

## **SPDSS Memorandum Final**

**To:** Ray Alvarado and Ray Bennett  
**From:** LRE, Erin Wilson and Duane Herring  
**Subject:** Task 3 – Identify Key Diversion Structures  
Notes from Water District 6 Meeting  
**Date:** December 8, 2004

### **Introduction**

This memorandum provides notes from the December 8, 2004 meeting with Water District 6 Water Commissioner, Bob Carlson. Meetings are being held with Water Commissioners in each Water District in the SPDSS study area. The objectives of these meetings are 1) to develop an initial basin understanding; 2) to determine what irrigation structures should be included as “Key Structures” in future detailed modeling efforts, and 3) to determine which reservoirs and diversions warrant more detailed investigation and technical documentation. These objectives support both Task 3 – Identify Key Diversion Structures and Task 5 – Identify Key Storage Reservoirs and Develop Operating Memorandum.

### **Approach**

Prior to the meeting, potential Key Structures for Division 6 were identified using the following procedure outlined in the SPDSS Scope of Work:

1. Identify net absolute water rights per structure. Select initial key structure cutoff value based on the 85 percent recommendation (SPDSS Feasibility Study, October 2001) for each water district.
2. Determine average annual diversion data for structures during three hydrologic years, one year each during the 1950s, the 1970s, and the 1990s. Add additional structures to the key list that diverted an average of 1,000 acre-feet per year on the main stem during any of the representative years. Note that this step will allow the inclusion of larger diversion structures having active water rights during the earlier years of the study that were subsequently transferred to other ditches or other uses.
3. Review readily available straight-line diagrams and include additional structures as appropriate, based on water rights and location.

Table 1, provided in the Results Section of this memorandum, lists the initial list of key diversion structures, the total of their decreed water rights, the period of record of available diversion records, their average annual diversions for the period of record, and the water source. In addition, as noted in the comment line, it includes new structures

added during the interviews, or structures that were removed as key and will be modeled in an aggregated fashion. On-going Task 3 efforts include review of irrigated acreage, water rights, and diversion records. It is expected that the key structure list shown in Table 1 will be further refined during these, and model development, efforts.

The interview with the Water Commissioner and the Division Engineer was intended to determine additional structures that should be considered key based on seniority, water administration, or basin operations (including structures with supplemental reservoir water). Prior to the meeting, a brief description of the purpose and goals of the interview was provided to the Water Commissioner, Bob Carlson. The following is a summary of the meeting agenda:

1. Review straight-line diagrams for accuracy
2. Develop a list of major projects, reservoirs, and ditches in the water district, including names of knowledgeable contact people
3. Gather information on dry-up points in the river, calling rights, augmentation plans, and administration specific to the water district
4. Gather general information on the preliminary list of irrigation diversions selected to be included in future detailed modeling efforts (key structures), and solicit input on their final inclusion
5. Develop information on reservoirs, such as owner entities, ditches that get reservoir deliveries, assigned delivery losses, etc.

LRE developed maps of the water district to facilitate the discussions and provided preliminary straight-line diagrams of Water District 6. Maps displayed reservoirs, diversion headgate locations, and canal layouts on a quad-sheet background. David Ellington, Division 1, plans to digitize the preliminary straight-line diagrams following the standards set for Division 1 straight-line diagrams. Information in this memorandum is believed to be accurate. However, information should not be relied upon in any legal proceeding.

## **Meeting Attendance**

The meeting was held at the Division 1 offices in Greeley. The following people attended part or all of the meeting:

Bob Carlson - District 6 Water Commissioner  
Boyd Sheets - District 6 Deputy Water Commissioner  
David Ellington - Division 1  
David Nettles - Division 1  
Erin Wilson - Leonard Rice Engineers  
Duane Herring - Leonard Rice Engineers

## **Meeting Notes**

Bob Carlson began by discussing the details of the South Boulder Creek system, followed by Boulder Creek and North Boulder Creek.

The major utilities and municipalities in District 6 include:

- Town of Louisville
- Town of Lafayette
- City of Boulder
- Public Service Utility Company
- Denver Water

## **Transbasin Diversions**

Colorado-Big Thompson (C-BT) and Windy Gap Water enter District 6 via the Boulder Feeder Canal, which empties into Boulder Reservoir. The administration of C-BT and Windy Gap water is described in the section entitled “C-BT Water and Municipal Use”. Transbasin water (Fraser River and Williams Fork River) is also brought into Gross Reservoir via Moffat Tunnel.

## **Compacts and Agreements Affecting District 6 Administration**

None

## **Stream Gages and General Administration**

Bob Carlson has been water commissioner since 1988. Boyd has been deputy water commissioner for about three years. Diversion coding in Water District 6 is based on the Water Commissioner handbook, although coding may have been different prior to 1988.

