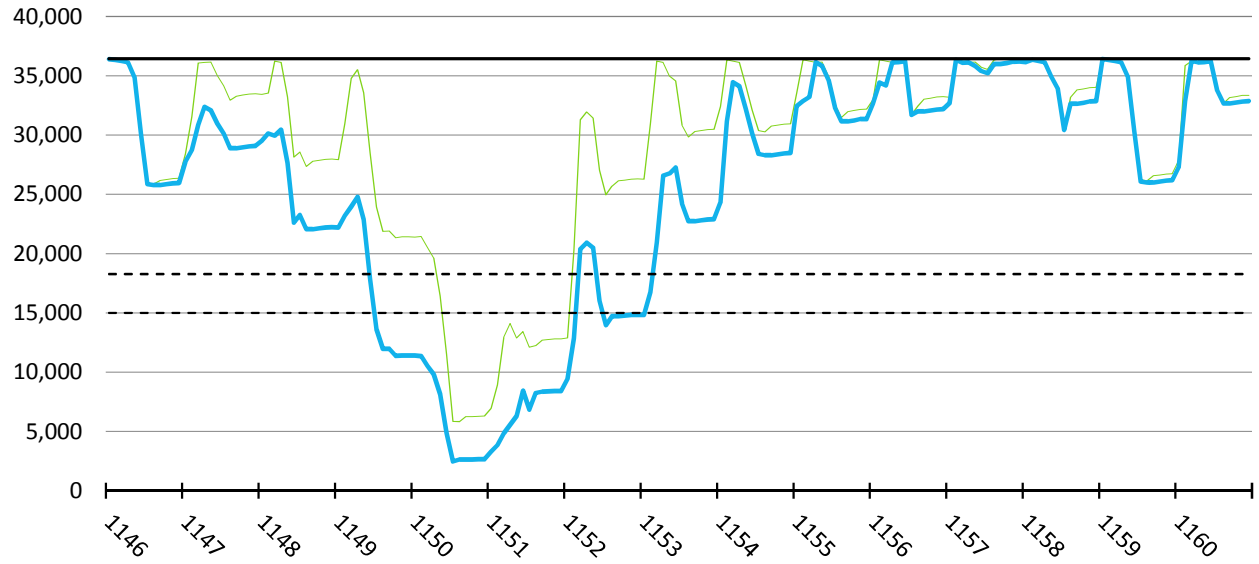
Scenario 2.A: Paleo/SWSI + Municipal Non-Consumptive Release

Reservoir Content:

End-of-Month SCENARIO 2.A

End-of-Month SCENARIO 2.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1146	10,013	5,307	2,201	798	1,707	0		
1147	3,139	178	0	697	2,264	0		
1148	9,616	2,941	2,402	770	3,503	0		
1149	**17,052**	**5,670**	**3,027**	**1,260**	**3,984**	**3,111**		
1150	**9,064**	**5,307**	**2,352**	**1,000**	**405**	**0**		
1151	**3,417**	**1,286**	**1,845**	**286**	**0**	**0**		
1152	10,239	2,941	2,461	798	3,944	95		
1153	9,927	200	2,772	1,002	4,917	1,036		
1154	5,407	178	2,215	798	2,216	0		
1155	5,014	178	852	697	3,287	0		
1156	4,809	2,165	885	232	1,527	0		
1157	178	178	0	0	0	0		
1158	5,594	178	2,277	798	2,341	0		
1159	9,941	5,235	2,268	798	1,640	0		
1160	4,206	178	852	436	2,740	0		
Avg.	7,174							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1146	0	0	0	0	0	0
1147	0	0	0	0	0	0
1148	0	0	0	0	0	0
1149	**1,147**	**0**	**0**	**0**	**0**	**1,147**
1150	**8,394**	**0**	**346**	**0**	**0**	**8,048**
1151	**6,933**	**0**	**0**	**512**	**0**	**6,421**
1152	0	0	0	0	0	0
1153	0	0	0	0	0	0
1154	0	0	0	0	0	0
1155	0	0	0	0	0	0
1156	0	0	0	0	0	0
1157	0	0	0	0	0	0
1158	0	0	0	0	0	0
1159	0	0	0	0	0	0
1160	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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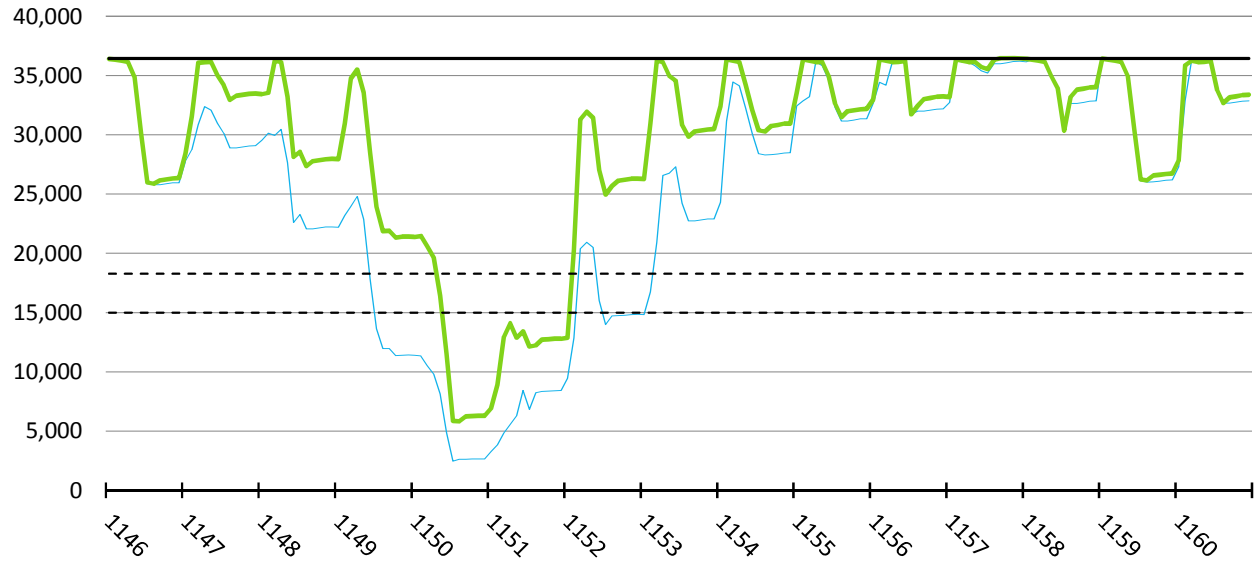
Figure 9: Water Supply & Water Right Master Plan

1146-1160

Scenario 2.B: Paleo/SWSI + Municipal NC Release + Morrison Creek Reservoir

Reservoir Content: End-of-Month SCENARIO 2.A; End-of-Month SCENARIO 2.B

Reservoir Capacity	36,439 AF
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	7,000	2,000	2,000	4,000	3,164	15,000	3,275
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	TOTAL RELEASES (AF)	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1146	10,006	5,300	2,201	798	1,707	0		
1147	3,844	178	0	697	2,969	0		
1148	8,595	2,941	1,975	770	2,909	0		
1149	**16,931**	**5,415**	**2,934**	**1,454**	**3,990**	**3,138**		
1150	**15,689**	**5,307**	**2,227**	**1,232**	**3,882**	**3,041**		
1151	**6,281**	**771**	**3,063**	**798**	**1,105**	**544**		
1152	10,113	2,941	2,462	798	3,912	0		
1153	6,704	178	1,796	741	3,895	94		
1154	5,407	178	2,271	798	2,160	0		
1155	5,007	178	852	697	3,280	0		
1156	4,810	2,006	885	232	1,687	0		
1157	178	178	0	0	0	0		
1158	5,510	178	2,262	798	2,272	0		
1159	9,797	5,091	2,268	798	1,640	0		
1160	4,206	178	852	436	2,740	0		
Avg.	7,539							

Year	TOTAL SHORTAGE (AF)	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1146	0	0	0	0	0	0
1147	0	0	0	0	0	0
1148	0	0	0	0	0	0
1149	**1,442**	**0**	**0**	**0**	**0**	**1,442**
1150	**423**	**0**	**167**	**0**	**0**	**255**
1151	**3,065**	**0**	**0**	**0**	**0**	**3,065**
1152	0	0	0	0	0	0
1153	0	0	0	0	0	0
1154	0	0	0	0	0	0
1155	0	0	0	0	0	0
1156	0	0	0	0	0	0
1157	0	0	0	0	0	0
1158	0	0	0	0	0	0
1159	0	0	0	0	0	0
1160	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 10: Water Supply & Water Right Master Plan

1580-1594

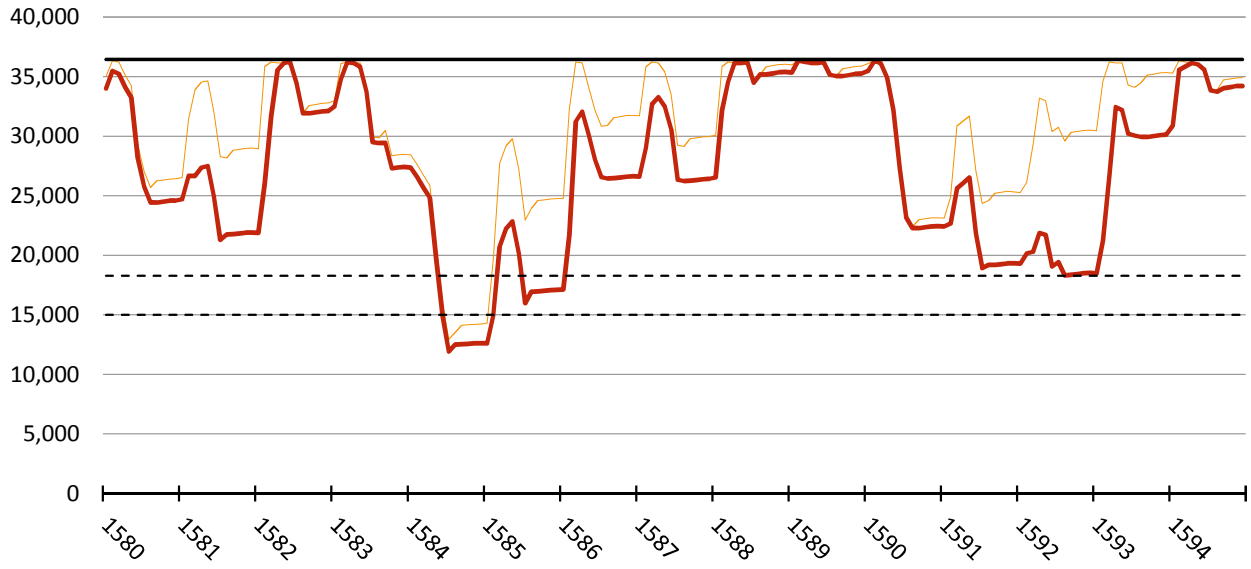
Scenario 1.A: Paleo Hydrology + SWSI 2050 Demands

Reservoir Content:

End-of-Month SCENARIO 1.A

End-of-Month SCENARIO 1.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	Raise Pool No. 7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1580	10,873	3,853	2,503	1,260	3,257	0		
1581	9,302	4,719	2,851	798	934	0		
1582	4,373	1,501	1,688	436	748	0		
1583	8,137	3,520	1,958	568	2,091	0		
1584	**14,627**	**6,864**	**2,108**	**1,379**	**3,870**	**406**		
1585	**9,681**	**4,217**	**3,042**	**798**	**1,624**	**0**		
1586	5,472	401	1,993	798	2,280	0		
1587	7,171	2,544	2,345	798	1,484	0		
1588	1,729	178	852	232	467	0		
1589	1,057	178	647	232	0	0		
1590	**13,093**	**6,022**	**1,967**	**1,260**	**3,844**	**0**		
1591	**10,895**	**4,585**	**3,028**	**1,056**	**2,226**	**0**		
1592	6,827	1,569	2,776	770	1,712	0		
1593	1,762	178	960	261	363	0		
1594	1,729	178	852	232	467	0		
Avg.	7,115							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1580	0	0	0	0	0	0
1581	0	0	0	0	0	0
1582	0	0	0	0	0	0
1583	**0**	**0**	**0**	**0**	**0**	**0**
1584	**380**	**0**	**380**	**0**	**0**	**0**
1585	0	0	0	0	0	0
1586	0	0	0	0	0	0
1587	0	0	0	0	0	0
1588	0	0	0	0	0	0
1589	0	0	0	0	0	0
1590	**287**	**0**	**287**	**0**	**0**	**0**
1591	**1**	**0**	**1**	**0**	**0**	**0**
1592	0	0	0	0	0	0
1593	0	0	0	0	0	0
1594	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 11: Water Supply & Water Right Master Plan

1580-1594

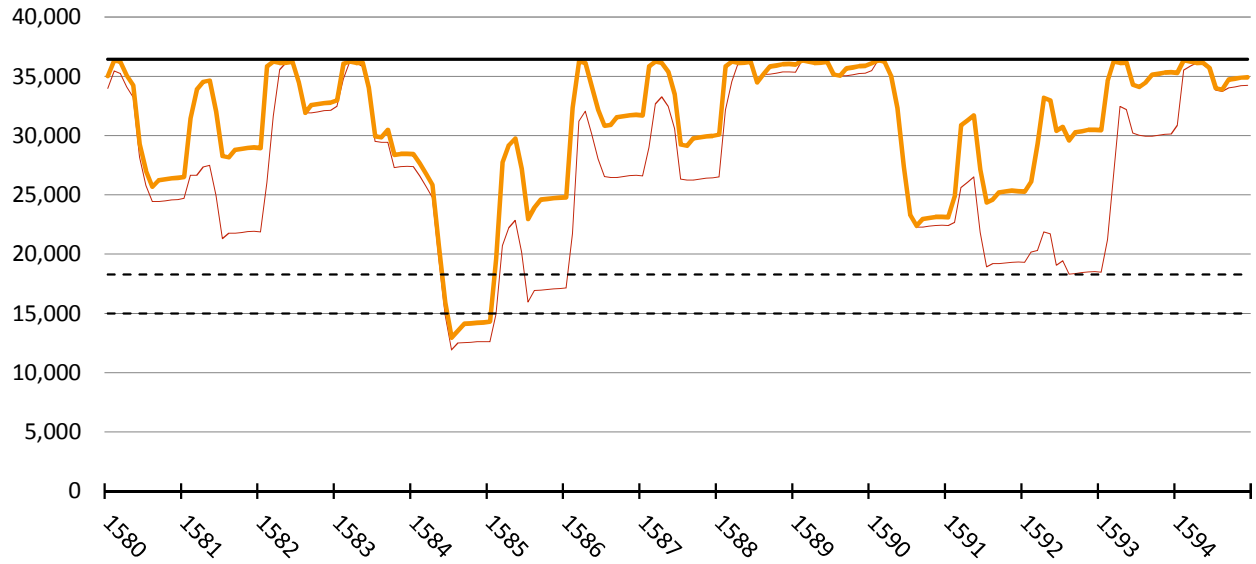
Scenario 1.B: Paleo/SWSI + Morrison Creek Reservoir

Reservoir Content:

End-of-Month SCENARIO 1.A

End-of-Month SCENARIO 1.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1580	10,565	3,595	2,539	1,260	3,171	0		
1581	8,996	4,413	2,851	798	934	0		
1582	4,271	1,399	1,688	436	748	0		
1583	8,129	3,520	2,010	568	2,031	0		
1584	**14,627**	**6,866**	**2,110**	**1,379**	**3,873**	**399**		
1585	**9,537**	**4,073**	**3,052**	**798**	**1,614**	**0**		
1586	5,125	217	2,197	798	1,913	0		
1587	7,171	2,544	2,346	798	1,483	0		
1588	1,729	178	852	232	467	0		
1589	1,057	178	647	232	0	0		
1590	**12,973**	**5,895**	**1,974**	**1,260**	**3,844**	**0**		
1591	**10,808**	**4,425**	**3,030**	**1,128**	**2,225**	**0**		
1592	6,683	1,425	2,791	770	1,697	0		
1593	1,608	178	960	261	209	0		
1594	1,729	178	852	232	467	0		
Avg.	7,001							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1580	0	0	0	0	0	0
1581	0	0	0	0	0	0
1582	0	0	0	0	0	0
1583	**0**	**0**	**0**	**0**	**0**	**0**
1584	**380**	**0**	**380**	**0**	**0**	**0**
1585	0	0	0	0	0	0
1586	0	0	0	0	0	0
1587	0	0	0	0	0	0
1588	0	0	0	0	0	0
1589	0	0	0	0	0	0
1590	**280**	**0**	**280**	**0**	**0**	**0**
1591	**0**	**0**	**0**	**0**	**0**	**0**
1592	0	0	0	0	0	0
1593	0	0	0	0	0	0
1594	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 12: Water Supply & Water Right Master Plan

1580-1594

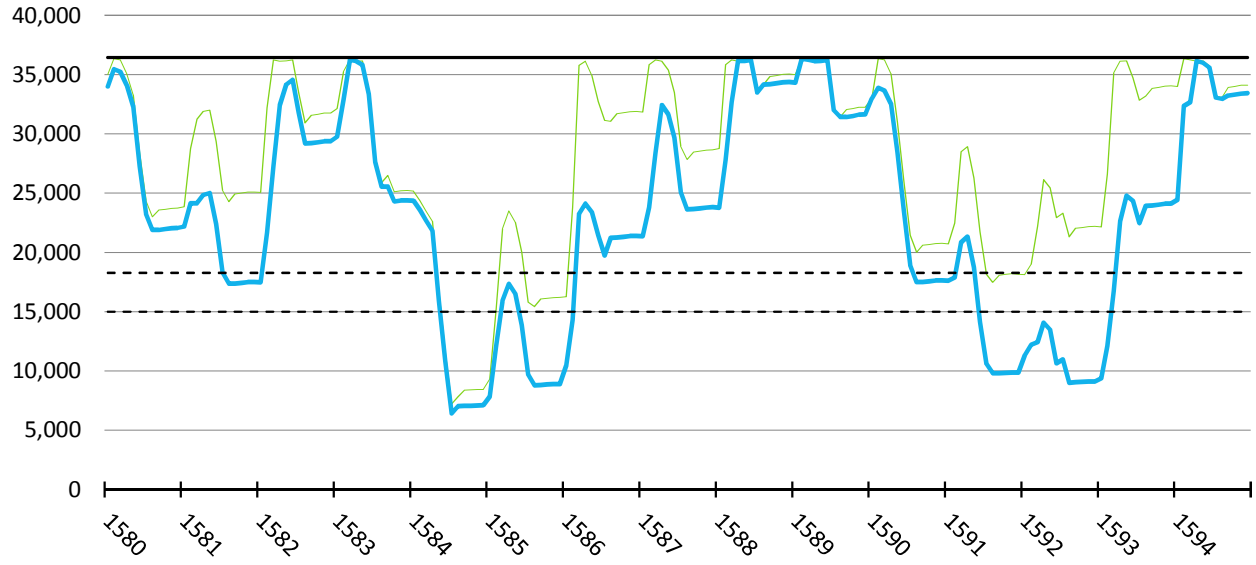
Scenario 2.A: Paleo/SWSI + Municipal Non-Consumptive Release

Reservoir Content:

End-of-Month SCENARIO 2.A

End-of-Month SCENARIO 2.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1580	14,549	3,850	2,503	1,260	3,880	3,056		
1581	11,862	4,708	2,851	1,002	3,301	0		
1582	6,302	1,521	1,688	436	2,657	0		
1583	13,238	3,520	1,958	772	3,902	3,086		
1584	**17,256**	**6,854**	**2,102**	**1,379**	**3,883**	**3,038**		
1585	**12,745**	**4,210**	**3,030**	**1,002**	**3,955**	**548**		
1586	10,022	2,528	3,109	798	3,587	0		
1587	9,342	2,544	2,345	1,002	3,451	0		
1588	2,735	178	852	232	1,473	0		
1589	4,675	178	647	436	3,414	0		
1590	**15,490**	**6,024**	**1,966**	**1,260**	**3,898**	**2,342**		
1591	**15,965**	**4,576**	**3,026**	**1,260**	**3,995**	**3,108**		
1592	8,042	1,569	2,550	770	3,153	0		
1593	4,469	178	1,414	798	2,079	0		
1594	2,529	178	852	232	1,267	0		
Avg.	9,948							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1580	19	0	0	0	0	19
1581	0	0	0	0	0	0
1582	0	0	0	0	0	0
1583	**883**	**0**	**0**	**0**	**0**	**883**
1584	**2,050**	**0**	**380**	**0**	**0**	**1,670**
1585	0	0	0	0	0	0
1586	0	0	0	0	0	0
1587	0	0	0	0	0	0
1588	0	0	0	0	0	0
1589	0	0	0	0	0	0
1590	**288**	**0**	**288**	**0**	**0**	**0**
1591	**1**	**0**	**1**	**0**	**0**	**0**
1592	0	0	0	0	0	0
1593	0	0	0	0	0	0
1594	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 13: Water Supply & Water Right Master Plan

