

DIVISION 2



1998 ANNUAL REPORT

**DIVISION ENGINEER'S
ANNUAL REPORT**

Water Division 2

1998

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER

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March 1, 1999

Mr. Hal Simpson
State Engineer
Division of Water Resources
Room 818
1313 Sherman Street
Denver, CO 80203

Dear Hal:

On behalf of the Division 2 staff I submit an Annual Report summarizing activities for Water Year 1998.

I would like to express sincere gratitude to the Division 2 personnel, you, and your staff for extending support in order to accomplish the responsibilities assigned during the past year.

Respectfully submitted,

Steven J. Witte, Division Engineer
Division 2

TABLE OF CONTENTS

Cover Picture Provided by Bill Howland

	<u>Page</u>
I. ACTIVITIES AND ACCOMPLISHMENTS DURING 1998 WATER YEAR	1
A. Surface Water Administration	1
B. Administration of Groundwater Use and Measurement Rules	3
1. Enforcement of Rules in the Rule 5 Area	
2. Horse Creek Resolution	
3. Improvements to Groundwater Information Systems	
4. Groundwater Operations	
5. Measurement Quality Control	
6. SB 96-124	
C. Developments in Kansas vs. Colorado	6
D. Legal and Litigation	7
E. Tabulation	8
F. Safety of Dams	9
1. DeWeese Dam	
2. Horseshoe Dam	
3. Pueblo Dam	
4. Vertrees Dam	
5. Model Dam	
6. Boss Lake and North Fork Reservoir	
7. WD 10 Inventory	
8. Dam Safety Training Workshop	
9. Manitou Dam	
10. Palmer Dam #5	
11. Palmer Dam #2	
12. Woodmoor Lake Dam	
13. South Suburban Reservoir	
14. Monument Dam	

	15.	A. McCray Dam	
	16.	Mountain Lake Dam	
	17.	Fisher Canyon Debris Basin and Dam	
	18.	Mason Dam	
	19.	ICODS	
G.		Hydrography	12
H.		Organization	12
	1.	Agency Meetings and Initiatives	
	a.	General Agency Staff Meetings	
	b.	Division 2 General Staff Meetings	
	c.	Division 2 Monthly Staff Meetings	
	d.	Leadership Team Meetings	
	e.	Employee Council Participation	
	f.	1998 Annual Agency Picnic	
	g.	Employee Recognition	
	2.	Training	
	3.	Personnel Changes	
I.		Involvement in the Water User Community	17
II.		Objectives for 1999	19
	A.	Contribute to the defense of Colorado's interests in the litigation with Kansas concerning the Arkansas River Compact and assure compliance with the Compact	
	B.	Conduct appropriate regulations and accounting of surface water operations	
	C.	Complete process of reorganization/staffing	
	D.	Continue to develop trustworthy personnel through competence and character focused continuing education program	
	E.	Continue to improve water rights tabulation	
	F.	Pursue review of dam safety hazard classifications in Water District 10	
	G.	Begin implementation of Pay-for-Performance on trial basis	

- H. Prepare for "Y2K" contingencies
- I. Develop innovative strategy to effectively address regulation of illegal water impoundment structures

III.

Appendixes

Appendix A

Transmountain Diversions

Appendix B

Water Diversion Summary

Appendix C

Water Court Activity

Appendix D

River Calls

Appendix E

Winter Water Program Reports

Appendix F

Groundwater Use and Measurement Orders Issued 1998

I. ACTIVITIES and ACCOMPLISHMENTS

1998 WATER YEAR

A. Surface Water Administration

- The Division Engineer for Division 2 acts as the Operations Secretary to the Arkansas River Compact Administration. In that capacity, the Engineer is charged with conducting the operations of John Martin Reservoir during each Compact year (November 1 through October 31) pursuant to the April 24, 1980 "Resolution Concerning an Operating Plan for John Martin Reservoir" (as subsequently amended) and submitting an annual report of those operations to the Administration. The Annual Report for 1997 was submitted to the Administration at its regular meeting on December 9, 1997.

At that meeting Mr. Mark Rude, Water Commissioner for the Kansas Department of Agriculture, Garden City, Kansas, was elected to the position of Assistant Operations Secretary. Additionally, the Administration approved proposed amendments to the Operating Principles for the Trinidad Dam and Reservoir Project authorizing municipal and industrial use of Project water. However, amendments to the Operating Principles proposed by the Purgatoire River Water Conservancy District were not approved.

On December 14, 1997 John Martin Reservoir began to spill. Storage of water upstream of John Martin Reservoir under post-Compact water rights began on the following day at which time the flow of water measured at the Garden City, Kansas gauge registered approximately 375 cfs. Upstream storage continued with minor interruptions through March 31, 1998 during which time the mean daily flow of the Arkansas at Garden City, Kansas was never less than 200 cfs. This operation occurred over the objections of the state of Kansas. The reader is referred to the Annual Report of the Operations Secretary for 1998 for additional details.

A special telephonic meeting of the Arkansas River Compact Administration was convened on March 25, 1998. The purpose of this meeting was primarily to approve two resolutions amending the "Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping" originally adopted March 17, 1997.

In response to negotiations seeking to resolve issues that have delayed attempts to obtain approval of amendments to the Operating Principles for the Trinidad Dam and Reservoir Project, "Criteria for Temporary Detention and Subsequent Release of Flood Flows Stored in the Trinidad Reservoir Conservation Pool" were prepared in advance of the 1998 meeting of the Arkansas River Compact Administration.

Meeting the seemingly ever-increasing demand for information remains a significant challenge. The amount of various types of information and the frequency of demands for such information, particularly by the state of Kansas to support modeling requirements and their desire to verify operations, have caused us to evaluate and attempt to improve our information processing systems. One example of this has been the development of a prototype John Martin Accounting System (JMAS) which is intended to replace a GW Basic program that has been used for a number of years but limited in many respects.

The 1998 meeting of the Arkansas River Compact Administration was held on December 8, 1998. The "Annual Report of the Operations Secretary Concerning the Operation of John Martin Reservoir – 1998" and the "Report of the Colorado State Engineer Concerning Accounting of the Operations of an Offset Account in John Martin Reservoir for Colorado Pumping – 1998" were submitted. Additionally, Mr. Rude tendered a "Preliminary Assistant Operations Secretary Report" which differed significantly from that of the Operations Secretary. The Operations Secretary and the Assistant Operations Secretary agreed to meet in an attempt to narrow the issues after finalization of the Assistant's report. The emergence of these issues threaten to nullify much of the effort invested in the JMAS system development during the past year.

- No water was stored in Pueblo Reservoir under the Winter Water Storage Program (84CW179) during the period November 15, 1997 through March 14, 1998 due to the lack of firm storage space availability in connection with dam safety storage restrictions. Neither was any water stored in John Martin Reservoir under the program due to the anticipated spill of Section III water from the reservoir. However, 124,607.18 acre-feet were diverted by off-channel storage and direct flow entities (see Appendix E). Minutes of the October 27, 1998 meeting of the Winter Water Storage Program Board of Trustees have been prepared and circulated by Chairman, Mr. Steve Arveschoug, in a memorandum dated October 30, 1998.

- In terms of the benefit to the public that result from the efforts of the employees of this Division it is difficult to justify the amount of time required to address individual, illegal water impoundment structures. However, there seems to be an increasing concern among water users having senior vested interests that the cumulative effect of these ponds may be significant and there is an expectation that the Division should fulfill its regulatory responsibilities in this area. A means of assessing the total impact and development of priorities and strategies to be more effective and efficient is needed.
- Accomplishment of the objective to refine implementation of the Smith/Reid agreement in 1998 will remain as a surface water administrative objective in 1999. It is hoped that re-organization plans designed to better support field personnel (discussed later in the report) will help achieve this objective.

B. Administration of Groundwater Use and Measurement Rules

1. Enforcement of Rules in the Rule 5 Area

By the end of 1997 an inventory of wells subject to the Amended Groundwater Measurement and Use Rules was essentially completed. Orders were issued requiring compliance with the Rules by no later than April 1, 1998. Due to the length of elapsed time since the Amended Use Rules became effective (June 1, 1996) (during which the Division's capabilities to enforce the Rules among wells affecting tributaries was being developed) additional measures were taken to impress upon owners of such wells that the Rules would, in fact, be enforced. This was done by issuing a letter of final warning just prior to the April 1, 1998 deadline. Thereafter, we began a systematic process of posting cease and desist orders on wells that remained out of compliance and initiating court actions as necessary to enforce those orders. By these means we believe that we have over 90% of the Rule 5 wells in compliance with the Rules, based upon the number of wells in approved replacement plans or which have been declared to be inactive. Additional work is needed to verify this level of compliance, to improve on replacement plans designed to replace out-of-priority depletions to tributaries, and to enforce against instances of non-compliance.