### *South Boulder Creek*

- The Moffat Water Tunnel at East Portal gage (09022500) measures transbasin water delivered through the Moffat tunnel. The gage is in good condition and is well maintained. Diversions through the Moffat Tunnel are diurnal.
- When Denver Water developed the Moffat system and built Gross Reservoir, they channelized South Boulder Creek, removing oxbows. At the time, there were several unadjudicated diversions off the oxbows. Denver replaced these diversions with headgates on the river. There are no water rights for many of these diverters, but they believe they have a right to divert because they have headgates.
- Administration requirements upstream of Gross Reservoir are relatively few. Eldora Ski Resort diverts from Jenny Creek for snow making and other uses - this diversion is recorded under infrequent records. Storage rights are administered for Karel Park Reservoir and Toll’s pond. Downstream of Rollinsville is Lake Pactolus, which has a junior 1940s storage. The lake was historically used as an ice-making facility. This reservoir is rarely in priority to store. Los Lagos Lakes and Manchester Lake have relatively senior rights,

but they are high in the basin and often may not fill because of physical water limitation. An 1888 Sterling call on the South Platte River will also prevent them from filling. There is some domestic use and a minor amount of irrigation above Gross Reservoir.

- The South Boulder Creek below Gross Reservoir gage (06729450) measures outflow from Gross Reservoir. The gage has some glitches, but is considered good overall. Gross Reservoir (0604199) stores some native flows, but mostly Moffat Tunnel Water. Native storage is calculated from change in storage, river flow measures below Gross Reservoir, and deliveries through the Moffat Tunnel. Denver provides daily accounting of Gross Reservoir storage.
- The South Boulder Creek near Eldorado Springs gage (BOSDELCO) is considered a good gage.
- The South Boulder Diversion Conduit near Eldorado Springs gage (BOSDELCO) measures water diverted into Denver's Pipeline. Diversions are also recorded under WDID 0600590.
- In general, Bob Carlson uses the USGS gages throughout the water district to identify streamflow trends, but not necessarily for direct administration.
- South Boulder Creek dry-up points include: the Jones and Donnelly Ditch, Community Ditch in the winter, on the Dry Creek Carrier below the Leyner and Cottonwood No 1 (in early July), on the Dry Creek Carrier below the Cottonwood No. 2 (end of July), and below the Howard Ditch (end of August).
- Generally, no release records are maintained from reservoirs delivering to Lafayette and Louisville.
- Return flow obligations from transfers to cities tracked based on front-end diversions

#### *North Boulder Creek*

- There are no active stream gages on North Boulder Creek.
- Administration requirements on upper North Boulder Creek include storage rights for Triple Lakes, Goose Lake, Island Lake, Lake Albion, and Silver Lake.
- Other diversions include Caribou Ranch direct and augmentation diversions.
- The City of Boulder provides accounting for diversions, releases, and storage in Goose Lake, Lake Albion, and Silver Lake.
- North Boulder Creek administration is generally controlled by calls on main Boulder Creek, or by the physical availability of water.

#### *Boulder Creek*

- Middle Boulder Creek at Nederland gage (06725500) measures water at the inlet to Barker Reservoir. The gage is in good condition and is used to assist in river administration. It tends to ice up in the winter and has had rock problems during high water events.
- Boulder Creek near Orodell gage (06727000) measures streamflow below the location of the Orodell power plant. The City of Boulder took over operation

of the power plant several years ago. Since then, peak power generation on the basis of public demand has ceased and the city generates on an “as-wanted” basis. The elimination of high flows from peak power generation has created icing problems with the gage during the winter.

- Boulder Creek at Boulder gage was installed during the summer of 2004 in coordination with Urban Drainage the Flood Control District. It is located on Boulder Creek near the library.
- Boulder Creek at North 75<sup>th</sup> Street near Boulder gage (BOCNORCO) is maintained by the USGS and used to assist in administration. The gage is directly downstream of where C-BT water from Boulder Reservoir enters Boulder Creek and upstream of the City of Boulders wastewater treatment plant discharge.
- Boulder’s effluent discharge location was moved from upstream to downstream of the Town of Lafayette’s pipeline in 2002 because of water quality concerns.
- There are several minimum streamflow requirement reaches from the continental divide to the 75<sup>th</sup> Avenue gage of 15 cfs under a 1972 water right. Instream flows are met into July by several transfers and donations of senior rights (e.g. on the Farmers Ditch, Harden Ditch, and Smith & Goss Ditch). The rights usually fall out of priority by the end of July, reducing instream flow to 5-6 cfs for the remainder of the summer and to about 1 cfs by mid-September to October 15.
- Boulder Creek at Mouth near Longmont (06830500) measures flow to the St. Vrain River.
- Dry-up points on Boulder Creek include: at the Idaho Creek Carrier Diversions (Houck No. 2 Ditch) and at the headgate of Rural Ditch
- Dry-up points on Boulder Creek include: the “12<sup>th</sup> Street Diversions” (except the minimum flow requirement), the “Idaho Creek Diversions”, and either Lower Boulder or Boulder and Weld near the end of July. The 12<sup>th</sup> Street Diversions (Boulder White Rock, North Boulder Farmers, and Boulder Left Hand) use a common carrier until 21<sup>st</sup> Street. Smith and Goss Ditch also diverts at this structure, but has its own headgate and does not rely on the carrier for water. The Idaho Creek Carrier delivers water to Houck No. 2, Carr Tyler, Highland South Side, Rural Ditch, and Delehant Tom Ditch.

### *Coal Creek*

- Coal Creek near Plainview gage (06730300) is okay
- Coal Creek near Louisville (06730400) is okay.
- Coal Creek Calls are generally internally controlled.