1580-1594

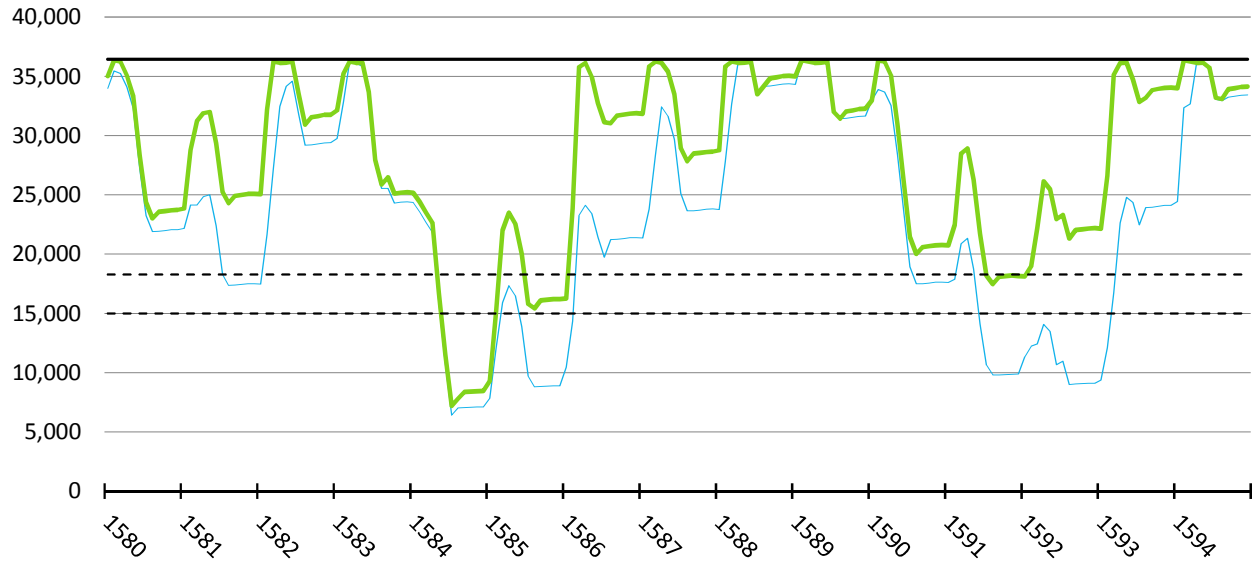
Scenario 2.B: Paleo/SWSI + Municipal NC Release + Morrison Creek Reservoir

Reservoir Content:

End-of-Month SCENARIO 2.A

End-of-Month SCENARIO 2.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1580	14,352	3,592	2,539	1,260	3,893	3,068		
1581	11,863	4,404	2,851	1,002	3,606	0		
1582	6,224	1,404	1,688	436	2,696	0		
1583	13,473	3,520	2,009	772	4,004	3,168		
1584	**17,263**	**6,856**	**2,103**	**1,379**	**3,885**	**3,040**		
1585	**12,678**	**4,066**	**3,040**	**1,002**	**3,960**	**610**		
1586	6,236	867	3,008	798	1,563	0		
1587	8,959	2,544	2,346	1,002	3,067	0		
1588	2,733	178	852	232	1,471	0		
1589	4,675	178	647	436	3,414	0		
1590	**15,373**	**5,899**	**1,974**	**1,260**	**3,914**	**2,326**		
1591	**15,889**	**4,412**	**3,029**	**1,333**	**3,996**	**3,119**		
1592	8,015	1,425	2,781	770	3,039	0		
1593	3,585	178	960	493	1,954	0		
1594	2,528	178	852	232	1,266	0		
Avg.	9,590							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1580	19	0	0	0	0	19
1581	0	0	0	0	0	0
1582	0	0	0	0	0	0
1583	**762**	**0**	**0**	**0**	**0**	**762**
1584	**2,084**	**0**	**380**	**0**	**0**	**1,704**
1585	0	0	0	0	0	0
1586	0	0	0	0	0	0
1587	0	0	0	0	0	0
1588	0	0	0	0	0	0
1589	0	0	0	0	0	0
1590	**280**	**0**	**280**	**0**	**0**	**0**
1591	**0**	**0**	**0**	**0**	**0**	**0**
1592	0	0	0	0	0	0
1593	0	0	0	0	0	0
1594	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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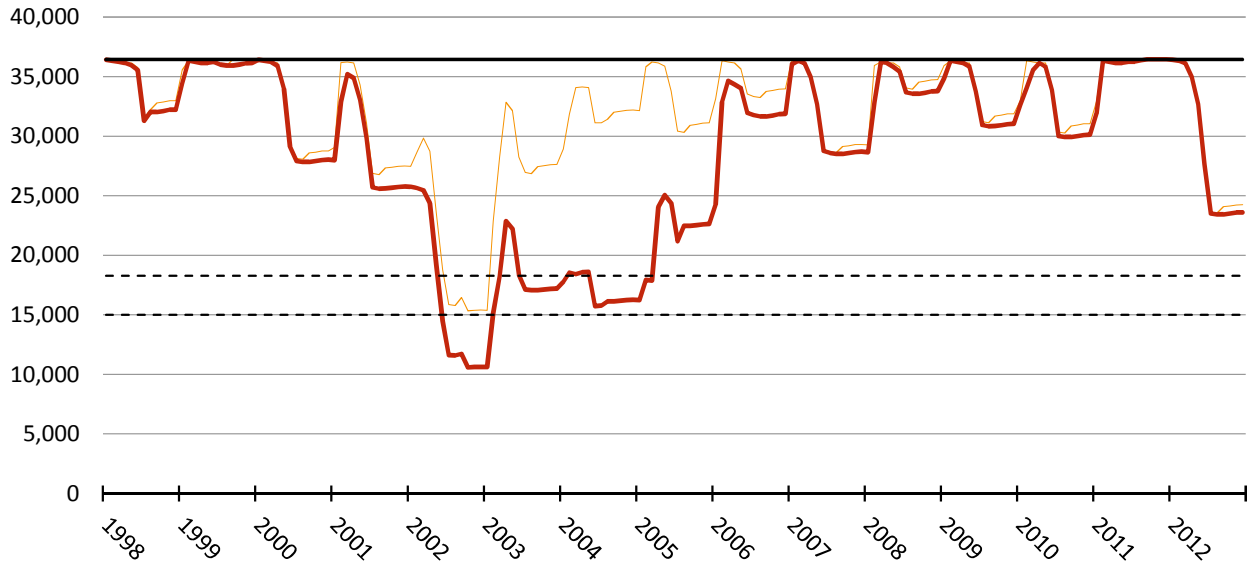
Figure 14: Water Supply & Water Right Master Plan — 1998-2012

Scenario 1.A: Paleo Hydrology + SWSI 2050 Demands

Reservoir Content: End-of-Month SCENARIO 1.A; End-of-Month SCENARIO 1.B

Reservoir Capacity	36,439 AF
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	7,000	2,000	2,000	4,000	3,164	15,000	3,275
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	TOTAL RELEASES (AF)	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	Raise Pool No. 7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1998	4,251	2,544	1,008	232	467	0		
1999	178	178	0	0	0	0		
2000	7,714	2,941	2,217	798	1,758	0		
2001	9,126	3,756	2,296	798	2,276	0		
2002	**14,279**	**6,777**	**1,960**	**1,131**	**3,843**	**568**		
2003	**7,990**	2,665	2,679	798	1,848	0		
2004	4,433	1,434	1,966	566	467	0		
2005	5,356	2,084	1,845	493	934	0		
2006	1,866	178	960	261	467	0		
2007	6,629	1,945	1,966	824	1,894	0		
2008	1,729	178	852	232	467	0		
2009	4,691	1,419	1,845	493	934	0		
2010	5,675	2,544	1,845	493	793	0		
2011	483	178	0	305	0	0		
2012	**11,595**	**5,307**	**1,966**	**1,056**	**3,266**	**0**		
Avg.	5,733							

Year	TOTAL SHORTAGE (AF)	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	117	0	117	0	0	0
2002	**380**	**0**	**380**	**0**	**0**	**0**
2003	0	0	0	0	0	0
2004	0	0	0	0	0	0
2005	0	0	0	0	0	0
2006	0	0	0	0	0	0
2007	0	0	0	0	0	0
2008	0	0	0	0	0	0
2009	0	0	0	0	0	0
2010	0	0	0	0	0	0
2011	0	0	0	0	0	0
2012	**198**	**0**	**198**	**0**	**0**	**0**

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 15: Water Supply & Water Right Master Plan

1998-2012

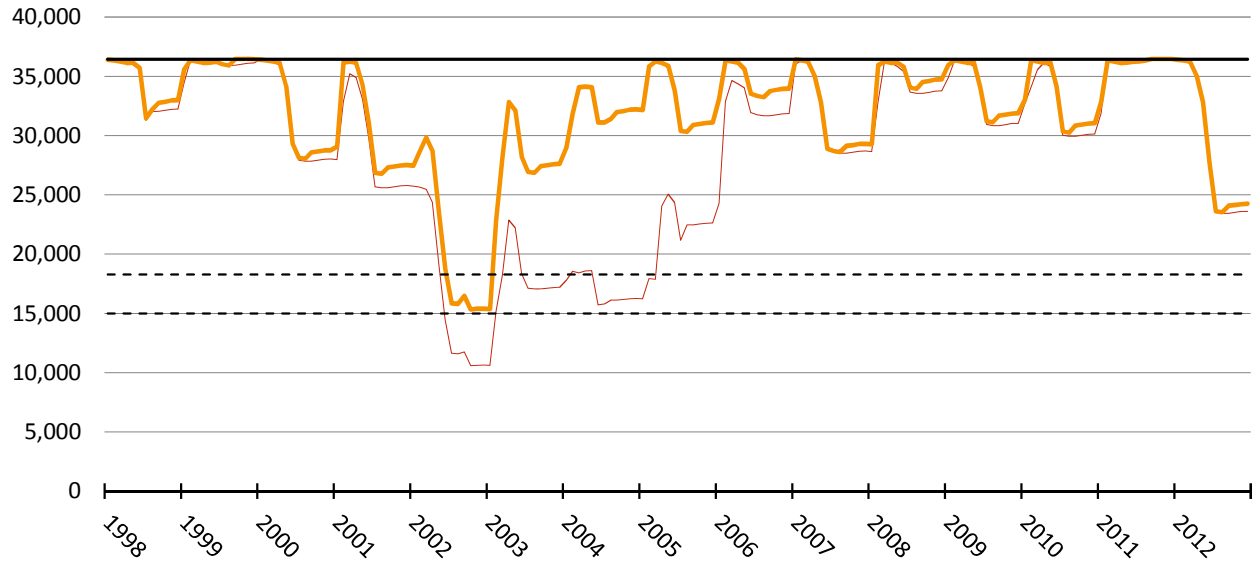
Scenario 1.B: Paleo/SWSI + Morrison Creek Reservoir

Reservoir Content:

End-of-Month SCENARIO 1.A

End-of-Month SCENARIO 1.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1998	4,251	2,544	1,008	232	467	0		
1999	178	178	0	0	0	0		
2000	7,714	2,941	2,272	798	1,703	0		
2001	9,184	3,749	2,361	798	2,276	0		
2002	**14,325**	**6,829**	**2,001**	**1,131**	**3,930**	**434**		
2003	**7,988**	2,663	2,691	798	1,836	0		
2004	4,433	1,434	1,966	566	467	0		
2005	5,351	2,079	1,845	493	934	0		
2006	2,199	178	988	566	467	0		
2007	6,636	1,945	1,973	824	1,894	0		
2008	1,729	178	852	232	467	0		
2009	4,691	1,419	1,845	493	934	0		
2010	5,673	2,544	1,845	493	791	0		
2011	483	178	0	305	0	0		
2012	**11,602**	**5,307**	**1,973**	**1,056**	**3,266**	**0**		
Avg.	5,762							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	52	0	52	0	0	0
2002	**380**	**0**	**380**	**0**	**0**	**0**
2003	0	0	0	0	0	0
2004	0	0	0	0	0	0
2005	0	0	0	0	0	0
2006	0	0	0	0	0	0
2007	0	0	0	0	0	0
2008	0	0	0	0	0	0
2009	0	0	0	0	0	0
2010	0	0	0	0	0	0
2011	0	0	0	0	0	0
2012	**191**	**0**	**191**	**0**	**0**	**0**

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 16: Water Supply & Water Right Master Plan

1998-2012

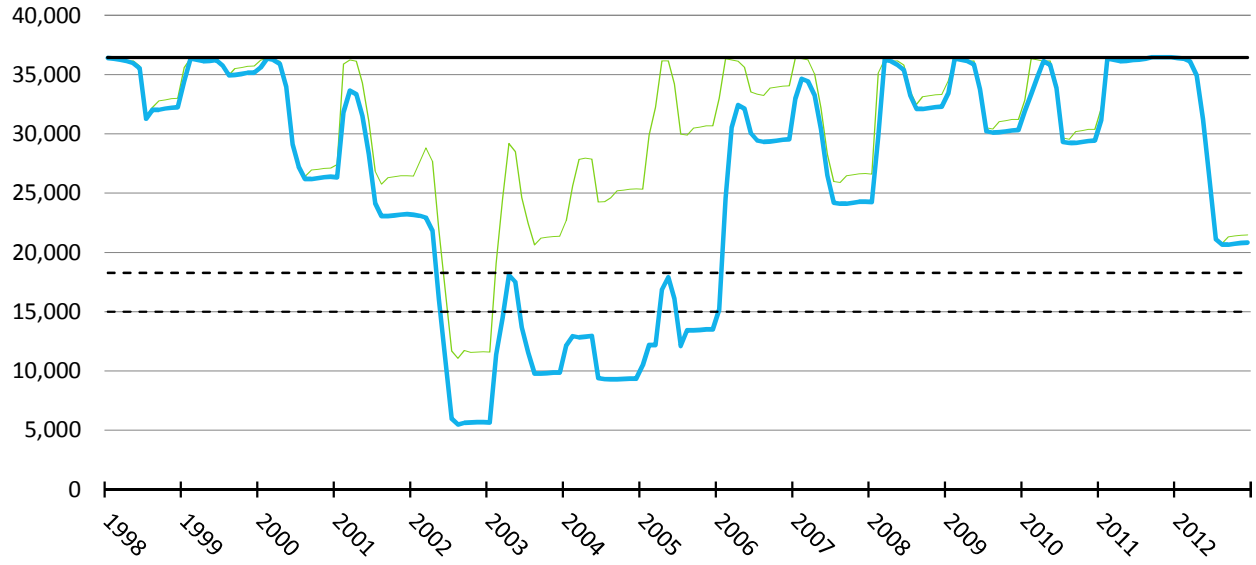
Scenario 2.A: Paleo/SWSI + Municipal Non-Consumptive Release

Reservoir Content:

End-of-Month SCENARIO 2.A

End-of-Month SCENARIO 2.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1998	4,251	2,544	1,008	232	467	0		
1999	1,422	178	0	436	808	0		
2000	10,603	2,941	2,217	1,002	3,878	565		
2001	10,584	3,756	2,293	1,002	3,533	0		
2002	**16,878**	**6,766**	**1,958**	**1,260**	**3,861**	**3,033**		
2003	**11,466**	2,653	2,671	1,002	3,921	1,219		
2004	5,136	1,465	1,966	566	1,139	0		
2005	7,389	2,084	1,845	493	2,967	0		
2006	2,306	178	960	493	675	0		
2007	9,375	1,944	1,966	1,056	3,886	523		
2008	3,255	178	852	436	1,789	0		
2009	5,411	1,419	1,845	493	1,654	0		
2010	6,379	2,544	1,845	493	1,497	0		
2011	483	178	0	305	0	0		
2012	**14,386**	**5,307**	**1,966**	**1,260**	**3,902**	**1,951**		
Avg.	7,288							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	120	0	120	0	0	0
2002	**1,527**	**0**	**380**	**0**	**0**	**1,147**
2003	0	0	0	0	0	0
2004	0	0	0	0	0	0
2005	0	0	0	0	0	0
2006	0	0	0	0	0	0
2007	0	0	0	0	0	0
2008	0	0	0	0	0	0
2009	0	0	0	0	0	0
2010	0	0	0	0	0	0
2011	0	0	0	0	0	0
2012	**198**	**0**	**198**	**0**	**0**	**0**

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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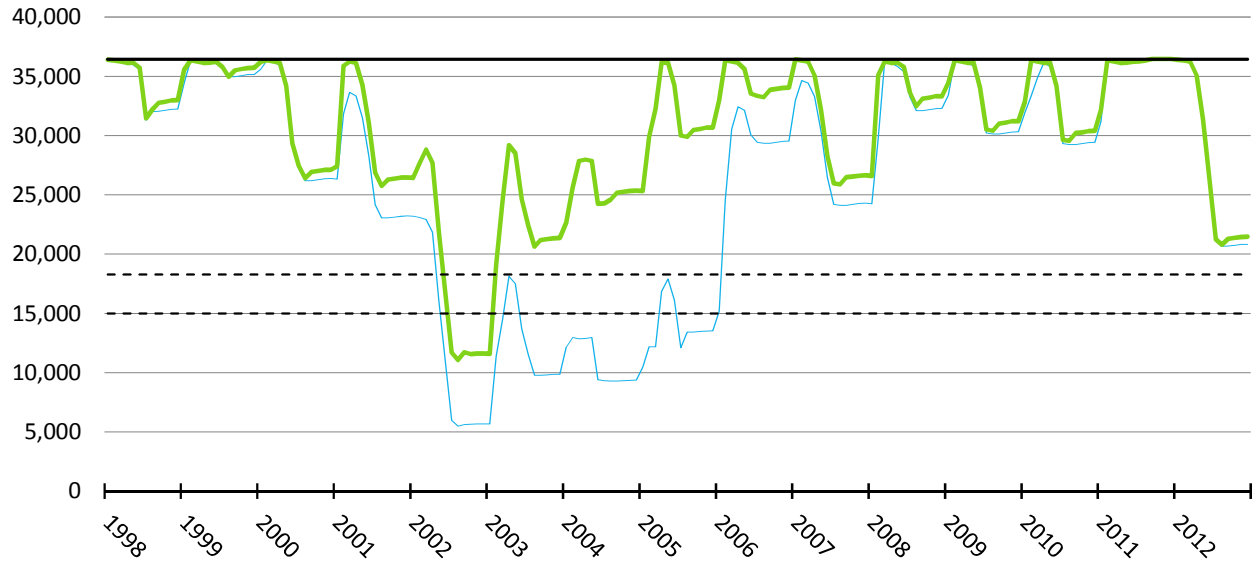
Figure 17: Water Supply & Water Right Master Plan 1998-2012

Scenario 2.B: Paleo/SWSI + Municipal NC Release + Morrison Creek Reservoir

Reservoir Content:

End-of-Month SCENARIO 2.A
End-of-Month SCENARIO 2.B

Reservoir Capacity	36,439 AF
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	7,000	2,000	2,000	4,000	3,164	15,000	3,275
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	TOTAL RELEASES (AF)	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1998	4,251	2,544	1,008	232	467	0		
1999	1,422	178	0	436	808	0		
2000	10,603	2,941	2,272	1,002	3,901	487		
2001	10,641	3,749	2,361	1,002	3,529	0		
2002	**17,220**	**6,825**	**2,001**	**1,335**	**3,950**	**3,109**		
2003	**11,466**	2,653	2,688	1,002	3,934	1,189		
2004	5,174	1,431	1,966	566	1,211	0		
2005	7,207	2,084	1,845	493	2,785	0		
2006	2,199	178	988	566	467	0		
2007	9,379	1,944	1,973	1,056	3,902	504		
2008	3,255	178	852	436	1,789	0		
2009	5,411	1,419	1,845	493	1,654	0		
2010	6,376	2,544	1,845	493	1,494	0		
2011	483	178	0	305	0	0		
2012	**14,393**	**5,307**	**1,973**	**1,260**	**3,916**	**1,937**		
Avg.	7,299							

Year	TOTAL SHORTAGE (AF)	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	52	0	52	0	0	0
2002	**1,397**	**0**	**380**	**0**	**0**	**1,017**
2003	0	0	0	0	0	0
2004	0	0	0	0	0	0
2005	0	0	0	0	0	0
2006	0	0	0	0	0	0
2007	0	0	0	0	0	0
2008	0	0	0	0	0	0
2009	0	0	0	0	0	0
2010	0	0	0	0	0	0
2011	0	0	0	0	0	0
2012	**191**	**0**	**191**	**0**	**0**	**0**

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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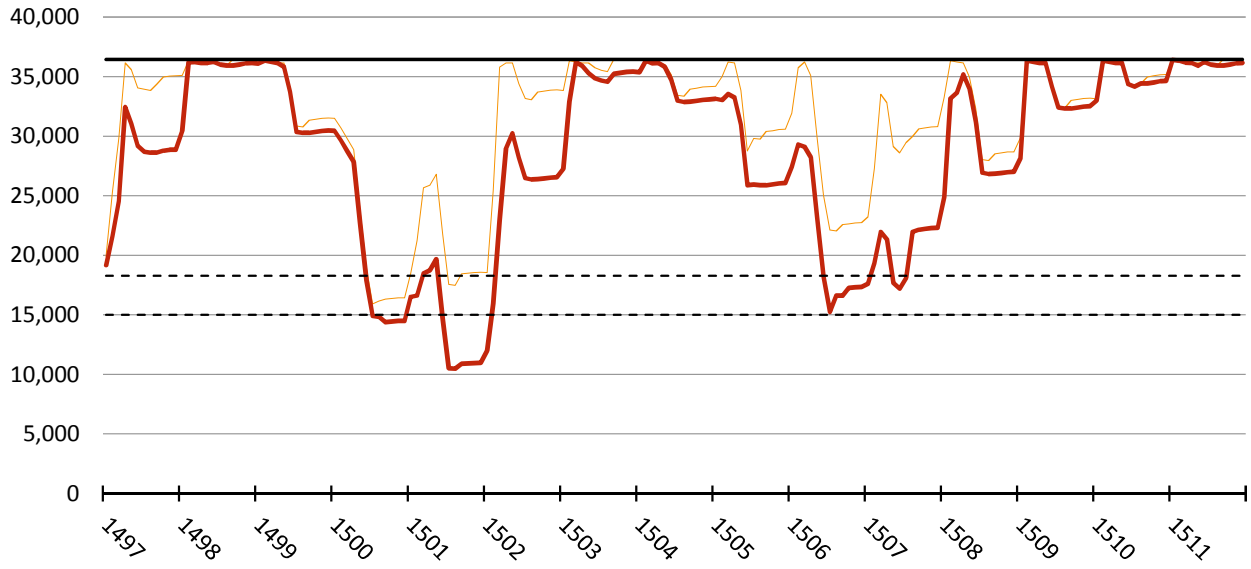
Figure 18: Water Supply & Water Right Master Plan

