

E-FILED

DISTRICT COURT,
WATER DIVISION 4, COLORADO
1200 N. Grand Avenue, Bin A
Montrose, CO 81401

**CONCERNING THE APPLICATION FOR
WATER RIGHTS OF UPPER GUNNISON
RIVER WATER CONSERVANCY
DISTRICT**

in Gunnison County.

Filed in the District Court
Water Division 4

APR 19 2005

Filed in the District Court
Water Division 4

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MAY 17 2005

Case Numbers: 02 CW 294
03 CW 107

**FINDINGS OF FACT, CONCLUSIONS OF LAW
AND RULING OF THE REFEREE AND DECREE**

This matter comes before the Water Judge acting as Referee (Referee) upon the application of the Upper Gunnison River Water Conservancy District (Upper Gunnison District or District) for a change of water rights and approval of a plan for augmentation. 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

Case No. 02CW294

1. The Application in Case No. 02CW294 was filed by John L. Rozman, Sr. (Rozman) on December 31, 2002 and subsequently assigned to the District. Rozman applied for a conditional storage right for 277.14 acre-feet for replacement and augmentation with an appropriation date of October 17, 2000.

2. Statements of opposition were timely filed by the Mt. Crested Butte Water and Sanitation District, the Upper Gunnison District, Dolores G. LaVigne and Ralph R. Allen & Sons, Inc. No person or entity sought to intervene. The time for filing statements of opposition and motions to intervene has expired.

3. The Upper Gunnison District was substituted as the Applicant in Case No. 02 CW 294 on May 5, 2003. Ralph R. Allen & Sons, Inc. withdrew its statement of opposition in Case No. 02 CW 294 pursuant to Rule 5(c), Uniform Local Rules for All State Water Divisions on September 26, 2003.

4. On July 31, 2003, the water referee re-referred Case No. 02CW294 to the water judge.

5. The District amended the Application on April 9, 2004 to clarify the beneficial uses claimed and to increase the amount of storage.

6. The Amended Application seeks a conditional right of 407.21 acre-feet (inclusive of the 277.14 acre-feet claimed by Rozman) for water to be released to augment out-of-priority depletions by domestic, municipal, industrial, and irrigation uses pursuant to the plan for augmentation for which approval is sought in Case No. 03CW107. The District will elect to store water under this right when it is in priority rather than storing under the two existing senior rights (described in paragraph 13 below). Water stored under this water right will be fully consumable because no return flow obligation attaches and the District seeks a finding to that effect.

Change of Water Right (Case No. 03CW107)

7. The Application in Case No. 03CW107 was filed on April 30, 2003.

8. Statements of opposition were timely filed by the Colorado Water Conservation Board (CWCB), the Mt. Crested Butte Water and Sanitation District, the Crested Butte Land Trust, the Glacier Lily Association, Dolores G. LaVigne and Ralph R. Allen & Sons, Inc. No person or entity sought to intervene. The time for filing statements of opposition and motions to intervene has expired. Ralph R. Allen & Sons, Inc. withdrew its statement of opposition in Case No. 03CW107 pursuant to Rule 5(c), Uniform Local Rules for All State Water Divisions on September 26, 2003.

9. The CWCB filed its Statement of Opposition to protect the instream flow water rights decreed to Washington Gulch in Case No. 80CW94, the Slate River in Case Nos. 80CW092 and the East River in Cases Nos. 83CW230 and 83CW228, to protect the natural environment to a reasonable degree.

10. On October 2, 2003, the water referee re-referred Case No. 03CW107 to the water judge.

11. On April 9, 2004, the water judge granted the District's unopposed motion to consolidate Cases Nos. 02CW294 and 03CW107 for all purposes and to have the water judge act as water referee pursuant to § 37-92-302(4), C.R.S. (2004).

12. The District has entered into a contract with Rozman to purchase the water rights described in paragraph 13 below. Pursuant to the purchase agreement, the District has exclusive possession and control of Meridian Lake Reservoir and the water decreed thereto under the Existing Rights described in paragraph 13, including the right to make releases and the right to file this Application.

13. The Upper Gunnison District proposes to change the following water rights (Existing Rights) decreed to Meridian Lake Reservoir:

a. A decree for Meridian Lake Reservoir entered in Civil Action No. 5289, District Court, Gunnison County on June 20, 1957 for 138.58 acre-feet of water with an appropriation date of July 25, 1902 (Priority No. 483) for supplemental irrigation of 340 acres of land under the Rozich Ditch and the Meridian Ditch. The source is Washington Gulch, a tributary of the Slate River.

b. A decree for Meridian Lake Reservoir entered in Civil Action No. 5590 District Court, Gunnison County on January 27, 1961 for 554.27 acre-feet of water with an appropriation date of July 25, 1902 (Priority No. 532) for supplemental irrigation of the same 340 acres of land under the Rozich Ditch and the Meridian Ditch. The source is Washington Gulch, a tributary of the Slate River.

14. The District proposes to change:

a. The uses of the Existing Rights to domestic, municipal, industrial, and irrigation by providing replacement water to augment out-of-priority depletions by such uses; and

b. The place of use of the Existing Rights to the Slate, East, and Gunnison River basins and the basins of tributaries thereof upstream of Blue Mesa Reservoir.

15. In addition to the Existing Rights, a third water right was decreed to Meridian Lake Reservoir in Case No. W-545 entered June 22, 1973 for 279.55 acre-feet of water with an appropriation date of July 25, 1902 for "recreation, fish culture and wildlife procreation in place, non-consumptive use." Under the contract described in paragraph 12, the District will acquire an undivided one-quarter interest in the water right decreed to the reservoir in Case No. W-545, but this water right is not included in the District's applications in Cases 02CW294 or 03CW107.

16. The Existing Rights have been used historically for supplemental irrigation of land under the Rozich Ditch and the Meridian Ditch in the Summer and Fall.

17. The reservoir water was normally used initially through the Meridian Ditch and applied to the Meridian Ditch lands because it was the higher of the two ditches. Surface runoff from the irrigation through the Meridian Ditch was captured and applied to the Rozich Ditch lands. This use of Meridian Lake Reservoir water through the Meridian and Rozich Ditches resulted in a relatively efficient irrigation practice.

18. The District's engineering consultants estimate that approximately 50.4 percent of the water historically released from the reservoir was consumed, producing return flow to Washington Gulch of approximately 49.6 percent of the reservoir releases. These percentages result from estimates of 90 percent conveyance efficiency and 40 percent field irrigation efficiency for the

use under the Meridian Ditch and a 40 percent field irrigation efficiency on the use under the Rozich Ditch. The field irrigation losses under the Meridian Ditch were distributed two-thirds to surface waste and one-third to deep percolation. The field irrigation losses under the Rozich Ditch were distributed one-half to surface waste and one-half to deep percolation. Approximately 21.8 percent of the return flow (10.8 percent of the reservoir release) was a surface return to Washington Gulch and 78.2 percent of the return flow (38.8 percent of the reservoir release) returned through the ground water system and therefore produced delayed stream accretions. Factors from the District's current substitute water supply plan were used by the engineering consultants to lag the ground water returns back to Washington Gulch. These factors indicated that 19 percent of the stream accretions from return flow occur in July, 25 percent in August, 28 percent in September, 11 percent in October, 7 percent in November, 5 percent in December, 3 percent in January, and 1 percent in February.

19. In order to change the present use of the Existing Rights from supplemental irrigation to replacement water for augmentation of domestic, municipal, industrial and irrigation uses without causing injury to vested water rights or decreed conditional water rights, the return flows that would have occurred under their original decreed use must be maintained during any period when water rights senior to August 26, 2002, decreed pursuant to applications filed on or before December 31, 2004, are calling. If the District stores water in Meridian Lake Reservoir under the priority of the Existing Rights, and if the amount of the stored water that corresponds to the historical return flow is released to Washington Gulch in the proper amounts and at the proper times, the remainder of the water stored under the Existing Rights will be fully consumable and can be used for replacement of out-of-priority depletions by domestic, municipal, industrial and irrigation uses under the plan for augmentation decreed herein.

20. The land and water rights involved herein are not included within the boundaries of any designated ground water basin. The rights requested herein do not require the construction of any wells.

21. Water users who wish to be included in the District's plan for augmentation may purchase Augmentation Certificates entitling the water user to the release of replacement water from Meridian Lake Reservoir for augmentation either directly or by exchange. A description of the Augmentation Certificates is set out in paragraph 60, below.

22. The District and the CWCB have reached a settlement of the CWCB's objections. That settlement is reflected in this ruling and recognizes that: (1) some owners of existing wells in the Slate River drainage bought their properties in the mistaken belief that the augmentation plans covering their subdivisions or lots were adequate; (2) the cost of acquiring replacement water for existing depletions by Treatment Plant Wells to the Affected Reach of the Slate River (defined in paragraph 39) for 365 days per year is prohibitive; and, (3) the amount of replacement water provided for Treatment Plant Wells under the District's plan for augmentation is adequate mitigation for CWCB's instream flow right for existing depletions in the Affected Reach of the Slate River.

