

<p>District Court, Water Division 4 Montrose County Justice Center 1200 North Grand Avenue, Bin A Montrose, CO 80401</p> <hr/> <p>CONCERNING THE WATER RIGHTS OF THE UNITED STATES OF AMERICA IN THE TAYLOR RIVER, A TRIBUTARY OF THE GUNNISON RIVER</p> <p>IN GUNNISON COUNTY, COLORADO</p>	<p style="text-align: right;">DATE FILED: May 9, 2016 11:56 AM CASE NUMBER: 2011CW31</p> <p style="text-align: center;">▲ COURT USE ONLY ▲</p> <hr/> <p>Case Number: 11CW31 (C/R 86CW203 and 96CW224)</p>
<p>FINDINGS OF FACT, CONCLUSIONS OF LAW, RULING OF THE REFEREE AND DECREE</p>	

This matter comes before the Court upon the Application to Make Water Right Absolute filed by the United States of America (United States). The Referee, having made such investigations as are necessary to determine whether the statements in the application are true, and having become fully advised with respect to the subject matter of the application, hereby enters and makes the following findings of fact, conclusions of law, and ruling.

FINDINGS OF FACT

1. The United States filed the Application on March 30, 2011.
2. Statements of Opposition were timely filed by the Upper Gunnison River Water Conservancy District (Upper Gunnison District), the Colorado River Water Conservation District (River District), the City of Gunnison, and Milton Graves, William McComb Dunwoody, and Nancy Williams (Trustees), as Trustees of three Louisiana Trusts. By Order for Substitution dated October 25, 2012, Pinto Trust Company LLC (Pinto) was substituted for the Trustees as objector. By Order for Substitution dated August __, 2015, Taylor Placer, Ltd. (“Taylor Placer”)

was substituted for Pinto as objector. The time for filing statements of opposition and motions to intervene has expired.

3. The water right the United States seeks to make absolute in this case is the conditional portion of the water right decreed by this Court in Case No. 86CW203 on September 18, 1990, and amended by an Order dated November 13, 1990 (Refill Decree), for the refill of Taylor Park Reservoir (Refill Right).

4. The dam impounding Taylor Park Reservoir is located in Gunnison County in the N½ of Section 24, Township 14 South, Range 83 West of the 6th Principal Meridian. The initial point of survey for the reservoir impounded by the dam is at a point whence the North quarter corner of Section 8, Township 14 South, Range 82 West of the 6th Principal Meridian bears North 39° 13' East a distance of 15,911.5 feet.

5. The Refill Right was decreed for 106,230 acre-feet, of which 44,700 acre-feet was decreed absolute and 61,530 acre-feet was decreed conditional, with a priority date of August 28, 1975. The source of supply for the water right decreed to the Refill Right is the Taylor River and its tributaries, tributaries of the Gunnison River.

6. The Refill Decree was granted upon an Application filed by the Upper Gunnison District; thereafter, the Refill Right was assigned to the United States by the Upper Gunnison District by an Assignment of Water Rights dated March 22, 1993 in accordance with a contract dated April 16, 1990 between the United States, the Upper Gunnison District, the Uncompahgre Valley Water Users Association and the Colorado River Water Conservation District.

7. The Refill Decree provides that while the water is impounded in Taylor Park Reservoir, it shall be used for recreational purposes, including fishery and wildlife, and that the impounded water shall be released at times and in quantities calculated to enhance the fishery and recreational uses of the Taylor and Gunnison Rivers above Blue Mesa Reservoir.

8. Of the 106,230 acre-feet, 19,200 acre-feet were decreed for additional use for increased and supplemental irrigation within the Upper Gunnison District. Of said 19,200 acre-feet, 13,777 acre-feet were decreed absolute (as part of the 44,700 acre-feet), and the remaining 5,423 acre-feet were decreed conditional (as part of the 61,530 acre-feet).

9. The 61,530 acre-feet conditional portion of the Refill Right, including 5,432 acre-feet decreed for increased and supplemental irrigation, was continued in force until March 31, 2011 by this Court by decree entered on April 12, 2005 in Case No. 96CW224.