2. Horse Creek Resolution

Based on a January 29, 1997 settlement agreement the Division 2 Water Court issued an order declaring the Amended Use Rules to be effective within the Horse Creek Basin as of April 1, 1997 subject only to a potential challenge by the Horse Creek Water Users Association (HCWUA) should the contingencies in the settlement not be satisfied. This order was issued March 19, 1997. Subsequently, the contingencies of the settlement were satisfied and the Division 2 Water Court approved a plan for augmentation filed by HCWUA (see 97CW52) on March 6, 1998, subject to a reservation of retained jurisdiction for a period of two years. This prompted HCWUA to withdraw its protest to the Amended Use Rules (95CW211) as of May 18, 1998.

3. Improvements to Groundwater Information Systems

Several dramatic improvements were accomplished including:

- abilities to monitor compliance deadlines and produce enforcement tracking lists for field personnel.
- increase of efficiency in processing well diversion data through the Ledger process and calculate depletions each month.
- expedited and distributed process for collecting well pumping data from well associations.
- added ability to track wells in substitute water supply plans and decreed plans for augmentation.
- began process of adapting well data to be compatible with Hydrobase.

4. Groundwater Operations

Operations necessary to implement the Amended Use Rules involve review of replacement plans, determination of monthly pumping and associated time-lagged stream depletions, coordination of replacements of out-of-priority stream depletions and depletions to usable stateline flow, reporting replacement plan operations, and enforcement activities.

Replacement plans submitted pursuant to Rule 14 of the Amended Use Rules are due March 1st of each year, with the operational year for such plans beginning April 1st. Consistent with our practice, since the Amended Use Rules became effective, we prepared a letter of expectation to guide developers of replacement plans prior to the 1998-99 plan year submission deadline. In 1998, Division 2 reviewed and recommended approval of fourteen "Rule 14" plans. Ultimately, approximately 185,000 acre-feet of

pumping was approved pursuant to these plans. Additionally, due to a temporary staffing problem in the State Engineer's Office, it was necessary for Division 2 personnel to review and provisionally approve a number of substitute water supply plans in the spring of 1998.

Pursuant to Rule 16 of the Amended Use Rules annual summaries of plans approved by the State Engineer were prepared following the end of the 1997-98 plan year. In summary, the wells included within these plans were authorized to pump 204,113.45 acre-feet. The total amount of water actually pumped was 142,441.31 acre-feet. The total amount of stream depletions which required replacement was 35,696.93 acre-feet of which 10,462.55 were determined to be depletions to usable stateline flow. Replacement for out-of-priority stream depletions affecting senior Colorado surface rights were 26,689.20 acre-feet. The amount of replacement water delivered to replace depletions to usable stateline flow was 10,486.08 acre-feet. Reports concerning the operations of the Offset Account during the 1997/98 plan year were submitted to the Operations Committee of the Arkansas River Compact Administration on December 9, 1997 and December 8, 1998.

Monthly augmentation coordination meetings were held throughout the irrigation season during the 1998-99 replacement plan year. Following each month's effort to determine the amount of water actually pumped by wells within each replacement plan and the associated cumulative amount of stream depletion for the period, a meeting is held to coordinate the corresponding replacement required with representatives of well associations pursuant to their approved plans. These meetings have proven to be quite beneficial to maintaining an open exchange of information. Through December, 1998 approximately 121,000 acre-feet has been pumped during the 1998/99 replacement plan year.

Enforcement procedures have not been altered significantly from those described in the most recent annual report. Appendix F summarizes some of the groundwater enforcement activities undertaken with the past year.

5. Measurement Quality Control

Well tester training was held April 22-24, 1998. Additionally, a one day re-certification class was held April 6, 1998. These classes were coordinated and presented almost exclusively under the direction of Division of Water Resources personnel. Based upon job performance and re-examination results it was determined necessary to withdraw certification of one of the previously approved well testers.

Measurement method quality control monitoring. Division 2 personnel conducted follow-up tests on 69 of the 288 wells that had recently had a PCC determination by independent well testers during the 1998 field season.

6. SB 96-124

Distribution of grants to groundwater associations provided by Senate Bill 96-124 was made contingent on participation in a series of meetings held for the purpose of discussing data transfer mechanisms and development of each approved association's information systems.

Requests for final payment of money to the Arkansas Groundwater Users Association and the Lower Arkansas Water Management Association for their grant program participation were submitted on December 7, 1998. Efforts to resolve discrepancies that exist with the Colorado Water Protective and Development Association's data have not been completed.

C. Developments in Kansas vs. Colorado

- The Special Master scheduled hearings for the purpose of determining depletions to usable stateline flow for the years 1995 and 1996 and established a schedule regarding future testimony related to damages following the U. S. Supreme Court's decision over-ruling, without prejudice, all exceptions to the Special Master's Second Report on January 20, 1998.
- In a special meeting held March 25, 1998, the Arkansas River Compact Administration approved two resolutions amending the March 17, 1997 resolution which created an "Offset Account in John Martin Reservoir for Colorado Pumping." The effect of these amendments were: 1) to allow delivery of 500 acre-feet as a prerequisite to additional storage in the Offset Account, after April 1st in any year upon joint agreement by the State Engineers of Colorado and Kansas and, 2) to modify language to conform more closely to the usable flow analysis used with the Kansas Hydrologic – Institutional (HI) Model approved in Kansas v. Colorado, 514 U.S. 673 (1996).
- Participation in the ongoing study by the United States Geological Survey (USGS) to compare the power conversion coefficient (PCC) method of determining groundwater pumping to totalizing flow meter data was continued and increased in 1998. Division personnel conducted multiple well discharge tests on an expanded network of 103 wells during the 1998 field season. The data collected was provided to the USGS for analysis.

- An irrigated acreage survey project was initiated in 1998 for the purpose of identifying acreage served only by wells and acreage served both by wells and surface water. This project involved distribution of a questionnaire to the members of well associations, of which approximately 97% were returned, and verification of a random 10% of the population. Furthermore, verification of at least 20% of all responding farm units with at least one sole source well and 10% of all farm units having multiple wells potentially serving the same decreed acreage has been done. Once analyzed this data, together with information to be obtained by updating 1985 aerial photography with 1998 satellite imagery, should provide a good basis for determining recent acreage irrigated by source of water.
- Division personnel (Bill Tyner, Dale Straw, and Steve Witte) provided testimony before the Special Master during the hearings held in May, 1998 for the purpose of determining depletions to usable stateline flow for the years 1995 and 1996. An order was issued by the Special Master on January 11, 1999 directing the states to rerun the HI model in accordance with his decisions. Although it is believed that this has been done, agreement on the final number has not been concluded but is expected to be in the range of 6,717 to 8,196 acre-feet.
- Colorado submitted a report to the Special Master entitled "Report on how Colorado would Acquire and Deliver Water to Repay Past Depletions to Usable Stateline Flows" in October, 1998.
- Kansas submitted expert reports to the Special Master in support of its claims for money damages totaling \$78 million in November, 1998.
- Hearings are expected to be held in September, 1999 concerning depletions to usable stateline flow (if any) for 1997 and 1998 and other evidence related to Colorado's compliance with the Compact (e.g.: the status of the U.S.G.S. study of the PCC method and the adequacy of the presumptive stream depletion factors established in the Amended Use Rules). Hearings in November, 1999 will concern damage and remedy issues related to past depletions.

D. Legal and Litigation

One hundred eighty-two cases were filed with the Division 2 Water Court in the 1998 calendar year. Fifty-nine of these filings, however, were filed by the State and Division Engineers as complaints related to violations of administrative orders issued for the purpose of enforcing Groundwater Use and Measurement Rules. See Appendix C.

The status of several ongoing issues is detailed below:

- The United States Forest Service filed in 1979 (79CW176) for many instream reserved flow rights for channel maintenance and other uses in the Pike and San Isabel National Forests. Approximately four years ago negotiations involving water users, the State, and the Forest Service were initiated in an attempt to settle the Forest Service claims. However, these negotiations now appear to be threatened by Forest Service policy which would withhold the certainty sought by the State and its water users.
- A hearing was held on the application of Lea Vista Corporation (92CW100) for approval of a plan for augmentation during May, 1998. Augmentation was proposed to occur using Antelope Creek water rights that were changed to augmentation purposes in 86CW32 to replace out-of-priority stream depletions associated with a proposed development near Cripple Creek. The court granted a mid-trial motion to dismiss based upon applicant's failure to establish a prima facie showing of absence of any material injurious effect.
- The Division 2 Water Court has not yet entered a ruling in the matter of Beaver Lakes Estate v. Moyers (96CW123).