Plan for Augmentation

23. In Case No. 03CW107 the District seeks approval of a plan for augmentation to augment out-of-priority depletions by wells, surface diversions and ponds in the Slate, East, and Gunnison River basins and the basins of tributaries thereof within the boundaries of the District by providing a substitute supply of water either directly or by exchange.

Background

24. The drought conditions which the Upper Gunnison River Basin experienced in 2002 and 2003 focused attention on the vulnerability of domestic and other water users in the basin to calls from senior irrigation water rights and instream flow water rights within the basin, as well as calls from senior water rights downstream from the Wayne N. Aspinall Unit. Even though the senior irrigation rights diverting from the Affected Reach of the Slate River have never placed a call when water is in short supply, it became apparent that a significant number of domestic wells diverting from that reach of the Slate River had been permitted based on plans for augmentation which are inadequate. In some cases, the replacement water supply is based upon rights that are curtailed during dry years. In other cases, augmentation ponds were never constructed or are not functional due to sediment, inoperable outlet works or other defects. Until recently, there has been little or no follow-up to insure that the approved plans for augmentation were ever implemented. The result of this inattention is that property owners purchased homes and lots in the mistaken belief that their homes or lots had a reliable water supply.

25. An especially critical situation exists where existing subdivisions or individual dwelling units utilizing wells that divert water in the Slate River basin have their wastewater piped to the East River Regional Sanitation District treatment plant (East River Treatment Plant) rather than treating it on site with non-evaporative sewage disposal systems. Because the East River Treatment Plant discharges into the East River, the diversions for indoor household use in such cases are one hundred percent depletive to the Slate River from the point of diversion to its confluence with the East River. The East River Treatment Plant discharges ninety-five percent (95%) of the diversions for indoor household use by these wells into the East River.

26. The District's objective in developing and seeking approval of the plan for augmentation described herein is to provide a source of replacement water by making it available for sale to those persons needing water to augment their out-of-priority depletions, especially those with existing wells whose present plans for augmentation are inadequate.

General Findings

27. The source of replacement water for this plan for augmentation is water stored in Meridian Lake Reservoir under the Existing Rights described in paragraph 13 and under the water rights claimed in Case No. 02CW294. The District will sell Augmentation Certificates which will

entitle the owner to have water released from Meridian Lake Reservoir in increments of 0.05 acre-feet (Base Units). The owner of an Augmentation Certificate described in paragraph 60 becomes entitled to the benefits of the District's plan for augmentation and will not be required to implement or amend an individual plan, subject to the requirements of paragraph 64.f.

28. Meridian Lake Reservoir is located in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 16, NE $\frac{1}{4}$, NE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 21 and SW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ Section 22, Township 13 South, Range 86 West, 6th P.M. The Northwest abutment of the dam is at a point whence the Southwest corner of Section 23, Township 13 South, Range 86 West, 6th P.M. bears South 54° 35' East a distance of 7,910 feet.

29. Meridian Lake Reservoir is situated between two Northwest-to-Southeast-trending ridges in an area that is tributary to Washington Gulch and then to the Slate and East Rivers. (See Figure 1.) The reservoir was formed over a natural lake by the construction of a dam in a saddle in the Northeastern ridge that was the outlet for the natural lake. The inflow to the reservoir is from runoff and spring discharge in the area that drains to the reservoir, which amounts to about 150 acres and ranges in elevation from about 9,620 feet to about 10,200 feet according to U.S. Geological Survey topographic maps.

30. According to an area-capacity survey performed for the District by North Star Surveying, Inc. in 2002, the capacity of Meridian Lake Reservoir is 686.76 acre-feet at the top of the overflow pipe. The District has entered into agreements with the owners of the remaining three-fourths undivided interest in the "in place, non-consumptive use" water right decreed in Case No. W-545. In those agreements, the District has agreed not to release from the reservoir any water stored under that water right. The amount decreed to reservoir under the W-545 right is 279.55 acre-feet. Thus, the usable capacity of the reservoir for purposes of this plan is 407.21 acre-feet.

31. The District's engineering consultants have determined that the firm annual yield of Meridian Lake Reservoir when operated utilizing the Existing Rights is 48.8 acre-feet. As used herein, firm annual yield means the quantity of water that can dependably be released from the reservoir, in addition to any releases required to provide historical return flows, in every water year and be sold by the District as replacement water under this plan for augmentation.

32. The outlet works of Meridian Lake Reservoir discharge into Washington Gulch in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 21, Township 13 South, Range 86 West, 6th P.M. Water discharged then flows down Washington Gulch to and through Meridian Lake Park Reservoir No.1, the dam of which is located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 22, Township 13 South, Range 86 West, 6th P.M.

33. The District proposes to augment out-of-priority depletions in Washington Gulch downstream from the discharge of the outlet works of Meridian Lake Reservoir, the Slate River downstream from the confluence with Washington Gulch, the East River downstream from the confluence with the Slate River and the Gunnison River upstream from the Blue Mesa Reservoir. The District also proposes to augment out-of-priority depletions in other reaches and tributaries of

those rivers within the District by exchange in those instances where an exchange can be made without impairing the availability of water lawfully divertible by others pursuant to § 37-80-120(4), C.R.S. (2004) or impairing decreed instream flow water rights.

34. The reaches described in paragraph 33 are within the boundaries of the District.

35. No dry-up of historically irrigated land is proposed by the District or shall be required as part of the change of water rights or operation of the plan for augmentation described herein; therefore, entry of this judgment and decree will not limit or affect in any way the irrigation of the land lying under the Rozich Ditch or the Meridian Ditch by means of the direct-flow water rights decreed to those ditches.

Stream Depletions

36. For purposes of this plan for augmentation, “dwelling unit” means a structure or any part of a structure designed for residential purposes having one or more rooms, not more than one kitchen and at least one bathroom, that is intended for long-term occupancy by one or more persons for living and sleeping purposes and that may or may not be placed on a permanent foundation.

37. Based upon the State Engineer’s assumption that daily indoor household use is 350 gallons per day per dwelling unit, the total annual diversion by a well for indoor household use is 0.39205 acre-feet per dwelling unit.

38. If a dwelling unit utilizes a non-evaporative sewage disposal system, the annual consumptive use by the well serving that dwelling unit from indoor household use is ten percent (10%) of the total amount diverted by the well. Therefore, the stream depletion by a well serving a dwelling unit utilizing a non-evaporative sewage disposal system will not exceed 0.0392 acre-feet per year. The depletion occurs at a uniform rate throughout the year.

39. As noted in paragraph 25, for wells located in the Slate River drainage serving dwelling units connected to the East River Treatment Plant (herein referred to as Treatment Plant Wells), the annual depletion to the Slate River by the well from indoor household use is one hundred percent (100%) of the total amount diverted by the well (0.39205 acre-feet per year). The depletion occurs at a uniform rate throughout the year. Such stream depletions from Treatment Plant Wells occur only in the reach of the Slate River downstream from its confluence with Washington Gulch from the points where the wells’ cones of depression intersect the stream to the confluence of the Slate and East Rivers (hereafter referred to as the Affected Reach of the Slate River). Downstream from the discharge point for the East River Treatment Plant (which is located above the confluence of the East River and Slate River), the annual consumptive use by the Treatment Plant Wells from indoor household use is five percent (5%) of the total amount diverted by the well (0.0196 acre-feet per year).

40. Consumptive use by a well diverting water for lawn irrigation has been determined by the District's engineering consultants using a modified Blaney-Criddle assessment adjusted for precipitation and temperature conditions in each elevation zone within the District. The calculation of stream depletions from lawn irrigation is contained in Table 8A attached hereto.

41. Consumptive use resulting from evaporation from ponds and other water surfaces in each elevation zone within the District has been determined by the District's engineering consultants. The calculation of stream depletions from evaporation is contained in Table 1 attached hereto.

42. Consumptive use of water diverted for stock watering purposes is assumed to be one hundred percent of diversions and results in stream depletions of eleven (11) gallons per animal watered per day.

43. The consumptive use calculations described in paragraphs 40 - 42 have been reviewed and approved by the State Engineer. Stream depletions from any other uses authorized to be augmented under this plan for augmentation shall be determined by the Division Engineer on a case-by-case basis consistent with the provisions of paragraph 60.d. Such determinations by the Division Engineer shall be subject to review by this Court under its retained jurisdiction pursuant to § 37-92-304(6) C.R.S. (2004).

Transit Loss

44. Transit losses occur in the delivery of water in a natural stream primarily as the result of channel storage, bank storage, evapotranspiration by phreatophytes and evaporation. For purposes of determining the amount of replacement water that must be released from Meridian Lake Reservoir in order to replace depletions to the stream at the point of depletion, the transit losses associated with the incremental increase in the natural flow of the stream caused by reservoir releases must be included.