10. According to the Official Accounting Sheet (Gunnison River System) maintained by the Division 4 Engineer, Taylor Park Reservoir achieved its decreed refill by storing 106,230 acre-feet of water in priority in water years 2005, 2006, 2007, 2008 and 2009. In each of those

water years, water stored in the reservoir under the Refill Right was used for recreational purposes, including fishery and wildlife, and was released at times and in quantities calculated to enhance the fishery and recreational uses of the Taylor and Gunnison Rivers in accordance with the Refill Decree. Table 1, attached, provides a summary of relevant information from the Official Accounting Sheet.

11. The expert report prepared by Slattery & Hendrix Engineering LLC establishes that in water year 2009 19,200 acre-feet of the Refill Right decreed for increased and supplemental irrigation by the Refill Decree was stored in priority in Taylor Park Reservoir and released in August, September and October for increased and supplemental irrigation use within the boundaries of the Upper Gunnison District. (See Table 2 attached to this Decree and incorporated herein.)

12. The United States has completed its appropriation of 106,230 acre-feet of water stored under the Refill Right and applied that water to all decreed beneficial uses, including 19,200 acre-feet decreed for increased and supplemental irrigation within the Upper Gunnison District.

CONCLUSIONS OF LAW

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

14. All notices required by law have been properly made, including those required under C.R.S. §§ 37-92-302(2)(b)(II) and 37-92-302(3). This Court has jurisdiction over the Application and over all persons or entities that had standing to appear, even though they did not do so.

15. The Application is complete, covering all applicable matters required pursuant to the *Water Right Determination and Administration Act of 1969*, C.R.S. §§ 37-92-101, *et seq.*, and should be granted.

16. The United States has fulfilled all legal requirements for a finding that the conditional portion of the Refill Right decreed to the Taylor Park Reservoir should be made absolute.

TERMS AND CONDITIONS

17. In accordance with the Stipulation filed in this Court dated July 31, 2015, entered into among the parties as a compromise and settlement of disputed issues, which Stipulation has been approved by the Court, the terms and conditions contained in paragraph 18 below are incorporated into this Decree.

18. For the purposes of: (1) a compromise and settlement of the issues in dispute concerning the administration of instream flow rights in the Taylor River and certain of its tributaries as decreed in Case No. W-1991, Water Division No. 4, on February 11, 1975 (the “W-1991 Rights”) and the Refill Right; (2) specifying terms and conditions in a water court decree granting the application in this Case No. 11CW31 in whole or in part; (3) specifying terms and conditions in a future water court decree governing a change in the uses of up to 106,230 acre-feet for augmentation purposes, as described in paragraph 17 of the Stipulation (the “Future Change Decree”); and (4) the administration of any exchanges between or among the Wayne N. Aspinall Unit, Taylor Park Reservoir, and the Gunnison Tunnel; the parties agree that the W-1991 Rights and all water stored in and released from Taylor Park Reservoir shall be administered according to the following procedures and criteria, which shall be incorporated verbatim into any decree presented to the Water Court in this case and into a decree changing the use of the Refill Right as provided above:

A. Taylor Placer shall be notified of each annual Taylor Park Reservoir operations meeting of the parties to the 1975 Exchange Agreement and may attend and provide written and oral information at each meeting. The parties shall cooperate with one another to determine the amount and timing of releases from Taylor Park Reservoir in accordance with the terms and conditions of this paragraph 18.

B. Subject to the terms of this paragraph 18, the rate and timing of releases from Taylor Park Reservoir shall be established by the United States, after consultation with Taylor Placer, the Taylor Local Users Group (if any), and the other parties to the 1975 Exchange Agreement, in a manner consistent with the following criteria:

(1) Definitions. As used in this paragraph 18:

(a) “Forecasted Inflow” means the forecast for the Taylor River Basin issued by the Colorado Basin River Forecast Center or successor agency, and used by the Bureau of Reclamation for forecasts, of the most probable (50% chance of exceedance) unregulated April 1 through July 31 inflow to Taylor Park Reservoir. After consultation with the Colorado State Engineer and the Upper Gunnison River Water Conservancy District, the United States may adopt a different forecast which uses the best scientifically accepted techniques to predict unregulated inflow to Taylor Park Reservoir, or change the date of the forecast if the timing of peak runoff in the Upper Gunnison Basin changes significantly on a consistent basis.