### Normal Year River Call Sequence

<p>Winter – November 1<sup>st</sup> begins the storage season</p>	<p>South Boulder Creek</p> <ul style="list-style-type: none"> <li>• Marshall Reservoir and Louisville Reservoir store off of Community Ditch. The ditch typically dries up the river in the winter.</li> <li>• Erie Reservoir has the #1 storage right but generally can't get enough during the winter, so only stores during spring runoff</li> <li>• Lafayette's reservoirs are generally called out, but they borrow from the river during the winter and repay later in the season if necessary – usually to Marshall Reservoir.</li> <li>• Lafayette has 1.34 cfs of fully consumable water from Dry Creek #2 Ditch that they can take during the winter</li> </ul> <p>Boulder Creek</p> <ul style="list-style-type: none"> <li>• Six-Mile Reservoir stores, other reservoirs are junior to South Platte reservoirs</li> </ul> <p>Coal Creek</p> <ul style="list-style-type: none"> <li>• Standley Lake stores through Last Chance Ditch under its original storage rights in Kinnear Reservoir</li> </ul>
<p>April 1 through Spring</p>	<p>South Boulder Creek</p> <ul style="list-style-type: none"> <li>• Marshall continues to store</li> <li>• Howard and McGinn typically begin irrigation early, generally April 1</li> </ul> <p>Boulder Creek</p> <ul style="list-style-type: none"> <li>• Boulder White Rock Ditch 1873 right sometimes is the calling right in the early spring</li> </ul> <p>Coal Creek</p> <ul style="list-style-type: none"> <li>• Kerr Ditch 1861 right sometimes calls in spring or early summer</li> </ul>
<p>Early Summer – Runoff to 1<sup>st</sup> Week in July</p>	<p>South Boulder Creek</p> <ul style="list-style-type: none"> <li>• Goodhue (1873) or Davidson Ditch (1872) until 1<sup>st</sup> week in July</li> </ul> <p>Boulder Creek</p> <ul style="list-style-type: none"> <li>• Boulder White Rock Ditch 1873 right will until the 1<sup>st</sup> week in July</li> </ul> <p>Coal Creek</p> <ul style="list-style-type: none"> <li>• Hake Ditch 1860 right by early June.</li> </ul>

	Eggleston #1 Ditch 1860 right by mid June
July	South Boulder Creek <ul style="list-style-type: none"> <li>• Leyner &amp; Cottonwood 1870 right early July</li> <li>• Leyner &amp; Cottonwood 1865 right in mid July</li> <li>• Cottonwood No. 2 1863 right end of July</li> </ul> Boulder Creek <ul style="list-style-type: none"> <li>• Lower Boulder Ditch 1870 right early July</li> <li>• North Boulder Farmers Ditch 1863 right in mid July</li> </ul> Coal Creek <ul style="list-style-type: none"> <li>• Eggleston #1 Ditch is usually dry by July because there is no water upstream of its headgate.</li> </ul>
End of Irrigation Season- August to September	South Boulder Creek <ul style="list-style-type: none"> <li>• Shearer Ditch, McGinn Ditch, or Howard Ditch 1860 rights. If Shearer Ditch stops irrigating, other ditches may come back on.</li> </ul> Boulder Creek <ul style="list-style-type: none"> <li>• Farmers Ditch 1862 right in early August</li> <li>• North Boulder Farmers 1862 and Boulder Left Hand Ditch 1862 rights in September</li> </ul>

Late spring, South Platte direct diversion calls end storage in Water District 6. Water District 6 direct diversion rights are generally senior to South Platte direct diversion rights.

## C-BT Water and Municipal Use

C-BT water is delivered to Water District 6 through the Boulder Feeder Ditch via Boulder Reservoir. Water is delivered to Boulder Creek at the location shown above. Deliveries are coded as “replacement to river” or “release to river”. The Platte Valley Company is federally funded to account for and deliver water to the South Platte via the Lower Boulder Ditch. The towns of Lafayette, Louisville, Superior, Erie, and Boulder own C-BT units. The town of Broomfield historically relied on the Great Western Reservoir to meet their municipal demand, however the threat of contamination from Rocky Flats has prompted the federal government to purchase other supplies for the

town. C-BT and Windy Gap water is now delivered through the Broomfield Pipeline for their use.

Major municipal and industrial users include Xcel Energy (formerly Public Service), Boulder, Lafayette, and Louisville. Lafayette, Louisville, and Erie uses are discussed under their individual river diversion in the Ditch Specific Information section.

Public Service uses cooling water for their power plant at the Valmont Complex. The Valmont (or Public Service) Complex includes Valmont Reservoir (aka Owens Reservoir- 0604230), Hillcrest Reservoir (0604178), and Leggett Reservoir (0604180); which are essentially operated as one reservoir with a combined capacity of around 12,000 acre-feet. The reservoirs are filled from East Boulder Ditch (0600575), Enterprise Ditch (0600576), and the Leggett Inlet. There is no measurement device on the Leggett inlet. Water diverted into the reservoirs is measured on the Wellman Canal and the East Boulder Bypass. Total use at Valmont is around 2,000 to 3,000 acre-feet per year. Leggett Ditch Company also owns shares in Owens Reservoir, and approximately 1,100 acre-feet per year is released for irrigation. Releases from the complex are often too warm to meet federal temperature guidelines, so C-BT water is often traded. They are shareholders and have changed the uses to include industrial in the following ditches:

- Enterprise Ditch
- Dry Creek #2 Ditch
- Jones Donnelly Ditch
- East Boulder Ditch

The City of Boulder is located along Boulder Creek and constitutes the largest municipal entity within Water District 6. Boulder diverts its municipal water supply from direct rights and storage on North Boulder Creek, Middle Boulder Creek and Main Boulder Creek. Boulder also receives water from the Colorado-Big Thompson and Windy Gap Projects, and has changed direct flow rights from several ditches on main Boulder Creek.