45. The District's engineering consultants estimated transit losses based on assumptions regarding reservoir releases during the month of August in a dry year, a period when transit loss would be higher than normal. Relationships between the stream top width and the flow in the stream were developed for each gaging station on the five reaches of the Slate, East and Gunnison Rivers containing stream gages, based upon the gaging station characteristics published by the United States Geological Survey. This relationship was then used to estimate the additional water surface area that would be created in the stream channel by augmentation releases from Meridian Lake Reservoir. The increase in net evaporation during the month was then estimated by applying the net lake evaporation rate for August multiplied by the additional area (top width times reach length) caused by augmentation releases. These evaporation volumes were then doubled. The volumes of transit losses were then calculated as percentages of the total reservoir release.

46. Based on the analysis by the District's engineering consultants described in paragraph 45, and after consultation with the Division Engineer and review of a number of relevant studies, the District and the Division Engineer concur that a reasonable and conservative transit loss assessment for releases from Meridian Lake Reservoir is 0.1% (0.001) of the reservoir release for each mile of distance from the reservoir to the point of depletion.

47. The Court concludes that the transit loss assessment described in paragraph 46 accurately estimates the transit losses associated with releases from Meridian Lake Reservoir under this plan for augmentation.

Mitigation of Injury to CWCB Water Rights in the Affected Reach of the Slate River

48. Owners of existing Treatment Plant Wells would have to provide approximately 0.4067 acre-feet of replacement water annually if required to replace their depletions to the Affected Reach of the Slate River from indoor household use for 365 days per year (including transit loss and winter mitigation). The District estimates that in 2004, the cost to the water user of replacement water from Meridian Lake Reservoir will be at least \$30,000 per acre-foot and is only available for sale in increments of 0.05 acre-foot. The District and the CWCB concur that, at that price, acquisition of 0.45 acre-feet of replacement water would be cost-prohibitive for almost all existing well owners subject to that requirement, making it unlikely that they would participate in this plan. The plan provides mitigation for existing injury to CWCB instream flow water rights in the Affected Reach of the Slate River that would not otherwise occur; therefore, enabling participation by all existing well owners in the Slate River basin enhances protection of those water rights. As a result, the District and the CWCB have reached the settlement described below.

49. For existing Treatment Plant Wells only, the settlement limits the required amount of replacement water for out-of-priority depletions to the Affected Reach of the Slate River to the amount described in paragraph 51.

50. During the period 1994-2003, the CWCB instream flow water right decreed to the Slate River from the confluence of Coal Creek to the confluence of the East River in Case No. 80CW092 was not satisfied during an average of 47 days per year. The maximum number of days the instream flow water rights were not satisfied was 104 in 2002, the driest year of record. Historically, the majority of those days occurred in July, August and September, with a smaller percentage occurring in October and November. There have been rare occurrences of a shortage of brief duration in January, February and March. The period from July through September is also when senior irrigation rights would be calling if their entitlements are not being met.

51. The settlement reached between the District and the CWCB, and approved by the Division Engineer, provides that owners of existing Treatment Plant Wells may continue to divert water out of priority for indoor household use only by providing replacement water to the Affected

Reach of the Slate River in the amount of not more than 0.084855 acre-feet per well per year, plus transit loss and the assessment for winter mitigation in accordance with paragraph 55. This amount of replacement water is the equivalent of the amount of depletion to the Affected Reach of the Slate River by a Treatment Plant Well for 79 days. This amount of replacement water is also expected to provide adequate protection for senior irrigation water rights in the Affected Reach of the Slate River from out-of-priority stream depletions by these wells.

52. Water rights diverting water downstream from the confluence of the Slate River and East River, and instream flow water rights decreed to the East River downstream from its confluence with the Slate River, are adequately protected because the amount of replacement water provided by Treatment Plant Wells under this settlement (0.084855 acre-feet per well per year) is more than sufficient to provide the full amount of their net indoor depletions (0.0196 acre-feet per well per year) downstream from the point of discharge from the East River Treatment Plant.

53. Treatment Plant Wells for which a well permit was issued after May 17, 2004 are not included in the settlement described in paragraph 51. Such wells will be required to replace one hundred percent of their depletions to the Affected Reach of the Slate River. Wells serving dwelling units utilizing non-evaporative sewage disposal systems, and all other structures participating in the District's plan for augmentation except Treatment Plant Wells for which a well permit was issued before May 17, 2004, are not included in this settlement because the plan for augmentation provides full replacement of stream depletions by such wells and other structures.

54. The CWCB instream flow water right decreed to the Slate River in Case No. 80CW092 for the reach between the confluence of Coal Creek and the confluence of the East River has not historically been measured during the winter months because of ice on the stream. Depletions to that instream flow water right occurring during the winter months cannot be replaced by releases from Meridian Lake Reservoir at the time they occur because releases will freeze at and below the outlet works of Meridian Lake Reservoir and because any water released must be passed through Meridian Lake Park Reservoir No. 1. The latter reservoir is normally frozen over in winter, making it difficult or impossible to pass releases through the reservoir. Consequently, out-of-priority depletions may cause injury to the CWCB Slate River instream flow rights in the Affected Reach during the rare periods of shortage occurring in the winter months. The records for the USGS gauge Slate River near Crested Butte for the period 1994-2003 reflect that the Slate River winter instream flow right in the Affected Reach (12 c.f.s.) was short an average of zero days in the month of December, and one day in each of the months of January, February and March for an average shortage during the winter months of three days. Any injury caused by out-of-priority depletions during the winter months by wells or other structures covered by this plan will be mitigated by releases from Meridian Lake Reservoir from the winter mitigation pool, as provided in paragraph 55.

55. To mitigate injury to the CWCB instream flow water right decreed to the Affected Reach of the Slate River from out-of-priority depletions during the winter months by wells and other structures covered by this plan, the CWCB shall be entitled to request that the Division Engineer order releases from Meridian Lake Reservoir at any time during the period from October 1 through April 30 when conditions (or future improvements in technology) would permit the discharge from the reservoir to flow to a reach of the stream protected by said instream flow right, in the following amounts:

a. For each Class A Augmentation Certificate issued by the District under this plan, .001074 acre-feet;

b. For each Class B Augmentation Certificate issued by the District under this plan, .01074 acre-feet;

c. For each Class C Augmentation Certificate issued by the District under this plan, .01074 acre-feet;

d. For each Class D Augmentation Certificate issued by the District under this plan, the equivalent of the consumptive use of the diversions augmented by such certificate for ten days, calculated by dividing annual consumptive use by 365 and multiplying by ten (10). The amount of consumptive use thus determined shall be approved by the Division Engineer.

56. The Division Engineer shall calculate the total amount of water to be released according to paragraph 55 and order the total amount released from Meridian Lake at the time or times requested by the CWCB consistent with the requirements of paragraph 55.

57. Replacement to the CWCB instream flow water rights will be made at the point of depletion.

58. The CWCB's acceptance of this injury with mitigation settlement is contingent upon the District's continued operation and maintenance of the streamgaging station known as Slate River Near Crested Butte.

59. At a regular meeting on July 20, 2004, the CWCB gave final approval to the settlement described above pursuant to Rule 8i(3) of its *Rules Concerning the Instream Flow and Natural Lake Level Program*.

Augmentation Certificates

60. Water users with wells or other structures located in the Slate, East or Gunnison River basins upstream from Blue Mesa Reservoir who wish to be included in the District's plan for augmentation may purchase one or more of the following Augmentation Certificates.

a. Class A Augmentation Certificate. This certificate entitles the owner to the release from Meridian Lake Reservoir of 0.05 acre-feet of water (one Base Unit) per year when such releases are ordered by the Division Engineer to protect vested water rights or decreed conditional water rights from injury. A Class A Augmentation Certificate will provide sufficient replacement water, including transit loss at least as far as Blue Mesa Reservoir and CWCB winter mitigation, to augment the annual depletions from in-house use only for a single dwelling unit that utilizes a non-evaporative sewage disposal system.

b. Class B Augmentation Certificate. This certificate entitles the owner to the release from Meridian Lake Reservoir of 0.1 acre-feet of water (two Base Units) per year when such releases are ordered by the Division Engineer to protect vested water rights or decreed conditional water rights from injury. In accordance with the settlement described in paragraph 51, a Class B Augmentation Certificate will provide sufficient replacement water, including transit loss to the point of depletion and CWCB winter mitigation, to augment the annual depletions from in-house use only for a single dwelling unit utilizing a Treatment Plant Well for which a well permit was issued on or before May 17, 2004.

c. Class C Augmentation Certificate. This certificate entitles the owner to the release from Meridian Lake Reservoir of 0.45 acre-feet of water (nine Base Units) per year when such releases are ordered by the Division Engineer to protect vested water rights or decreed conditional water rights from injury. A Class C Augmentation Certificate will provide sufficient replacement water, including transit loss to the point of depletion and CWCB winter mitigation, to augment the annual depletions from in-house use only for a single dwelling unit utilizing a Treatment Plant Well for which a well permit was issued after May 17, 2004.

d. Class D Augmentation Certificate. This certificate entitles the owner to the release from Meridian Lake Reservoir of sufficient water to replace depletions from diversions for domestic, municipal and industrial uses, pond evaporation, lawn irrigation and livestock watering when such releases are ordered by the Division Engineer to protect vested water rights or decreed conditional water rights from injury. The required amount of replacement water shall be determined by the Division Engineer, in increments of 0.05 acre-feet of water (one Base Unit) per year, on a case-by-case basis. Diversions for drinking and sanitary uses other than in single dwelling units are to be estimated based on the table attached as Appendix 1. Consumptive use of such diversions is ten percent for individual non-evaporative sewage disposal systems and five percent for central wastewater treatment systems that discharge effluent within the drainage of diversion. Pond

evaporation is to be determined using the table attached as Table 1. The amount of consumptive use from lawn irrigation shall be determined using the table attached as Table 8A. Consumptive use by livestock is eleven (11) gallons per animal per day.