(b) The Taylor Local Users Group (TLUG) consists of five citizen members appointed by the Board of Directors of the Upper Gunnison District. TLUG provides recommendations to the District regarding Taylor Park Reservoir

operations. The members presently represent rafting or boating interests, flat water recreation interests in Taylor Park Reservoir, irrigation users along the Taylor and Gunnison Rivers, wade fishermen, and property interests along the Taylor and Gunnison Rivers. A representative selected by Taylor Placer shall be appointed to and shall serve on the TLUG and any successor entity that serves the same or a similar purpose. Taylor Placer shall provide to the Upper Gunnison District the name and contact information of Taylor Placer’s selected representative. Actions of Taylor Placer’s selected representative shall be binding on Taylor Placer.

(c) Available water is water that is available for release from Taylor Park Reservoir in accordance with the Accounting Conditions of the Refill Decree and as determined using the criteria set forth below.

(2) Year types: The May 1 Forecasted Inflow to Taylor Park Reservoir shall be used to define year categories as specified in Table 1 below:

Table 1: Year Types

Year type	A year in which the Forecasted Inflow is:
Dry Year	Less than 75,000 acre-feet
Average Year	equal to or greater than 75,000 acre-feet but less than 110,000 acre-feet
Wet Year	equal to or greater than 110,000 acre-feet

(a) Provided, that the volumetric criteria for each year type (initially 75,000 AF and 110,000 AF as set forth above) shall be recalculated prior to May 1 of each year so that the Dry Year, Average Year, and Wet Year Types each represent 1/3rd of the years of actual unregulated April 1 through July 31 inflow to Taylor Park Reservoir during the 30 years preceding the year of such adjustment (the “Nominal 1/3 Volumetric Criteria”);

(b) Provided further, that in each year the volumetric criteria to be used to determine the year type shall be the average of the Nominal 1/3 Volumetric Criteria that were calculated for the preceding five years in accordance with the foregoing subparagraph 18.B.(2)(a) (the “Adjusted Volumetric Criteria”).

(3) Storage objectives: The volume of water available for release from the Reservoir during the period of May 1 through October 31 shall initially be

determined based on the May 1 Forecasted Inflow and Reservoir storage level, and shall periodically be redetermined as necessary from May through October based on actual storage levels and inflows, in order to achieve the objective of a minimum Reservoir storage level of:

(a) 75,000 acre-feet as of October 31 in Wet Years;

(b) 70,000 acre-feet in Average Years; and

(c) 70,000 acre-feet in Dry Years; provided that in years with Forecasted Inflows less than 70,000 acre-feet, the minimum storage level may be reduced by up to 1,000 acre-feet for each 1,000 acre-feet by which the Forecasted Inflows are less than 70,000 acre-feet.

(4) Peak flows: Releases of available water will be made to achieve the following minimum peak flow rates for the minimum number of consecutive days each year specified below. The timing of such peak flow releases will be during the runoff period from May 1 through June 30, and will be coordinated with the other parties to the 1975 Exchange Agreement and Taylor Placer.

(a) Average Year (as defined in Table 1): Not less than 445 c.f.s. for 5 consecutive days.

(b) Wet Year (as defined in Table 1): Not less than 445 c.f.s. for 10 consecutive days.

(c) Releases shall be adjusted to avoid a Reservoir spill and flooding in the Taylor and Gunnison Rivers, with consideration given to projected East River flows.

(5) Rate and timing of other releases of available water:

(a) At times during the period of May 1 through October 31 when the foregoing peak flows are not being released from the Reservoir, the rate and timing of release of available water as determined above shall be established based on the following multi-use considerations, which are not listed in any order of priority:

- (i) Optimizing fish habitat in the Taylor and Gunnison Rivers;
- (ii) Recreational fishing in the Taylor and Gunnison Rivers;
- (iii) Recreational boating in the Taylor and Gunnison Rivers;
- (iv) Fisheries management in Taylor Park Reservoir;
- (v) Recreational boating and fishing in Taylor Park Reservoir;
- (vi) Irrigation; and,

(vii) Any other purpose for which Taylor Park Reservoir is authorized to release water.

(b) The rate and timing of May 1 through October 31 releases shall be adjusted in accordance with the volume available for release as determined above after consultation with the parties to the 1975 Exchange Agreement, and the TLUG.

(6) Winter operations (November – March): The rate of release of available water from the Reservoir from November 1 to March 31 will be established on or before November 1 based on the actual content of the Reservoir on October 31, as specified below:

(a) If the actual content of the Reservoir on October 31 is equal to or greater than 75,000 acre-feet, the release rate shall be 100 c.f.s.