E. Tabulation

Efforts have continued during the past year to improve the accuracy and overall completeness of water right and water structure databases in Division 2. Several water commissioners have worked in the Division office during the winter season re-tabulating and learning more about water rights (including the related structures) in their water districts with the assistance of Joe Flory and Steve Kastner. In spite of suffering from two vacancies beginning in July, which have taken resources away from this effort, data relating to 236 structures and 1,019 water rights were corrected this year. Due to changes which have occurred to points of diversion or place of use since the original decrees were granted several owners of water rights were convinced of the need for a change of water right and have subsequently applied for such a change in Division 2 Water Court. In this continuing effort other water right owners have already been identified as needing to improve the correspondence between their current decree parameters and actual administrative practices during the upcoming year. At present the Hydrobase conversion readiness status of Division 2 data is unknown.

F. **Safety of Dams**

The Division 2 office Dam Safety workgroup was staffed with two registered professional engineers throughout 1998. The following is their report of the significant events of the past year.

1. A presentation concerning DeWeese Dam safety deficiencies to was made to the DeWeese-Dyc Ditch and Reservoir Company annual share holders meeting during which the shareholders authorized the design and rehabilitation of approximately one million dollars in repairs. This was the culmination of a three-year effort by Division 2 Dam Safety to accomplish the badly needed repairs without imposing a storage restriction. Subsequent efforts to facilitate and aid in the financing of the project by dam safety personnel has resulted in an approved Colorado Water Conservation Board construction loan and cost shares of \$100,000 from a local water district for the storage of 100 AF of augmentation water, and \$500,000 from Division of Wildlife for a minimum 500 AF conservation pool. The project is currently under design review and construction is scheduled to begin July 1, 1999.
2. Construction and rehabilitation of Horseshoe Dam in accordance with approved plans and specifications was started in November 1998. Work under way includes a new outlet, extensive toe drain system, additional down stream slope zoned stability embankment, new riprap, and spillway improvements. A somewhat unique design approach was used to satisfy the Corps of Engineers requirement to maintain the wetlands that had developed beyond the toe of the dam as the result of extensive seepage for many years. The toe drains were daylighted in five locations and extended well beyond the toe, and the seepage was then allowed to disperse over the previously established wetlands area.
3. A preferred repair alternative was chosen by the Bureau of Reclamation and their consultant to address the identified safety deficiency relating to very low shear strength shale in the foundation below the concrete buttress spillway and outlet works of Pueblo Dam. The selected alternative includes filling the existing spilling basin with Roller Compacted Concrete (RCC), installing post tensioned rock bolts from the toe of the buttresses through the weak layer and into firm formations below, placing a structural concrete cap on top the RCC and construction of a new energy dissipation structure to replace the stilling basin function. The RCC placement is nearly complete but it is unknown if enough work can be completed this spring to raise the current storage restriction before forced releases will be necessary or if a sufficient amount of water will be released to water users to cause forced releases to be unnecessary.

4. Vertrees Dam, an 800 AF class III off stream dam in southeast Pueblo County experienced a piping failure and total breach of the dam near the left abutment on May 25, 1998. No damage was done except erosional damage to the dam owners property. The failure resulted in a 1200 CFS peak flow at gaging station almost 20 miles down stream. Base flow in the Huerfano River at the time was only 50 CFS.
5. A piping failure in progress was discovered at Model Dam in northern Las Animas County as the result of the normal routine inspection. Large diameter piping holes were discovered on both sides of the outlet and downstream in the outlet channel. A large 1-foot diameter sand boil was also discovered just downstream of the outlet. A zero storage restriction was imposed and the dam has been subsequently breached at the outlet by the owner and at the request of the owner's engineer.
6. A meeting with the Upper Arkansas Water Conservancy District Board of Directors resulted in their voting to make significant safety improvements to Boss Lake and North Fork Reservoir. Improvements include RCC over topping and spillway rehabilitation and toe drain installation.
7. An inventory of dams in the Colorado Springs area of WD10 was completed, and 12 dams were identified as requiring hazard classification reviews. Reviews were completed for South Lake and Highline Reservoir dams, and both dams were upgraded to Class 1. These two dams were identified as the highest priority structures in the area. The remaining ten dams will be evaluated in 1999 and 2000, in order of their likely revised hazard classifications.
8. A dam safety training workshop was held for the Colorado Springs Utilities Water Resources Department. The city owns and operates 22 dams in Division 2, 12 of which are Class 1 dams. City dam maintenance personnel and watershed operators were instructed in the principles of dam design and construction, dam safety, maintenance, monitoring, inspection, and emergency response to dam safety incidents.
9. During the video inspection of the outlet for Manitou Dam, the upstream guard gate was closed and could not be reopened. Divers removed the gate, and the Manitou Springs engineer is preparing plans for installation of a new hydraulic guard gate.
10. During the video inspection of the outlet at Palmer Dam #5, a hole was discovered in the outlet conduit downstream of the regulating gate, which

would likely result in the development of significant piping and possible failure of the dam. Repairs were ordered, and the owner's engineer is preparing designs for lining the outlet.

11. Repairs were completed to Palmer Dam #2. The deteriorated concrete at the base of the dam was removed and replaced, and an internal drain system was installed in the repaired area. The dam is back in full service.
12. Storage behind Woodmoor Lake Dam was restricted to 5 feet below the elevation of the emergency spillway, due to inadequate spillway capacity. Surveying for a new development on the west shore of the reservoir revealed that the ground surface was several feet lower than the dam crest, probably from earlier unauthorized excavation in the area. The ground elevation was restored in the area prior to construction of the development.
13. During a diving exercise by the Colorado Springs Fire Department at South Suburban Reservoir, several significant cracks were discovered in the reservoir bottom. The divers filmed sediment from the reservoir bottom being carried by currents into the cracks. A zero storage restriction was ordered, and the City drained the reservoir. The City's engineer is preparing plans for investigation and repair of the cracks.
14. The Town of Monument and El Paso County have entered into an agreement to conduct an investigation of Monument Dam and to develop conceptual designs for rehabilitation of the dam. The town and the county are also pursuing a water storage right for the reservoir. The investigation of the dam is currently underway, with plans for final repairs due during 1999.
15. During the inspection of A. McCray dam, failure of the upstream embankment slope was observed to be accelerating. The steel sheet pile walls were rotating upstream and were pulling the deadman anchors from the embankment crest. The reservoir level was restricted, and El Paso County and Fountain Mutual Irrigation Company are cooperating to maintain the restricted level. Ownership and responsibility for the dam are in dispute between the two parties. This dam will likely be upgraded to Class 1 as a result of the hazard classification reviews.
16. During inspection of Mountain Lake Dam in Leadville, sinkholes were observed at the upstream toe of the embankment. Ordered interim repairs to the dam were completed to prevent the slope from failing.

17. Designs for construction of Fisher Canyon Debris Basin and Dam were approved, and construction began in December 1998.
18. Repairs to remediate seepage at Mason Dam were completed in October 1998, and interim approval for storage of water was issued. The reservoir will be returned to full operation and storage in 1999.
19. Division 2 staff represented Colorado on the steering committee for the Interagency Committee on Dam Safety (ICODS), which developed a national workshop for identification and prioritization of research needs on seepage and piping associated with conduits through embankment dams.

G. Hydrography

The Division 2 Hydrographic workgroup organization throughout 1998 consisted of a professional engineer, as lead hydrographer, supported by one EIT and two technicians. Upon the resignation of the lead hydrographer on July 1, 1998 Assistant Division Engineer, Steve Kastner, assumed the responsibilities of that position on an interim basis.

Based upon a management level decision to adopt a restructured organizational plan statewide which was proposed by the Chief Hydrographer, Jim McDanold, Division 2 is currently attempting to implement that plan as rapidly as possible. It is believed that under this plan the technical skills and productivity of each of the members of the Division 2 hydrographic workgroup will be increased.

H. Organization

1. Agency Meetings and Initiatives

a. General Agency Staff Meetings

Steve Witte, Division Engineer; Keith Kepler, Assistant Division Engineer; Steve Kastner, Assistant Division Engineer; and Wendy Bogard, Administrative Assistant (Support Staff Person for the Year for 1997) attended the State Engineer's Spring Meeting in Denver, March 11-13, 1998.

Steve Witte, Keith Kepler and Steve Kastner attended the State Engineer's Late Summer Meeting in Glenwood Springs on August 26-28, 1998.

b. Division 2 General Staff Meetings – 1998

The Spring General Staff Meeting was held May 1, 1998. The main emphasis of this meeting was to review objectives for the coming year, to underscore the importance and diversity of administration required to implement different plans for augmentation, and to familiarize personnel with Colorado Peak Performance program aspects.