61. The terms and conditions which apply to the ownership and use of the Augmentation Certificates are set out in an *Agreement For Purchase of Augmentation Certificate Providing for Water Service From Meridian Lake Reservoir* which must be entered into between the purchaser of an Augmentation Certificate and the District, and which may be amended by the District in its discretion. The District will maintain records of Augmentation Certificates issued in sufficient detail to enable the Division Engineer to determine the total annual augmentation requirements for all structures participating in this plan for augmentation. The District will provide annual reports of changes to the Division Engineer.

62. The District's plan for augmentation does not provide for replacement of depletions to Washington Gulch during the Winter months when releases cannot be made from Meridian Lake Reservoir; however, for all structures participating in the plan except Treatment Plant Wells, full replacement of depletions is accomplished on an annual basis. In addition, all structures participating in the plan, including those which are providing full replacement of depletions, are required to contribute to the winter mitigation pool described in paragraph 55, thus providing additional replacement water to the stream system to mitigate the inability of the reservoir to provide releases during Winter months.

63. The Division Engineer will order releases from Meridian Lake Reservoir for all structures participating in the District's plan for augmentation when such releases are necessary to protect vested water rights or decreed conditional water rights from injury by out-of-priority depletions by participating structures.

TERMS AND CONDITIONS TO PREVENT INJURY

64. The following terms and conditions will prevent injury to vested water rights and decreed conditional water rights and are applicable to the change of water right and approval of plan for augmentation sought in Case No. 03CW107:

a. Transit losses are assessed on releases in accordance with paragraph 46.

b. Releases are made from Meridian Lake Reservoir to replace the historical supplementary irrigation return flows. These releases shall be made during the months of July through September for the storage accrual in Meridian Lake under Priorities Nos. 483 and 532 during the previous storage period of October through June in accordance with the Reporting and Accounting Form attached hereto as Appendix 2. Because winter releases will freeze at and below the outlet works of Meridian Lake Reservoir, the releases to replace historical return flows for October through June shall be made in one slugged release in the Fall before weather conditions will

cause such freezing. Notwithstanding the foregoing, replacement of historical irrigation return flows is not necessary when all downstream water rights having priorities senior to August 26, 2002 decreed pursuant to applications filed on or before December 31, 2004 are satisfied or when the calling or controlling downstream priority is one decreed to the Wayne N. Aspinall Unit. In the latter event, the foregone historical return flow releases shall be counted against the depletion allowance provided by the *Agreement Among the United States of America, the Colorado State Engineer, the Colorado River Water Conservation District, and the Upper Gunnison River Water Conservancy District for the Administration of Water Pursuant to the Subordination of Wayne N. Aspinall Unit Water Rights Within the Upper Gunnison River Basin* dated June 1, 2000.

c. To protect water rights in or above the Affected Reach of the Slate River, any call placed or maintained by CWCB when the instream flow water right decreed to the Slate River between the confluence of Coal Creek and the confluence of the East River in Case No. 80CW092 is not receiving its full entitlement after all of the replacement water for Treatment Plant Wells has been released from Meridian Lake Reservoir shall be reduced by the Division Engineer by the amount of depletion from the Treatment Plant Wells. Any call placed or maintained by CWCB to satisfy such water right during Winter months when releases cannot be made from Meridian Lake Reservoir shall be reduced by the Division Engineer by the amount of depletion from all structures participating in this plan for augmentation to the extent that augmentation releases are not being made from the reservoir to replace depletions in time, place and amount.

d. An accounting of reservoir operation is maintained in accordance with the Reporting and Accounting Form attached hereto as Appendix 2.

e. The District operates and maintains the streamgaging station known as Slate River Near Crested Butte (Station No. 09111500).

f. Prior to issuance of an Augmentation Certificate where the applicant therefor proposes to augment by exchange, the applicant for the Augmentation Certificate shall provide the Division Engineer with sufficient details about the proposed exchange to enable the Division of Water Resources to determine whether an exchange can be made without impairing the availability of water lawfully divertible by others pursuant to § 37-80-120(4) C.R.S. (2004) or impairing decreed instream flow water rights. At the time of submission to the Division Engineer, the applicant shall provide notice of the application for an Augmentation Certificate by publication in the Water Resume for Water Division No. 4. Such notice shall state that any affected person may provide written comments regarding the application to the Division Engineer within thirty days after the date of publication. The Division of Water Resources shall not conclude its evaluation until after the expiration of thirty days from the date of publication of the resume.

g. Until such time as the District presents evidence to this Court which satisfies the Court that the firm annual yield of Meridian Lake Reservoir has increased to more than 48.8 acre-feet per year as a result of changes to the reservoir or its operation, the District shall not sell

Augmentation Certificates representing more than 48.8 acre-feet of replacement water in the aggregate. Changes to the reservoir or its operation may include, without limitation, improvements to the outlet works and operation of the reservoir utilizing the water rights decreed thereto in Case No. 02CW294, either alone or in combination with the Existing Rights. The evidence contemplated in this paragraph shall be presented by filing an application for amendment of this plan for augmentation according to the requirements of §37-92-302 C.R.S. (2004).

h. With respect to the period of retained jurisdiction required by § 37-92-304(6) C.R.S. (2004), the court finds that a period of ten years is sufficient.

CONCLUSIONS OF LAW

65. The applicant is a water conservancy district established pursuant to the Water Conservancy Act, §37-45-101 *et seq.*, C.R.S. (2004) and is entitled to make appropriations of water to benefit citizens within the Upper Gunnison River Water Conservancy District boundaries. As such it is entitled to the governmental agency exception to the anti-speculation doctrine in §37-92-103(3)(a)(I), C.R.S. (2004).

66. Timely and adequate notice of the pendency of this proceeding in rem was given in the manner required by law. This Court has jurisdiction over the subject matter of this proceeding and over all who have standing to appear as parties, whether they have appeared or not.

67. The District has demonstrated the intent to appropriate 407.21 acre-feet of storage with an appropriation date of August 26, 2002 to be released to augment out-of-priority depletions by domestic, municipal, industrial, and irrigation uses and pond evaporation and livestock watering pursuant to the plan for augmentation for which approval is sought in Case No. 03CW107 and manifested that intent by an act sufficient to provide notice to third parties. The District has also demonstrated that it can and will store 407.21 acre-feet of water and put it to beneficial use within a reasonable time. § 37-92-305(9)(b), C.R.S. (2004). Consequently, the District is entitled to a conditional storage right for 407.21 acre-feet with an appropriation date of August 26, 2002 for augmentation of out-of-priority depletions by domestic, municipal, industrial, and irrigation uses and pond evaporation and livestock watering.

68. Entry of a judgment and decree in this case does not adjudicate exchange priorities for the benefit of owners of Augmentation Certificates who propose to augment by exchange.

69. The settlement between the District and the CWCB described in paragraphs 48-59 was entered into by way of compromise and settlement of this litigation and any agreement by the CWCB not to oppose entry of this decree shall not be construed as concurrence with any specific finding of fact or conclusion of law contained therein or with the specific engineering methodologies or administrative practices utilized by the District other than for purposes of settlement of this matter. Nothing contained in this decree shall be binding upon the CWCB other than in the current proceeding.

RULING

IT IS HEREBY RULED AND ORDERED:

70. The foregoing Findings of Fact and Conclusions of Law are incorporated into and form a part of this decree, as if fully set forth herein at this point.

71. The facts alleged in the application are true.

72. The Application in Case No. 02CW294 for a conditional water storage right in MERIDIAN LAKE RESERVOIR for 407.21 acre-feet with an appropriation date of August 26, 2002 to be released to augment out-of-priority depletions by domestic, municipal, industrial, and irrigation uses (including pond evaporation and livestock watering) is GRANTED. Pursuant to §37-92-306 C.R.S. (2004), the priority date decreed herein for said 407.21 acre-feet shall be August 26, 2002 and shall establish its relative priority among water rights awarded for applications filed in 2004. Water stored in Meridian Lake Reservoir under this priority is fully consumable.