(b) If the actual content of the Reservoir on October 31 is less than 75,000 acre-feet and greater than 70,000 acre-feet, the release rate shall be determined by the following formula:

$$85 + .003 \times (\text{actual October 31 content} - 70,000) \text{ rounded to the nearest whole number.}$$

(c) If the actual content of the Reservoir on October 31 is less than 70,000 acre-feet and greater than 60,000 acre-feet, the release rate shall be determined by the following formula:

$$75 + .001 \times (\text{actual October 31 content} - 60,000) \text{ rounded to the nearest whole number.}$$

(d) These values are reflected in the following Table 2:

Table 2
November – March Release Rate

Oct. 31 content >= (acre-feet)	Release Rate (cfs)
75,000	100
74,000	97
73,000	94
72,000	91
71,000	88
70,000	85

69,000	84
68,000	83
67,000	82
66,000	81
65,000	80
64,000	79
63,000	78
62,000	77
61,000	76
60,000	75

(e) Provided, however, that notwithstanding the reservoir content and release rate schedule described above:

(i) the objective of reservoir operations shall be to achieve a minimum Reservoir storage level of 75,000 acre-feet as of October 31 in Wet Years and 70,000 acre-feet in Average Years and Dry Years, subject to the foregoing paragraph 18.B.(3)(c);

(ii) the rate of release from the Reservoir from November 1 to March 31 shall be no less than 100 c.f.s. in years in which the actual April through July inflow to the Reservoir is equal to or greater than that specified for a Wet Year type; and

(iii) If the adjustments described in paragraph 18.B.(2)(b) result in Adjusted Volumetric Criteria for a Wet Year Type with Forecasted Inflow of less than 105,000 acre-feet, the rate of release for Wet Year Type set forth in subparagraph 18.B.(6)(e)(ii) above shall be reduced proportionately according to the following formula and rounded to the nearest whole number:

Rate of release from November 1 – March 31 = 85 + .0005 x (Adjusted Volumetric Criteria for Wet Year Type – 75,000)

(f) the parties recognize that it may not be possible to set the release from the dam to the exact number and that the release rate may vary from the initial setting due to gage drift over time.

(7) Operations in exceptionally dry years: In exceptionally dry years when actual April through July inflow to the Reservoir is less than 70,000 acre-feet and the Reservoir content on October 31 is less than 60,000 acre-feet (1977, 1981,

2002, and 2012 in the historical period of record), the rate of release from the Reservoir from November 1 to March 31 shall be a minimum of 50 c.f.s., with higher releases made to the extent possible.

(8) Ramping rates: The rate of change in releases (“ramping”) shall be as follows: Ramping down shall be limited to no more than 100 c.f.s. per day from flows of 500 c.f.s. or greater, 50 c.f.s. per day from flows between 250 c.f.s. and 500 c.f.s., and 25 c.f.s. per day from flows of less than 250 c.f.s. The rate of ramping up shall generally be no more than 50 c.f.s. per day, but can occur at higher rates to mobilize sediments and other material in the stream. Exceptions to the foregoing ramping rates may be made for emergency operations.

C. The implementation of the foregoing release criteria shall be subject to the following limitations:

(1) The rate and timing of releases shall not interfere with the rights of the UVWUA under the 1975 Exchange Agreement or the impair the ability of the UVWUA to utilize the full amount of water stored in the exercise of the 1904 right in accordance with the Accounting Conditions of the decree in Case No. 86CW203.

(2) Nothing in the Stipulation or this Decree shall prevent the United States from altering the rate and timing of releases if necessary to respond to emergency conditions, to accommodate maintenance and repair of the Reservoir, or comply with its non-discretionary obligations under federal law.

(3) In addition, and notwithstanding paragraph 18.C.(2) herein, the terms and conditions of the Stipulation and this Decree are subject to the Secretary of the Interior’s exercise of discretion pursuant to the laws governing operation of the Reservoir and Federal Reclamation projects generally.

D. A copy of the proposed operations of Taylor Park Reservoir established or modified in accordance with the Stipulation and this Decree shall promptly be provided by the United States to Taylor Placer, the parties to the 1975 Exchange Agreement, and the Division Engineer.