1497-1511

Scenario 1.A: Paleo Hydrology + SWSI 2050 Demands

Reservoir Content: End-of-Month SCENARIO 1.A; End-of-Month SCENARIO 1.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	Raise Pool No. 7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1497	4,649	178	2,739	798	934	0		
1498	178	178	0	0	0	0		
1499	5,022	1,750	1,845	493	934	0		
1500	**15,093**	**6,872**	**2,113**	**1,379**	**3,878**	**378**		
1501	10,982	5,307	2,910	1,056	1,709	0		
1502	5,402	852	2,789	798	963	0		
1503	508	178	0	305	25	0		
1504	2,417	178	1,279	493	467	0		
1505	6,843	2,941	1,962	566	1,374	0		
1506	**13,289**	**6,873**	**2,147**	**1,056**	**3,213**	**0**		
1507	**6,988**	**2,396**	**2,448**	**824**	**1,320**	**0**		
1508	8,123	3,417	2,267	798	1,641	0		
1509	3,417	178	1,812	493	934	0		
1510	1,866	178	960	261	467	0		
1511	724	178	0	258	288	0		
Avg.	5,700							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1497	0	0	0	0	0	0
1498	0	0	0	0	0	0
1499	0	0	0	0	0	0
1500	**380**	**0**	**380**	**0**	**0**	**0**
1501	0	0	0	0	0	0
1502	0	0	0	0	0	0
1503	0	0	0	0	0	0
1504	0	0	0	0	0	0
1505	0	0	0	0	0	0
1506	**272**	**0**	**272**	**0**	**0**	**0**
1507	**0**	**0**	**0**	**0**	**0**	**0**
1508	0	0	0	0	0	0
1509	0	0	0	0	0	0
1510	0	0	0	0	0	0
1511	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 19: Water Supply & Water Right Master Plan

1497-1511

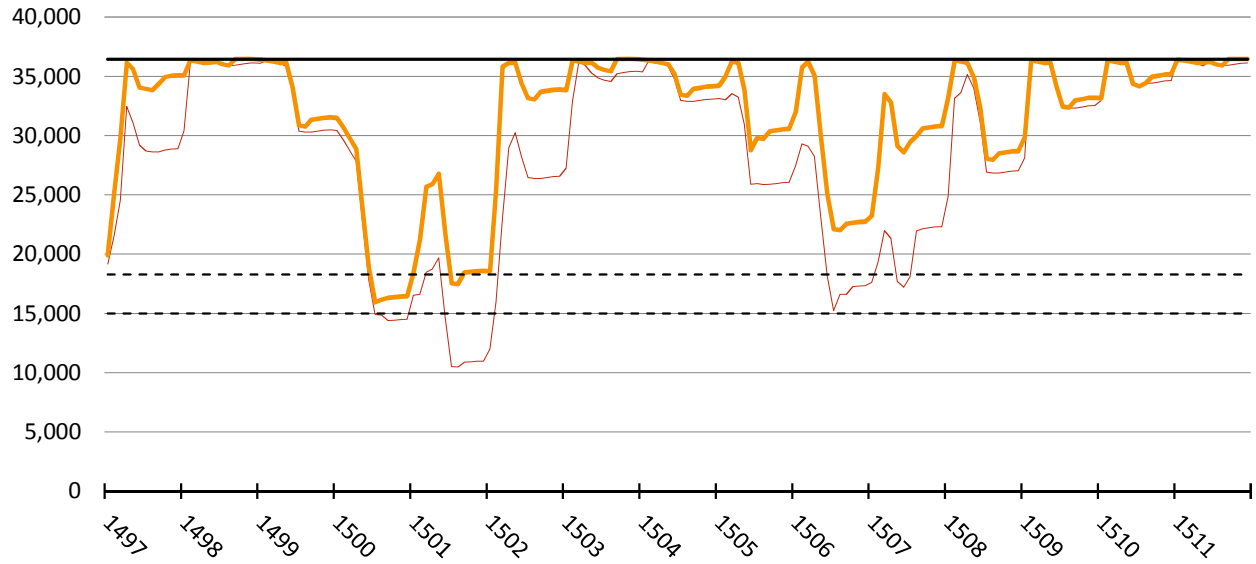
Scenario 1.B: Paleo/SWSI + Morrison Creek Reservoir

Reservoir Content:

End-of-Month SCENARIO 1.A

End-of-Month SCENARIO 1.B

Reservoir Capacity	36,439 AF
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1497	4,649	178	2,739	798	934	0		
1498	178	178	0	0	0	0		
1499	4,863	1,591	1,845	493	934	0		
1500	**15,095**	**6,874**	**2,114**	**1,379**	**3,879**	**376**		
1501	10,982	5,307	2,912	1,056	1,707	0		
1502	3,816	498	1,891	493	934	0		
1503	203	178	0	0	25	0		
1504	2,143	178	1,005	493	467	0		
1505	6,843	2,941	1,975	566	1,361	0		
1506	**13,150**	**6,842**	**1,975**	**1,056**	**3,277**	**0**		
1507	**6,943**	**2,351**	**2,465**	**824**	**1,303**	**0**		
1508	7,959	3,253	2,268	798	1,640	0		
1509	3,417	178	1,812	493	934	0		
1510	1,866	178	960	261	467	0		
1511	466	178	0	0	288	0		
Avg.	5,505							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1497	0	0	0	0	0	0
1498	0	0	0	0	0	0
1499	0	0	0	0	0	0
1500	**380**	**0**	**380**	**0**	**0**	**0**
1501	0	0	0	0	0	0
1502	0	0	0	0	0	0
1503	0	0	0	0	0	0
1504	0	0	0	0	0	0
1505	0	0	0	0	0	0
1506	**380**	**0**	**380**	**0**	**0**	**0**
1507	**0**	**0**	**0**	**0**	**0**	**0**
1508	0	0	0	0	0	0
1509	0	0	0	0	0	0
1510	0	0	0	0	0	0
1511	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 20: Water Supply & Water Right Master Plan

1497-1511

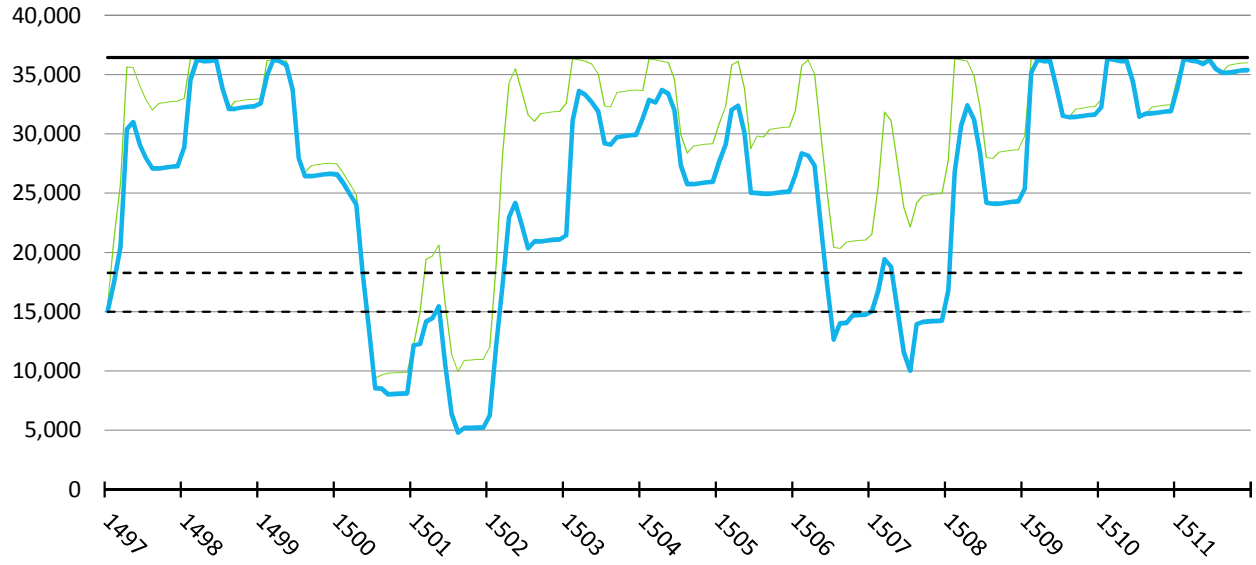
Scenario 2.A: Paleo/SWSI + Municipal Non-Consumptive Release

Reservoir Content:

End-of-Month SCENARIO 2.A

End-of-Month SCENARIO 2.B

Reservoir Capacity	**36,439 AF**
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	**7,000**	**2,000**	**2,000**	**4,000**	**3,164**	**15,000**	**3,275**
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	**TOTAL RELEASES (AF)**	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1497	5,424	178	2,739	1,002	1,505	0		
1498	4,309	178	0	436	3,695	0		
1499	10,489	1,750	1,845	697	3,903	2,294		
1500	**17,739**	**6,861**	**2,106**	**1,379**	**3,878**	**3,042**		
1501	13,300	5,307	2,909	1,260	3,824	0		
1502	6,674	852	2,779	1,002	2,041	0		
1503	3,422	178	0	798	2,446	0		
1504	7,252	178	1,298	697	3,902	1,177		
1505	6,843	2,941	1,974	566	1,362	0		
1506	**14,965**	**6,871**	**2,145**	**1,056**	**3,863**	**1,030**		
1507	**12,836**	**2,396**	**2,444**	**1,056**	**3,880**	**3,060**		
1508	8,123	3,417	2,265	798	1,643	0		
1509	4,327	178	1,812	493	1,844	0		
1510	4,582	178	960	493	2,951	0		
1511	1,489	178	0	694	617	0		
Avg.	8,118							

Year	**TOTAL SHORTAGE (AF)**	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1497	0	0	0	0	0	0
1498	0	0	0	0	0	0
1499	0	0	0	0	0	0
1500	**647**	**0**	**380**	**0**	**0**	**267**
1501	0	0	0	0	0	0
1502	0	0	0	0	0	0
1503	0	0	0	0	0	0
1504	0	0	0	0	0	0
1505	0	0	0	0	0	0
1506	**274**	**0**	**274**	**0**	**0**	**0**
1507	**602**	**0**	**0**	**0**	**0**	**602**
1508	0	0	0	0	0	0
1509	0	0	0	0	0	0
1510	0	0	0	0	0	0
1511	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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Figure 21: Water Supply & Water Right Master Plan

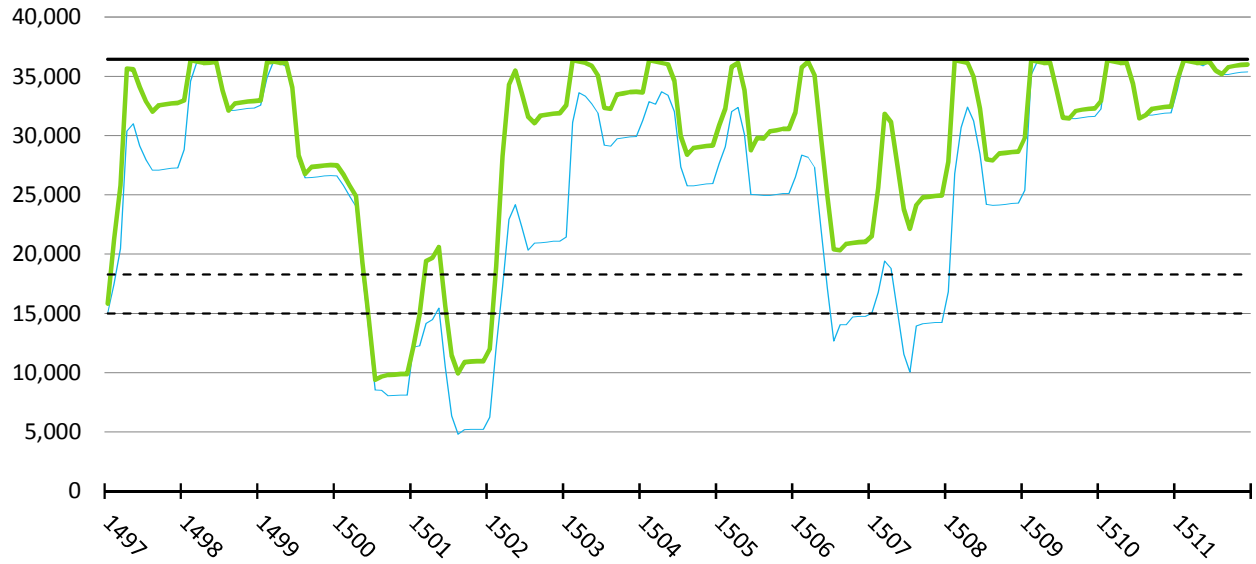
1497-1511

Scenario 2.B: Paleo/SWSI + Municipal NC Release + Morrison Creek Reservoir

Reservoir Content:

End-of-Month SCENARIO 2.A
End-of-Month SCENARIO 2.B

Reservoir Capacity	36,439 AF
Preferred Remainder	3,275 AF
Emergency Remainder	15,000 AF
	18,275 AF



	Pools:	7,000	2,000	2,000	4,000	3,164	15,000	3,275
	Filled:	1st	2nd	3rd	4th	5th	6th	7th
Year	TOTAL RELEASES (AF)	Tri-State Pool No.1 (AF)	Municipal Pool No.2 (AF)	Augment Pool No.5 (AF)	Exchange Pool No.6 (AF)	Raise Pool No.7 (AF)	Emergency Remainder (AF)	Preferred Remainder (AF)
1497	5,424	178	2,739	1,002	1,505	0		
1498	4,309	178	0	436	3,695	0		
1499	10,489	1,591	1,845	697	3,939	2,417		
1500	**17,748**	**6,863**	**2,108**	**1,379**	**3,879**	**3,046**		
1501	13,319	5,307	2,910	1,260	3,842	0		
1502	5,922	706	2,794	697	1,725	0		
1503	3,596	178	174	798	2,446	0		
1504	7,232	178	1,008	697	3,928	1,421		
1505	6,843	2,941	1,975	566	1,361	0		
1506	**14,850**	**6,842**	**1,975**	**1,056**	**3,891**	**1,086**		
1507	**12,855**	**2,349**	**2,463**	**1,056**	**3,903**	**3,084**		
1508	7,992	3,254	2,268	798	1,672	0		
1509	4,327	178	1,812	493	1,844	0		
1510	4,582	178	960	493	2,951	0		
1511	1,474	178	0	694	602	0		
Avg.	8,064							

Year	TOTAL SHORTAGE (AF)	Tri-State Pool No. 1 (AF)	Municipal Pool No. 2 (AF)	Augment Pool No. 5 (AF)	Exchange Pool No. 6 (AF)	MULTIPLE POOLS (AF)
1497	0	0	0	0	0	0
1498	0	0	0	0	0	0
1499	0	0	0	0	0	0
1500	**639**	**0**	**380**	**0**	**0**	**259**
1501	0	0	0	0	0	0
1502	0	0	0	0	0	0
1503	0	0	0	0	0	0
1504	0	0	0	0	0	0
1505	0	0	0	0	0	0
1506	**380**	**0**	**380**	**0**	**0**	**0**
1507	**538**	**0**	**0**	**0**	**0**	**538**
1508	0	0	0	0	0	0
1509	0	0	0	0	0	0
1510	0	0	0	0	0	0
1511	0	0	0	0	0	0

* Multiple Pools include:

2050 M&I District 57
Pool Nos. 2, 6, & 7

2050 M&I District 58
Pool Nos. 2, 6, & 7

2050 Large Industry
Pool Nos. 6, & 7

Non-Consumptive
Pool Nos. 6, & 7

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7.0 WATER RIGHTS MASTER PLAN

The modeling results related to the WSMP, as discussed in Section 6.0 above, indicate that in Water Districts 57 and 58 of the Yampa River basin junior diverters will experience water shortages in dry years based on demand levels projected to occur during the 35-year planning period from 2015 through 2050, and that the District's water storage facilities can play an important role in meeting these identified shortages. The analyses and studies underlying the WSMP also helped to define the existing and future need for the water rights associated with the District's water supply operations. In particular, this information was used to determine the extent to which the District needed to continue its conditional water rights. For the WRMP, RESOURCE examined the District's entire water rights portfolio and provided recommendations based on the results from the WSMP.

7.1 District Water Rights

The District maintains a water rights portfolio, which consists of absolute and conditional direct flow and storage rights that are decreed for multiple beneficial uses. A summary of this portfolio is tabularly presented in ***Tables 3.A – 3.C*** and graphically shown in ***Figure 22***.

Based upon the results of the WSMP analyses, RESOURCE recommends that the District maintain most of its conditional water rights. These conditional water rights, in conjunction with the portion of the District's portfolio that has already been made absolute, will be needed in order to reliable meet the shortages that are projected to occur within the District's service area. There are a couple conditional water rights, however, that appear unreliable due to a lack of physical and/or legal water supply. In these instances, the District should abandon the portion of the water right that is either physically or legally limited, as there is very little probability that it could ever be made absolute. The water rights associated with the District's existing and planned storage facilities are discussed in more detail in the following sub-sections.

7.1.1 Stagecoach Reservoir

As outline in Sections 5.0 and 6.0 above, the WSMP indicates that Stagecoach Reservoir is a key storage facility to the District's overall water resource planning and water supply operations. Through the WSMP process, analyses showed that this existing reservoir was capable of providing a reliable water supply to help meet future demands in the Yampa River basin, even during critical drought sequences. Moreover, its ability to help meet these future

demands was also illustrated in the BRT's Projects and Methods Study, which identified both Stagecoach Reservoir and Morrison Creek Reservoir as Identified Projects and Processes (IPP) facilities (CDM, November 2014). As a key storage facility in the Yampa River basin, it is therefore important that the District maintain the water rights associated Stagecoach Reservoir that are necessary to provide the benefits identified in the WSMP and the BRT study.

There are 14 water rights decreed for storage in Stagecoach Reservoir: 6 rights associated with the dry-up of senior agricultural ditches, 3 rights associated with the Four Counties Project, 2 rights associated with Pleasant Valley Reservoir, and 3 rights associated with the Stagecoach (a.k.a. Bear Reservoir) itself. The 6 agricultural water rights total 518.4 AF, of which the entire amount has been made absolute. During the first fill of the reservoir, which typically occurs between March 1st and May 31st, only 42.6 AF of the total 518.4 AF is available to be stored. The remaining portion of the agricultural rights, however, can continued to be stored after the first fill to replace evaporative losses. The 3 water rights associated with the Four Counties Project (Ditch No. 1, Ditch No. 3, and the Ditch No. 3 Extension and Enlargement) total 1,620 cfs, of which 151.0 cfs has been made absolute. Assessing the portion of this supply that would contribute to the first fill of the reservoir is challenging, as it depends on a combination of the streamflow on Fish Creek and the inflow to Stagecoach Reservoir. These water rights, however, are an important component to the District's overall operations, and as such, are evaluated separately in sub-section 7.1.4. The 2 water rights associated with Pleasant Valley Reservoir include the Pleasant Valley storage right and the Pleasant Valley Feeder Canal. These rights are paired together in terms of the yield that is available at the original Pleasant Valley Reservoir site. In total, this combination of rights is decreed to alternatively store 30,100 AF in Stagecoach Reservoir. Of this total storage volume, 20,854 AF has been made absolute. Finally, the 3 water rights associated with Stagecoach Reservoir itself include: the Bear Original right, the Bear 1st Enlargement right, and the Bear Refill right. The Bear Original and 1st Enlargement rights are decreed to be stored in the first filling of the reservoir. These rights total 11,614.2 AF and 22,105.8 AF respectively, of which the entire amount of the original right been made absolute, while all of the enlargement right remains conditional. The Bear Refill right is decreed to be stored after the first filling of the reservoir. This right totals 6,700 AF, of which the entire amount has been made absolute. These rights are summarized below and outlined in more detail in ***Table 3.A***.