The Fall General Staff Meeting was held September 25, 1998. The agenda included discussion of a draft of the revised goals and objectives for the agency's Long Range Plan and a presentation on the Department of Natural Resources Safety Program and Handbook. The 1998 Water Commissioner of the Year commendation was awarded to Steve Trexel and a Special Award of Recognition was presented to Dave Jones.

c. Division 2 Monthly Staff Meetings

The practice of holding monthly staff meetings was continued during 1998. An attempt has been made to hold these on the first Tuesday of each month in order to establish a routine. Although these meetings are sometimes viewed as a burden on already busy schedules they have proven to be an indispensable means of keeping staff apprised of current and upcoming activities.

d. Leadership Team Meetings

Beginning with the January 1998 Leadership Team Meeting the emerging importance of these meetings to the future management of the Division of Water Resources was recognized and a commitment of Division 2 staff participation was reached.

e. Employee Council Participation

Due to health concerns Doug Brgoch relinquished his position as the Division's Employee Council representative to his alternate, Bruce Smith, in 1998.

The Employee Council conducted an annual employee satisfaction survey through distribution of questionnaires during the fall of 1998. The results of this survey have not been released as of the date when this report was written.

f. 1998 Annual Agency Picnic

Several members of the Division 2 staff attended the Annual Employee Picnic held at Steamboat Lake on August 1, 1998.

g. Employee Recognition

In addition to the more established and higher profile means of recognizing superior performance, Division 2 took the opportunity to reward four of its finest employees during the year. Manager's Discretionary Awards were conferred to Dale Straw and Bill Tyner for their accomplishments and extraordinary contributions toward the goal of demonstrating Arkansas River Compact compliance. Bill Richie and Dan DiRezza received "Top Dog" awards for their well testing efforts.

2. Training

The Division 2 Training Program has focused on the expressed needs or interests of its employees. A division-wide survey was distributed to employees and the results tabulated to determine topics and priorities for those topics. Those training needs have been addressed in many ways.

Computer training was a top priority for many employees. In response to that, several Division 2 employees taught classes for those interested. Vivian Brown and Julia Faix used the Walsenburg campus computer lab of Trinidad State Junior College to conduct 2 full days of instruction on entry level computer use, Windows '95 and Microsoft Word. Keith Kepler organized and taught 2 full days of Microsoft Excel using the computer lab at Human Services in Pueblo. Other computer training included several short-term continuing education classes at Pueblo Community College in Access, Excel, the Internet, and Intermediate/Advanced Windows. Full-term college courses in Access were attended by several employees, also held at Pueblo Community College.

Other training developed to meet the needs of employees was the introduction of "in-house" sessions sponsored by the Division 2 Training Committee. In-house sessions began in November 1997 and seven were held between November 1997 and October 1998. These sessions have generally been day-long sessions, and held about every other month between late fall and late spring. They have been held in the Pueblo office in the Security Services Credit Union Board Room. This location is centrally located for most field staff and can accommodate all employees comfortably. Sessions have varied between 4 or 5 topics per day to just a morning and an afternoon presentation (depending on topics). Homemade breakfast or lunch has occasionally been provided by some staff of the Pueblo office as an added draw to the sessions. Attendance is not mandatory but is encouraged for all staff. The attendance has increased about 25% since the first session was held and now reaches about three-fourths of all employees.

The presentation format has included employees speaking on certain topics of interest, Denver staff addressing issues of concern, guest speakers, and video presentations. Hand-outs are generally provided, overhead slides have been used in presentations, and audience participation is encouraged through question and answer opportunities. Some topics presented by Division 2 staff have included: augmentation, history and operation of specific reservoirs, history of Colorado Water Law, the water court application process, analytical stream depletion model (Glover), setting the Arkansas River call, computer discussions, a series on surface water hydrology, and an overview and review of the Division 2 office Records Room. Staff from the Denver office has addressed/taught well permitting, Colorado Peak Performance, and use of the VAX. Guest speakers have included presentations by the Toastmasters on public speaking and an instructor from Pueblo Community College on verbal communication. The in-house sessions continue to be an effective and a cost-effective form of training for all staff. Ideas and topics continue to be generated by the employees of the division and the sessions are planned and coordinated by the Training Committee.

Additionally, other training was offered, provided and attended by Division 2 staff. One opportunity offered was a "mini-tour" of the Upper Arkansas River Basin organized and conducted by Bill Tyner and attended by many field and office staff in attempt learn more about the key elements of the river basin related to transmountain diversion and augmentation. Another opportunity included a group of employees who attended the Colorado Water Officials Annual meeting in Steamboat Springs and some funding was provided for that event. There were numerous other opportunities and sessions that were available for staff members.

In the fiscal year 1997/1998, \$2535.58 was spent toward Division 2's commitment to educate and train the employees of the division. Funding was provided by a combination of allocated training funds, Division 2's operating funds, and other sources. Training in fiscal year 1998/1999 has continued to be a major emphasis. Again, a combination of allocated training funds, Division 2 operating money, and other sources have brought expenditures to \$5490.28 to date.

3. **Personnel Changes**

Kathy Trask, EPST I, was hired in April, 1998 to monitor compliance of well owners with the requirements of the Amended Groundwater Measurement and Use Rules. Position 461 had previously been vacated through resignation.

Vivian Brown, Programmer/Analyst, was hired in May, 1998 to lead and assist development of data processing and information systems division-wide. Position 465 had previously been vacated through resignation.

Larry Hakes, EPSA I, was hired in May, 1998 to provide field support for purposes of enforcing Amended Groundwater Measurement and Use Rules. Position 456 had previously been vacated through resignation.

Mark Trivisonno, EPSA I, was hired in May, 1998 to provide field support for purposes of enforcing Amended Groundwater Measurement and Use Rules. Position 454 had previously been vacated through resignation.

Soraya Baroumand, EPSA I, was hired in June, 1998 as a part-time Deputy Water Commissioner in Water District 11.

Chad Lessar, EPSA Intern, was hired on a temporary basis to assist Doug Brgoch in Water District 16 during the 1998 irrigation season.

Mark Ball, EPSA I, was hired on a temporary basis to assist Don Taylor during the 1998 irrigation season as a workload relief trial measure.

Frank Kipple, Lead Hydrographer, resigned his position as of July 1, 1998.

George Ridenour, Water Commissioner, Water Districts 14 and 15 retired on July 1, 1998.

Joe Flory, River Operations Coordinator, resigned his position as of November, 1998 in order to accept appointment as the Water Commissioner for Water Districts 14 and 15 through a voluntary, non-disciplinary demotion process.

Walt Clotworthy, part-time Deputy Water Commissioner, Water District 11, has determined to make his retirement final and will not seek reinstatement in 1999.

Figure 1 (Page 18) depicts the organizational structure of Division 2 as of February 1, 1999. It does not represent certain organizational changes that are anticipated and that have been alluded to within this report but which have not yet been implemented. The principle change yet to be implemented will involve restructuring the hydrographic workgroup as well as consolidation of other surface water functions. The plan will entail reassignment of supervisory responsibility to limit the span of control over water commissioners with the intended effect being to provide closer and more timely support.

I. Involvement in the Water User Community

- Division 2 staff members attend numerous meetings of organizations held on a periodic basis in order to maintain working relationships with our constituency. These may be grouped in several categories as listed below.

Groundwater Associations: e.g., Arkansas Groundwater Users Association, Colorado Water Protective and Development Association, Lower Arkansas Water Management Association.

Conservancy Districts: e.g., Southeastern Colorado Water Conservancy District, Purgatoire Water Conservancy District, Upper Arkansas Water Conservancy District.

Ditch Companies and Water User Associations: e.g., Amity, Ft. Lyon, Upper Water District 10 Water Users Association, Wet Mountain Valley Water Users Association.