- Boulder's North Boulder Creek interests include several high mountain reservoirs (Green Lakes Reservoirs 1 through 5, Albion Lake, Goose Lake, Island Lake, and Silver Lake) the City of Boulder Pipeline No. 1. The combined capacity of Boulder's storage on North Boulder Creek is around 7,000 acre-feet.
- Boulder's Middle Boulder Creek interests include Barker Meadow Reservoir and the City of Boulder Pipeline No. 3
- Boulder's main Boulder Creek interests include C-BT and Windy Gap water delivered to Boulder Reservoir. The water can be treated at the Boulder Reservoir Treatment Plant, and used directly for municipal use, or delivered to Boulder Creek through the Boulder Feeder Canal as an exchange for direct flow or storage.

Contact for the City of Boulder accounting is Craig Skeie.

## **Ditch Specific Information**

In general, ditches are discussed in upstream to downstream order.

### *South Boulder Creek*



- **South Boulder Diversion Conduit (0600590)** delivers Moffat Tunnel and native water to their North Side system. Denver provides daily accounting of diversions below Gross Reservoir.
- **Louisville Pipeline (0600598)** diverts municipal water above Eldorado Springs for direct use by the Town of Louisville. Louisville owns shares in several ditches on South Boulder Creek. Louisville can divert their pipeline water and other changed water through the Community Ditch for direct use and can store in Marshall Lake when there is available capacity. Louisville also has available storage in Harper Lake and Louisville Reservoir. Harper Lake is used for flow equalization. Louisville's South Treatment plant is located near the outlet of Marshall Lake and their North Treatment plant is located at Louisville Reservoir. Louisville provides monthly records of their diversions to Bob Carlson. The contact for the Town of Louisville is Dan Mathis.
- **Community Ditch (0500564)**, also referred to as Upper Community Ditch, is owned by the Farmers Reservoir and Irrigation Company (FRICO). Water is delivered to **Marshall Lake (0604212)** and **McKay Lake (0604214)** and to irrigate FRICO-Marshall lands below the reservoir. FRICO also has an agreement with the Town of Louisville to carry their water (termed "foreign water") through the Community Ditch when there is excess capacity. Louisville can also store water in Marshall Lake if there is excess capacity. There is no irrigation off the Community Ditch upstream of Marshall Lake.
- **Lafayette Pipeline (0600597)** historically delivered water to the Marshall water treatment plant. The Marshall treatment plant is no longer in operation, but used to be located near the Town of Marshall and is not connected to Marshall Reservoir. The pipeline currently diverts water above Eldorado Springs and returns it to South Boulder Creek below Community Ditch. The water is re-diverted for the town's use through the **Lafayette Diversion Pt 4 (0600889)**, which is located on South Boulder Creek and is the inlet to Baseline Reservoir (0604173 ~ 6,900 af). Lafayette also diverts water through the newly built (in 2002) **Lafayette Boulder Creek Pipeline 1 (0600878)** located downstream of 75<sup>th</sup> Street on Boulder Creek. The pipeline can only divert changed water from Lower Boulder Ditch and waste water exchanges. Lafayette also has storage in Henry Waneka Reservoir 1 (0604203 ~ 1000 af), and Goosehaven Reservoir 1 & 2 (06003998 ~ 500 af). The contact for the City of Lafayette is Brad Dallam.
- **Eldorado Springs Diversion (0600751)** has a 1904 right on South Boulder Creek that is called out 9 to 10 months of the year. They operate on a substitute supply plan that replaces out-of-priority diversions with FRICO-Marshall water.
- **South Boulder Foothills Ditch** is not longer active
- **Davidson Ditch (0600567)** diverts for some irrigation. A portion of the original irrigation rights have been changed to include all uses and shares are owned by Lafayette and Louisville. The ditch serves as the legal fill ditch for Waneka Reservoir