Stagecoach Reservoir: 36,438.7 AF		Total Right	Absolute	Conditional
First Fill	Agricultural Rights	518.4 AF	518.4 AF	0.0 AF
	Four Counties Project	1,620.0 cfs	151.0 cfs	1,469.0 cfs
	Pleasant Valley Reservoir	30,100.0 AF	20,854.0 AF	9,246.0 AF
	Pleasant Valley Feeder Canal	300.0 cfs	0.0 cfs	300.0 cfs
	Bear Original	11,614.2 AF	11,614.2 AF	0.0 AF
	Bear 1st Enlargement	22,105.8 AF	0.0 AF	22,105.8 AF
		64,338.4 AF	**32,986.6 AF**	**31,351.8 AF**
Second Fill	Refill Right	6,700.0 AF	6,700.0 AF	0.0 AF
		6,700.0 AF	**6,700.0 AF**	**0.0 AF**

The total volume of water decreed for storage in Stagecoach Reservoir is greater than the reservoir's current capacity of 36,438.7 AF. In order to determine the water rights that are necessary for the District to maintain, RESOURCE evaluated the firm supply associated with the reservoir's first fill. As described above, all or portions of the agricultural water rights, Bear Original right, and Pleasant Valley Reservoir right has been made absolute. In total, the absolute portion of these rights that is available to store under the first fill of the reservoir is equal to 32,510.8 AF. This amount is 3,927.9 AF less than the physical storage capacity of Stagecoach Reservoir, as outlined below.

Stagecoach Reservoir:	**36,438.7 AF**	**Capacity**
1st Fill Rights, Absolute:	42.6 AF	Agricultural Rights (March-May)
	11,614.2 AF	Bear Original
	20,854.0 AF	Pleasant Valley Reservoir
	32,510.8 AF	
Remaining Volume:	**3,927.9 AF**	(36,438.7 AF – 32,510.8 AF)

It is logical for the District to use a portion of its 22,105.8 AF Bear 1st Enlargement water right to meet the 3,927.9 AF shortfall. This water right is specifically decreed for storage at the Stagecoach Reservoir site, as opposed to the Pleasant Valley Reservoir right, which is decreed as an alternative point of storage. With the assignment of 3,927.9 AF of the Bear 1st Enlargement water right to fill the remaining physical capacity of Stagecoach Reservoir, there will remain 18,177.9 AF of this conditional storage right (22,105.8 AF – 3,927.9 AF). The firm yield associated with this balance is calculated to be zero, as the combination of other senior absolute storage rights decreed at the Stagecoach Reservoir site command the entire amount of water physically and legally available during dry periods. As a result, RESOURCE

recommends that the conditional portion of the Bear 1st Enlargement water right that is not needed to complete the reservoir's first fill be abandoned.

In addition to evaluating the first fill of Stagecoach Reservoir, RESOURCE also investigated other possible storage options for the District's remaining conditional water rights in the reservoir. Specifically, the District can store a portion of its 9,246.0 AF conditional Pleasant Valley Reservoir right to offset evaporative losses. This ability was granted in Case No. 95CW139. RESOURCE calculates that the annual evaporative loss from the reservoir at capacity is approximately 1,700 AF. Therefore, during future operations of the reservoir, up to 1,700 AF of water associated with the Pleasant Valley Reservoir conditional water right will be used for evaporative purposes. As a result, RESOURCE recommends that the 1,700 AF of the District's conditional Pleasant Valley Reservoir water rights decreed to Stagecoach Reservoir be maintained. The associated pro rata interest in the Pleasant Valley Feeder Canal is 11.8 cfs ((1,700 AF / 43,220 AF) x 300.0 cfs = 11.8 cfs). In addition, the remaining conditional portion of the Pleasant Valley Reservoir water rights should not be abandoned at this time. These water rights are decreed as alternate points of storage, which could be potentially developed by the District at a new, future location. Analyses related to the WSMP showed that even with Stagecoach and Morrison Creek Reservoirs online, there were shortage in the Yampa River basin. RESOURCE, therefore, recommends that the District continue to investigate and explore the potential need for the conditional portion of the Pleasant Valley Reservoir right not being used to offset evaporation; 7,546 AF (9,246 AF – 1,700 AF = 7,546 AF).

A summary of recommendations related to the water rights associated with the District's Stagecoach Reservoir is presented below.

Recommendations:

1) The Bear 1st Enlargement Right should be maintained in an amount equal to the volume of the reservoir's first fill that has not already been made absolute under the District's agricultural rights, Bear original storage right, and the rights associated with the Pleasant Valley Project that are decreed at Stagecoach Reservoir: 3,927.7 AF.

2) The remaining conditional portion of the Bear 1st Enlargement water right that is not needed to complete the reservoir's first fill should be abandoned: 18,177 AF.

3) A portion of the Pleasant Valley Reservoir storage right and associated Pleasant Valley Reservoir Feeder Canal should be applied towards replacing the average annual evaporative loss associated with Stagecoach Reservoir (Case No. 95CW139): 1,700 AF and 11.8 cfs.

4) The remaining conditional portion of the Pleasant Valley Reservoir storage right and associated Pleasant Valley Reservoir Feeder Canal decreed for storage in the District's Stagecoach Reservoir should be maintained: 7,546 AF and 52.4 cfs. These rights are alternate points of diversion, which the District could develop at a new, future location to meet shortages in the Yampa River basin not meet through the operation of Stagecoach and Morrison Creek Reservoirs.

7.1.2 Morrison Creek Reservoir

As mentioned above, in the sub-section related to Stagecoach Reservoir, the BRT's Projects and Methods Study identified both Stagecoach Reservoir and Morrison Creek Reservoir as Identified Projects and Processes (IPP) facilities (CDM, November 2014). This recognition as an important component of the water supply infrastructure in the Yampa River basin was further confirmed by the District's analysis of Morrison Creek Reservoir, as part of the WSMP process. More precisely, the District concluded that when Morrison Creek Reservoir is operated in conjunction with Stagecoach Reservoir, the storage pools in Stagecoach Reservoir recovered more quickly after extended periods of drought, the water level remained at higher elevations for longer periods of time, and this tandem operation generally improved the District's overall firm yield. As such, it is important that the District maintain the water rights associated Morrison Creek Reservoir that are necessary to provide the benefits identified in the WSMP and the BRT study.

There are 2 water rights decreed for storage in Morrison Creek Reservoir, both of which are associated with Pleasant Valley Project: the Pleasant Valley Reservoir storage right and the Pleasant Valley Reservoir Feeder Canal. These rights are paired together in terms of the yield that is available at the original Pleasant Valley Reservoir site. In total, this combination of rights is decreed to store 10,620 AF in Morrison Creek Reservoir. These rights are summarized below and outlined in more detail in ***Table 3.B***.

Morrison Creek Reservoir: 10,620 AF		**Total Right**	**Absolute**	**Conditional**
First Fill	Pleasant Valley Reservoir	10,620.0 AF	0.0 AF	10,620.0 AF
	Pleasant Valley Feeder Canal	300.0 cfs	0.0 cfs	300.0 cfs
		10,620.0 AF	**0.0 AF**	**10,620.0 AF**

In support of the Water Court case associated with the District's Morrison Creek Project, RESOURCE determined the firm yield of the reservoir (Resource Engineering, Inc., 2008). In its analysis, RESOURCE examined the amount of water physically and legally available for storage under the District's Pleasant Valley Reservoir and Feeder Canal rights and concluded that the full storage amount of 43,220 AF was available most years at the original site. RESOURCE then examined the amount of water physically and legally available at the Morrison Creek Reservoir site, and concluded, that during the April through June snowmelt period, the site yielded 24,393 AF in dry years, 39,073 AF in average years, and 47,712 AF in wet years. Accordingly, the water rights and water supply available to be stored at the Morrison Creek Reservoir site have sufficient firm yield to support the District's full decreed amount of 10,620 AF. As a result, RESOURCE recommends that the entirety of the District's conditional Pleasant Valley Reservoir water rights decreed to Morrison Creek Reservoir be maintained: 10,620 AF. The associated pro rata interest in the Pleasant Valley Feeder Canal is 73.6 cfs ((10,620 AF / 43,220 AF) x 300.0 cfs = 73.6 cfs).

A summary of recommendations related to the water rights associated with the District's Morrison Creek Reservoir is presented below.

Recommendations:

1) The full amount of the Pleasant Valley Reservoir storage right and associated Pleasant Valley Reservoir Feeder Canal decreed to be stored in the District's Morrison Creek Reservoir should be maintained: 10,620 AF and 73.6 cfs. This storage facility increases the firm yield of Stagecoach Reservoir and helps preserve the water surface elevation.

7.1.3 Little Morrison Diversion & Alternate Point

The purpose of the Little Morrison Creek Diversion is similar to the District's Morrison Creek storage project. That is, the Little Morrison Creek Diversion would supply water from the Morrison Creek basin to Stagecoach Reservoir. As proposed, the project would consist of a diversion dam and gravity canal that would be capable to diverting up to 50 cfs from Morrison Creek. The diverted supply would then be delivered to Stagecoach Reservoir by gravity flow in Little Morrison Creek or directly through a pipeline. While the Little Morrison Creek Diversion project was not explicitly modeled in the WSMP process, it is assumed that the benefits to Stagecoach Reservoir would be similar: storage pools would recovered more quickly after extended periods of drought, water levels would remained at higher elevations for longer periods of time, and the overall firm yield associated the District's water supply

operations would improve. The Little Morrison Creek Diversion and Morrison Creek Reservoir projects are considered redundant, and it is not currently anticipated by the District that both projects would be constructed and operated simultaneously. It is important, however, for the District to retain both sets of conditional rights until such time that the District's ongoing assessments of Morrison Creek Reservoir have concluded that it is not practical and/or feasible to construct a reservoir at the proposed site. Also, from a timing perspective, the Little Morrison Creek Diversion could be constructed ahead of Morrison Creek Reservoir. In this manner, water could be delivered to Stagecoach Reservoir from the Little Morrison Creek Diversion while the District developed and completed the reservoir project. From a budgetary perspective, this phased approach also makes since, as the pipeline associated with the Little Morrison Creek Diversion could then be used to deliver water from Morrison Creek Reservoir to Stagecoach Reservoir. In prior engineering assessments, the most expensive component of any project on Morrison Creek was the water delivery pipeline (Resource Engineering, Inc., 2008). As a result, RESOURCE recommends that the entirety of the District's conditional Little Morrison Creek Diversion right be maintained: 50 cfs.

A summary of recommendations related to the water rights associated with the District's Little Morrison Creek Diversion and Alternate Point is presented below.

Recommendations:

1) The full diversion amount associated with the District's Little Morrison Creek Diversion water right should be maintained: 50 cfs. This diversion project provides a back-up to the Morrison Creek Reservoir project, and alternatively, could be developed ahead of the storage project, which would allow the District to deliver water to Stagecoach Reservoir while pursing the construction of Morrison Creek Reservoir.

7.1.4 Four Counties Project

As mentioned, in the sub-section related to Stagecoach Reservoir, the water rights associated with the Four Counties Project are an important component in the District's overall water supply operations. The Four Counties Project consists of three ditch systems: Ditch No. 1, Ditch No. 3, and Ditch No. 3 Extension and Enlargement. Associated with each of these ditch systems are a series of high elevation direct flow rights, which have been decreed for storage in Stagecoach Reservoir, Steamboat Lake, and other storage sites within the Yampa River basin. Moreover, these water rights provide the District with several unique attributes: (1) The direct flow water rights associate with Ditch No. 1 and Ditch No. 3 have the most senior priority in the District's portfolio, behind only the agricultural ditch rights decreed for storage in

Stagecoach Reservoir; (2) All of the Four Counties water rights are decreed as 100% consumptive, meaning that the District can use the return flow component of the diverted supply to extinction; (3) All of the Four Counties water rights are decreed to be used specifically for mining purpose, as well as other beneficial uses; and (4) All of the Four Counties water rights are decreed to be alternatively diverted at numerous location within the District. Based on these unique attributes, it is important that the District maintain the water rights associated Four Counties Project that are necessary to support the District's overall water resource planning efforts.

In total, there 28 direct flow water rights decreed to the Four Counties Project: 4 rights associated with Ditch No. 1, 11 rights associated with Ditch No. 3, and 13 rights associated with the Ditch No. 3 Extension and Enlargement. The 4 rights associated with Ditch No. 1 total 101 cfs, of which 21 cfs has been made absolute. The 11 rights associated with Ditch No. 3 total 655 cfs, of which 130 cfs has been made absolute. Finally, the 13 rights associated with the Ditch No. 3 Extension and Enlargement total 864 cfs, all of which is conditional. These rights are summarized below and outlined in more detail in ***Table 3.C***.

Four Counties Project: 1,620 cfs		**Total Right**	**Absolute**	**Conditional**
Diversion Rate	Ditch No. 1	101.0 cfs	21.0 cfs	80.0 cfs
	Ditch No. 3	655.0 cfs	130.0 cfs	525.0 cfs
	Ditch No. 3 Enlargement	864.0 cfs	0.0 cfs	864.0 cfs
		1,620.0 cfs	**151.0 cfs**	**1,469.0 cfs**

The District's ability to alternatively divert and/or store its Four Counties water rights depends on the water supply that is physically and legally available at the decreed points of diversion. The original points of diversion for these water rights, however, are located in remote areas that would be challenging to monitor. Consequently, the State has accepted a methodology, in which the water supply available to the Four Counties water rights at the original points of diversion is derived based on streamflow conditions monitored at the USGS gage site on Fish Creek. Many of the watersheds that supply all of the District's water rights associated with the Four Counties Project contribute to the overall streamflow at the Fish Creek site. As a result, the flow at a particular headgate can be derived as function of the watershed area above that headgate compared to the total watershed area above the Fish Creek gage. In fact, the combined watershed areas associated with all of the Four Counties water rights is approximately equal to the total watershed area above the Fish Creek gage. For the purpose of determining the maximum amount of water available to the Four Counties water rights,

RESOURCE therefore examined the historical record at the Fish Creek gage site. This analysis found that the streamflow in Fish Creek was extremely high during the 2011 runoff season. The 4-day average surrounding the peak rate was selected as a representative high-end flow condition for quantifying water availability under the Four Counties Project. This amount equaled approximately 1,150 cfs and represents the maximum amount of water that could have been diverted under the Four Counties water rights between 1966 and 2015.

In order for the District to fully capture the maximum water supply available under its Four Counties water rights, the streamflow conditions at its alternate points of diversion need to be of an equal or greater amount. Currently, the District's primary use of its Four Counties water rights is for storage in Stagecoach Reservoir. In 2011, during the peak runoff period, the District was able to divert at a maximum rate of approximately 300 cfs under its Four Counties water rights for storage in Stagecoach Reservoir. Based on the District's accounting records from 2011 through 2015, diversions attributed to the Four Counties water rights peaked in 2011. In total, during the 2011 water year, the District diverted 23.7 cfs under conditional water rights associated with Ditch No. 1 and Ditch No. 3 and 57.4 cfs under conditional water rights associated with the Ditch No. 3 Extension and Enlargement. As a result, RESOURCE recommends that in the District's upcoming diligence case these amounts be claimed absolute. The amount to be claimed absolute by water rights is summarized in ***Table 4***.

While the inflow to Stagecoach Reservoir in 2011 did not match the maximum water supply available under the Four Counties Project, RESOURCE examined the reservoir's historical record of inflow. This analysis found that streamflow conditions on the Yampa River above Stagecoach Reservoir peak at around 750 cfs. As a result, there is potential for the District to divert up to 750 cfs under its Four Counties water rights for storage in Stagecoach Reservoir.

The remaining portion of the maximum available water supply under the Four Counties Project could then be diverted at an already decreed alternative diversion and/or storage site, such as Steamboat Lake. This storage facility is located in the headwaters of the Elk River and is owned and operated by Colorado Parks and Wildlife (CPW). As part of its pending umbrella augmentation plan for the Elk River basin, the District has obtained a storage lease in Steamboat Lake with the CPW. Furthermore, the District is exploring a cooperative relationship with CPW that would allow for a portion of the Four Counties water rights to be stored in the 26,364 AF Steamboat Lake. Many of the Four Counties Ditch water rights are

senior to portions of the storage rights currently decreed to Steamboat Lake. As such, the addition of the Four Counties water rights to Steamboat Lake could improve the storage facility's legal supply component.

Alternatively, the District could divert and/or store the portions of the maximum available water supply under the Four Counties Project at new, alternative sites within its service area. By way of example, in 2015, the Steamboat Ski Resort acquired an interest in several of the water rights associated with the District's Four Counties Project. The ski resort plans to alternatively divert its interest in these rights in order to provide a water supply to existing and planned restaurants located on the mountain.

Based on District's existing operations and the potential opportunities associated with the Four Counties water rights, RESOURCE recommends that the maximum water supply of 1,150 cfs that is available under the Four Counties Project be maintained. Included with this recommendation, the District should preserve the entirety of the water rights associated with Ditch No. 1 and Ditch No. 3 (151 cfs Absolute + 605 cfs Conditional = 756 cfs), and 394 cfs under the Ditch No. 3 Extension and Enlargement. Consequently, the remaining conditional portion associated with the Ditch No. 3 Extension and Enlargement should be abandoned. The amount to be abandoned by water rights is summarized in ***Table 4***.

A summary of recommendations related to the water rights associated with the District's Four Counties Project is presented below.

Recommendations:

1) The full amount of the maximum water supply available under the Four Counties Project should be maintained; 1,150 cfs. This amount includes water rights that have been made absolute. The conditional portions that should be maintained include: 80 cfs associated with Ditch No. 1, 655 cfs associated with Ditch No. 3, and 394 cfs associated with the Ditch No. 3 Extension and Enlargement. It is anticipated that the District could divert up 750 cfs of the maximum water supply available for under the Four Counties Project for storage in Stagecoach Reservoir. The remaining balance of 400 cfs could then be diverted and/or stored at sites already decreed as alternatives or change to new, future sites within the District's service area.

2) The conditional portion of the Ditch No. 3 Extension and Enlargement that is less than the maximum available water supply should be abandoned: 470 cfs. This amount represents approximately 29% of the Four Counties Project.

3) Based on District's accounting records from 2011 through 2015, water stored under the Four Counties water rights peaked in 2011. In total, during the 2011 water year, the District diverted 23.7 cfs under conditional water rights associated with Ditch No. 1 and Ditch No. 3 and 57.4 cfs under conditional water rights associated with the Ditch No. 3 Extension and Enlargement. As a result, these amounts should be claimed absolute in the District's upcoming diligence case.

7.1.5 Pleasant Valley Reservoir and Feeder Canal

As originally contemplated, the Pleasant Valley Reservoir Project consisted of a 43,220 AF on-channel storage facility located on the Yampa River near the current location of Lake Catamount. This storage facility was to be filled from on-channel sources, as well as from a 300 cfs feeder canal that was to deliver water originating in the McKinnis Creek and Walton Creek watersheds to the reservoir. In Case No. W-946-76, the District changed portions of this project to be stored at alternative locations within the Yampa River basin. More specifically, Stagecoach Reservoir received the benefit of 30,100 AF, Yamcolo Reservoir received the benefit of 2,500 AF, and 10,620 AF has been transferred to Morrison Creek Reservoir by the District in Case No. 07CW61. In this more recent case, the District had to demonstrate to the Water Court that the physical and legal water supply available to the Pleasant Valley Reservoir Project as originally contemplated was sufficient, such that the entire 10,620 AF amount could be transferred to the Morrison Creek Reservoir site. As previously described, RESOURCE completed this analysis, demonstrating that between on-channel sources and imports from the feeder canal, the entire yield of the Pleasant Valley Reservoir Project is available and therefore can be stored at District's alternative sites described above.

The District's use of its water rights associated with the Pleasant Valley Reservoir and Feeder Canal are discussed within the context of the alternative and transferred to reservoir sites. The evaluation of these rights and concluding recommendations are therefore presented in the sub-sections for Stagecoach Reservoir (7.1.1), Morrison Creek Reservoir (7.1.2), and Yamcolo Reservoir (7.1.6). A summary from these sub-section is presented below.

Pleasant Valley Reservoir: 43,220 AF Pleasant Valley Feeder Canal: 300 cfs		Total Right	Absolute	Conditional
Storage Component	Stagecoach Reservoir	22,554 AF	20,854 AF	1,700 AF
	Morrison Creek Reservoir	10,620 AF	0 AF	10,620 AF
	Yamcolo Reservoir	2,500 AF	2,500 AF	0 AF
	Total Allocated Supply	**35,674 AF**	**23,354 AF**	**12,320 AF**
	Remaining Supply	7,546 AF		7,546 AF

Diversion Component	Stagecoach Reservoir	156.4 cfs	0 cfs	156.4 cfs
	Morrison Creek Reservoir	73.6 cfs	0 cfs	73.6 cfs
	Yamcolo Reservoir	17.6 cfs	0 cfs	17.6 cfs
	Total Allocated Supply	**247.6 cfs**	**0.0 cfs**	**247.6 cfs**
	Remaining Supply	52.4 cfs	0.0 cfs	52.4 cfs

** The amount associated with the Feeder Canal represents a Pro-Rata share of the 300.0 cfs (Volume / 43,220 AF Total) x 300.0 cfs*

7.1.6 Yamcolo Reservoir

The District's Yamcolo Reservoir and Coal Creek Diversion were not directly analyzed through the WSMP modeling process. Each of these structure, however, does or could potentially benefit constituents within the District's service area and therefore are important components in the District's overall water supply operations. As such, RESOURCE evaluated the water rights associated with Yamcolo Reservoir and the Coal Creek Diversion based on existing and/or contemplated operations in relation to the water supply that is physically and legally available to store and/or divert. A description of this analysis in regards to Yamcolo Reservoir follows. The analysis related to the Coal Creek Diversion is described in the next sub-section: 7.1.7.