73. The Application for change of water rights in Case No. 03CW107 from irrigation to domestic, municipal, industrial, and irrigation uses (including pond evaporation and livestock watering) by providing replacement water to augment out-of-priority depletions by such uses is GRANTED subject to terms and conditions of this decree. The places of use are the Slate, East, and Gunnison River basins and the basins of tributaries thereof upstream of Blue Mesa Reservoir.

74. The Application for approval of the plan for augmentation described in this decree is GRANTED subject to the terms and conditions stated in this decree.

75. Pursuant to § 37-92-305(8) C.R.S. (2004) , the Division Engineer or shall curtail all out-of-priority diversions, the depletions from which are not so replaced as to prevent injury to vested water rights.

76. The District shall install measuring devices for Meridian Lake Reservoir as required by the Division Engineer for the operation of this plan. Owners of Augmentation Certificates shall install totalizing flow meters on augmented wells and such other type of measuring device for surface diversions and ponds as may be ordered by the Division Engineer.

77. The District shall file an annual report with the Division Engineer by December 15th of each year itemizing diversions and replacements made under this plan.

78. Prior to or during the month of April, 2011, and every six years thereafter until the conditional water right decreed herein is decreed absolutely, the District, if it desires to maintain the same, shall file an application for finding of reasonable diligence with this Court.

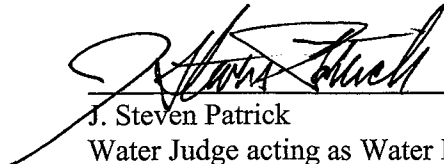
79. The District shall notify this Court of any change in mailing address. Upon the sale or other transfer of the conditional water right decreed herein, the transferee shall file with this Court a notice of transfer which shall state:

- a. The title and case number of this case;
- b. The description of the water right transferred;
- c. The name of the transferor;
- d. The name and mailing address of the transferee.

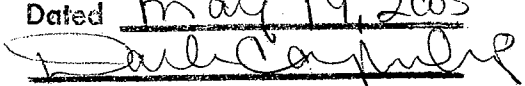
80. This decree shall be filed with the water clerk and a copy shall be filed with the State Engineer and Division Engineer, Water Division No. 4.

81. Pursuant to § 37-92-304(6) C.R.S. (2004), this court retains jurisdiction over this decree, including the Tables and Accounting Form attached, for reconsideration of the question of injury to the vested rights of others for a period of ten years from and after the date that this ruling becomes the decree of this court. During such period of retained jurisdiction, copies of the completed Reporting and Accounting Form attached as Appendix 2 shall be provided annually to the Oposers.

Dated this 14th day of April, 2005.

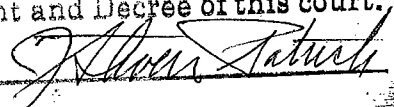

J. Steven Patrick
Water Judge acting as Water Referee
Water Division No. 4

Mailed-A Copy of this Document to
all parties in this case.

Dated May 19, 2005

Water Clerk

The only protest having been withdrawn and
other
No protest was filed to this matter.
The foregoing ruling is confirmed
and approved, and is made the
Judgment and Decree of this court.

Dated: 5/17/05


Water Judge

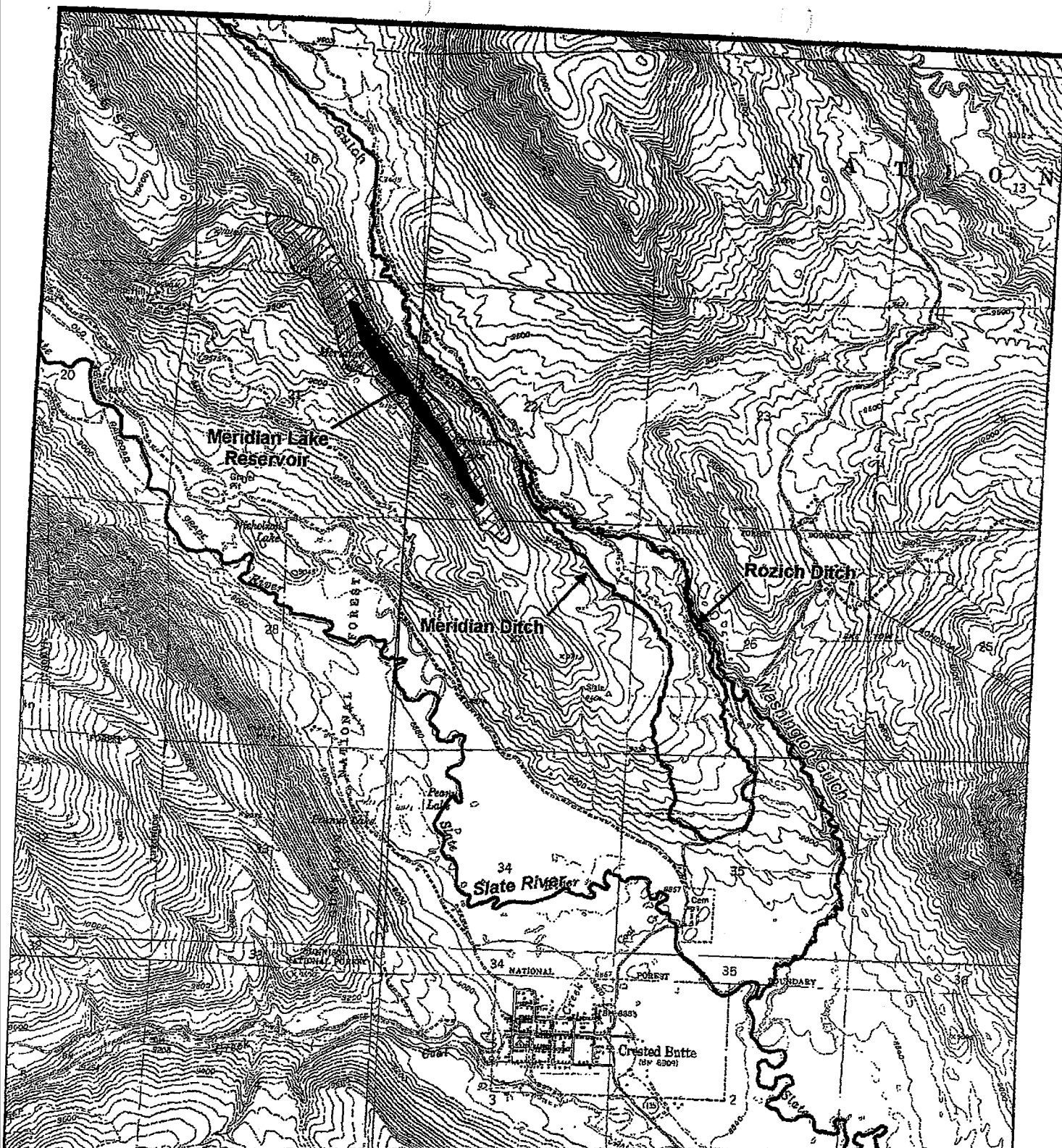


FIGURE 1

**LOCATION MAP OF
MERIDIAN LAKE RESERVOIR**



Helton & Williamsen, P.C.

Drawn by: Andy Olson

Checked by:

Job No. U214

File: CrestedB_loc.mxd

Rev.
Date:

Date: 12/22/2003

0 1,500 3,000 6,000 9,000
Scale in Feet

Appendix 1

GUIDELINES ON
INDIVIDUAL SEWAGE DISPOSAL SYSTEMS
REVISED 2000

COLORADO STATE BOARD OF HEALTH
AUTHORITY: CHAPTER 25, ARTICLE 10
Colorado Revised Statutes, 1973,
as Amended

COLORADO DEPARTMENT OF HEALTH
WATER QUALITY CONTROL DIVISION
4300 Cherry Creek Drive South
DENVER, CO 80246-1530

For Biodegradable Wastes Only

TABLE I
QUANTITIES AND BOD STRENGTH OF SEWAGE
FOR VARIOUS TYPES OF USES

TYPE OF ESTABLISHMENT	GALLONS/PERSON/DAY (AVERAGE) (UNLESS OTHERWISE STATED)	LBS. BOD5/PERSON/DAY (UNLESS OTHERWISE STATED)
Residential		
Single-family dwellings (two people per bedroom)	75	.20
Separate Distribution of Flows - Individual Residential use		
Bath/Shower	14.7	.014
Dishwasher	1.8	.002
Kitchen sink	4.4	.045
Additional for garbage grinder	1.4	.052
Laundry washer	19.5	.037
Lavatory	8.4	.021
Water closet	24.8	.029
Hotels and Motels - per room (without private baths)	50	.15
Hotels and Motels - per room (with private baths)	75	.15
Multiple-family dwellings or apartments	75	.20
Boarding and Robming houses	50	.15
Mobile Home Parks	75	.20
(per space)	300	.80
Commercial		
Airports (per passenger)	5	.02
(per employee)	10	.06
Barber and Beauty Shops (per chair)	100	.70*
Bowling Alleys (per lane - toilet wastes only)	5	.03*
Bus Service Areas (not including food)	5	.02