E. For purposes of performing the terms of the Stipulation and this Decree, Taylor Placer shall provide to the United States and the Upper Gunnison District the name, mailing address, and email address of the person authorized to represent Taylor Placer in matters related to the Stipulation and this Decree.

F. Taylor Placer agrees that inflows to Taylor Park Reservoir not needed to meet the release schedule established or modified in accordance with the Stipulation and this

Decree may be physically stored in the Reservoir, provided that such water is released according to the terms of the Stipulation and this Decree and allowed to flow through the decreed reach of the W-1991 Rights. The storage of such water shall occur under the priority of the 1904 right and the Refill Right, in accordance with the Accounting Conditions of the decree in Case No. 86CW203 as the same may be modified by the Future Change Decree.

G. The operation of Taylor Park Reservoir in accordance with the provisions of the Stipulation and this Decree shall be considered to be consistent with the “historical operation” of the Reservoir, as that term is used in the decree in Case No. W-1991, and achieve the optimum use of such water for the purposes of the 1975 Exchange Agreement, as amended on July 9, 1979 and April 16, 1990; and the beneficial uses of the Refill Right as decreed in Case No. 86CW203 as the same may be modified by the Future Change Decree.

H. Releases from Taylor Park Reservoir (whether of first fill or second fill water stored in the Reservoir, or inflows to the Reservoir) shall be credited by the Division Engineer as an exercise of the 1904 right or the Refill Right of Taylor Park Reservoir, in accordance with the Accounting Conditions of the decree in Case No. 86CW203 as the same may be modified by the Future Change Decree, and also as an exercise of the W-1991 Rights, up to their decreed rate of flow.

I. Nothing herein shall be construed as a subordination of the W-1991 Rights to any water right, conditional water right, or appropriation. The terms of the Stipulation and this Decree represent a compromise and settlement of a disputed issue as to the relative priority of the W-1991 Rights and the Taylor Park Reservoir water rights and an agreed interpretation of the specific terms of the decrees in Case Nos. W-1991 and 86CW203. Nothing in the Stipulation or this Decree shall limit or impair the exercise by Taylor Placer or administration by the State and Division Engineers of the W-1991 Rights as against any other water right, conditional water right, or appropriation, including without limitation exercise and administration as against diversions or depletions that would reduce inflows to Taylor Park Reservoir that are accounted under the Refill Right. The Stipulation and this Decree do not include a selective subordination. Nothing in the Stipulation or this Decree constitutes any admission by any party as to the legality of selective subordination, or shall be used as precedent in any other case regarding any party's position on selective subordination.

J. The Stipulation was entered pursuant to agreement of the parties to address their interests and concerns and resolves them finally in this matter. However, because the issues addressed therein have not been litigated by the parties, the parties shall not be collaterally estopped from asserting any factual or legal issues in any other cases not

involving these water rights. Neither the Stipulation nor this Decree shall be used, considered, or cited as precedent in any other case except and only to the extent that the rights decreed herein are at issue.

RULING OF THE REFEREE

19. The Findings of Fact and Conclusions of Law as set forth above are incorporated herein by reference and are hereby modified as necessary to constitute part of the Ruling of the Referee.

20. The Application To Make Water Right Absolute is GRANTED for the 61,530 acre-foot conditional portion of the Refill Right decreed to Taylor Park Reservoir, including 5,432 acre-feet decreed for increased and supplemental irrigation within the Upper Gunnison District.

21. A copy of this Decree of the Water Court shall be filed with the State Engineer and the Division Engineer for Water Division No. 4.

22. It is further ORDERED that this Ruling shall be filed with the Water Clerk, subject to judicial review.

Dated this 15th day of April, 2016.


S. Gregg Stanway, Water Court Referee

JUDGMENT AND DECREE

No protest was filed to this matter. The foregoing Ruling of the Referee is confirmed and approved and made the Judgment and Decree of this Court.

Dated this 9th day of May, 2016.