Yamcolo Reservoir is a constructed storage facility located on the Bear River (Yampa River) approximately 25 miles upstream of Stagecoach Reservoir. This reservoir was built on United States National Forest Land, however, the District owns the associated facilities and water rights. In its current configuration, the District can store up to 9,621 AF in Yamcolo Reservoir, of which 8,535 AF is considered to be active and available to lease. The remaining 1,086 AF of the reservoir's capacity is then attributed to the conservation pool. Historically, the District has leased the reservoir's active storage content to serve a variety of uses in both the Yampa and Colorado River basins, and at present, the entirety of the District's available leased supply is under contract, with a majority of the water committed to agricultural needs. Of the 8,535 AF of active storage in Yamcolo Reservoir, nearly 90% or 7,523 AF is contracted for by agricultural irrigators located in south Routt County. The remaining balance of 1,010 AF is contracted between a number of municipalities and water service providers located across the District's service area, including: the Town of Yampa, the City of Steamboat Springs, the

Town of Hayden, Routt County / Phippsburg, Morrison Creek Water and Sanitation District, and Mt. Werner Water and Sanitation District.

The amount of storage that the District releases from Yamcolo Reservoir to meet the water requirements of its contractees varies by the type of water year. In most years, the District releases water to meet agricultural demands in the months of June and July, when the stream reach between Yamcolo Reservoir and the Town of Yampa is under administration from calls placed by senior irrigators. As the streamflow hydrology of the region becomes drier this call potential increases, which results in a greater demand for the water supply stored in Yamcolo Reservoir. In critical dry years, the stream system has been under administration for the entire length of the irrigation season from May through October. During these periods, the District has released up to 7,523 AF from storage – the full agricultural contract amount. While the District's management of its agricultural contract supply has an established history, releases for municipal users have occurred less frequently. Analyses related to the WSMP, however, showed that even with both Stagecoach and Morrison Creek Reservoirs online, there were shortage to municipal and industrial users in the Yampa River basin. As such, releases to municipal contract users from Yamcolo Reservoir will likely be more frequent in the future.

In order to legally support the current and future demands on Yamcolo Reservoir, the District has compiled a portfolio of water rights decreed for storage at this facility. Specifically, the District's legal supply consists of 5 storage rights and 1 diversion right. Of the 5 storage rights, 4 are related to the reservoir's first fill. These first fill storage rights total 10,556.9 AF, of which the entire amount has been made absolute for irrigation and 10,031.9 AF has been made absolute for industrial and domestic uses. The remaining storage right for 8,000 AF is to be used to fill the reservoir after the first fill has been achieved. The District has made 914.0 AF of this refill right absolute for irrigation, municipal, industrial, domestic, and stock water purposes. The remaining 7,086.0 AF of the refill right is conditional. This refill right is an important component in the District's operation of Yamcolo Reservoir, as it allows water to be stored in the late summer and early fall after the first fill has been achieved, and the ability to store this additional supply improves the reliability of the reservoir. The water rights associated with Yamcolo Reservoir are summarized below and outlined in more detail in ***Table 3.B***.

Yamcolo Reservoir: 9,621.0 AF Capacity		Total Right	Absolute	Conditional
First Fill	Original Right	6,531.9 AF	6,531.9 AF	0.0 AF
	Pleasant Valley Reservoir	2,500.0 AF	2,500.0 AF	* 2,500.0 AF
	1st Enlargement	1,000.0 AF	1,000.0 AF	0.0 AF
	2nd Enlargement	525.0 AF	525.0 AF	* 525.0 AF
	Coal Creek Diversion	100.0 cfs	0.0cfs	100.00 cfs
		10,556.9 AF	**10,556.9 AF**	*** 3,025.0 AF**

Second Fill	Refill Right	8,000.0 AF	914.0 AF	7,086.0 AF
	Coal Creek Diversion			100.00 cfs
		8,000.0 AF	**914.0 AF**	**7,086.0 AF**

Notes: 1.) * Indicates that the water right has not been made absolute for all decreed purposes.

2.) The Coal Creek Diversion can be stored in Yamcolo Reservoir. Water stored under this right, however, cannot be claimed under any of the other storage rights in Yamcolo Reservoir unless specifically decreed as a source of supply. Details related to the Coal Creek Diversion can be found in the following sub-section.

Yamcolo Reservoir currently operates on a November 1st water year, and beginning on this date the stored water supply is attributed to the District's first fill water rights in a senior to junior manner. Typically, a first fill of the reservoir is achieved in the spring, during the snowmelt runoff. After the first fill is achieved, the District relies on its second fill right to store water. This second fill storage right, however, is subject to the same river administration on the Bear River (Yampa River) that requires the District's agricultural contractees to request releases from Yamcolo Reservoir. As a result, the District's ability to store under its second fill right is limited in most years to a three month period from August through October. In these months, based on reservoir and streamflow data collected by the State from 1991 to 2011, the average inflow to Yamcolo Reservoir was equal to approximately 40 cfs, 30 cfs, and 25 cfs respectively, for a three month total volume of nearly 6,000 AF. Of this available amount, however, a portion must be bypassed in order to meet requirements set forth in the District's special use permit (SUP) with the Forest Service. At this time, the specific bypass requirements are unknown, as the District is in the process of securing a new long term permit. Assuming that the language proposed by the District is accepted by the Forest Service, the minimum bypass requirements would be as follows: the minimum of inflow or 12 cfs in the months of August and September and minimum of inflow or 8 cfs in the month of October. With consideration of these potential bypass flow requirements, the storable inflow to Yamcolo Reservoir would be equal to approximately 30 cfs, 20 cfs, and 20cfs respectively, for a three month total volume of nearly 4,500 AF.

In the future, for continuity, the District may choose to operate Yamcolo Reservoir on a springtime accounting year similar to Stagecoach Reservoir. This change would require that

the District use its second fill storage right through the winter season. As a result, RESOURCE examined the winter inflow to Yamcolo Reservoir for the same period of study from 1991 to 2011, and concluded that on average the available inflow was equal to approximately 5,000 AF without consideration of a minimum bypass requirement and 3,000 AF with the consideration of a bypass flow equal to the minimum of inflow or 8 cfs. When added to the available water supply from the August through October, the District could on average store approximately 7,500 AF.

Given the uncertainly related to the District's potential bypass requirements and accounting year, RESOURCE recommends that the full amount of the District's 8,000 AF second fill storage right in Yamcolo Reservoir be maintained.

Recommendations:

1) The full amount of the District's conditional second fill storage right in Yamcolo Reservoir should be maintained: 8,000 AF. Given the uncertainty related to the minimum bypass requirement and accounting year, it is prudent planning that District maintain the ability to refill Yamcolo Reservoir, as water that is stored after the first fill has been achieved improves the overall reliability of the reservoir.

2) The District should reevaluate the need for its entire second fill storage right in Yamcolo Reservoir, once bypass requirements are known and an accounting year is set.

7.1.7 Coal Creek Diversion

The District's Coal Creek Diversion is decreed to divert 100.0 cfs from Coal Creek, a tributary of the Bear River (Yampa River) that is approximately ½ a mile downstream from the outlet of Yamcolo Reservoir. The water supply diverted by this direct flow right is to be delivered through a pipeline to Yamcolo Reservoir for subsequent storage and/or for the reregulation of flows in Coal Creek.

As originally contemplated, the primary purpose of the Coal Creek Diversion was to divert up to 100 cfs from Coal Creek during the spring runoff and then subsequently release that supply through Yamcolo Reservoir in an effort to stabilize daily streamflow fluctuations. During the seasonal snowmelt cycle, high elevation streams exhibit a pronounced change in streamflow throughout the day. This change, or diurnal fluctuation, is attributed to the snowmelt process. During the day, solar radiation and heat conductance from exposed rocks and vegetation warm the snowpack. This warming process begins to melt the snowpack at the surface and

the free water moves downward through the rest of the snowpack. At night with colder temperatures, the water freezes within the snowpack. The alternating cycle of freeze-thaw occurs at various distances from the receiving stream systems creating an uneven distribution of water that reaches the stream channel at any point in the day. Generally, the streamflow peaks during the nighttime as the daytime melt finally finds its way to area streams. Following the nighttime peak, streamflow begin to recede throughout the morning reaching its lowest level generally in the early afternoon. As temperatures and heat conductance increase, the volume of the daily melt is accelerated and streamflow volume can alternately increase and decrease two to three fold over the course of a day. This wide swing in daily streamflow causes problems for downstream irrigators along the Bear River, as they must constantly adjust headgate settings in response to the changing flow conditions. According to Elvis Iacovetto, retired Water Commissioner for District 58, irrigators commonly experience either an over or under abundance of streamflow at their respective headgates. Such conditions can cause damage to diversion facilities and are difficult to administer as irrigators can unwittily exceed their legal allocations during the evening high flow period. Diverting from Coal Creek into Yamcolo Reservoir during the peak snowmelt period could help, in part, mitigate this situation. For example, if the Coal Creek Diversion was operated such that 100 cfs was diverted for 12 hours during the evening when the streamflow is at its peak and then reduced over the daytime hours to a rate of approximately 30 cfs, the total volume delivered to the reservoir would be 130 AF. This volume could be reregulated and released from Yamcolo Reservoir over a 24 hour period at a constant volume of 65 cfs.

The second purpose of the Coal Creek was to improve the overall yield of Yamcolo Reservoir. The operation of the Coal Creek diversion for storage purposes, however, would be limited to a period during the early spring, at the onset of snowmelt runoff and in the late summer, early fall when the Bear River (Yampa River) is no longer under administration. In most years, Yamcolo Reservoir is filled in spring, when the streamflow in the Bear River increases due to snowmelt runoff. Then, once filled, the excess flows are bypassed downstream. During these times, the benefit of delivering an additional springtime water supply from Coal Creek to Yamcolo Reservoir may be limited. In drier years, however, when the snowpack is low and the springtime streamflow is reduced, adding an additional water source would be beneficial and help ensure that the reservoir achieves its first fill. After this initial period of filling, there is limited opportunity to deliver water from Coal Creek until the late summer due to river administration. The call potential on the Bear River below Coal Creek can last the entire length of the irrigation season in a dry year (May through October); however, in most years,

this potential is limited to the months of June and July. Consequently, deliveries from Coal Creek to Yamcolo Reservoir could begin in August and continue through the fall until winter icing conditions set in. The additional of this late season water supply improves the firm yield and overall reliability of the reservoir.

Both of uses of the Coal Creek Diversion would provide benefit to constituents within the District's service area. As such, RESOURCE recommends that the District maintain the entire diversion amount of 100 cfs.

Recommendations:

1) The full diversion amount associated with the Coal Creek Diversion water right should be maintained: 100 cfs. This diversion project has the potential to help stabilize streamflow conditions in the Bear River, during the spring runoff when diurnal fluctuations can cause a flows to change significantly throughout the day. Moreover, this diversion project has the potential to improve the yield of Yamcolo Reservoir.

2) Additional hydrologic studies are recommended to better quantify the potential benefits associated with the Coal Creek Diversion. This process would be helpful to the District in its continuing discussions with the U.S. Forest Service regarding reservoir operations, flushing flows, and required bypass flows.

Table 3.A
Summary of Upper Yampa Water Conservancy District's Water Rights
Water Supply & Water Right Master Plan

Decreed Structure Water Right	Source of Supply	Administration Number	Appropriation Date	Adjudication Date	Amount **Absolute**		Amount **Conditional**		Decreed Use
STAGECOACH RESERVOIR: 64,338.4 AF + 6,700 AF Refill					***39,656.6 AF***		***31,351.8 AF***		
Changed Agricultural Rights					**518.4**	**AF**	**0.0**	**AF**	
Yellow Jacket Ditch	Yampa River *Changed from Direct Irrigation to Storage in Stagecoach Reservoir in Case No. 95CW78*	14175.00000	1888-10-22	1892-09-22	49.3	AF			CU Credits *Monthly Limitations Assessed by Ditch*
Union Ditch		14563.00000	1889-11-14	1892-09-22	267.5	AF			
Little Chief Ditch		20450.19968	1904-09-02	1906-09-20	8.8	AF			
Union Ditch		33782.24988	1918-06-01	1946-09-14	76.6	AF			
Yellow Jacket Ditch		33782.25353	1919-06-01	1946-09-14	98.7	AF			
Little Chief Ditch		33782.25353	1919-06-01	1946-09-14	17.6	AF			
Four Counties Ditches					**151.0**	**cfs**	**1,469.0**	**cfs**	
Ditch No. 1	Yampa River *Stagecoach Decreed an AP of Storage in Case W-1091*	39599.00000	1958-06-02	1964-03-30	21.0		80.0	cfs	DM, MN, IR, IN, PW, MI, RC, EX, SB, AG
Ditch No. 3		39599.00000	1958-06-02	1964-03-30	130.0	cfs	525.0	cfs	
Ditch No. 3 Enlg. & Ext.		41727.41412	1963-05-20	1972-05-30	0.0	cfs	864.0	cfs	
Pleasant Valley Reservoir					**20,854.0**	**AF**	**9,246.0**	**AF**	
Original 1st Fill	Yampa River	41727.39991	1959-06-29	1972-05-30	20,854.0	AF	9,246.0	AF	DM, MN, IR, IN, PW, ST
Feeder Canal	Yampa River	41727.39991	1959-06-29	1972-05-30			300.0	cfs	
Change Use for Stg. & Diversion Rights in Case No. 01CW41		55332.00000	2001-06-29	2001-12-31					+ AG
Bear (aka Stagecoach) Reservoir					**18,284.2**	**AF**	**22,105.8**	**AF**	
Original 1st Fill	Yampa River	40815.00000	1961-09-30	1964-03-30	11,614.2	AF			DM, MN, IR, IN, RC, ST, PS
1st Enlargement		44559.44488	1971-10-21	1972-12-31			22,105.8	AF	
Change Use for both Storage Rights in Case No. 01CW41		55332.00000	2001-06-29	2001-12-31					+ AG
Refill Right	Yampa River	53691.53386	1996-03-01	1997-12-31	6,670.0	AF			+ PW, EX
Hydroelectric	Yampa River	50769.48498	1982-10-13	1989-12-31	110.0	cfs			PW

Decreed Uses: DM = Domestic, MN = Municipal, IR = Irrigation, IN = Industrial, PW = Power, MI = Mining, RC = Recreation, ST = Stock, PS = Piscatorial, EV = Evaporation, ET = Export, EX = Exchange, SB = Substitution, AG = Augmentation
(+) = Added Use(s) to Original Right, (*) = All Uses not decreed Absolute

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Table 3.B
Summary of Upper Yampa Water Conservancy District's Water Rights
Water Supply & Water Right Master Plan

Decreed Structure Water Right	Source of Supply	Administration Number	Appropriation Date	Adjudication Date	Amount **Absolute**	Amount **Conditional**	Decreed Use
MORRISON CREEK RESERVOIR & DIVERSION: 10,620.0 AF & 50.0 cfs					***0.0 AF*** ***0.0 cfs***	***10,620.0 AF*** ***50.0 cfs***	
Pleasant Valley Reservoir					**0.0 AF**	**10,620.0 AF**	
Original 1st Fill	Morrison Creek	41727.39991	1959-06-29	1972-05-30		*10,620.0 AF*	DM, MN, IR, IN, PW, ST, ET
Feeder Canal	Morrison Creek	41727.39991	1959-06-29	1972-05-30		300.0 cfs	
Change Use for Stg. & Diversion Rights in Case No. 01CW41		55332.00000	2001-06-29	2001-12-31			+ AG
Little Morrison Creek Diversion					**0.0 cfs**	**50.0 cfs**	
Little Morrison Diversion	Morrison Creek	52959.00000	1994-12-30	1994-12-31	0.0 cfs	50.0 cfs	DM, MN, IR, IN, PW, RC, ST, PS, EX, AG
Alternate Point of Diversion	*Morrison Creek*						
YAMCOLO RESERVOIR: 10,556.9 AF + 8,000 AF Refill					***11,470.9 AF***	***7,086.0 AF***	
Pleasant Valley Reservoir					**2,500.0 AF**	**0.0 AF**	
Original 1st Fill	Yampa River	41727.39991	1959-06-29	1972-05-30	2,500.0 AF	** 2,500.0 AF*	DM, MN, IR, IN, PW, ST, ET
Feeder Canal	Yampa River	41727.39991	1959-06-29	1972-05-30		300.0 cfs	
Change Use for Stg. & Diversion Rights in Case No. 01CW41		55332.00000	2001-06-29	2001-12-31			+ AG
Yamcolo Reservoir					**8,970.9 AF**	**7,086.0 AF**	
Original 1st Fill	Yampa River	41329.00000	1963-02-26	1964-03-30	6,531.9 AF		DM, IR, IN, ET
1st Enlargement		47481.37136	1951-09-04	1980-12-31	1,000.0 AF		All Uses (*)
2nd Enlargement		50769.50653	1988-09-06	1989-12-31	525.0 AF	** 525.0 AF*	+ MN, RC, PS
Refill Right	Yampa River	47905.00000	1996-03-01	1997-12-31	914.0 AF	7,086.0 AF	+ MN, ST
Coal Creek Diversion	Coal Creek	56100.00000	2003-08-06	2003-12-31		100.0 cfs	All Uses (*)

Decreed Uses: DM = Domestic, MN = Municipal, IR = Irrigation, IN = Industrial, PW = Power, MI = Mining, RC = Recreation, ST = Stock, PS = Piscatorial, EV = Evaporation, ET = Export, EX = Exchange, SB = Substitution, AG = Augmentation

(+) = Added Use(s) to Original Right, (*) = All Uses not decreed Absolute

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Table 3.C
Summary of Upper Yampa Water Conservancy District's Water Rights
Water Supply & Water Right Master Plan

Decreed Structure Water Right	Source of Supply	Administration Number	Appropriation Date	Adjudication Date	Amount **Absolute**	Amount **Conditional**	Decreed Use
FOUR COUNTIES DITCHES: 1,620 cfs					***151.00 cfs***	***1469.00 cfs***	
Ditch No. 1					**21.00 cfs**	**80.00 cfs**	
Ditch Gains / Collection	Surface/Ground Water	39599.00000	1958-06-02	1964-03-30		30.00 cfs	
Headgate No. 4	Fish Creek	39599.00000	1958-06-02	1964-03-30		50.00 cfs	DM, MN, IR, IN, PW, MI, RC, EX, SB, AG
Headgate No. 5	Granite Creek	39599.00000	1958-06-02	1964-03-30	10.00 cfs		
Headgate No. 6	Granite Creek	39599.00000	1958-06-02	1964-03-30	11.00 cfs		
Ditch No. 3					**130.00 cfs**	**525.00 cfs**	
Ditch Gains / Collection	Surface/Ground Water	39599.00000	1958-06-02	1964-03-30		125.00 cfs	
Headgate No. 3	Walton Creek	39599.00000	1958-06-02	1964-03-30	18.00 cfs	2.00 cfs	
Headgate No. 4	Walton Creek	39599.00000	1958-06-02	1964-03-30	13.00 cfs	2.00 cfs	
Headgate No. 5	Fishhook Creek	39599.00000	1958-06-02	1964-03-30		20.00 cfs	
Headgate No. 6	Fishhook Creek	39599.00000	1958-06-02	1964-03-30		25.00 cfs	
Headgate No. 7	Fishhook Creek	39599.00000	1958-06-02	1964-03-30	26.00 cfs	104.00 cfs	DM, MN, IR, IN, PW, MI, RC, EX, SB, AG
Headgate No. 8	Long Park Creek	39599.00000	1958-06-02	1964-03-30	36.00 cfs	174.00 cfs	
Headgate No. 9	Hogan Creek	39599.00000	1958-06-02	1964-03-30		35.00 cfs	
Headgate No. 10	Walton Creek	39599.00000	1958-06-02	1964-03-30	7.00 cfs	8.00 cfs	
Headgate No. 11	Walton Creek	39599.00000	1958-06-02	1964-03-30	9.00 cfs	16.00 cfs	
Headgate No. 12	Walton Creek	39599.00000	1958-06-02	1964-03-30	21.00 cfs	14.00 cfs	
Ditch No. 3 Enlargement & Extension					**0.00 cfs**	**864.00 cfs**	
Ditch Gains / Collection	Surface/Ground Water	41727.41412	1963-05-20	1972-05-30		300.00 cfs	
Headgate No. 9	Hogan Creek	41727.41412	1963-05-20	1972-05-30		6.00 cfs	
Headgate No. 13	Walton Creek	41727.41412	1963-05-20	1972-05-30		6.00 cfs	
Headgate No. 14	Storm King Creek	41727.41412	1963-05-20	1972-05-30		49.00 cfs	
Headgate No. 15	Beaver Creek	41727.41412	1963-05-20	1972-05-30		14.00 cfs	
Headgate No. 16	Burgess Creek	41727.41412	1963-05-20	1972-05-30		70.00 cfs	
Headgate No. 17	Fish Creek	41727.41412	1963-05-20	1972-05-30		52.00 cfs	DM, MN, IR, IN, PW, MI, RC, EX, SB, AG
Headgate No. 18	Fish Creek	41727.41412	1963-05-20	1972-05-30		30.00 cfs	
Headgate No. 19	Fish Creek	41727.41412	1963-05-20	1972-05-30		70.00 cfs	
Headgate No. 20	Middle Fork Fish Creek	41727.41412	1963-05-20	1972-05-30		130.00 cfs	
Headgate No. 21	Middle Fork Fish Creek	41727.41412	1963-05-20	1972-05-30		12.00 cfs	
Headgate No. 22	Harrison Creek	41727.41412	1963-05-20	1972-05-30		75.00 cfs	
Headgate No. 23	Harrison Creek	41727.41412	1963-05-20	1972-05-30		50.00 cfs	