Country clubs		
(per member)	30	.02
(per employee)	20	.06
Dentist offices	50	.14*
(per non-wet chair)		
Doctors offices (per doctor)	250	.80*
Fairgrounds	5	.02
(per person attending)		
Factories and plants		
(exclusive of industrial wastes)		
(per employee per 8-hour shift-no showers)	20	.05
(per employee per 8-hour shift - showers provided)	35	.08
Food service establishments		
(per seat)		
Restaurant (Open 1 or 2 meals)	50	.06/meal served
24-hour Restaurant	75	.07/meal served
Restaurant with paper service only	25	.01/meal served
Additional for bars and cocktail lounges	30	.02
Drive-in Restaurant	50	.02
(per car space)		
Kennels (per dog)	30	.20
Laundries, self-service	400	.75
(per commercial washer)		
Office Buildings	15	.06
(per employee per 8-hour shift)		
Stores and Shopping Centers	.1	.01*
(per square foot of Retail space)		
Service Stations (per toilet fixture)	250	.50*
Stadiums, Race Tracks, Ball Parks (per seat)	5	.02
Theaters (Movie, Indoor, or Auditorium)	5	.02
Work or construction camps (semi-permanent - with flush toilets)	50	.17
Work or construction camps (semi-permanent - without flush toilets)	35	.02
Institutional (does not include kitchen wastewater flows)		
Churches (not including food)	5	.01

Hospitals (per bed space)	250	.20
Nursing Homes (per bed space)	100	.17
Schools, Boarding	100	.17
Schools, Day	15	.04
(without cafeteria, gym or showers)		
(with cafeterias, no gym or showers)	20	.08
(with cafeterias, gym and showers)	25	.10
(additional for school workers)	15	.06
Recreational and Seasonal		
Camps, day (no meal served)	15	.12
Luxury Resort	125	.17
Resort (night and day)	50	.12
Campground (seasonal occupancy - per unit)**	50	.12
Public Park (during hours when park is open)		
- Flush Toilet (per fixture per hour)	36	.04 lbs./ fixture
- Urinal (per fixture per hour)	10	.01 lbs./fixture
- Shower (per fixture per hour)	100	.10 lbs./ fixture
- Faucet (per fixture per hour)	15	.04 lbs./ fixture
Swimming pools and bathhouses	10	.06
Travel trailer parks (with individual water and sewage hookup - per unit) **	50	.12
(without individual water and sewage hookup - per unit) **	50	.12

* = BOD Levels needing further verification

** = Laundry facilities are to be calculated on a per commercial washer basis in accordance with other elements of this table.

Appendix 2

REPORTING AND ACCOUNTING FORM FOR DECREE IN CONSOLIDATED CASES NO. 02CW294 AND 03CW107

WATER YEAR = _____

PART 1 - REPLACEMENT REQUIREMENTS

Item	No. of units or area in acres	Unit Replacement requirement ac-ft/day	Monthly replacement requirements												
			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Ann
Slate River wells/uses															
Days of call under instream-flow rights															
Pre-May 17, 2004 inside uses with wastewater treatment in East River basin		0.001074 ¹													
Post-May 17, 2004 inside uses with wastewater treatment in East River basin		0.001074													
Inside uses with ISDS treatment in Slate River basin		0.000107													
Irrigation		Table 8a													
Pond water surface		Table 1													
Transit loss		1.5 %													
Days of additional call from irrigation water rights															
Inside uses with wastewater treatment in East River basin		0.000054													
Inside uses with ISDS treatment in Slate River basin		0.000107													
Irrigation		Table 8a													
Pond water surface		Table 1													
Transit loss		4.0 %													
Subtotal															
Other wells/uses															
Days of call from irrigation water rights															
Inside uses with centralized wastewater treatment		0.000054													
Inside uses with ISDS treatment		0.000107													
Irrigated area															
Pond water surface															
Other															
Transit loss		4.0 %													
Subtotal															
Total															

¹ Limited to 0.084855 acre-foot per unit per year

REPORTING AND ACCOUNTING FORM FOR DECREE IN CONSOLIDATED CASES NO. 02CW294 AND 03CW107

WATER YEAR = _____

Part 2 - Meridian Lake Reservoir storage accruals:			
Beginning date of fall/spring storage =			Observed data
Reservoir gage height =			Observed data
Usable content in ac-ft =			Observed data
End of fall/ spring storage =			Observed data
Reservoir gage height =			Observed data
Usable content in ac-ft =			Observed data
Total net storage accrual in ac-ft =			
	No. of days	Pct. Of total	Volume stored in acre-feet
Total =		100.0	
Under the 02CW294 storage right right =			
Under senior storage rights =			

Part 3 - returnflow and winter mitigation obligations:			
Total =		49.6 % of volume stored under senior storage rights	from Par. 19 of decree
July =		19.0 % of volume stored under senior storage rights	
August =		25.0 % of volume stored under senior storage rights	
September =		28.0 % of volume stored under senior storage rights	
October through June =		27.0 % of volume stored under senior storage rights	
Winter mitigation =		from Part 1 and Par. 52 of decree	

Part 4 - Meridian Lake Reservoir operation:

Month	Add'l storage under junior storage right ac-ft	Ac-ft releases for				Storage owed for return flow ac-ft	Consum-able water in storage ac-ft	Legal content at end of month in acre-feet	Actual EOM content ac- ft	Owed to river in ac-ft
		Winter mitigation	Replac- ment under PFA	Hist. return flow obligation	Out-of- priority evap.					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
March										
April										
May										
June										
July										
August										
Sep.										
October										

Notes for Part 4:

- Column 2 - Show water that becomes available and is stored under the 02CW294 storage right during April through through October.
- Column 3 - Show water released to the State River for winter mitigation.
- Column 4 - Replacement releases from Part 1. Replacement releases are required only when calls are made under water rights senior to 10/17/2000 decreed prior to 12/31/02.
- Column 5 - Historical return flow releases figured in Part 3. Releases of historical return flow are required only when calls are being made under water rights senior to 2002.
- Column 6 - Out-of-priority evaporation.
- Column 7 - The amount of water committed to historical return flow releases for remainder of year.
- Column 8 - The amount of consumable water remaining in the legal content after the historical return flow commitment is deducted.
- Column 9 - The March value is from Part 2; the remaining values are calculated from the previous month's legal content by adding the inflow from column 2 and subtracting a) the required replacement release from column 3, b) the required historical return flow release from column 4, and c) the out-of-priority evaporation from column 5.
- Column 10 - Actual observed end-of-month content.
- Column 11 - Any departure between actual and legal reservoir content to be made up in the next month. Positive values indicate that water is owed to the river and negative values indicate that the river owes water to Meridian Lake Reservoir.

Table 1
Lake Evaporation Rates

RATES FOR ON CHANNEL LAKES														
Elevation Range		Net Lake Evaporation (feet) (calculated as lake evaporation minus effective precipitation using SEO SWSP Guidelines)												
Lower	Upper	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
6,600	6,799	0.00	0.00	0.00	0.28	0.40	0.50	0.48	0.37	0.33	0.21	0.10	0.00	2.65
6,800	6,999	0.00	0.00	0.00	0.28	0.39	0.49	0.48	0.37	0.33	0.21	0.10	0.00	2.65
7,000	7,199	0.00	0.00	0.00	0.27	0.39	0.49	0.47	0.36	0.32	0.21	0.10	0.00	2.61
7,200	7,399	0.00	0.00	0.00	0.27	0.39	0.49	0.47	0.36	0.32	0.21	0.10	0.00	2.61
7,400	7,599	0.00	0.00	0.00	0.27	0.38	0.48	0.47	0.36	0.32	0.21	0.10	0.00	2.58
7,600	7,799	0.00	0.00	0.00	0.24	0.37	0.47	0.45	0.35	0.31	0.20	0.09	0.00	2.48
7,800	7,999	0.00	0.00	0.00	0.21	0.36	0.46	0.44	0.34	0.30	0.19	0.09	0.00	2.39
8,000	8,199	0.00	0.00	0.00	0.18	0.35	0.45	0.43	0.33	0.29	0.19	0.09	0.00	2.31
8,200	8,399	0.00	0.00	0.00	0.15	0.34	0.44	0.42	0.32	0.28	0.18	0.09	0.00	2.22
8,400	8,599	0.00	0.00	0.00	0.12	0.33	0.43	0.41	0.31	0.27	0.17	0.09	0.00	2.13
8,600	8,799	0.00	0.00	0.00	0.09	0.32	0.43	0.40	0.30	0.27	0.17	0.09	0.00	2.07
8,800	8,999	0.00	0.00	0.00	0.06	0.31	0.42	0.39	0.29	0.26	0.16	0.09	0.00	1.98
Greater than 9,000		0.00	0.00	0.00	0.00	0.29	0.39	0.36	0.27	0.24	0.15	0.08	0.00	1.79