- **Goodhue Ditch (0600650)** is used for some irrigation. The original irrigation rights have been changed to include all uses and some shares are owned by the Towns of Lafayette and Louisville. The ditch is also used to fill Goodhue Reservoir.
- **South Boulder and Bear Creek Ditch (0600588)** diverts for some irrigation. A portion of the original irrigation rights have been changed to include all uses and shares are owned by the Town of Lafayette.
- **Dry Creek Ditch #2 (0600570)** diverts for some irrigation. A portion of the original irrigation rights have been changed to include municipal and industrial uses and shares are owned by the Towns of Lafayette and Louisville and by Public Service.
- **Marshalville Ditch (0600585)** diverts for irrigation. Some of the rights have been transferred to the Louisville Pipeline for municipal use.
- **Schearer Ditch (0600592)** delivers irrigation water to Boulder Open Space and has not been changed for other uses.
- **South Boulder Canyon Ditch (0600593)** diverts for some irrigation. A portion of the original irrigation rights have been changed to include municipal use and are owned by the Town of Erie. Shares are diverted for Erie's direct use and for storage in Erie Reservoir.
- **McGinn Ditch (0600586)** diverts for some irrigation. Some of the rights have been transferred to the Louisville Pipeline for municipal use.
- **Anderson Ditch (0600501)** tails into Bear Creek and is re-diverted through the Anderson Extension Ditch. It is used to deliver water to South Boulder Creek for several augmentation plans. Water enters South Boulder Creek upstream of the New Dry Creek Carrier. It is also a fill ditch for Baseline Reservoir.
- **New Dry Creek Carrier (0600902)** carries water to the following ditches. They share a common headgate on South Boulder Creek, but are measured separately.
  - **Enterprise Ditch (0600576)** diverts for some irrigation of vegetable row crops and grass. A portion of the original irrigation rights have been changed to include municipal and industrial uses and shares are owned by the Town of Lafayette and Public Service.
  - **Cottonwood Ditch #2 (0600566)** diverts for some irrigation, although some of the rights have been transferred to the Louisville Pipeline.
  - **Dry Creek Davidson Ditch (0600569)** diverts for irrigation and municipal use for Louisville.
  - **Andrews and Farwell Ditch (0600560)** diverts for irrigation.
  - **Leyner and Cottonwood #1 Ditch (0600565)** diverts for some irrigation. A portion of the original irrigation rights have been changed to include all uses and shares are owned by the Towns of Lafayette, Louisville, and Erie. The ditch is also used to fill Goosehaven Reservoir
- **Howard Ditch (0600580)** is the senior irrigation right on South Boulder Creek. It diverts for some original irrigation. A portion of the original

irrigation rights have been changed to include all uses and shares are owned by the Towns of Lafayette and Louisville, Boulder Open Space, and Eldora Ski Resort as an alternate point of diversion. The remaining water is in high demand by municipalities because of the seniority. South Boulder Creek can be dried up below this diversion.

- **Wellman Ditch (aka Wellman Canal – 0600557)** The original irrigation rights on Wellman Ditch have been abandoned. Public Service owns rights to use the ditch to divert water from Boulder Creek to storage in Hillcrest Reservoir, in the Valmont Complex.
- **East Boulder Ditch (0600575)** delivers water to the Valmont (Public Service) complex and for irrigation.
- **Jones and Donnelly Ditch (0600582)** is used for irrigation. A portion of the rights have been transferred to Enterprise Ditch, East Boulder Ditch, and Leggett inlet. However, the transfers are not used to fill the Valmont Complex. South Boulder Creek is typically dried up below this diversion.

#### *North Boulder Creek*

- **Boulder Silver Lake Pipeline (0600600)** is the first portion of the Boulder City Pipeline that diverts water from North Boulder Creek to Lakewood Reservoir, including Boulder's water released from Silver Lake. Diverted water passes through the Silver Lake Hydroelectric Project prior to entering Silver Lake.
- **Boulder City Pipeline (0600599)** diverts Boulder's 6.189 cfs right on the Town of Boulder Ditch into the Boulder City Pipeline (Silver Lake and Lakewood Pipelines) and carries it to the Betasso Treatment Plant. This is an alternate point for the Town of Boulder Ditch (0600601) and Boulder's transferred rights from other ditches, including the Anderson Ditch and the Farmers Ditch. All of Boulder's water diverted from North Boulder Creek is recorded under this pipeline.

#### *Middle Boulder Creek*

- **Barker Reservoir (0604172)** was historically owned by Public Service and used for power generation. The reservoir has a capacity of approximately 11,700 acre-feet. The City of Boulder purchased storage in 1960, increasing their holdings until 2001 when they purchased the entire system. Barker Reservoir stores native inflows and C-BT water (by exchange).
- **City of Boulder Pipeline No. 3 (0600943)** diverts water from Barker Reservoir through a steel penstock approximately 1,800 feet to the Orodell Hydroelectric Plant located on Main Boulder Creek, then to the City for treatment. The pipeline is also used to fill Mesa Reservoir (aka Wonderland Lake - 0604184) and Mesa Park Reservoir (0604183).

#### *Boulder Creek*

- **Silver Lake Ditch (0600603)** diverts for irrigation and to fill Mesa Reservoir (1,500 acre-feet).
- **Farmers Ditch (0600525)** diverts for irrigation. About half of the original irrigation right has been changed to municipal use by the City of Boulder.
- **New Anderson Ditch (0600501)** diverts for some irrigation and storage in Baseline Reservoir. A portion of the original right has been changed for municipal use in Boulder.
- The following “**12<sup>th</sup> Street Diversions**” share a common headgate and carrier (Dry Creek Carrier) but are measured separately. The carrier splits at 21<sup>st</sup> Street. Boulder Creek can be dried up below these diversions, except to meet minimum instream flow requirements.
  - **Smith and Goss Ditch (0600554)** originally diverted for irrigation at about 45 cfs. Most of the original rights have been abandoned and the ditch currently diverts around 5 cfs for irrigation and municipal transfer flow.
  - **Harden Ditch (0600530)** has not diverted since 1974. A portion of the right was transferred to the Boulder Pipeline and a portion was abandoned. Flows from this right contribute to Boulder’s instream flow package.
  - **Boulder & White Rock Ditch (0600516)** diverts water for irrigation and for storage in Panama Reservoir and Six-mile Reservoir. A small portion of the water right is used for augmentation.
  - **Boulder & Left Hand Ditch (0600513)** diverts for irrigation. Irrigation return flows accrue to Left Hand Creek in Water District 5.
  - **North Boulder Farmers Ditch (0600543)** diverts for irrigation. A portion of the rights have been changed to all uses by the City of Boulder.
  - **McCarty Ditch (No Records)** is a historic structure, the rights of which have been transferred to contribute to Boulder’s instream flow package.
- **Butte Mill Ditch (0600518)** diverts for irrigation up to 10 cfs. The ditch historically ran at 100 cfs and was used for milling.
- **Green Ditch (0600528)** diverts for irrigation.
- **Lafayette Diversion Pt 4 (0600889)** diverts, as an alternate point, Lafayette’s South Boulder Creek rights into Baseline Reservoir.
- **Leggett Ditch (0600537)** was once two separate structures (**Revolution Ditch (0600528)** and **Leggett Ditch (0600437)**), which are now the same physical structure. Leggett Ditch diverts for irrigation and storage in Panama Reservoir.
- **Lower Boulder Ditch (0600538)** has the most senior right in eastern Colorado (1859) and diverts for irrigation. A portion of the original irrigation rights have been changed to include all uses and shares are owned by the Towns of Lafayette, Louisville, and Boulder. Boulder Creek typically dries up downstream of this headgate in mid-summer. As note above, Lower Boulder Ditch delivers C-BT water to the South Platte River, specifically to Coal Ridge Ditch (0200552), which is the lower portion of Lower Boulder Ditch.