Decreed Uses: DM = Domestic, MN = Municipal, IR = Irrigation, IN = Industrial, PW = Power, MI = Mining, RC = Recreation, ST = Stock, PS = Piscatorial, EV = Evaporation, ET = Export, EX = Exchange, SB = Substitution, AG = Augmentation

(+) = Added Use(s) to Original Right, (*) = All Uses not decreed Absolute

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Four Counties P-40 & P-45 Ditches

Structure Name	Total Rate	Absolute	Conditional
Ditch No. 1	101 cfs	21 cfs	80 cfs
Ditch No. 3	655 cfs	130 cfs	525 cfs
Ditch No. 3 Extension	864 cfs		864 cfs
	1,620 cfs	151 cfs	1,469 cfs

Stagecoach Reservoir: CAPACITY = 36,439 AF

Structure Name	Total Volume	Absolute	Conditional
Agricultural Rights	518.4 AF	518.4 AF	
Bear Original Right	11,614.2 AF	11,614.2 AF	
Pleasant Valley Alt. Point	30,100.0 AF	20,854.0 AF	9,246.0 AF
Bear Enlargement	22,105.8 AF		22,105.8 AF
	64,338.4 AF	32,986.6 AF	31,351.8 AF
ReFill Right	6,670.0 AF	6,670.0 AF	

Morrison Creek Reservoir & Diversion

Reservoir Structure	Conditional
Pleasant Valley Alt. Point	10,620.0 AF
Pleasant Valley Feeder Canal	300.0 cfs
Diversion Structure	
Little Morrison Creek Diversion	50.0 cfs

Reservoir and/or Diversion Structures yet to be Developed

Yamcolo Reservoir: CAPACITY = 9,621 AF

Structure Name	Total Volume	Absolute	Conditional
Original Storage	6,531.9 AF	6,531.9 AF	
Pleasant Valley Alt. Point	2,500.0 AF	2,500.0 AF	
1st Enlargement	1,000.0 AF	1,000.0 AF	
2nd Enlargement	525.0 AF	525.0 AF	
	10,556.9 AF	10,556.9 AF	
Second Fill	8,000.0 AF	914.0 AF	7,086.0 AF
Coal Creek Diversion			100.0 cfs

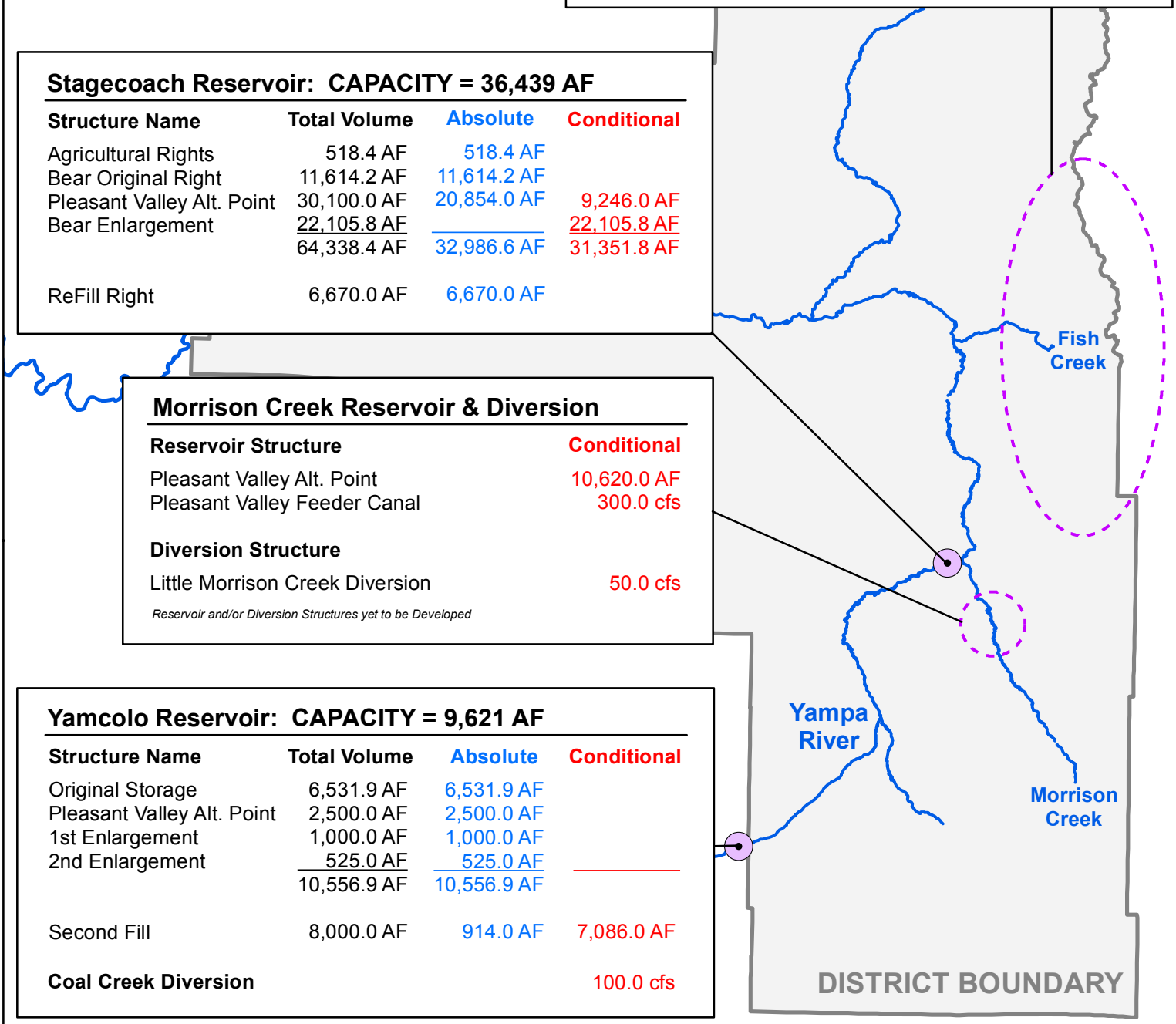

Figure 22
Summary of Upper Yampa Water Conservancy District's Water Rights
Water Supply & Water Right Master Plan

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Date: 2016-02-09
File: 1047-8.0
Drawn: ANM
Approved: RSF

Table 4
Four Counties Water Rights Recommended to be Made Absolute & to be Cancel
Water Supply & Water Right Master Plan

Decreed Structure Water Right	Decreed Water Right Amount			To be Cancelled		To be Made Absolute		
	Total Rate	Absolute Rate	Conditional Rate	Cancel	Remaining Rate	Absolute	Total Absolute	Remaining Conditional
Ditch No. 1	**101.0 cfs**	**21.0 cfs**	**80.0 cfs**	**0.0 cfs**	**101.0 cfs**	**3.2 cfs**	**24.2 cfs**	**76.8 cfs**
Ditch Gains / Collection	**30.0 cfs**	0.0 cfs	30.0 cfs	0.0 cfs	30.0 cfs	0.0 cfs	0.0 cfs	30.0 cfs
Headgate No. 4	**50.0 cfs**	0.0 cfs	50.0 cfs	0.0 cfs	50.0 cfs	3.2 cfs	3.2 cfs	46.8 cfs
Headgate No. 5	**10.0 cfs**	10.0 cfs	0.0 cfs	0.0 cfs	10.0 cfs	0.0 cfs	10.0 cfs	0.0 cfs
Headgate No. 6	**11.0 cfs**	11.0 cfs	0.0 cfs	0.0 cfs	11.0 cfs	0.0 cfs	11.0 cfs	0.0 cfs
Ditch No. 3	**655.0 cfs**	**130.0 cfs**	**525.0 cfs**	**0.0 cfs**	**655.0 cfs**	**20.5 cfs**	**150.5 cfs**	**504.5 cfs**
Ditch Gains / Collection	**125.0 cfs**	0.0 cfs	125.0 cfs	0.0 cfs	125.0 cfs	0.0 cfs	0.0 cfs	125.0 cfs
Headgate No. 3	**20.0 cfs**	18.0 cfs	2.0 cfs	0.0 cfs	20.0 cfs	0.0 cfs	18.0 cfs	2.0 cfs
Headgate No. 4	**15.0 cfs**	13.0 cfs	2.0 cfs	0.0 cfs	15.0 cfs	0.0 cfs	13.0 cfs	2.0 cfs
Headgate No. 5	**20.0 cfs**	0.0 cfs	20.0 cfs	0.0 cfs	20.0 cfs	9.1 cfs	9.1 cfs	10.9 cfs
Headgate No. 6	**25.0 cfs**	0.0 cfs	25.0 cfs	0.0 cfs	25.0 cfs	2.7 cfs	2.7 cfs	22.3 cfs
Headgate No. 7	**130.0 cfs**	26.0 cfs	104.0 cfs	0.0 cfs	130.0 cfs	0.0 cfs	26.0 cfs	104.0 cfs
Headgate No. 8	**210.0 cfs**	36.0 cfs	174.0 cfs	0.0 cfs	210.0 cfs	0.0 cfs	36.0 cfs	174.0 cfs
Headgate No. 9	**35.0 cfs**	0.0 cfs	35.0 cfs	0.0 cfs	35.0 cfs	8.7 cfs	8.7 cfs	26.3 cfs
Headgate No. 10	**15.0 cfs**	7.0 cfs	8.0 cfs	0.0 cfs	15.0 cfs	0.0 cfs	7.0 cfs	8.0 cfs
Headgate No. 11	**25.0 cfs**	9.0 cfs	16.0 cfs	0.0 cfs	25.0 cfs	0.0 cfs	9.0 cfs	16.0 cfs
Headgate No. 12	**35.0 cfs**	21.0 cfs	14.0 cfs	0.0 cfs	35.0 cfs	0.0 cfs	21.0 cfs	14.0 cfs
Ditch No. 3 Enlg. & Ext.	**864.0 cfs**	**0.0 cfs**	**864.0 cfs**	**470.0 cfs**	**394.0 cfs**	**57.4 cfs**	**57.4 cfs**	**336.6 cfs**
Ditch Gains / Collection 1	**138.0 cfs**	0.0 cfs	138.0 cfs	107.3 cfs	30.7 cfs	0.0 cfs	0.0 cfs	30.7 cfs
Ditch Gains / Collection 2	**162.0 cfs**	0.0 cfs	162.0 cfs	126.0	36.0 cfs	0.0 cfs	0.0 cfs	36.0 cfs
Headgate No. 9	**6.0 cfs**	0.0 cfs	6.0 cfs	0.0 cfs	6.0 cfs	6.0 cfs	6.0 cfs	0.0 cfs
Headgate No. 13	**6.0 cfs**	0.0 cfs	6.0 cfs	1.4 cfs	4.6 cfs	0.7 cfs	0.7 cfs	3.9 cfs
Headgate No. 14	**49.0 cfs**	0.0 cfs	49.0 cfs	11.0 cfs	38.0 cfs	5.4 cfs	5.4 cfs	32.6 cfs
Headgate No. 15	**14.0 cfs**	0.0 cfs	14.0 cfs	7.1 cfs	6.9 cfs	0.8 cfs	0.8 cfs	6.1 cfs
Headgate No. 16	**70.0 cfs**	0.0 cfs	70.0 cfs	68.9 cfs	1.1 cfs	0.2 cfs	0.2 cfs	0.9 cfs
Headgate No. 17	**52.0 cfs**	0.0 cfs	52.0 cfs	14.0 cfs	38.0 cfs	5.9 cfs	5.9 cfs	32.1 cfs
Headgate No. 18	**30.0 cfs**	0.0 cfs	30.0 cfs	9.3 cfs	20.7 cfs	2.9 cfs	2.9 cfs	17.8 cfs
Headgate No. 19	**70.0 cfs**	0.0 cfs	70.0 cfs	56.2 cfs	13.8 cfs	2.1 cfs	2.1 cfs	11.7 cfs
Headgate No. 20	**130.0 cfs**	0.0 cfs	130.0 cfs	23.1 cfs	106.9 cfs	16.6 cfs	16.6 cfs	90.3 cfs
Headgate No. 21	**12.0 cfs**	0.0 cfs	12.0 cfs	0.0 cfs	12.0 cfs	4.9 cfs	4.9 cfs	7.1 cfs
Headgate No. 22	**75.0 cfs**	0.0 cfs	75.0 cfs	9.5 cfs	65.5 cfs	9.8 cfs	9.8 cfs	55.7 cfs
Headgate No. 23	**50.0 cfs**	0.0 cfs	50.0 cfs	36.2 cfs	13.8 cfs	2.1 cfs	2.1 cfs	11.7 cfs

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8.0 COMPLIANCE WITH CASE NO. 07CW0040

The work products associated with Sections 2.0 through 6.0 above will help guide the District in the operation of its existing water supply facilities and planning for future operations. The products will also satisfy the terms and conditions contained in the District's prior diligence decree entered in Case No. 07CW40. The water rights included in Case No. 07CW40 are part of a larger portfolio of rights that support the District's water supply program that has been developed to meet existing and future water demands within its service area. The application and its subsequent amendment were opposed by the State and Division Engineer. In effort to settle its case, the District entered into a Stipulation and Agreement with the State and Division Engineer that committed itself to developing a Water Rights Master Plan to examine the District's water rights, including all of the conditional rights that were contained in Case No. 07CW40. One of the primary purposes of the plan is to determine if the identified conditional rights are reasonably necessary to meet the District's future needs. The water rights plan was prepared in consultation with the Division Engineer.

The Stipulation and Agreement entered in Case No. 07CW0040 contains ten (10) elements. These elements are outlined below followed by documentation that each condition has been satisfied as part of this WSMP/WRMP process.

1) The District's plan shall be prepared in consultation with the Division Engineer.

The District's WSMP/WRMP process was completed in consultation with Erin Light, Division Engineer. The study process included both formal and informal consultation. Informal consultation consisted of periodic progress reports presented by District Manager Kevin McBride during the Board of Directors regularly scheduled meetings. Formal consultation took place with the Division Engineer on December 11, 2014 and on February 24, 2016 during which specifics of the investigation were reviewed and discussed. Each formal consultation included follow-up email exchanges between the parties to document meeting discussions and to inquire/respond to additional questions.

2) Identify the planning period and describe why it represents a reasonable planning period.

The District's WSMP/WRMP examines basin water demands and supplies through the year 2050. This 35-year planning period was selected as it is consistent with the study period examined in the various state sponsored studies conducted as part of SWSI 2010 update. Due to the parallel planning periods, the District incorporated the state's findings regarding projected water demands, water shortages, and opportunities to help mitigate the identified "gap" in water supplies into its planning process.

3) Utilize substantiated population projections relevant to the District's service area based on normal rate of growth for that period.

The State's various studies determined future M&I needs by projecting future populations and applying estimated per capita water use rates to the population totals (CWCB, Updated Statewide Water Supply Initiative-SWSI, 2010). Population projections were estimated using the forecasting process and models utilized by the Colorado State Demographer's Office (SDO). Due to the uncertainty in projecting economic conditions and employment levels in 2050, low, medium, and high scenario population projections were developed. A complete analysis of the population projections used in the State sponsored studies is contained in SWSI 2010 at Appendix H (CWCB, Updated Statewide Water Supply Initiative-SWSI, 2010).

4) Analyze the District's ability to use its existing water rights to serve constituents who are located outside of Area A as described in paragraph 7 of the District's water court decree entered in Case No. 06CW49.

With the exception noted below, there is limited opportunity to serve constituents who are located outside of the referenced Area A delineation. For clarity, the Area A delineation decreed as part of Case No. 06CW49 included an area within the Little Morrison Creek basin above Stagecoach Reservoir that was referenced as "Future Area A". This area will be included within Area A upon completion of one or more of the District's conditional water rights associated with either the Morrison Creek Reservoir Project or the Little Morrison Creek Diversion. Moreover, the District, in concert with the Division Engineer's Office has delineated an additional "Area A" service boundary within the Elk River watershed as part of its water court application for an umbrella plan for augmentation pending in Case No. 15CW3058. This new Area

A delineation, combined with the Area A decreed in Case No 06CW49, represent the areas within the District boundary that can readily be served by District water rights. Water service outside of these areas is possible, if for example, water right conditions within the tributary basins located upstream of the Area A boundary's change. By way of example, if a controlling senior water right that currently represents the separation between Area A and Area B is abandoned or purchased, the District's ability to serve within that basin could be expanded. Such changes are not possible to predict and would have to be evaluated on a case by case basis. ***Figure 2***, attached, provides a map of the District's existing (06CW0049) and proposed (15CW3058) Area A service areas.

There is ability to serve District constituents located outside of existing or proposed Area A boundaries within tributary basins located downstream of the District's Four Counties Ditch water rights. The Four Counties Ditch water rights were originally associated with a proposed transbasin diversion project that consisted of a long, linear ditch system that would collect water from multiple headwater streams and intervening watershed areas located in Water District No. 58 generally east and southeast of Steamboat Springs.

An example of such use outside of the Area A boundary was initiated in 2015. The District entered into a water service contract with the Steamboat Ski and Resort (Resort) for use of up to 20.0 AF of yield associated with the Four Counties Ditch No. 3 Extension and Enlargement water right. The Resort plans to use the water supply to support existing and future mountain restaurant facilities at its ski area. The location of the diversion and use of the water right is situated within the area downstream of the Four Counties Ditch system and upstream of the District's Area A boundary.

The potential use of the District's Four Counties Ditch system water rights outside of Area A, as shown in ***Figure 2***, is limited. The limitations occur due to the predominance of federal lands (Routt National Forest) within the tributary basins and the presence of downstream controlling water rights. Still, the water right use is attractive to constituents as the Four Counties Ditch system priorities are all senior to the City of Steamboat Spring's RICD water right. RESOURCE estimates that the potential use of Four Counties Ditch water rights outside of the Area A boundary to be approximately 200 AF+-.

5) Analyze the amount of water necessary to serve the reasonably anticipated needs of the District and its constituents for the planning period.

The "reasonably anticipated needs of the District" were obtained directly from the State sponsored studies referenced earlier in this report. The studies identified existing and future water demands in the Yampa River basin over the next 35-year planning horizon (2015 through 2050). This is the same planning horizon used by the District as part of its WSMP/WRMP process. These investigations were thorough and the study process involved the public and local and State water officials and organizations. This information was incorporated directly into the District's study process and provides the foundation for defining "reasonably anticipated water needs".

The anticipated water needs of the District are displayed in Section 6.3 above. This section summarizes the future water shortages anticipated in the upper Yampa River basin and quantifies the amount of storage release necessary from District facilities to help meet basin deficiencies.

6) Analyze the anticipated firm yield of the District's conditional water rights.

The firm yield of a water right is generally defined as that amount of water that can be delivered annually over an extended period, including during periods of extreme drought. In 2006, RESOURCE modeled the firm yield of the District's Stagecoach Reservoir using assumed operating assumptions and historic streamflow records. The study projected that the firm yield of Stagecoach Reservoir was approximately 9,000 to 9,500 AF annually depending upon alternative assumptions. In those studies, the reservoir was assessed as a whole with respect to its various water right components. That is, there were no distinctions made for individual storage priorities and in what order they were used to fill and release from the reservoir.

If the firm yield of Stagecoach Reservoir was assessed in a similar manner as part of this study, the firm yield of Stagecoach Reservoir would be described as ranging from 13,000 to 17,000 AF per year depending upon the particular operational scenario as described in Section 6.2 above. The increase in firm yield from that calculated in 2006 is attributed to Yampa Basin StateMod's ability to predict basin water shortages and

associated periods of river administration. In StateMod, water is only released from Stagecoach Reservoir to the extent necessary to help meet downstream demands. Each year is different and not all years require the same amount of water to be released. Prior modeling efforts assumed that the full contract pool would be released annually beginning July 1st of extreme dry year cycles.

The question posed under condition No. 6 with respect to conditional water rights used to fill various storage facilities is different from that described above as it requests information regarding the firm yield of individual water right components, not the firm yield of the reservoir in whole (all rights operating together). Consequently, the firm yield of the individual components may be substantially different from the firm yield of the "whole".

Bear Enlargement in Stagecoach Reservoir: 22,105.8 AF conditional

As outlined in Section 7.1 above, 3,927.9 AF of this right will potentially be used in the first fill of Stagecoach Reservoir. Under the District's and State's reservoir accounting protocol, the storage pool associated with this right will be the last water stored in the reservoir during the spring and will be the first water released for beneficial use. As shown in Section 6.3 above, there will be multiple time periods during drought cycles that Stagecoach Reservoir will not achieve a fill during several consecutive years. Accordingly, the firm yield of this water right is technically zero. However, this does not diminish the value of the water right in helping achieve the calculated firm yield of the reservoir in whole as defined earlier. For example, this water right was fully used to help achieve a fill of Stagecoach Reservoir prior to heading into the identified drought periods. Although reservoir inflow was insufficient during subsequent dry years to fill under this priority, it did help meet downstream demands during the initial year of the drought. Accordingly, this right is a necessary component of the reservoir's overall firm yield.