RATES FOR OFF-CHANNEL LAKES														
Elevation Range		Lake Evaporation (feet) (lake evaporation with no effective precipitation offset)												
Lower	Upper	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
6,600	6,799	0.00	0.00	0.00	0.31	0.43	0.53	0.55	0.44	0.38	0.26	0.14	0.00	3.02
6,800	6,999	0.00	0.00	0.00	0.31	0.42	0.53	0.54	0.44	0.37	0.25	0.14	0.00	3.00
7,000	7,199	0.00	0.00	0.00	0.30	0.42	0.52	0.54	0.44	0.37	0.25	0.14	0.00	2.98
7,200	7,399	0.00	0.00	0.00	0.30	0.42	0.52	0.54	0.44	0.37	0.25	0.13	0.00	2.97
7,400	7,599	0.00	0.00	0.00	0.30	0.42	0.52	0.53	0.43	0.37	0.25	0.13	0.00	2.95
7,600	7,799	0.00	0.00	0.00	0.27	0.41	0.51	0.53	0.43	0.36	0.25	0.13	0.00	2.89
7,800	7,999	0.00	0.00	0.00	0.23	0.41	0.50	0.52	0.42	0.36	0.24	0.13	0.00	2.81
8,000	8,199	0.00	0.00	0.00	0.20	0.40	0.50	0.51	0.42	0.35	0.24	0.13	0.00	2.75
8,200	8,399	0.00	0.00	0.00	0.17	0.39	0.49	0.50	0.41	0.35	0.24	0.13	0.00	2.68
8,400	8,599	0.00	0.00	0.00	0.14	0.39	0.48	0.50	0.40	0.34	0.23	0.12	0.00	2.60
8,600	8,799	0.00	0.00	0.00	0.10	0.38	0.47	0.49	0.40	0.34	0.23	0.12	0.00	2.53
8,800	8,999	0.00	0.00	0.00	0.07	0.38	0.47	0.48	0.39	0.33	0.23	0.12	0.00	2.47
Greater than 9,000		0.00	0.00	0.00	0.00	0.36	0.45	0.47	0.38	0.32	0.22	0.12	0.00	2.32

Notes:

- 1) Values shown for the 6,600 to 6,799 elevation range are the rates from Table 2
for a small reservoir located near Crystal Reservoir which is located at an approximate elevation of 6,760 feet
- 2) Values shown for the 7,400 to 7,599 elevation range are the rates from Table 2
for a small reservoir located near Blue Mesa Reservoir which is located at an approximate elevation of 7,500 feet
- 3) Values shown for the greater than 9,000 feet elevation range are the rates from Table 2
for a small reservoir located near Taylor Park Reservoir which is located at an approximate elevation of 9,330 feet
- 4) Values for intermediate elevation ranges determined by linear interpolation.
- 5) Based on Colorado Revised Statutes Section 37-84-117(5) the state engineer will permit precipitation credit when calculating evaporation from an on-channel reservoir. Colorado Revised Statutes Section 37-84-117(1) defines an on-channel reservoir as "...any reservoir situated upon or in the bed of any natural stream or through which any natural stream flows". If a lake can be defined as on-channel then the upper table is used to estimate evaporation losses.

Table 2

Lake Evaporation Rates Calculated Using the SEO Guidelines for Estimating Evaporation losses at Gravel

Crystal Reservoir Evaporation estimated using SEO SWSP guidelines for Gravel Pits													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Monthly Distribution from													
SEO SWSP Guidelines	1.0%	3.0%	6.0%	9.0%	12.5%	15.5%	16.0%	13.0%	11.0%	7.5%	4.0%	1.5%	100.0%
Evaporation (inches) 1)	0.41	1.23	2.46	3.69	5.13	6.36	6.58	5.33	4.51	3.08	1.64	0.62	41.00
Ice Free Cover (%) 2)	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	0%	
Ice Free Evap (inches)	0.00	0.00	0.00	3.69	5.13	6.36	6.58	5.33	4.51	3.08	1.64	0.00	36.29
Total Precip (inches) 3)	0.91	0.67	0.53	0.51	0.55	0.59	1.16	1.31	0.83	0.77	0.64	0.79	9.26
Effective Precip (70%)	0.64	0.47	0.37	0.36	0.39	0.41	0.81	0.92	0.58	0.54	0.45	0.55	6.48
Net Lake Evap (inches)	0.00	0.00	0.00	3.33	4.74	5.94	5.75	4.41	3.93	2.54	1.19	0.00	31.83
Net Lake Evap (feet)	0.00	0.00	0.00	0.28	0.40	0.50	0.48	0.37	0.33	0.21	0.10	0.00	2.65
Crystal Evap (feet) 4)	0.00	0.00	0.00	0.26	0.34	0.51	0.52	0.48	0.43	0.39	0.00	0.00	3.45
Diff from Blue Mesa Evap	0.00	0.00	0.00	0.02	0.06	-0.01	-0.04	-0.15	-0.15	-0.22	-0.29	0.00	-0.80

1) Estimated from NOAA Technical Report NWS 33

2) Determined from the Ice Free cover months used by the Division 4 Engineer for Crystal Reservoir.

3) 1971-2000 Average precipitation for the Blue Mesa Lake climate station (see Western Regional Climate Center website at wrcc.dri.edu)

4) Evaporation rates used by Division 4 Engineer to estimate evaporation at Crystal Reservoir.

Blue Mesa Reservoir Evaporation estimated using SEO SWSP guidelines for Gravel Pits													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Monthly Distribution from													
SEO SWSP Guidelines	1.0%	3.0%	6.0%	9.0%	12.5%	15.5%	16.0%	13.0%	11.0%	7.5%	4.0%	1.5%	100.0%
Evaporation (inches) 1)	0.40	1.20	2.40	3.60	5.00	6.20	6.40	5.20	4.40	3.00	1.60	0.60	40.00
Ice Free Cover (%) 2)	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	0%	
Ice Free Evap (inches)	0.00	0.00	0.00	3.60	5.00	6.20	6.40	5.20	4.40	3.00	1.60	0.00	35.40
Total Precip (inches) 3)	0.91	0.67	0.53	0.51	0.55	0.59	1.16	1.31	0.83	0.77	0.64	0.79	9.26
Effective Precip (70%)	0.64	0.47	0.37	0.36	0.39	0.41	0.81	0.92	0.58	0.54	0.45	0.55	6.48
Net Lake Evap (inches)	0.00	0.00	0.00	3.24	4.62	5.79	5.59	4.28	3.82	2.46	1.15	0.00	30.95
Net Lake Evap (feet)	0.00	0.00	0.00	0.27	0.38	0.48	0.47	0.36	0.32	0.21	0.10	0.00	2.58
Blue Mesa Evap (feet) 4)	0.00	0.00	0.00	0.21	0.30	0.43	0.46	0.46	0.47	0.42	0.38	0.00	3.13
Diff from Blue Mesa Evap	0.00	0.00	0.00	0.06	0.08	0.05	0.01	-0.10	-0.15	-0.21	-0.28	0.00	-0.55

1) Estimated from NOAA Technical Report NWS 33.

2) Determined from the Ice Free cover months used by the Division 4 Engineer for Blue Mesa Reservoir.

3) 1971-2000 Average precipitation for the Blue Mesa Lake climate station (see Western Regional Climate Center website at wrcc.dri.edu)

4) Evaporation rates used by Division 4 Engineer to estimate evaporation at Blue Mesa Reservoir.

Taylor Park Reservoir Evaporation estimated using SEO SWSP guidelines for Gravel Pits													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Monthly Distribution from													
SEO SWSP Guidelines	1.0%	3.0%	6.0%	9.0%	12.5%	15.5%	16.0%	13.0%	11.0%	7.5%	4.0%	1.5%	100.0%
Evaporation (inches) 1)	0.35	1.05	2.10	3.15	4.38	5.43	5.60	4.55	3.85	2.63	1.40	0.53	35.00
Ice Free Cover (%) 2)	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	0%	
Ice Free Evap (inches)	0.00	0.00	0.00	0.00	4.38	5.43	5.60	4.55	3.85	2.63	1.40	0.00	27.83
Total Precip (inches) 3)	1.36	1.30	1.40	1.34	1.32	0.98	1.81	1.42	1.21	0.56	0.78	0.78	15.29
Effective Precip (70%)	0.95	0.91	0.98	0.94	0.93	0.69	1.27	1.27	1.00	0.84	0.39	0.55	10.71
Net Lake Evap (inches)	0.00	0.00	0.00	0.00	3.45	4.74	4.33	3.28	2.85	1.78	1.01	0.00	21.45
Net Lake Evap (feet)	0.00	0.00	0.00	0.00	0.29	0.39	0.36	0.27	0.24	0.15	0.08	0.00	1.79
Taylor Park Evap (feet) 4)	0.00	0.00	0.00	0.00	0.14	0.21	0.28	0.32	0.32	0.28	0.22	0.00	1.77
Diff from TP Res Evap	0.00	0.00	0.00	0.00	0.15	0.18	0.08	-0.05	-0.08	-0.13	-0.14	0.00	0.02

1) Estimated from NOAA Technical Report NWS 33

2) Determined from the Ice Free cover months used by the Division 4 Engineer for Taylor Park Reservoir.