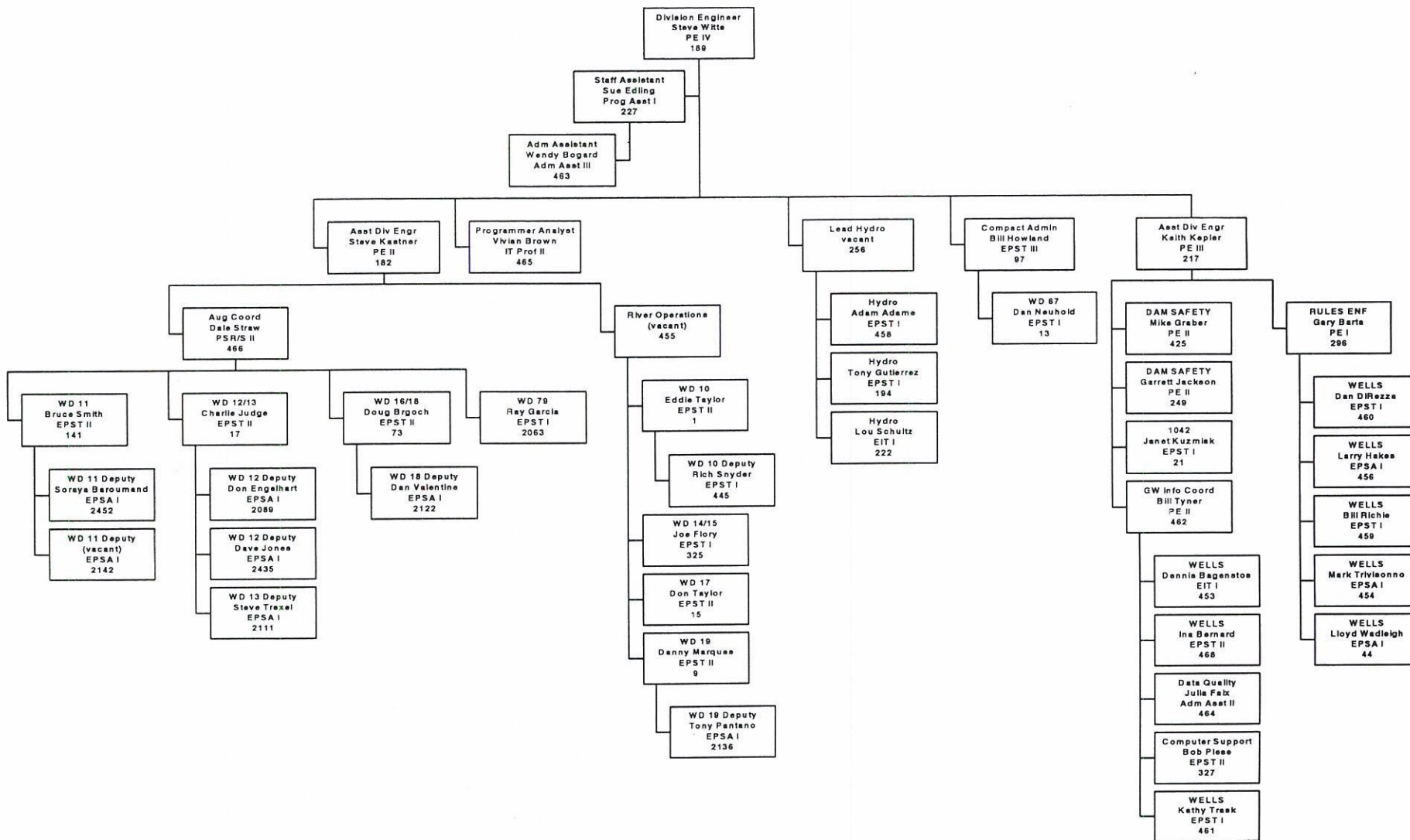
Arkansas River Compact Administration

Arkansas River Basin Technical Group: this is an alliance consisting of a variety of governmental agencies that have agreed to convene on a quarterly basis to share information concerning their water related programs.

- Additionally, Division 2 personnel have been involved in several other activities intended to increase public awareness of water related issues which are listed below.

Arkansas River Forum (February, 1998)
Nebraska Water 2000 Seminar (March, 1998)
Citizens Water Law Seminar (April, 1998)
Pueblo Leadership Seminar (May, 1998)
Nebraska Legislative Tour (August, 1998)

COLORADO DIVISION of WATER RESOURCES
 Division 2
 Organizational Chart
 2/1/99



- This office continues to participate in the development of a Water Needs Assessment in conjunction with a Memorandum of Understanding executed by the U. S. Bureau of Land Management, the U. S. Bureau of Reclamation, the U. S. Forest Service, and the Colorado Department of Natural Resources.

II. OBJECTIVES for 1999

A. Contribute to the defense of Colorado's interests in the litigation with Kansas concerning the Arkansas River Compact and assure compliance with the Compact.

- Prepare a report describing Compact compliance efforts since July 1997.
- Provide data to implement changes to the Hydrologic Institutional Model to determine depletions to usable stateline flow for 1997 and 1998.
- Implement recommendations of the USGS Power Conversion Coefficient Comparison Study by March, 2000.
- Monitor effect of approved replacement plans; revise and review implementation and enforcement procedures accordingly.
- Improve monitoring of operations and accounting for decreed plans for augmentation.

B. Conduct appropriate regulations and accounting of surface water operations.

- Seek to resolve and/or narrow issues raised by the Assistant Operations Secretary through appropriate processes of the Arkansas River Compact Administration.
- Develop improved surface water information systems.
- Refine implementation of the Smith/Reid agreement.

C. Complete process of reorganization/staffing.

- D. Continue to develop trustworthy personnel through competence and character focused continuing education program.
- E. Continue to improve water rights tabulation.
- F. Pursue review of dam safety hazard classifications in Water District 10.
- G. Begin implementation of Pay-for-Performance on trial basis.
- H. Prepare for "Y2K" contingencies.
- I. Develop innovative strategy to effectively address regulation of illegal water impoundment structures.

APPENDIX A

TRANSMOUNTAIN DIVERSIONS 1998

1998 TRANSMOUNTAIN DIVERSION SUMMARY - INFLOWS

RECIPIENT					SOURCE	
WD/WD	DIVERSION STRUCTURE	STREAM	ACRE-FEET	DAYS	WD/WD	STREAM
2/11	COLUMBINE DITCH	ARKANSAS RIVER	1,669	111	5/37	EAGLE RIVER
2/11	EWING DITCH	TENNESSEE CREEK	775	129	5/37	EAGLE RIVER
2/11	WURTZ DITCH	TENNESSEE CREEK	2,070	129	5/37	EAGLE RIVER
2/11	HOMESTAKE TUNNEL	LAKE FORK CREEK	24,520	113	5/37	EAGLE RIVER
2/11	BOUSTEAD TUNNEL	LAKE FORK CREEK	53,971	365	5/38	FRYINGPAN RIVER
2/11	BUSK-IVANHOE TUNNEL	LAKE FORK CREEK	4,123	126	5/38	FRYINGPAN RIVER
2/11	TWIN LAKES TUNNEL	LAKE CREEK	46,930	365	5/38	ROARING FORK RIVER
2/11	LARKSPUR DITCH	PONCHA CREEK	66	73	4/28	TOMICHI CREEK
2/79	HUDSON DITCH	HUERFANO RIVER	0	0	3/35	MEDANO CREEK
2/79	MEDANO DITCH	HUERFANO RIVER	834	60	3/35	MEDANO CREEK
	TOTAL:		134,958			

1998 TRANSMOUNTAIN DIVERSION SUMMARY - OUTFLOWS

RECIPIENT					SOURCE	
WD/WD	DIVERSION STRUCTURE	STREAM	ACRE-FEET	DAYS	WD/WD	STREAM
5/36&37	STEVENS-LEITER WELL (AKA ARKANSAS WELL)	BLUE/EAGLE RIVERS	417	365	2/11	GROUNDWATER
	TOTAL:		417			

APPENDIX B

WATER DIVERSION SUMMARY 1998

1998 WATER DIVERSION SUMMARY

(ALL UNITS: ACRE-FEET)

USE TYPE	WD10	WD11	WD12	WD13	WD14	WD15	WD16	WD17	WD18	WD19	WD66	WD67	WD79	TOTAL
IRRIGATION	44,667	146,281	147,461	42,616	344,241	10,014	14,425	889,274	11,338	67,854	300	288,178	26,313	2,032,962
STORAGE	3,609	134,109	2,355	1,318	588,433	1,557	1,871	237,078	0	1,303	0	374,457	834	1,346,924
MUNICIPAL	99,043	3,912	9,531	207	33,363	914	4,322	5,705	0	4,229	0	11,624	0	172,850
COMMERCIAL	153	112	101	8	373	14	57	627	0	0	0	608	0	2,053
DOMESTIC	4	12	87	20	1	1	1	0	0	2	0	0	0	128
STOCK	15	0	0	0	166	0	0	0	0	302	0	0	0	483
INDUSTRIAL	2,570	0	113,700	0	9,298	20,704	0	0	0	0	0	0	0	146,272
RECREATIONAL	0	0	0	0	0	0	17	0	0	0	0	0	0	17
FISHERY	0	24,884	0	0	0	0	0	1,408	0	0	0	0	0	26,292
AUGMENTATION	2,182	0	9	0	0	0	0	0	0	0	0	701	0	2,892
RECHARGE	0	0	0	0	0	0	0	0	0	0	0	2,638	0	2,638
OTHER	24,605	5	2,597	0	390	0	26	13	0	0	0	0	0	27,636
TOTAL	176,848	309,315	275,841	44,169	976,265	33,204	20,719	1,134,105	11,338	73,690	300	678,206	27,147	3,761,147