Pleasant Valley Project at Stagecoach Reservoir: 9,246 AF conditional

There remains 9,246 AF of water associated with Pleasant Valley Reservoir decreed as an alternate place of storage in Stagecoach Reservoir. As outlined in Section 7.1.1 above, RESOURCE recommends that 1,700 AF of this water right be used to offset reservoir evaporation as allowed and anticipated in Case No. 95CW139. The District's

version of the Yampa Basin StateMod model, as operated in this WSMP/WRMP, accounted for evaporative losses from the reservoir's water surface throughout the study period. The amount of evaporative loss varied from year to year depending upon the storage content of the reservoir, however, the full amount of the right was always available for use as necessary. Accordingly, the firm yield of this conditional right is considered 1,700 AF.

The firm yield of the remaining 7,546 AF is limited by the physical and legal availability of water at the original Pleasant Valley Reservoir site. In a 2009 investigation regarding the feasibility of moving the Pleasant Valley Reservoir water rights to the District's Morrison Creek Reservoir site, RESOURCE found that during extremely dry periods the total yield of the water supply at the original Pleasant Valley Reservoir was less than the total 43,230 AF of water decreed to the reservoir (Resource Engineering, Inc., 2009). The dry year yield was calculated to be approximately 35,000 AF which coincides closely with the total volume of water dedicated to storage at other alternative reservoir sites including Stagecoach Reservoir, Yamcolo Reservoir, and Morrison Creek Reservoir. Water would be available to the 7,546 AF remaining Pleasant Valley Reservoir pool to the extent that the total storage at the alternate reservoir sites was less than approximately 35,000 AF. For example, if the total dry year storage at the three alternative reservoir sites was 30,000 AF, there would be approximately 5,000 AF available for storage under the remaining Pleasant Valley Reservoir pool. Additional studies will be necessary in the future to refine the firm yield of this Pleasant Valley Reservoir pool.

Pleasant Valley Project at Morrison Creek Reservoir: 10,620 AF conditional

The 10,620 AF of conditional storage right at Morrison Creek Reservoir will be filled under the 10,620 AF Pleasant Valley Reservoir storage right (alternate place of storage) and its 300 cfs supporting Pleasant Valley Feeder Canal right as decreed in Case No. 07CW0061. The firm yield of Morrison Creek Reservoir was determined in prior analyses completed by RESOURCE (Resource Engineering, Inc., 2008). In its previous study, RESOURCE examined the amount of water physically and legally available for storage under its Pleasant Valley Reservoir decree over an extended study period. During the April through June snowmelt period it was estimated that Morrison Creek at the site of the Morrison Creek Reservoir yielded 24,393 AF, 39,073

AF and 47,712 AF during dry, average and wet years respectively. Accordingly, the site has sufficient firm yield available to support its full decreed amount of 10,620 AF.

Little Morrison Creek Diversion: 50.0 cfs conditional

As described in Section 7.1.3 above, the Little Morrison Diversion Project will consist of a diversion dam and gravity flow canal that will divert up to 50 cfs of water from Morrison Creek and deliver to the adjacent Little Morrison Creek basin, were it will flow by gravity to Stagecoach Reservoir. The primary purpose of this project is to help firm the yield of Stagecoach Reservoir. The diverted water would not otherwise be available to Stagecoach Reservoir as Morrison Creek is tributary to the Yampa River one mile downstream from the Stagecoach dam.

The firm yield of the Little Morrison Creek Diversion project was determined in prior analyses completed by RESOURCE (Resource Engineering, Inc., 2008). In its previous study, RESOURCE examined the amount of water physically and legally available at the proposed headgate diversion over an extended study period. The study assumed that the project could only operate when more than 15 cfs was available at the headgate. The total volume of water available for diversion during the extreme dry year was approximately 2,939 AF. This amount of water is considered the firm yield of the Little Morrison Creek Diversion project.

Four Counties Ditches (P-40 and P-45): 1,469 cfs conditional

The water yield associated with the conditional Four Counties Ditch water rights is calculated on a procedure developed cooperatively by the UYWCD and the Division 6 Engineer. The procedure used to calculate the availability of water at the originally decreed points of diversion on the ditch system is based upon a correlation analysis of flows available at the nearby Fish Creek stream gage. To estimate water availability, the measured Fish Creek streamflow levels are prorated by watershed area (cfs per unit area) and applied to the small basins that would have contributed to the conditional Four Counties Ditch water rights. Under current decrees, the District can store the calculated volume of water under the ditch directly in Stagecoach Reservoir. Using this procedure, the District has stored 151 cfs of water in Stagecoach Reservoir all of which has been decreed absolute.

Using the above described methodology, the yield of the Four Counties water rights are limited to the maximum daily streamflow available at the Fish Creek gage. Based upon the historic record at this site, the calculated maximum amount of water available is 1,150 cfs. This finding indicates that the District could abandon 470 cfs of the total 1,620 cfs water right (1,620 cfs – 1,150 cfs = 470 cfs). The remaining 1,150 cfs right would consist of 151 cfs absolute and 999 cfs conditional.

When used for purposes of filling Stagecoach Reservoir, the Four Counties water rights are essentially supplemental to the reservoir's main storage rights originating from the Yampa River. However, the Four Counties water rights are unique and offer advantages to the District making it essential to maintain both sets of water rights. The advantage of the Four Counties water rights is that they provide the most senior storage priority, can be used and successively re-used to 100% consumption, and can be used specifically for mining purposes. The Four Counties water rights, however, are limited during drought periods when there is only modest yield available due to the small contributing watershed above the original ditch alignment. Based upon recent water right accounting, the dry year supply (firm yield) of the Four Counties water rights are approximately 500 AF. Due to the unique value provided by the Four Counties water rights, the District should retain that portion of the Four Counties water rights recommended in this report. These water rights will be used in association with the District's Yampa River storage rights to fill Stagecoach Reservoir.

Second Fill in Yamcolo Reservoir: 7,016 AF conditional and
Coal Creek Diversion at Yamcolo Reservoir: 100 cfs conditional

As outlined in Section 7.1.6 above, the 7,016 AF conditional portion of the Second Fill water right will be used to refill the storage supply. The additional supply, provided by the Second Fill water right, will increase the storage content in Yamcolo Reservoir heading into the new water year, and inherently improve the firm yield and reliability of the overall storage project. As a result, by maintaining the Second Fill water right, the District will be able to maximize the firm yield of Yamcolo Reservoir. If the Second Fill water right is evaluated on its own, and not as part of a storage project, the available dry year supply (firm yield) is likely to be less than 7,016 AF. An exact volume could not be quantified at this time, due to uncertainties related to the District's minimum bypass requirements and accounting year. The District can revise this assessment once these uncertainties are known. Notwithstanding, a finding that the dry year

supply is less than 7,016 AF does not diminish the District's need and the potential benefit associated with maintaining the total amount decreed to the Second Fill water right.

Similarly, the 100 cfs conditional Coal Creek Diversion water right will be used as a supplemental storage supply, delivering water from the Coal Creek Basin to Yamcolo Reservoir. This additional supply will increase the storage content in Yamcolo Reservoir, which inherently will improve the project's firm yield and overall reliability. Moreover, this diversion project has the potential to help stabilize streamflow conditions in the Bear River, during the spring runoff when diurnal fluctuations can cause a flows to change significantly throughout the day. As a result, maintaining 100 cfs of the Coal Creek Diversion right, the District will be able to maximize the firm yield of Yamcolo Reservoir and help stabilize flows in the Bear River. If the Coal Creek Diversion right is evaluated on its own, and not as part of a storage project, the available dry year supply (firm yield) is likely to be less than 100 cfs. Again, a finding that the dry year supply for the Coal Creek Diversion right is less than the rate recommended to be maintained does not diminish the potential benefit of maintaining full amount.

7) Evaluate scenarios of the amount of water that the District may need to release from storage under its contracts, using information provided by its contract allottees, and augmentation plan decreed in Case No. 06CW49 during the planning period.

The various reservoir operational scenarios examined over the planning period were presented in Section 6.2 above. As described, the releases were made to satisfy District contractees first, followed by releases to meet identified shortages to M&I and SSI users within the District's service area per the results of the various State sponsored studies. Specifics related to multi-year reservoir operations and storage releases are summarized in Section 6.3.

The reservoir operations described above included the District's 2,000 AF augmentation pool (Case No. 06CW0049). The augmentation needs were integrated into Yampa Basin 2015 StateMod model. Under the modeling protocol, during those months during which StateMod indicated that there were basin shortages (river administration likely), releases were made from the augmentation pool. The amount

of water to be released each month varied based upon a depletion matrix developed by RESOURCE to best describe anticipated depletions based upon an expected mix of uses within the augmentation pool (domestic, commercial, irrigation, pond evaporation, etc.). RESOURCE developed the projected depletion matrix based upon actual depletions related to hundreds of water allotment contracts associated with the Basalt Water Conservancy District (BWCD) augmentation plans. A summary of the projected monthly depletions by type of use are presented below.

Month	Commercial Depletions	Domestic Depletions	Industrial Depletions	TOTAL DEPLETIONS
Jan	1.6 AF	65.3 AF	3.6 AF	70.5 AF
Feb	1.9 AF	67.7 AF	3.0 AF	72.5 AF
Mar	2.5 AF	73.8 AF	4.0 AF	80.3 AF
Apr	40.9 AF	100.5 AF	5.8 AF	147.2 AF
May	34.9 AF	138.3 AF	2.8 AF	176.0 AF
Jun	43.0 AF	211.3 AF	3.4 AF	257.7 AF
Jul	44.5 AF	255.5 AF	5.1 AF	305.1 AF
Aug	42.2 AF	212.8 AF	6.0 AF	261.1 AF
Sep	40.9 AF	184.9 AF	6.1 AF	231.9 AF
Oct	38.7 AF	158.0 AF	6.9 AF	203.5 AF
Nov	2.0 AF	112.6 AF	4.4 AF	119.1 AF
Dec	1.9 AF	69.2 AF	4.0 AF	75.0 AF
Total	295.0 AF	1650.0 AF	55.0 AF	**2000.0 AF**
Percent:	14.8%	82.5%	2.8%	100.0%

8) Describe the potential amount, and timing of consumptive use within the District's service area that may require augmentation during the planning period.

See response to No. 7 above.

9) Does the anticipated needs of the District contain reasonable water conservation measures by District contractees during the planning period?

As described in Section 4.0 above, the water demand associated with the State sponsored studies that have been used in this study included assumptions that future water demands would be less than projected due to water savings associated with required passive water conservation. Passive water conservation savings are primarily related to the water demand reductions associated with the impacts of state and federal policy measures and laws. Examples of passive water savings include the use of required water saving fixtures and the retrofitting of housing stock and

businesses that exist prior to 2016 through the replacement of washing machines, toilets, and dishwashers (CDM, 2011).

10) Analyze the amount of water physically and legally available for diversion at each decreed point of diversion.

The very purpose of the WSMP/WRMP study was to identify the amount of water physically and legally available for diversion at various District points of diversion and storage. The District spent significant time and resources in developing and using a modified version of Yampa Basin 2015 StateMod model that operates over the paleo-record. The model assesses basin water supplies based upon physical and legal constraints and projects water availability for storage and release of water from District facilities. The results of the StateMod modeling as part of this investigation, combined with other studies completed by RESOURCE, provide information related to water availability at various points of diversion. This information can be found in the various report sections above.

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REPORT ADOPTED

The foregoing Water Supply / Water Right Master Plan Report prepared for the Upper Yampa Water Conservancy District by Resource Engineering, Inc., was duly adopted by the Upper Yampa Water Conservancy District, Board of Directors at their regularly scheduled meeting of May 18, 2016.

Kevin McBride, P.E.
District Manager, Upper Yampa Water Conservancy District
May 25, 2016

ATTACHMENT 1:
Case No. 07CW40, Water Division 6
Decree & Stipulation

DISTRICT COURT, WATER DIVISION 6, COLORADO P.O. BOX 773117 STEAMBOAT SPRINGS, COLORADO 80477 PHONE NUMBER: (970) 879-5020	
CONCERNING THE APPLICATION FOR WATER RIGHTS OF: UPPER YAMPA WATER CONSERVANCY DISTRICT IN ROUTT AND MOFFAT COUNTIES, COLORADO	COURT USE ONLY
	CASE NO. 07CW40 WATER DIVISION 6

FINDINGS OF FACT, CONCLUSIONS OF LAW AND JUDGMENT AND DECREE

This matter came before the Court upon the Application of the Upper Yampa Water Conservancy District for a Finding of Reasonable Diligence. The Court having reviewed the Application and other pleadings in this case, and now being fully advised with respect to this matter, enters the following Findings of Fact, Conclusions of Law and Judgment and Decree.

FINDINGS OF FACT

1. Applicant. The Applicant is the Upper Yampa Water Conservancy District and is represented in this matter by Weiss and Van Scoyk, LLP, 600 S. Lincoln, Suite 202, Steamboat Springs, CO 80487, (970) 879-6053 and Balcomb & Green, P.C., P.O. Drawer 790, Glenwood Springs, CO 81602, (970) 945-6546.

2. Notice and Jurisdiction. Applicant filed an Application for Finding of Reasonable Diligence on March 27, 2007 and a First Amendment to Application on November 26, 2008. The Application and First Amendment to Application were properly published in the resume for Water Division No. 6. All notices required by law have been properly made, including as required under C.R.S. §37-92-302(3). The Court has jurisdiction over the Application and over all persons or entities who standing to appear, even though they did not do so. The Court finds that the relief requested herein is consistent with the relief originally requested in the Application and for which public notice was provided.

3. Opposition. There were no statements of opposition to the Application as initially filed. Catamount Development, Inc., Dick Wolfe, State Engineer, Erin Light, Division Engineer,

Water Division 6, and Flying Diamond Resources, filed statements of opposition to the First Amended Application. Said opposers have either withdrawn their statements of opposition or entered into stipulations for entry of a ruling, copies of which are on file with the court.

4. Summary of Consultation. The Court has given due consideration to the Division Engineer's Summary of Consultation dated November 23, 2007. See C.R.S. §37-92-302(4).

5. District's Uses and Service Area.

A. The District provides raw water for domestic, municipal, irrigation and other uses to its constituents and contractees within its service area. The District's service area covers nearly all of Routt County and a portion of Moffat County. It extends from the headwaters of the Yampa River and its tributaries downstream to an area just south and west of the City of Craig.

B. The District has existing contracts for delivery of water in the annual amount of 13,192 acre-feet for such uses. The District's contractees use and will use their contracted water supplies either by direct delivery and diversion for beneficial use or by augmentation under judicially approved plans that they have secured. The District also has adjudicated an area-wide augmentation plan, approved by this Court in Case No. 06CW49, to provide for additional contracts in the amount of up to 2,000 acre feet of annual releases for augmentation to additional District contractees. The District also operates a hydropower operation at Stagecoach Reservoir.

C. Water demand for domestic, irrigation, commercial and municipal uses in the upper Yampa Basin within Applicant's service area will increase in the future. The District has an identified planning period of 50 years. During that period, the demands for water under the District's existing contracts are expected to increase because of changes in water rights administration requiring contractees to use more water directly or by exchange and growth within the individual service areas.

D. Routt County's population growth is expected to grow at an average rate of between 2.0 and 2.5 per cent per year over the next 30 years based on reasonable growth projections. This population increase will require additional diversions to satisfy future demands. The evidence presented by the Applicant demonstrates that up to an additional 4,940 acre feet of annual diversions may be required within unincorporated areas of the District's service area, and that additional demands of up to 7,398 acre feet will occur within incorporated areas, some of which have contracted for deliveries of water from the District, including the City of Steamboat Springs, the Morrison Creek Metropolitan Water and Sanitation District, Mount Werner Water and Sanitation District, Town of Hayden and the Town of Yampa. Future industrial and commercial uses will add to this demand.

E. The District's planning period, population projections, and anticipated future demands as described above are reasonable and are based upon substantiated projections.

CLAIM FOR FINDING OF REASONABLE DILIGENCE

6. Structures: Four Counties Ditch Nos. 1 and 3, Priority Nos. 40 through 40-0. The Upper Yampa Water Conservancy District acquired the following conditional water rights from the Colorado-Ute Electric Association, Inc. The District has made certain portions of these rights absolute in Cases Nos. 92CW26 and 95CW116, District Court Water Division 6, as well as conveyed several of those rights to the City of Steamboat Springs. Those rights previously made absolute and/or which were conveyed to the City of Steamboat Springs are specifically excluded from this Decree.

A. Previous Decree: The Four Counties Ditch Nos. 1 and 3, Priority Nos. 40 through 40-0, were decreed in Civil Action No. 3538, Water District No. 58, Routt County District Court, decreed March 30, 1964, amended September 8, 1970.

B. Legal Descriptions/Amounts from original decree:

(1) Four Counties Ditch No. 1, Headgate No. 4 (Priority No. 40C): 50 cfs (conditional) out of Fish Creek at a point S 21 degrees 22' East 17,665 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(2) Four Counties Ditch No. 3, Headgate No. 9 (Priority No. 40D): 35 cfs (conditional) out of Hogan Creek at a point S 65 degrees 22' East 15,450 feet to the NW Corner of Section 7, T5N, R82W, 6th P.M.

(3) Four Counties Ditch No. 3, Headgate No. 8 (Priority No. 40E): 174 cfs (conditional) out of Long Park Creek at a point S 42 degrees 48' East 9,195 feet to the NW Corner of Section 7, T5N, R82W, 6th P.M.

(4) Four Counties Ditch No. 3, Headgate No. 7 (Priority No. 40F): 104 cfs (conditional) out of Fishhook Creek at a point S 39 degrees 16' East 8,555 feet to the NW Corner of Section 7, T5N, R82W, 6th P.M.

(5) Four Counties Ditch No. 3, Headgate No. 6 (Priority No. 40G): 25 cfs (conditional) out of Unnamed Creek No. 5, tributary to Fishhook Creek, at a point S 83 degrees 38' East 6,955 feet to the NW Corner of Section 7, T5N, R82W, 6th P.M.

(6) Four Counties Ditch No. 3, Headgate No. 5 (Priority No. 40H): 20 cfs (conditional) out of Unnamed Creek No. 4, tributary to Fishhook Creek, at a point N 86 degrees 30' East 5,625 feet to the NW Corner of Section 7, T5N, R82W, 6th P.M.

(7) Four Counties Ditch No. 3, Headgate No. 4 (Priority No. 40I): 2 cfs (conditional) out of Unnamed Creek No. 3, tributary to Walton Creek, at a point N 87 degrees 30' East 8,245 feet to the SW Corner of Section 7, T5N, R82W, 6th P.M.

(8) Four Counties Ditch No. 3, Headgate No. 3 (Priority No. 40J): 2 cfs (conditional) out of Unnamed Creek No. 2, tributary to Walton Creek, at a point N 23 degrees 04' West 2,165 feet to the SW Corner of Section 7, T5N, R82W, 6th P.M.

(9) Branch of Four Counties Ditch No. 3, Headgate No. 12 (Priority No. 40K): 14 cfs (conditional) out of Unnamed Creek No. 7, tributary to Walton Creek, at a point N 84 degrees 30' East 4,565 feet to the SW Corner of Section 19, T5N, R82W, 6th P.M.

(10) Branch of Four Counties Ditch No. 3, Headgate No. 11 (Priority No. 40L): 16 cfs (conditional) out of Unnamed Creek No. 6, tributary to Walton Creek, at a point S 47 degrees 12' East 4,995 feet to the SW Corner of Section 19, T5N, R82W, 6th P.M.

(11) Branch of Four Counties Ditch No. 3, Headgate No. 10 (Priority No. 40M): 8 cfs (conditional) out of Walton Creek, at a point N 78 degrees 28' East 2,155 feet to the NE Corner of Section 19, T5N, R82W, 6th P.M.

(12) Four Counties Ditch No. 1 (Priority No. 40N): 30 cfs (conditional) from surface and ground flows along Four Counties Ditch No. 1 in Water District 58, other than at points of diversion described in Priority Nos. 40 through 40C above, at or above 9,567 feet above sea level.

(13) Four Counties Ditch No. 3 and its Branch (Priority No. 40O): 125 cfs (conditional) from surface and ground flows along Four Counties Ditch No. 3 in Water District 58, other than at points of diversion described in Priority Nos. 40D through 40M above, at or above 9,567 feet above sea level.

C. Alternate Places of Diversion and Storage. Pursuant to the decree entered in Case No. W-1091-76, District Court, Water Division 6, these water rights may be diverted and stored, directly or by exchange, at the following alternate places of diversion or storage: the Givens Ditch, the Colorado Utilities Ditch, Craig Station Ditch, Ash

Ponds, Hayden Reservoir, Steamboat Lake, Bear (Stagecoach) Reservoir, California Park Reservoir, Dunkley Reservoir, Grouse Mountain Reservoir, Pleasant Valley Reservoir, and Rampart Reservoir.

D. Use: Domestic, municipal, irrigation, industrial, generation of electric power and energy, mining and recreation, including appropriative rights of exchange and substitution, augmentation and exchange for replacement purposes and all other augmentation uses. Subject to the limitations of the decree entered in Case No. W-1091-76 and recited in paragraph 8 below, all water diverted or stored, directly or by exchange, is subject to reuse and successive uses until 100 percent of such water has been consumptively used.