3) 1948-2002 Average precipitation for the NOAA Taylor Park climate station.

4) Evaporation rates used by Division 4 Engineer to estimate evaporation at Taylor Park Reservoir.

Table 8A

Lagged Streamflow Effects from Outdoor Water Use for Lawn Irrigation

(includes the alluvium of the mainstems of the Gunnison River & Tomichi Creek, and all areas north of these)

Note: October depletions are not reflected herein

Elevation Range		Distance from the Stream	Lagged Stream Depletions from Irrigation of Blue Grass (ac-ft/ac)												Total
Lower	Upper		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
6600	6799	Less than 100	0.00	0.00	0.00	0.00	0.39	0.48	0.48	0.39	0.32	0.00	0.00	0.00	2.06
		100 to 499	0.01	0.01	0.01	0.00	0.30	0.42	0.44	0.39	0.34	0.08	0.03	0.02	2.06
		500 to 999	0.04	0.03	0.02	0.01	0.18	0.32	0.38	0.37	0.35	0.18	0.10	0.06	2.06
		Greater than 1000	0.10	0.06	0.04	0.04	0.06	0.17	0.26	0.31	0.34	0.30	0.22	0.14	2.06
6800	6999	Less than 100	0.00	0.00	0.00	0.00	0.38	0.46	0.46	0.38	0.31	0.00	0.00	0.00	1.99
		100 to 499	0.01	0.01	0.01	0.00	0.29	0.41	0.43	0.38	0.33	0.07	0.03	0.02	1.99
		500 to 999	0.04	0.03	0.02	0.01	0.18	0.31	0.37	0.36	0.34	0.18	0.09	0.06	1.99
		Greater than 1000	0.09	0.06	0.04	0.04	0.06	0.17	0.25	0.30	0.33	0.29	0.21	0.14	1.99
7000	71999	Less than 100	0.00	0.00	0.00	0.00	0.37	0.45	0.45	0.37	0.30	0.00	0.00	0.00	1.93
		100 to 499	0.01	0.01	0.01	0.00	0.28	0.40	0.42	0.37	0.31	0.07	0.03	0.02	1.93
		500 to 999	0.04	0.03	0.02	0.01	0.17	0.30	0.35	0.34	0.32	0.17	0.09	0.06	1.93
		Greater than 1000	0.09	0.06	0.04	0.04	0.06	0.16	0.24	0.29	0.31	0.28	0.20	0.13	1.93
7200	7399	Less than 100	0.00	0.00	0.00	0.00	0.35	0.43	0.43	0.35	0.29	0.00	0.00	0.00	1.86
		100 to 499	0.01	0.01	0.01	0.00	0.27	0.38	0.40	0.35	0.30	0.07	0.03	0.02	1.86
		500 to 999	0.04	0.03	0.02	0.01	0.17	0.29	0.34	0.33	0.31	0.17	0.09	0.06	1.86
		Greater than 1000	0.09	0.06	0.04	0.04	0.06	0.16	0.24	0.28	0.30	0.27	0.20	0.13	1.86
7400	7599	Less than 100	0.00	0.00	0.00	0.00	0.34	0.42	0.42	0.34	0.28	0.00	0.00	0.00	1.80
		100 to 499	0.01	0.01	0.01	0.00	0.26	0.37	0.39	0.34	0.29	0.07	0.03	0.02	1.80
		500 to 999	0.04	0.03	0.02	0.01	0.16	0.28	0.33	0.32	0.30	0.16	0.09	0.06	1.80
		Greater than 1000	0.09	0.06	0.04	0.04	0.06	0.15	0.23	0.27	0.29	0.26	0.19	0.12	1.80
7600	7799	Less than 100	0.00	0.00	0.00	0.00	0.33	0.40	0.40	0.33	0.27	0.00	0.00	0.00	1.73
		100 to 499	0.01	0.01	0.01	0.00	0.26	0.36	0.37	0.33	0.28	0.06	0.03	0.02	1.73
		500 to 999	0.04	0.03	0.02	0.01	0.15	0.27	0.32	0.31	0.29	0.15	0.08	0.05	1.73
		Greater than 1000	0.08	0.05	0.04	0.04	0.05	0.15	0.22	0.26	0.28	0.26	0.18	0.12	1.73
7800	7999	Less than 100	0.00	0.00	0.00	0.00	0.32	0.39	0.39	0.32	0.26	0.00	0.00	0.00	1.67
		100 to 499	0.01	0.01	0.01	0.00	0.25	0.34	0.36	0.32	0.27	0.06	0.03	0.02	1.67
		500 to 999	0.04	0.03	0.02	0.01	0.15	0.26	0.31	0.30	0.28	0.15	0.08	0.05	1.67
		Greater than 1000	0.08	0.05	0.04	0.04	0.05	0.14	0.21	0.25	0.27	0.25	0.18	0.11	1.67
8000	8199	Less than 100	0.00	0.00	0.00	0.00	0.30	0.37	0.37	0.30	0.25	0.00	0.00	0.00	1.60
		100 to 499	0.01	0.01	0.01	0.00	0.24	0.33	0.35	0.30	0.26	0.06	0.03	0.02	1.60
		500 to 999	0.03	0.03	0.02	0.01	0.14	0.25	0.30	0.29	0.27	0.14	0.08	0.05	1.60
		Greater than 1000	0.08	0.05	0.03	0.03	0.05	0.13	0.20	0.24	0.26	0.24	0.17	0.11	1.60
8200	8399	Less than 100	0.00	0.00	0.00	0.00	0.29	0.36	0.36	0.29	0.24	0.00	0.00	0.00	1.54
		100 to 499	0.01	0.01	0.01	0.00	0.23	0.32	0.33	0.29	0.25	0.06	0.02	0.02	1.54
		500 to 999	0.03	0.02	0.02	0.01	0.14	0.24	0.28	0.28	0.26	0.14	0.07	0.05	1.54
		Greater than 1000	0.07	0.05	0.03	0.03	0.05	0.13	0.19	0.23	0.25	0.23	0.16	0.11	1.54
8400	8599	Less than 100	0.00	0.00	0.00	0.00	0.28	0.34	0.34	0.28	0.23	0.00	0.00	0.00	1.47
		100 to 499	0.01	0.01	0.01	0.00	0.22	0.30	0.32	0.28	0.24	0.05	0.02	0.02	1.47
		500 to 999	0.03	0.02	0.02	0.01	0.13	0.23	0.27	0.26	0.25	0.13	0.07	0.05	1.47
		Greater than 1000	0.07	0.05	0.03	0.03	0.05	0.12	0.19	0.22	0.24	0.22	0.15	0.10	1.47
8600	8799	Less than 100	0.00	0.00	0.00	0.00	0.27	0.33	0.33	0.27	0.22	0.00	0.00	0.00	1.41
		100 to 499	0.01	0.01	0.01	0.00	0.21	0.29	0.30	0.27	0.23	0.05	0.02	0.01	1.41
		500 to 999	0.03	0.02	0.01	0.01	0.13	0.22	0.26	0.25	0.24	0.13	0.07	0.04	1.41
		Greater than 1000	0.07	0.04	0.03	0.03	0.04	0.12	0.18	0.21	0.23	0.21	0.15	0.10	1.41
8800	8999	Less than 100	0.00	0.00	0.00	0.00	0.25	0.31	0.31	0.25	0.21	0.00	0.00	0.00	1.34
		100 to 499	0.01	0.01	0.01	0.00	0.20	0.28	0.29	0.25	0.22	0.05	0.02	0.01	1.34
		500 to 999	0.03	0.02	0.01	0.01	0.12	0.21	0.25	0.24	0.23	0.12	0.06	0.04	1.34
		Greater than 1000	0.06	0.04	0.03	0.03	0.04	0.11	0.17	0.20	0.22	0.20	0.14	0.09	1.34
Greater than 9000		Less than 100	0.00	0.00	0.00	0.00	0.24	0.30	0.30	0.24	0.20	0.00	0.00	0.00	1.28
		100 to 499	0.01	0.01	0.01	0.00	0.19	0.26	0.28	0.24	0.21	0.05	0.02	0.01	1.28
		500 to 999	0.03	0.02	0.01	0.01	0.11	0.20	0.24	0.23	0.22	0.11	0.06	0.04	1.28
		Greater than 1000	0.06	0.04	0.03	0.03	0.04	0.11	0.16	0.19	0.21	0.19	0.13	0.09	1.28