APPENDIX C

WATER COURT ACTIVITY 1998

1998 WATER COURT ACTIVITY

APPLICATIONS FILED BY TYPE	NUMBER	NUMBER OF STRUCTURES	CONSULTATIONS WITH REFEREE
AUGMENTATION	9	251	9
CHANGE OF WATER RIGHT	12	76	12
INJUNCTION/COMPLIANTS (1)	61	89	0
SURFACE	53	69	53
STORAGE	2	13	2
UNDERGROUND	14	26	14
MULTIPLE CASE TYPES	23	245	23
DILIGENCE	4	26	4
CONDITIONAL MADE ABSOLUTE	2	2	2
OTHER	2	4	2
TOTAL	182	801	121

(1) MEASUREMENT RULES: 54, USE RULES: 2, OTHER GROUNDWATER VIOLATIONS: 3, SURFACE WATER: 2

APPENDIX D

RIVER CALLS 1998

Date	Arkansas River Call	Priority Dat
11/1/97	JOHN MARTIN RESERVOIR	12/14/1948
11/2/97	JOHN MARTIN RESERVOIR	12/14/1948
11/3/97	JOHN MARTIN RESERVOIR	12/14/1948
11/4/97	JOHN MARTIN RESERVOIR	12/14/1948
11/5/97	JOHN MARTIN RESERVOIR	12/14/1948
11/6/97	JOHN MARTIN RESERVOIR	12/14/1948
11/7/97	JOHN MARTIN RESERVOIR	12/14/1948
11/8/97	JOHN MARTIN RESERVOIR	12/14/1948
11/9/97	JOHN MARTIN RESERVOIR	12/14/1948
1/10/97	JOHN MARTIN RESERVOIR	12/14/1948
1/11/97	JOHN MARTIN RESERVOIR	12/14/1948
1/12/97	JOHN MARTIN RESERVOIR	12/14/1948
1/13/97	JOHN MARTIN RESERVOIR	12/14/1948
1/14/97	JOHN MARTIN RESERVOIR	12/14/1948
1/15/97	JOHN MARTIN RESERVOIR	12/14/1948
1/16/97	JOHN MARTIN RESERVOIR	12/14/1948
1/17/97	JOHN MARTIN RESERVOIR	12/14/1948
1/18/97	JOHN MARTIN RESERVOIR	12/14/1948
1/19/97	WINTER WATER	03/01/1910
1/20/97	WINTER WATER	03/01/1910
1/21/97	WINTER WATER	03/01/1910
1/22/97	WINTER WATER	03/01/1910
1/23/97	WINTER WATER	03/01/1910
1/24/97	WINTER WATER	03/01/1910
1/25/97	WINTER WATER	03/01/1910
1/26/97	WINTER WATER	03/01/1910
1/27/97	WINTER WATER	03/01/1910
1/28/97	WINTER WATER	03/01/1910
1/29/97	WINTER WATER	03/01/1910
1/30/97	WINTER WATER	03/01/1910
12/1/97	WINTER WATER	03/01/1910
12/2/97	WINTER WATER	03/01/1910
12/3/97	WINTER WATER	03/01/1910
12/4/97	WINTER WATER	03/01/1910
12/5/97	WINTER WATER	03/01/1910
12/6/97	JOHN MARTIN RESERVOIR	12/14/1948
12/7/97	JOHN MARTIN RESERVOIR	12/14/1948
12/8/97	JOHN MARTIN RESERVOIR	12/14/1948
12/9/97	JOHN MARTIN RESERVOIR	12/14/1948
2/10/97	JOHN MARTIN RESERVOIR	12/14/1948
2/11/97	JOHN MARTIN RESERVOIR	12/14/1948
2/12/97	JOHN MARTIN RESERVOIR	12/14/1948
2/13/97	JOHN MARTIN RESERVOIR	12/14/1948
2/14/97	PUEBLO RESERVOIR/Free Rive	06/25/1962
2/15/97	PUEBLO RESERVOIR/Free Rive	06/25/1962
2/16/97	PUEBLO RESERVOIR/Free Rive	06/25/1962
2/17/97	PUEBLO RESERVOIR/Free Rive	06/25/1962

Date	Arkansas River Call	Priority Dat
2/18/97	PUEBLO RESERVOIR/Free Rive	06/25/1962
2/19/97	PUEBLO RESERVOIR/Free Rive	06/25/1962
2/20/97	PUEBLO RESERVOIR/free river	06/25/1962
2/21/97	PUEBLO RESERVOIR/free river	06/25/1962
2/23/97	PUEBLO RESERVOIR/free river	06/25/1962
2/24/97	PUEBLO RESERVOIR/free belo	06/25/1962
2/25/97	Pueblo Reservoir/free river below	06/25/1962
2/26/97	Pueblo Reservoir/free river below	06/25/1962
2/27/97	Pueblo Reservoir/free river below	06/25/1962
2/28/97	Pueblo Reservoir/free river below	06/25/1962
2/29/97	Pueblo Reservoir/free river below	06/25/1962
2/30/97	Pueblo Reservoir/free river below	06/25/1962
2/31/97	Pueblo Reservoir/free river below	06/25/1962
1/1/98	Pueblo Reservoir/free river below	06/25/1962
1/2/98	Pueblo Reservoir/free river below	06/25/1962
1/3/98	Pueblo Reservoir/free river below	06/25/1962
1/4/98	Pueblo Reservoir/free river below	06/25/1962
1/5/98	Pueblo Reservoir/free river below	06/25/1962
1/6/98	Pueblo Reservoir/free river below	06/25/1962
1/7/98	Pueblo Reservoir/free river below	06/25/1962
1/8/98	Pueblo Reservoir/free river below	06/25/1962
1/9/98	Pueblo Reservoir/free river below	06/25/1962
1/10/98	Pueblo Reservoir/free River belo	06/25/1962
1/11/98	Pueblo Reservoir/free river below	06/25/1962
1/12/98	Pueblo Reservoir/Free river belo	06/25/1962
1/13/98	Pueblo Reservoir/free river below	06/25/1962
1/14/98	Pueblo Reservoir/free river below	06/25/1962
1/15/98	Pueblo Reservoir/free river below	06/25/1962
1/16/98	PUEBLO RESERVOIR/Free Rive	06/25/1962
1/17/98	Pueblo Reservoir/free river below	06/25/1962
1/18/98	Pueblo Reservoir/free river below	06/26/1962
1/19/98	Pueblo Reservoir/free river below	06/25/1962
1/20/98	Pueblo Reservoir/free river below	06/25/1962
1/21/98	Pueblo Reservoir/free river below	06/25/1962
1/22/98	Pueblo Reservoir/free river below	06/25/1962
1/23/98	Pueblo Reservoir/free river below	06/25/1962
1/24/98	Pueblo Reservoir/free river below	06/25/1962
1/25/98	Pueblo Reservoir/free river below	06/25/1962
1/26/98	Pueblo Reservoir/free river below	06/25/1962
1/27/98	Pueblo Reservoir/free river below	06/25/1962
1/28/98	Pueblo Reservoir/free river below	06/25/1962
1/29/98	Pueblo Reservoir/free river below	06/25/1962
1/30/98	Pueblo Reservoir/free river below	06/25/1962
1/31/98	Pueblo Reservoir/free river below	06/26/1962
2/1/98	Pueblo Reservoir/free river below	06/25/1962
2/2/98	Pueblo Reservoir/free river below	06/25/1962
2/3/98	Pueblo Reservoir/free river below	06/25/1962