- **Boulder and Weld County Ditch (0600515)** is an alternate diversion point for Martha Mathews Ditch and Houck Ditch #1. Boulder Creek typically dries up downstream of this headgate in mid summer the Lower Boulder Ditch is not calling.
- **Martha M. Mathews Ditch (0600540)** historically diverted for irrigation. Diversions have been transferred to the Boulder and Weld County Ditch.
- **Howell Ditch (0600536)** diverts for irrigation and storage in Wittemyer Ponds under its 1<sup>st</sup> enlargement decree.
- **Godding, Daily & Plumb Ditch (0600527)** diverts for irrigation and for storage in Nelson Lake #1.
- **Idaho Creek** is a carrier for the ditches listed below. They share a common headgate on Boulder Creek, but are measured separately. Boulder Creek typically dries up downstream of this headgate in mid summer.
  - **Houck Ditch #2 (0600534)** diverts for irrigation.
  - **Delehant Tom Ditch (0600523)** diverts for irrigation.
  - **Highland Southside Ditch (0600532)** diverts for irrigation.
  - **Carr Tyler Ditch (0600520)** diverts for irrigation and occasional storage in Stromquist Ponds.
- **Rural Ditch (0600551)** has a decreed headgate on Idaho Creek, but also diverts off Boulder Creek for irrigation.
- **Smith & Emmons Ditch (0600553)** historically diverted for irrigation. Water rights were transferred in 1994 to store in Longmont OP Reservoir No. 2 (ID 0603325).

#### *Coal Creek*

- **Last Chance Ditch (0600615)** has two headgates, one for the ditch to deliver water to Smart Reservoir, the other for an underground pipeline to deliver water to Standley Lake. Coal Creek typically dries up downstream of this headgate throughout the winter. The original storage rights on this ditch are to fill Kinnear Reservoir, which is the original Standley Lake. These original irrigation rights have been transferred to all uses for storage in Standley Lake and Smart Reservoir.
- **Standley/Kinnear Ditch** was transferred upstream to Last Chance Ditch.
- **McKay Ditch (0600744)** is no longer active.
- **Upper Church Ditch (0600606)** has transferred some of its irrigation rights to all uses in order to divert water into Broomfield Lake for municipal use by the Town of Broomfield.
- **Unknown Feeders** are owned by the City of Boulder and fill Eggleston Reservoirs #3 and #4. Diversions through each of these ditches are recorded under their respective reservoir records.
- **Eggleston #1 Ditch (0600608)** is the number 1 right on Coal Creek. Eggleston #1 Ditch shares the #2 right with Hake Ditch. Coal Creek usually dries up downstream of the Eggleston #1 headgate by mid June. The ditch has not transferred its original irrigation rights.
- **William C. Hake Ditch #2 (0600621)** diverts under its original irrigation rights. There are no transfers associated with this ditch.

- **Kerr Ditch (#1 and #2) (0600612/0600613)** has very junior water rights and is limited by physical supply. Coal Creek usually dries up downstream of this headgate by mid June. The Louisville Waste Water Treatment Plant is about ¼ mile downstream from this headgate and returns water to the creek.
- **Willis Ditch (0600931)** has a relatively junior right (1870). The ditch diverts very little water and diversion records are sparse.
- **Harris Ditch (0600611)** has a relatively junior right (1876). The ditch diverts very little water and diversion records are sparse. The Lafayette Waste Water Treatment Plant discharges downstream of this headgate.
- **Erie Coal Creek Ditch (0600610)** diverts under a relatively junior right (1894). The original irrigation rights on this ditch have not been transferred.
- **Vista Ridge Pump and Pipeline (0600750)** diverts under a junior water right (1999) for exchanges of Superior, Louisville, and Erie return flow credits. The pipeline is upstream of Erie's waste water discharge.