7. Structures: Four Counties Ditch No. 3, Enlargement and Extension

A. Previous Decree: Priority Nos. 45 through 45M, Water District 58, Civil Action 3926, Routt County District Court, decreed May 30, 1972.

B. Legal Descriptions/Amounts:

(1) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 9 (Priority No. 45): 6 cfs (conditional) out of Hogan Creek at a point N 82 degrees 00'E 14,160 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(2) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 13 (Priority No. 45A): 6 cfs (conditional) out of an unnamed tributary of Walton Creek at a point N 82 degrees 58'E 17,850 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(3) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 14 (Priority No. 45B): 49 cfs (conditional) out of Storm King Creek at a point S 83 degrees 25'E 22,850 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(4) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 15 (Priority No. 45C): 14 cfs (conditional) out of Beaver Creek at a point S 86 degrees 32'E 26,510 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(5) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 16 (Priority No. 45D): 70 cfs (conditional) out of an unnamed tributary of Walton Creek at a point S 61 degrees 02'W 589 feet to the NE Corner of Section 26, T5N, R82W, 6th P.M.

(6) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 17 (Priority No. 45E): 52 cfs (conditional) out of an unnamed tributary of Fish Creek at a point S 68 degrees 26'E 24,640 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(7) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 18 (Priority No. 45F): 30 cfs (conditional) out of an unnamed tributary of Fish Creek at a point S 59 degrees 00'E 20,570 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(8) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 19 (Priority No. 45G): 70 cfs (conditional) out of Fish Creek at a point S 37 degrees 03'E 18,800 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(9) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 20 (Priority No. 45H): 130 cfs (conditional) out of the Middle Fork of Fish Creek at a point N 36 degrees 02'E 27,260 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(10) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 21 (Priority No. 45I): 12 cfs (conditional) out of an unnamed tributary of the Middle Fork of Fish Creek at a point S 33 degrees 25'E 26,910 feet to the NW Corner of Section 6, T5N, R82W, 6th P.M.

(11) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 22 (Priority No. 45J): 75 cfs (conditional) out of Harrison Creek at a point S 65 degrees 25'E 4,610 feet to the SW Corner of Section 31, T5N, R82W, 6th P.M.

(12) Four Counties Ditch No. 3, Enlargement and Extension, Headgate No. 23 (Priority No. 45K): 50 cfs (conditional) out of an unnamed tributary of Harrison Creek at a point N 65 degrees 25'E 6,045 feet to the SW Corner of Section 31, T5N, R82W, 6th P.M.

(13) Four Counties Ditch No. 3, Enlargement and Extension (Priority No. 45L): 138 cfs (conditional) from surface and ground flows along Four Counties Ditch No. 3, Enlargement and Extension, from Headgate No. 9 to Headgate No. 21 in Water District 58, other than at points of diversion described in decrees for Headgates No. 9 through 21 at or above 9,567 feet above sea level.

(14) Four Counties Ditch No. 3, Enlargement and Extension (Priority No. 45M): 162 cfs (conditional) from surface and ground flows along Four Counties Ditch No. 3, Enlargement and Extension, in Water District 58, between Rabbit Ears Reservoir and Headgate No. 23, other than at points of diversion

described in decrees for Headgates No. 22 through 23 at or above 9,500 feet above sea level.

C. Alternate Places of Diversion and Storage: Pursuant to the decree entered in Case No. W-1091-76, District Court, Water Division 6, these water rights may be diverted and stored, directly or by exchange, at the following alternate places of diversion or storage: the Givens Ditch, the Colorado Utilities Ditch, Craig Station Ditch, Ash Ponds, Hayden Reservoir, Steamboat Lake, Bear (Stagecoach) Reservoir, California Park Reservoir, Dunkley Reservoir, Grouse Mountain Reservoir, Pleasant Valley Reservoir, and Rampart Reservoir.

D. Decreed Uses: Domestic, municipal, irrigation, industrial, generation of electric power and energy, mining and recreation, including appropriative rights of exchange and substitution, augmentation and exchange for replacement purposes and all other augmentation uses. Subject to the limitations of the decree entered in Case No. W-1091-76 and recited in paragraph 8 below, all water diverted or stored, directly or by exchange, is subject to reuse and successive uses until 100 percent of such water has been consumptively used.

8. Terms and Conditions – Four Counties Rights.

A. The total amounts of water to be diverted and stored by Applicant at any time through the structures described in paragraphs 6 and 7 above, shall be limited to the total amounts of water physically available in priority at the originally decreed points of diversion of said water rights less deductions for in stream losses between said originally decreed points of diversion and said alternate points of diversion and places of storage as determined by the Division Engineer for Water Division No. 6 in accordance with applicable Colorado Law.

B. In order to facilitate administration of this condition, the Division Engineer is authorized to determine the actual flows at said originally decreed points of diversion by correlation of flows at gauging stations to be installed at more accessible locations. If, however, the Division Engineer reasonably determines in the performance of his or her statutory duties that measuring devices at the originally decreed points of diversion are required in order to accurately determine the actual flows at said points, such requirement shall not prevent Applicant from diverting and storing water at the alternate points of diversion and places of storage described in paragraphs 6 and 7 herein pending issuance of the necessary permits for installation of said measuring devices, and actual installation of said measuring devices. Provided, however, that under such circumstances Applicant shall be required to proceed with all due diligence in good faith to attempt to obtain said permits and to install said measuring devices.

C. Applicant's right to reuse and make successive uses of water diverted or stored pursuant to the decree entered in Case No. W-1091-76 shall be subject to the limitation that Applicant shall not reuse or make successive uses of such water for consumptive purposes after such water has been diverted and/or stored and subsequently used for consumptive purposes, including power plant cooling, and returned to the stream from which diverted or stored. This limitation shall not preclude reuse or successive uses of such water for consumptive purposes before it is returned to the stream and becomes available for use by other appropriators. Storage or restorage of such water at the site of its use whether on or off stream shall not constitute the return of such water to the stream. For the purposes of this limitation, storage of water and use of water for hydroelectric power generation, including pumped-back storage, shall not be deemed use for a consumptive purpose. Applicant shall install such measuring devices and take such other actions as are reasonably determined by said Division Engineer in the performance of his or her statutory duties to be required in order to properly administer this limitation.

9. Structure: Bear Reservoir Enlargement

A. Priority Date/Previous Decree: October 21, 1971, decree entered in Case No. W-414-72, Water Div. No. 6 on October 29, 1973.

B. Amount: 22,105.8 acre feet (conditional)

C. Location: The dam is located in the SW1/4 SE1/4, Section 29, T4N, R84W, 6th P.M. The reservoir will inundate portions of Sections 29, 30, 31 and 32, T4N, R84W, portions of Section 36 T4N, R85W, and portions of Section 1, T3N, R85W, 6th P.M. The southern terminus of the dam embankment at the right abutment is located 269.15 feet N 77 degrees 57' E of the S1/4 Corner of Section 29. The centerline of the dam bears N 18 degrees 30' E from said southern terminus at the right abutment a distance of 800 feet. All bearings are referenced to the S line of Section 29 which bears N 87 degrees 14' 59" W.

D. Use: Water storage and appropriative rights of exchange and substitution, augmentation and exchange for replacement purposes and all other augmentation uses.

10. Structure: Pleasant Valley Reservoir

A. Priority Date/Previous Decree: June 29, 1959, Priority No. 39A, Water District No. 39A, Water District No. 58, Civil Action 3926, Routt County District Court, as modified by decree and entered in Case No. W-946-76, Water Division No. 6, granting alternate places of storage.

B. Amount: 40,720 acre feet out of 43,220 acre feet conditionally decreed. Of the 40,720 acre feet, 20,854 acre feet are absolute and 19,866 acre feet are conditional.

C. Location: Alternate points of storage are located as follows:

(1) Woodchuck Reservoir: The intersection of the centerline axis of said dam and the left abutment thereof being located at a point whence the SW corner of Sec. 30, T4N, R84W, 6th P.M., bears S 66 degrees 30' W a distance of 16.660 feet.

(2) Yamcolo Reservoir: The intersection of the centerline axis of said dam and the right abutment thereof being located at a point whence the W1/4 corner of Sec. 16, T1N, R86W, 6th P.M., bears N 41 degrees 53' E a distance of 873 feet.

(3) Bear Reservoir: The intersection of the centerline axis of said dam and the right abutment thereof being located at a point whence the W1/4 corner of Sec. 32, T4N, R84W, 6th P.M., bears S 47 degrees 35' W a distance of 4633 feet.

(4) Morrison Creek Reservoir: During the pendency of this application, the Applicant obtained a decree to allow water to also be stored in the Morrison Creek Reservoir in Case No. 07CW61, District Court, Water Division 6. The centerline of the proposed Morrison Creek Reservoir dam intersects Morrison Creek at a location within the SE1/4, NE1/4, Section 10, Township 3 North, Range 84 West of the 6th P.M. at a point located 244 feet west of the east section line and 1,539 feet south of the north section line of said Section 10.

D. Source: Yampa River tributaries

E. Use: Irrigation, domestic, stock watering, municipal, industrial and power uses and appropriative rights of exchange and substitution, augmentation and exchange for replacement purposes and all other augmentation uses.

11. Structure: Pleasant Valley Feeder Canal

A. Priority Date/Previous Decree: June 29, 1959, Priority No. 39, Water District No. 58, Civil Action 3926, Routt County District Court, as modified by decree and entered in Case No. W-946-76, Water Division No. 6 granting alternate places of storage.

B. Amount: 300 cfs (conditional)

C. Location: Alternate points of diversion and storage are located as follows:

(1) Woodchuck Reservoir: The intersection of the centerline axis of said dam and the left abutment thereof being located at a point whence the SW corner of Sec. 30, T4N, R84W, 6th P.M., bears S 66 degrees 30' W a distance of 16,600 feet.

(2) Yamcolo Reservoir: The intersection of the centerline axis of said dam and the right abutment thereof being located at a point whence the E1/4 corner of Sec. 16, T1N, R86W, 6th P.M., bears N 41 degrees 53' E a distance of 873 feet.

(3) Bear Reservoir: The intersection of the centerline axis of said dam and the right abutment thereof being located at a point whence the W1/4 corner of Sec. 32, T4N, R84W, 6th P.M., bears S 47 degrees 35' W a distance of 4633.0 feet.

(4) Morrison Creek Reservoir: During the pendency of this application, the Applicant obtained a decree to allow water to also be stored in the Morrison Creek Reservoir in Case No. 07CW61, District Court, Water Division 6. The centerline of the proposed Morrison Creek Reservoir dam intersects Morrison Creek at a location within the SE1/4, NE1/4, Section 10, Township 3 North, Range 84 West of the 6th P.M. at a point located 244 feet west of the east section line and 1,539 feet south of the north section line of said Section 10.

D. Source: Walton Creek and McKinnis Creek

E. Use: Irrigation, domestic, stock watering, municipal, industrial and power uses and appropriative rights of exchange and substitution, augmentation and exchange for replacement purposes and all other augmentation uses.

12. Future District Demands. Water demand for domestic, irrigation, commercial and municipal and augmentation uses in the upper Yampa Basin within Applicant's service area will increase in the future. Routt County's population growth is expected to grow at an average rate of between 2.0 and 2.5 per cent per year over the next 30 years based on reasonable growth projections. This population increase will require additional diversions to satisfy future demands above the District's current supply. Future industrial and commercial uses will add to this demand. The Court further finds that the District's planning period, population projections, and anticipated future demands are reasonable and are based upon substantiated projections.

13. Anti-Speculation. The water rights claimed herein are based upon a non-speculative intent and the Applicant has a specific plan and intent to divert, capture, possess, and control water for specific beneficial uses. C.R.S. § 37-92-103(3)(a)(II).

14. Feasibility. Based upon the totality of the facts and circumstances of this case, the Applicant has established that water can and will be diverted under the subject conditional water rights and will be beneficially used, and this water supply project can and will be completed with diligence and within a reasonable time. C.R.S. § 37-92-305(9)(b).

15. Integrated System. The conditional water rights decreed herein are individual components of Applicant's integrated water supply system. Consequently, in subsequent diligence proceedings, work on any one feature of Applicant's supply system shall be considered in finding that reasonable diligence has been shown in the development of water rights for all features of Applicant's water supply system. C.R.S. § 37-92-301(4)(b).

CONCLUSIONS OF LAW

16. To the extent they constitute legal conclusions, the foregoing Findings of Fact are incorporated herein.

17. The Application is complete, covering all applicable matters required pursuant to the Water Rights Determination and Administration Act of 1969, C.R.S. §§37-92-101 through – 602.

18. Applicant has fulfilled all legal requirements for a decree for the requested finding of reasonable diligence of the conditional water rights, except those previously declared absolute. C.R.S. §§37-92-301 and 37-92-302.

19. The conditional water rights decreed herein are individual components of Applicant's integrated water supply system. Consequently, in subsequent diligence proceedings, work on any one feature of Applicant's supply system shall be considered in finding that reasonable diligence has been shown in the development of water rights for all features of Applicant's water supply system, *see* C.R.S. §37-92-301(4)(b).

20. The subject Application is in accordance with Colorado law. Applicant has fulfilled all legal requirements for entry of a decree in this case.

JUDGMENT AND DECREE

21. The foregoing findings of fact and conclusions of law are incorporated herein.

22. The Court hereby adjudges and decrees that Applicant has been reasonably diligent in perfecting the conditional water rights of the Four Counties Ditch No. 1 and 3, Four Counties Ditch No. 3 Enlargement and Extension, Bear Reservoir, Bear Reservoir Enlargement,

Pleasant Valley Reservoir and Pleasant Valley Feeder Canal as described herein. *See,* C.R.S. §37-92-301(4)(b).

23. The conditional water rights of the Four Counties Ditch No. 1 and 3, Four Counties Ditch No. 3 Enlargement and Extension, Bear Reservoir, Bear Reservoir Enlargement, Pleasant Valley Reservoir, and Pleasant Valley Feeder Canal described herein shall be in full force and effect until May 31, 2016. If the Applicant wishes to maintain the conditional water rights thereafter, it shall file an application for finding of reasonable diligence on or before that date, or make a showing on or before then that the conditional water rights have become absolute rights by reason of the completion of the appropriation.

24. Review of determinations made by the Division Engineer or the State Engineer, in administration of the subject water rights is a water matter over which the Water Court has exclusive jurisdiction.

25. Pursuant to Rule 9 of the Uniform Local Rules for All State Water Court Divisions, upon the sale or other transfer of the conditional water rights of the Four Counties Ditch No. 1 and 3, Four Counties Ditch No. 3 Enlargement and Extension, Bear Reservoir, Bear Reservoir Enlargement, Pleasant Valley Reservoir and Pleasant Valley Feeder Canal, the transferee shall file with the Division 6 Water Court a notice of transfer which shall state:

A. The title and case number of this Case No. 07CW40;

B. The description of the conditional water right transferred;

C. The name of the transferor;

D. The name and mailing address of the transferee, and

E. A copy of the recorded deed.

The owner of the said conditional water right shall also notify the Clerk of the Division 6 Water Court of any change in mailing address. The Clerk shall place any notice of transfer or change or address in the case file of this Case No. 07CW40 and in the case files in which the Court first made a finding of reasonable diligence.

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It is accordingly ordered that these Findings of Fact, Conclusions of Law and Judgment and Decree shall be filed with the Water Clerk and shall become effective upon such filing, subject to judicial review pursuant to C.R.S. §37-92-304, as amended.

It is further ordered that a copy of this Decree shall be filed with the State Engineer and the Division Engineer for Water Division No. 6.

Done this 27th day of May, 2010.

BY THE COURT:

Michael A. O'Hara, III, Water Judge
Water Division No. 6, State of Colorado

This document constitutes a ruling of the court and should be treated as such.

Court:	CO Routt County District Court 14th JD
Judge:	Michael Andrew O'Hara
File & Serve Transaction ID:	31212692
Current Date:	May 27, 2010
Case Number:	2007CW40
Case Name:	In the interest of: UPPER YAMPA WATER CONSERVANCY DISTRICT

/s/ Judge Michael Andrew O'Hara III

DISTRICT COURT, WATER DIVISION 6, COLORADO
P.O. Box 773117
Steamboat Springs, Colorado 80477
Phone Number: (970) 879-5020

CONCERNING THE APPLICATION FOR WATER RIGHTS OF:
UPPER YAMPA WATER CONSERVANCY DISTRICT

IN ROUTT AND MOFFAT COUNTIES, COLORADO.

COURT USE ONLY

CASE NO. 07CW40

WATER DIVISION 6

ATTORNEYS FOR APPLICANT: UPPER YAMPA WATER CONSERVANCY DISTRICT

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STIPULATION AND AGREEMENT BETWEEN THE APPLICANT AND STATE ENGINEER AND DIVISION ENGINEER, WATER DIVISION 6

Applicant, Upper Yampa Water Conservancy District, and Opposers, Dick Wolfe State Engineer and Erin Light, Division Engineer, Water Division 6, (collectively "Engineers"), through their respective attorneys, hereby stipulate and agree to the following and move the Court to enter an Order approving said Stipulation:

1. The District has incorporated terms and conditions into its proposed decree as requested by Engineers. The Engineers consent to and will not oppose entry of a decree in this case that is no less restrictive than the decree version dated 3/30/2010 attached hereto as **Exhibit A**.

2. During the ensuing first 6-year diligence period for the water rights that are the subject of this Application and as a condition for the entry of any future diligence decree for such first 6-year diligence period, the District shall develop a Water Rights Master Plan that evaluates the future use of all of the District's water rights, including the conditional water rights in this case; and that identifies whether and how the conditional rights can be developed, prioritizes such development, and evaluates whether any of the conditional water rights will not be needed or useable by the District or potential assignees or contract allottees from the District. Such Plan will be filed with the Division Engineer. The Plan shall:

(A) Identify and be based upon a reasonable water supply planning period;

(B) Contain substantiated population projections relevant to the District's service area based on a normal rate of growth for that period;

(C) Analyze the District's ability to use its existing water rights to serve constituents who are located outside of Area A described in paragraph 7 of the Findings of Fact, Conclusions of Law, and Judgment and Decree dated December 15, 2008, in Case No. 06CW49, and shown on Exhibit A to that decree;

(D) Analyze the amount of water reasonably necessary to serve the reasonably anticipated needs of the District and its constituents for the planning period, which analysis shall include but not be limited to:

(i) The anticipated firm annual yield of the District's decreed conditional water rights, based on historical and existing river conditions;

(ii) Scenarios of the amounts of water the District may need to release from storage under its contracts, based upon information voluntarily provided by contract allottees, and augmentation plan decreed in Case No. 06CW49 during the planning period;

(iii) The potential amount, and timing of consumptive use within the District's service area that may require augmentation during the planning period; and

(iv) Potential for reasonable water conservation measures by District contractees during the planning period.

(E) Analyze the amount of water physically and legally available for diversion at each decreed point of diversion.

(F) The District may rely upon existing measuring and diversion structures, facilities, data, and engineering and analytical techniques as necessary in developing the information necessary for development of the Plan.

3. The District shall consult with the Division Engineer concerning the development of the Plan.

4. This Stipulation is entered into by way of compromise and settlement of this litigation. Any agreement by the Engineers not to oppose entry of this proposed decree shall not be construed as agreement with or a commitment to include any specific finding of fact, conclusion of law or administrative practice in a future court proceeding or stipulation and shall not constitute consent to, or agreement with, specific engineering methodologies or opinions expressed in the Water Rights Master Plan. This Stipulation and proposed decree shall not be binding on the Engineers other than in the current proceeding. This Stipulation and the stated contents of the Water Rights Master Plan do not bind the Parties regarding the nature of proof required by the District to obtain findings of reasonable diligence in the development of conditional water rights in future water court proceedings.

5. This Stipulation is subject to ratification by the Board of Directors of the Upper Yampa Water Conservancy District. It is anticipated that the District will take formal action to approve this Stipulation within the near future. Unless the District provides written notice to the Engineers that the Board of Directors has rejected this stipulation on or before, May 20, 2010, this Stipulation shall be binding upon the District.

6. The Engineers shall continue to receive copies of all pleadings in this case so as to ensure compliance with the provisions of this Stipulation.

7. The Stipulation shall be binding on the parties, their successors and assigns. Any dispute over whether the parties have complied with the terms of this stipulation shall be resolved by the Water Court, Water Division 6.

8. Each party shall bear its own costs and attorney fees.

9. The District shall file this Stipulation with the Water Court and may request an Order from the Court approving that Stipulation. This Stipulation shall be enforceable as an agreement between the Parties and, upon Court approval, as an Order of the Court.

Dated this 22nd day of April 2010.

JOHN W. SUTHERS, Attorney General

By: */s/ Scott Steinbrecher*
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Upper Yampa Water Conservancy District

CERTIFICATE OF SERVICE

I hereby certify that I have this date of April 22, 2010 electronically served a copy of the above and foregoing STIPULATION AND AGREEMENT BETWEEN THE APPLICANT AND STATE ENGINEER AND DIVISION ENGINEER, WATER DIVISION 6 upon the following:

Scott Steinbrecher, Esq.
Assistant Attorney General
Natural Resources & Environment Section
1525 Sherman Street, 5th Floor
Denver, CO 80203

Attorneys for the State and Division Engineers

/s/ Elaine L. Benson
Elaine L. Benson, Paralegal

This document was filed electronically. An original signature copy is available for inspection at the office of the originating attorney, pursuant to Colorado Rule of Civil Procedure 121, § 1-26.