Date	Arkansas River Call	Priority Dat
2/4/98	Pueblo Reservoir/free river below	06/25/1962
2/5/98	Pueblo Reservoir/free river below	06/25/1962
2/6/98	Pueblo Reservoir/free river below	06/25/1962
2/7/98	Pueblo Reservoir/free river below	06/25/1962
2/8/98	Pueblo Reservoir/free river below	06/25/1962
2/9/98	Pueblo Reservoir/free river below	06/25/1962
2/10/98	Pueblo Reservoir/free river below	06/25/1962
2/11/98	Pueblo Reservoir/free river below	06/25/1962
2/12/98	Pueblo Reservoir/free river below	06/25/1962
2/13/98	Pueblo Reservoir/free river below	06/25/1962
2/14/98	Pueblo Reservoir/free river below	06/25/1962
2/15/98	Pueblo Reservoir/free river below	06/25/1962
2/16/98	Pueblo Reservoir/free river below	06/25/1962
2/17/98	Pueblo Reservoir/free river below	06/25/1962
2/18/98	Pueblo Reservoir/free river below	06/25/1962
2/19/98	Pueblo Reservoir/free river below	06/25/1962
2/20/98	Pueblo Reservoir/free river below	06/25/1962
2/21/98	Pueblo Reservoir/free river below	06/25/1962
2/22/98	Pueblo Reservoir/free river below	06/25/1962
2/23/98	Pueblo Reservoir/free river below	06/25/1962
2/24/98	Pueblo Reservoir/free river below	06/25/1962
2/25/98	Pueblo Reservoir/free river below	06/25/1962
2/26/98	Pueblo Reservoir/free river below	06/25/1962
2/27/98	Free river below Pueblo Reservoi	06/25/1962
2/28/98	Free river below Pueblo Reservoi	06/25/1962
3/1/98	Free river below Pueblo Reservoi	06/25/1962
3/2/98	free river below Pueblo Reservoir	06/25/1962
3/3/98	Pueblo Reservoir/free river below	06/25/1962
3/4/98	Pueblo Reservoir/free river below	06/25/1962
3/5/98	Pueblo Reservoir/free river below	06/25/1962
3/6/98	Pueblo Reservoir/free river below	06/25/1962
3/7/98	Free River	
3/8/98	Free River	
3/9/98	Free River	
3/10/98	FREE RIVER	
3/11/98	Free River	
3/12/98	Free River	
3/13/98	Free River	
3/14/98	Free River	
3/15/98	Great Plains Reservoir	08/01/1896
3/16/98	Great Plains Reservoir	08/01/1896
3/17/98	Great Plains Reservoirs	08/01/1896
3/18/98	Great Plains Reservoir	08/01/1896
3/19/98	Free River	
3/20/98	Free River	
3/21/98	Pueblo Reservoir	06/25/1962
3/22/98	Pueblo Reservoir	06/25/1962

Date	Arkansas River Call	Priority Dat
3/23/98	Pueblo Reservoir	06/25/1962
3/24/98	Pueblo Reservoir	06/25/1962
3/25/98	Pueblo Reservoir/free river below	06/25/1962
3/26/98	Pueblo Reservoir/free river below	06/25/1962
3/27/98	Free River	
3/28/98	Free River	
3/29/98	Free River	
3/30/98	Free River	
3/31/98	Free River	
4/1/98	Free River	
4/2/98	Free River	
4/3/98	Free River	
4/4/98	Free River	
4/5/98	Free River	
4/6/98	Free River	
4/7/98	Free River	
4/8/98	Free River	
4/9/98	Free River	
4/10/98	FREE RIVER	
4/11/98	Free River	
4/12/98	Free River	
4/13/98	Free River	
4/14/98	Free River	
4/15/98	Free River	
4/16/98	Free River	
4/17/98	Free River	
4/18/98	Free River	
4/19/98	Free River	
4/20/98	Free River	
4/21/98	Free River	
4/22/98	Free River	
4/23/98	Free River	
4/24/98	Great Plains Reservoir	08/01/1896
4/25/98	Great Plains	08/01/1896
4/26/98	Great Plains	08/01/1896
4/27/98	Free River	
4/28/98	Free River	
4/29/98	Free River	
4/30/98	Free River	
5/1/98	Free River	
5/2/98	Free River	
5/3/98	Great Plains	08/01/1896
5/4/98	Holbrook # 2	08/30/1893
5/5/98	Holbrook # 2	08/30/1893
5/6/98	Fort Lyon #3	08/31/1893
5/7/98	Dye Reservoir	11/03/1903
5/8/98	Fort Lyon Storage	01/25/1906

Date	Arkansas River Call	Priority Dat
5/9/98	Fort Lyon Storage	01/25/1906
5/10/98	Fort Lyon # 3	08/31/1893
5/11/98	John Martin Reservoir	12/14/1948
5/12/98	John Martin Reservoir	12/14/1948
5/13/98	John Martin Reservoir	12/14/1948
5/14/98	John Martin Reservoir	12/14/1948
5/15/98	GREAT PLAINS	08/31/1896
5/16/98	COLORADO CANAL	06/09/1890
5/17/98	COLORADO CANAL	06/09/1890
5/18/98	HIGHLINE/EXCELSIOR	01/06/1890
5/19/98	HIGHLINE/EXCELSIOR	01/06/1890
5/20/98	HOLBROOK	09/25/1889
5/21/98	HIGHLINE	01/06/1890
5/22/98	HIGHLINE	01/06/1890
5/23/98	COLORADO CANAL	06/09/1890
5/24/98	COLORADO CANAL	06/09/1890
5/25/98	COLORADO CANAL	06/09/1890
5/26/98	COLORADO CANAL	06/09/1890
5/27/98	COLORADO CANAL	06/09/1890
5/28/98	COLORADO CANAL	06/09/1890
5/29/98	COLORADO CANAL	06/09/1890
5/30/98	COLORADO CANAL	06/09/1890
5/31/98	COLORADO CANAL	06/09/1890
6/1/98	COLORADO CANAL	06/09/1890
6/2/98	COLORADO CANAL	06/09/1890
6/3/98	FORT LYON #3	08/31/1893
6/4/98	FORT LYON STORAGE	01/25/1906
6/5/98	FORT LYON STORAGE	01/25/1906
6/6/98	FORT LYON STORAGE	01/25/1906
6/7/98	FORT LYON STORAGE	01/25/1906
6/8/98	FORT LYON STORAGE	01/25/1906
6/9/98	COLORADO CANAL	06/09/1890
6/10/98	COLORADO CANAL	06/09/1890
6/11/98	HOLBROOK	09/25/1889
6/12/98	BESSEMER/EXCELSIOR	05/01/1887
6/13/98	BESSEMER/EXCELSIOR	05/01/1887
6/14/98	BESSEMER/EXCELSIOR	05/01/1887
6/15/98	CATLIN	11/14/1887
6/16/98	HOLBROOK	09/25/1889
6/17/98	HOLBROOK	09/25/1889
6/18/98	HOLBROOK	09/25/1889
6/19/98	BESSEMER #2	05/01/1887
6/20/98	BESSEMER #2	05/01/1887
6/21/98	BESSEMER #2	05/01/1887
6/22/98	BESSEMER #2	05/01/1887
6/23/98	BESSEMER #2	05/01/1887
6/24/98	FORT LYON #2	03/01/1887

Date	Arkansas River Call	Priority Dat
6/25/98	FORT LYON #2	03/01/1887
6/26/98	BESSEMER #2	05/01/1887
6/27/98	BESSEMER/EXCELSIOR	05/01/1887
6/28/98	CATLIN	11/14/1887
6/29/98	CONSOLIDATED	03/13/1888
6/30/98	HOLBROOK	09/25/1889
7/1/98	HOLBROOK	09/25/1889
7/2/98	HOLBROOK	09/25/1889
7/3/98	CATLIN	11/14/1887
7/4/98	HOLBROOK	09/25/1889
7/5/98	HIGHLINE	01/06/1890
7/6/98	HIGHLINE	01/06/1890
7/7/98	HIGHLINE	01/06/1890
7/8/98	OTERO	03/03/1890
7/9/98	OTERO	03/03/1890
7/10/98	OTERO	03/03/1890
7/11/98	OTERO	03/03/1890
7/12/98	OTERO	03/03/1890
7/13/98	COLORADO CANAL	01/06/1890
7/14/98	HIGHLINE	01/06/1890
7/15/98	HIGHLINE	01/06/1890
7/16/98	HOLBROOK	09/25/1889
7/17/98	HOLBROOK	09/25/1889
7/18/98	CATLIN	11/14/1887
7/19/98	BESSEMER/EXCELSIOR	05/01/1887
7/20/98	FORT LYON	03/01/1887
7/21/98	FORT LYON #2	03/01/1887
7/22/98	FORT LYON	03/01/1887
7/23/98	FORT LYON	03/01/1887
7/24/98	FORT LYON	03/01/1887
7/25/98	FORT LYON	03/01/1887
7/26/98	HIGHLINE	01/06/1890
7/27/98	COLORADO CANAL	06/09/1890
7/28/98	COLORADO CANAL	06/09/1890
7/29/98	FORT LYON	03/01/1887
7/30/98	GREAT PLAINS	08/01/1896
7/31/98	JOHN MARTIN RESERVOIR	12/14/1948
8/1/98	JOHN MARTIN RESERVOIR	12/14/1948
8/2/98	JOHN MARTIN RESERVOIR	12/14/1948
8/3/98	GREAT PLAINS	08/01/1896
8/4/98	GREAT PLAINS	08/01/1896
8/5/98	JOHN MARTIN RESERVOIR	12/14/1948
8/6/98	JOHN MARTIN RESERVOIR	12/14/1948
8/7/98	JOHN MARTIN RESERVOIR	12/14/1948
8/8/98	JOHN MARTIN RESERVOIR	12/14/1948
8/9/98	JOHN MARTIN RESERVOIR	12/14/1948
8/10/98	GREAT PLAINS	08/01/1896