## **Recommended Detailed Documentation**

Technical memoranda should be developed and included in the basin information report for each of the following key structures in District 6:

- City of Boulder
- Marshall/FRICO System

**Table 1**

Structure	Name	Total Decree (cfs)	Diversion Record Period	Average Annual Divert (af)	Diversion Source	Comment	Key
0600599	BOULDER CITY PL	69.6	1984 - 2004	7992	NORTH BOULDER CREEK		Yes
0600512	TOWN OF BOULDER DITCH		1950 - 1974	9502	BOULDER CREEK	Recorded at 599	No
0600600	BOULDER SILVER LAKE PL		1984 - 1987	5370	NORTH BOULDER CREEK	Recorded at 599	No
0600601	CITY OF BOULDER PL		1974 - 1985	16124	NORTH BOULDER CREEK	Recorded at 599	No
0600603	SILVER LAKE DITCH	30.0	1950 - 2004	1018	NORTH BOULDER CREEK		Yes
0600590	S BOULDER DIVR CONDUIT	461.0	1974 - 2004	62474	SOUTH BOULDER CREEK	Delivers Denver's Moffat Water	Yes
0600598	LOUISVILLE PL	34.5	1971 - 2004	1361	SOUTH BOULDER CREEK		Yes
0600564	COMMUNITY DITCH	1357.7	1950 - 2004	5538	SOUTH BOULDER CREEK	Diverts for FRICO-Marshall, Primary DivSys with 589	Yes
0600589	S BOULDER COAL CR DITCH		1950 - 1986	2313	SOUTH BOULDER CREEK	Rights Transferred 564 - DivSys with 564, has acreage in early years	No
0600597	LAFAYETTE PL	6.9	1971 - 2004	980	SOUTH BOULDER CREEK	Municipal Use	Yes
0600567	DAVIDSON DITCH	223.2	1950 - 2004	3110	SOUTH BOULDER CREEK		Yes
0600650	GOODHUE DITCH	231.3	1950 - 2004	2254	SOUTH BOULDER CREEK		Yes
0600588	S BOULDER BEAR CR DITCH	29.8	1950 - 2004	1204	SOUTH BOULDER CREEK		Yes
0600570	DRY CREEK NO 2 DITCH	20.7	1950 - 2004	1323	SOUTH BOULDER CREEK		Yes
0600585	MARSHALVILLE DITCH	52.7	1950 - 2004	1142	SOUTH BOULDER CREEK		Yes
0600735	LEWIS H DAVIDSON D		1950 - 2004	177	SOUTH BOULDER CREEK	Alternate Point	Yes
0600592	SCHEARER DITCH	26.1	1950 - 2004	1522	SOUTH BOULDER CREEK		Yes
0600593	S BOULDER CANON DITCH	258.5	1950 - 2004	2146	SOUTH BOULDER CREEK		Yes
0600586	MCGINN DITCH	10.9	1950 - 2004	1475	SOUTH BOULDER CREEK		Yes
0600902	NEW DRY CR CARRIER DITCH	680.0			SOUTH BOULDER CREEK	Carrier	Yes
0600576	ENTERPRISE DITCH	21.9	1950 - 2004	926	SOUTH BOULDER CREEK	Mostly MuniUse, Carried through 902	Yes
0600889	LAFAYETTE DIVERSION PT 4		1988 - 2004	1375	SOUTH BOULDER CREEK	Municipal Use, Carried through 902	Yes
0600761	LAFAYETTE DITCH NO 9	25.0			SOUTH BOULDER CREEK	Diverted at 889	No
0600566	COTTONWOOD DITCH 2	32.4	1950 - 2004	1690	SOUTH BOULDER CREEK	Carried through 902	Yes
0600569	DRY CREEK DAVIDSON DITCH	16.7	1950 - 2004	1259	SOUTH BOULDER CREEK	Carried through 902	Yes
0600560	ANDREWS FARWELL DITCH	7.6	1950 - 2004	190	SOUTH BOULDER CREEK	Carried through 902	Yes
0600565	LEYNER COTTONWOOD DITCH	204.1	1950 - 2004	3659	SOUTH BOULDER CREEK	Carried through 902	Yes
0600580	HOWARD DITCH	13.0	1950 - 2004	1934	SOUTH BOULDER CREEK		Yes
0600575	EAST BOULDER DITCH	405.0	1950 - 2004	1187	SOUTH BOULDER CREEK		Yes
0600582	JONES DONNELLY DITCH	9.1	1950 - 2004	1318	SOUTH BOULDER CREEK		Yes