BY THE COURT:

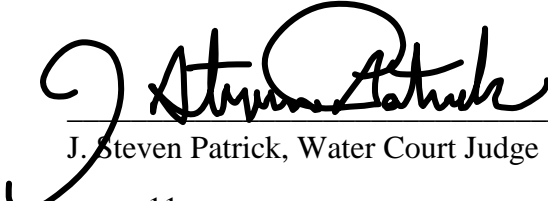

J. Steven Patrick, Water Court Judge

Table 1
Taylor Park Reservoir Refill Accounting under the Accounting Conditions
Specified in Case No. 86CW203
(units of acre-feet)

Year (1)	Inflow to Taylor Park Reservoir (2)	Amount Stored Under the Refill Decree (3)	Amount of Refill Water Released from Storage to the Taylor River for Decreed Purposes (4)	Evaporation Losses on Refill Water Stored in Taylor Park Reservoir (5)	Amount of Refill Water Booked over to 1st Fill Account in Taylor Park Reservoir on October 31 (6)
2005	130,430	106,230	42,963	2,422	60,845
2006	126,625	106,230	34,876	2,490	68,864
2007	130,122	106,230	27,566	2,591	76,073
2008	187,116	106,230	32,319	2,558	71,353
2009	159,613	106,230	31,213	2,723	72,294
2010	123,272	99,766	25,156	2,535	72,074
Avg	142,863	105,153	32,349	2,553	70,250

Explanation of Columns

- (1) Nov-Oct Irrigation year
- (2) Col 14 from the Gunnison River System Accounting Sheet.
- (3) Col 28 from the Gunnison River System Accounting Sheet.
- (4) Sum of Col 24 and Col 25 from the Gunnison River System Accounting Sheet.
- (5) Col 23 from the Gunnison River System Accounting Sheet.
- (6) Col 26 from the Gunnison River System Accounting Sheet.

Table 2
Irrigation Diversions Attributable to Releases from Water Stored under the Taylor Park 2nd fill Water Right
(units of acre-feet)

Nov-Oct Accounting Year	Historical Diversions				Diversions and 2nd Fill Releases					
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
	Total Irrigation Diversions in the UGRWCD	Irrigation Diversions Under Water Rights Senior to the Gunnison Tunnel Water Right	Irrigation Diversions Under Water Rights Junior to the Gunnison Tunnel Water Right	Irrigation Diversions Under Undeclared Water Rights	Shortage in Meeting flow in Gunnison Tunnel Demands	2nd Fill Releases from Taylor Park Reservoir	Divs Junior to Gunnison Tunnel During Periods of Gunnison Tunnel Shortage	2nd Fill Release During Periods of Gunnison Tunnel Shortage	Divs Junior to Gunnison Tunnel During Periods of Gunnison Tunnel Shortage Limited to 2nd Fill Releases	
(1)										
2005	610,688	194,448	365,678	50,562	19,212	42,963	35,918	10,514	10,514	
2006	571,845	201,607	328,862	41,376	1,475	34,876	5,081	2,272	2,272	
2007	640,902	218,517	370,668	51,717	7,804	27,566	25,747	4,873	4,873	
2008	633,600	183,646	379,780	70,174	21,797	32,319	33,614	8,336	8,336	
2009	598,553	197,367	352,511	48,675	46,760	31,213	62,096	19,405	19,405	
Avg	611,118	199,117	359,500	52,501	19,410	33,787	32,491	9,080	9,080	
Min	571,845	183,646	328,862	41,376	1,475	27,566	5,081	2,272	2,272	
Max	640,902	218,517	379,780	70,174	46,760	42,963	62,096	19,405	19,405	

This table is the sum of the daily values on an annual basis.

Explanation of Columns (data from file "Daily Diversions Gun Tunnel Analysis 1990-09.xls")

- (1) Nov-Oct Irrigation year
- (2) Total for all irrigation structures within the UGRWCD boundaries.
- (3) Total diversions under water rights senior to the Gunnison Tunnel water right. (Gunnison Tunnel administration number is 20393.18799)
- (4) Total diversions under water rights junior to the Gunnison Tunnel water right.
- (5) Diversions in excess of decreed water rights.
- (6) Col 5 of Gunnison River System Accounting Sheet. This is the Gunnison Tunnel shortage for days when the natural flow of the basin is not sufficient to meet the Gunnison Tunnel demands.
- (7) Sum of Col 24 and Col 25 of Gunnison River System Accounting Sheet. This is the releases from the 2nd Fill account in Taylor Park Reservoir.
- (8) Calculated on a daily basis as the value in Col 4 on days when there was a shortage at the Gunnison Tunnel as shown in Col 6.
- (9) Calculated on a daily basis as the minimum of Col 6 or Col 7
- (10) Calculated on a daily basis as the minimum of Col 8 or Col 9