**Table 1 - Continued**

Structure	Name	Total Decree (cfs)	Diversion Record Period	Average Annual Divert (af)	Diversion Source	Comment	Key
0600943	BOULDER PL 3 AT BARKER R	50.0	1988 - 2004	9528	MIDDLE BOULDER CREEK		Yes
0600944	BOULDER CITY PL 3	29.5			MIDDLE BOULDER CREEK	Recorded at 943	No
0600514	BOULDER POWER PL	110.0	1984 - 1996	7616	BOULDER CREEK	Included in 943	No
0600501	ANDERSON DITCH	176.4	1950 - 2004	2633	BOULDER CREEK	aka New Anderson Ditch	Yes
0600525	FARMERS DITCH	148.0	1950 - 2004	6102	BOULDER CREEK		Yes
0600554	SMITH GOSS DITCH	29.2	1950 - 2004	900	BOULDER CREEK	Senior Rights	Yes
0600516	BOULDER WHITE ROCK DITCH	909.1	1950 - 2004	8032	BOULDER CREEK		Yes
0600530	HARDEN DITCH	6.6	1950 - 1974	674	BOULDER CREEK	Portion Rights Transferred to Boulder, Portion Abandoned	No
0600543	N BOULD FARMER DITCH	62.3	1950 - 2004	4806	BOULDER CREEK		Yes
0600557	WELLMAN DITCH	120.0	1950 - 1953	91	BOULDER CREEK	Recorded Elsewhere	No
0600518	BUTTE MILL DITCH	110.9	1950 - 2004	1222	BOULDER CREEK		Yes
0600528	GREEN DITCH	138.3	1950 - 2004	1749	BOULDER CREEK	Significant Diversions	Yes
0600878	LAFAYETTE BOULDER C PL 1	n/a	2003 - 2005	1094	BOULDER CREEK	Carrier to Lafayette Municipal Demand	Yes
0600537	LEGGETT DITCH	31.4	1950 - 2004	7317	BOULDER CREEK		Yes
0600538	LOWER BOULDER DITCH	351.4	1950 - 2004	21300	BOULDER CREEK	Primary Divsys with 562 and 0200552	Yes
0600562	CENTRAL & SOUTH DITCH	9.0	1950 - 1983	223	BOULDER CREEK	Taken through 538	Divsys
0600515	BOULDER WELD CTY DITCH	61.9	1950 - 2004	2190	BOULDER CREEK	Primary Divsys with 540 and 533	Yes
0600540	MARTHA M MATHEWS DITCH	4.6	1950 - 1987	1142	BOULDER CREEK	Transferred to Boulder Weld 515	DivSys
0600536	HOWELL DITCH	5.0	1950 - 2004	508	BOULDER CREEK	Minor Diversions	Yes
0600527	GODDING DAILEY PLUMB D	30.4	1950 - 2004	2309	BOULDER CREEK		Yes
0600533	HOUCK 1 DITCH		1950 - 1983	470	BOULDER CREEK	Carried in 515	DivSys
0600534	HOUCK 2 DITCH	7.2	1950 - 2004	1338	BOULDER CREEK		Yes
0600523	DELEHANT DITCH	10.0	1950 - 2004	335	BOULDER CREEK	Minor Diversions	Yes
0600532	HIGHLAND S SIDE DITCH	152.2	1950 - 2004	5109	BOULDER CREEK		Yes
0600520	CARR TYLER DITCH	35.2	1950 - 2000	272	BOULDER CREEK		Yes
0600553	SMITH EMMONS DITCH	47.2	1950 - 2004	1360	BOULDER CREEK		Yes
0600551	RURAL DITCH	83.0	1950 - 2004	5579	BOULDER CREEK		Yes
0600615	LAST CHANCE DITCH	217.1	1950 - 2004	665	COAL CREEK	Diverts to Standley and Smart Reservoirs	Yes
0600606	CHURCH DITCH (UPPER)	54.3	1950 - 2000	272	COAL CREEK	Diverts to Upper Church (Broomfield) Lake	Yes
0600614	KINNEAR DITCH NO 2	781.0	1954 - 1989	658	COAL CREEK	Transferred to Last Chance	No



**Table 1 - Continued**

Structure	Name	Total Decree (cfs)	Diversion Record Period	Average Annual Divert (af)	Diversion Source	Comment	Key
0600608	EGGELSTON #1 DITCH	2.3	1950 - 2004	148	COAL CREEK	Primary Divsys with 605 and 609 #1 Right on Coal Creek	Yes
0600605	AUTREY EGGLESTON DITCH		1950 - 1977	144	COAL CREEK	Transferred to 608, Divsys	Divsys
0600609	EGGLESTON NO 2 DITCH		1950 - 1965	60	COAL CREEK	Transferred to 608, Divsys	Divsys
0600621	WILLIAM C HAKE DITCH	3.66	1950 - 2005	302	COAL CREEK		Yes
0600926	WANEKA DITCH	1.8			COAL CREEK	Supply to Reservoir	No
0600927	WANEKA DITCH 1	2.5			COAL CREEK	Supply to Reservoir	No
0600767	LOUISVILLE CCGC PL 2	1.4	1991 - 2004	54	COAL CREEK	Municipal Use	Yes
0600612	KERR DITCH NO 1	7.68	1950 - 2003	305	COAL CREEK		Yes
0600613	KERR DITCH NO 2	3.23	1950 - 2003	155	COAL CREEK		Yes
0600622	T N WILLIS DITCH	13.3	1984 - 1997	404	COAL CREEK	No Measuring Device	Yes
0600611	HARRIS DITCH	7.0	1950 - 1997	283	COAL CREEK	Measuring Device inoperable	Yes
0600610	ERIE COAL CR DITCH	25.0	1950 - 2005	574	COAL CREEK		Yes
0600805	4 MI INTAKE BLDR LFTHD D	17.0			FOUR MILE CANON CR	Diverted at Alternate Point	No
0600740	BOULDER WHITE ROCK GOOSE	26.0			GOOSE CREEK	Infrequent Diversions	No
0600747	GOODHUE DITCH	19.9			ROCK CREEK	Diverted at 650	No
0600800	BOULDER RES MUN INTAKE		1985 - 2004	3848	TRANSBASIN WATER	C-BT Inflow to Boulder Res	Yes
0600928	LEYNER CTNWD BULLHEAD DV	20.0			WASTE	Part of Leyner Cottonwood	No