Date	Arkansas River Call	Priority Dat
8/11/98	GREAT PLAINS	08/01/1896
8/12/98	GREAT PLAINS	08/01/1896
8/13/98	GREAT PLAINS	08/01/1896
8/14/98	CONSOLIDATED	03/13/1888
8/15/98	FORT LYON	03/01/1887
8/16/98	FORT LYON	03/01/1887
8/17/98	FORT LYON	03/01/1887
8/18/98	HOLBROOK	09/25/1889
8/19/98	CATLIN	11/14/1887
8/20/98	FORT LYON	03/01/1887
8/21/98	FORT LYON	03/01/1887
8/22/98	FORT LYON	03/01/1887
8/23/98	FORT LYON	03/01/1887
8/24/98	FORT LYON	03/01/1887
8/25/98	FORT LYON	03/01/1887
8/26/98	HIGHLINE	01/06/1890
8/27/98	COLORADO CANAL	06/09/1890
8/28/98	FORT LYON	03/01/1887
8/29/98	FORT LYON	03/01/1887
8/30/98	FORT LYON	03/01/1887
8/31/98	HOLBROOK	09/25/1889
9/1/98	FORT LYON	03/01/1887
9/2/98	FORT LYON	03/01/1887
9/3/98	FORT LYON	03/01/1887
9/4/98	FORT LYON	03/01/1887
9/5/98	FORT LYON	03/01/1887
9/6/98	FORT LYON	03/01/1887
9/7/98	FORT LYON	03/01/1887
9/8/98	CATLIN	12/03/1884
9/9/98	CATLIN	12/03/1884
9/10/98	CATLIN	12/03/1884
9/11/98	CATLIN	12/03/1884
9/12/98	CATLIN	12/03/1884
9/13/98	CATLIN	12/03/1884
9/14/98	CATLIN	12/03/1884
9/15/98	CATLIN	12/03/1884
9/16/98	CATLIN	12/03/1884
9/17/98	CATLIN	12/03/1884
9/18/98	CATLIN	12/03/1884
9/19/98	CATLIN	12/03/1884
9/20/98	CATLIN	12/03/1884
9/21/98	CATLIN	12/03/1884
9/22/98	FORT LYON	03/01/1887
9/23/98	FORT LYON	03/01/1887
9/24/98	FORT LYON	03/01/1887
9/25/98	FORT LYON	03/01/1887
9/26/98	FORT LYON	03/01/1887

Date	Arkansas River Call	Priority Dat
9/27/98	FORT LYON	03/01/1887
9/28/98	FORT LYON	03/01/1887
9/29/98	FORT LYON	03/01/1887
9/30/98	FORT LYON	03/01/1887
10/1/98	FORT LYON	03/01/1887
10/2/98	FORT LYON	03/01/1887
10/3/98	FORT LYON	03/01/1887
10/4/98	FORT LYON	03/01/1887
10/5/98	FORT LYON	03/01/1887
10/6/98	FORT LYON	03/01/1887
10/7/98	FORT LYON	03/01/1887
10/8/98	FORT LYON	03/01/1887
10/9/98	FORT LYON	03/01/1887
0/10/98	FORT LYON	03/01/1887
0/11/98	FORT LYON	03/01/1887
0/12/98	BESSEMER	05/01/1887
0/13/98	COLORADO CANAL	06/09/1890
0/14/98	COLORADO CANAL	06/09/1890
0/15/98	COLORADO CANAL	06/09/1890
0/16/98	COLORADO CANAL	06/09/1890
0/17/98	COLORADO CANAL	06/09/1890
0/18/98	COLORADO CANAL	06/09/1890
0/19/98	COLORADO CANAL	06/09/1890
0/20/98	COLORADO CANAL	06/09/1890
0/21/98	COLORADO CANAL	06/09/1890
0/22/98	COLORADO CANAL	06/09/1890
0/23/98	COLORADO CANAL	06/09/1890
0/24/98	COLORADO CANAL	06/09/1890
0/25/98	COLORADO CANAL	06/09/1890
0/26/98	COLORADO CANAL	06/09/1890
0/27/98	COLORADO CANAL	06/09/1890
0/28/98	COLORADO CANAL	06/09/1890
0/29/98	COLORADO CANAL	06/09/1890
0/30/98	OTERO	03/03/1890
0/31/98	COLORADO CANAL	06/09/1890

APPENDIX E

WINTER WATER PROGRAM REPORT

1998

WINTER WATER PROGRAM REPORT

COLORADO DIVISION OF WATER RESOURCES

DIVISION ENGINEER WATER DIVISION TWO

NOVEMBER 15, 1997 THROUGH MARCH 14, 1998

PUEBLO RESERVOIR (1) WINTER WATER PROGRAM STORAGE		DIRECT FLOW ENTITIES (4)	
BESSEMER	0.00	BESSEMER	2986.00
HIGHLINE	0.00	HIGHLINE	0.00
OXFORD	0.00	OXFORD	0.00
CATLIN	0.00	CATLIN	0.00
CONSOLIDATED	0.00	CONSOLIDATED	0.00
RIVERSIDE	0.00	RIVERSIDE	0.00
WEST PUEBLO	0.00	WEST PUEBLO	0.00
COLORADO	0.00	-----	-----
HOLBROOK	0.00	TOTAL	2986.00
FORT LYON	0.00		
AMITY	0.00		
-----	-----		
TOTAL	0.00		
OFF-CHANNEL STORAGE OR DIVERSION (2) FOR WINTER APPLICATION		STORAGE ENTITIES (5)	
BESSEMER	2986.00	COLORADO	16090.18
HIGHLINE	0.00	HOLBROOK	7320.00
OXFORD	0.00	FORT LYON	30089.00
CATLIN	0.00	AMITY	68122.00
CONSOLIDATED	0.00	-----	-----
RIVERSIDE	0.00	TOTAL	121621.18
WEST PUEBLO	0.00		
COLORADO	16090.18		
HOLBROOK	7320.00		
FORT LYON	30089.00		
AMITY	68122.00		
-----	-----		
TOTAL	124607.18		
JOHN MARTIN RESERVOIR (3) WINTER WATER PROGRAM STORAGE		THEORETICAL DIVISION OF DIRECT FLOW AND OFF-CHANNEL PARTICIPANTS	
AMITY	0.00	THEORETICAL	
FORT LYON	0.00	100,000 A.F. SYSTEM	
CONSOLIDATED	0.00	28.8% OF SYSTEM	28800.00
-----	-----	71.2% OF SYSTEM	71200.00
TOTAL	0.00	-----	-----
		TOTAL 100,000 A.F. SYSTEM	100000.00
ARKANSAS @ LAS ANIMAS TO JOHN MARTIN TRANSIT LOSS	0.00	AMITY	2750.00
		HOLBROOK	356.00
		-----	-----
DISTRIBUTED TOTAL	124607.18	THEORETICAL	
		103,106 A.F. SYSTEM	
		25% OF SYSTEM	5375.29
		75% OF SYSTEM	16125.88
		-----	-----
		TOTAL 103,106 A.F. SYSTEM	21501.18
		DISTRIBUTED TOTAL	124607.18
(1) REFLECTS PARTICIPANTS WITH PROGRAM WATER IN PUEBLO RESERVOIR (2) REFLECTS PARTICIPANTS WITH PROGRAM WATER IN PRIVATELY OWNED OFF-CHANNEL RESERVOIRS OR PROGRAM WATER DIVERTED FOR WINTER APPLICATION (3) REFLECTS PARTICIPANTS WITH PROGRAM WATER IN JOHN MARTIN RESERVOIR (4) REFLECTS TOTAL PROGRAM WATER ATTRIBUTABLE TO DIRECT FLOW PARTICIPANTS (5) REFLECTS TOTAL PROGRAM WATER ATTRIBUTABLE TO OFF-CHANNEL STORAGE PARTICIPANTS			
TOTAL CONTENTS PUEBLO RESERVOIR:		254833.00 AF	
TOTAL CONTENTS JOHN MARTIN RESERVOIR:		343851.00 AF	
		18-Mar-98	

APPENDIX F

**GROUNDWATER USE & MEASUREMENT
ORDERS ISSUED in 1998**

Ground Water Measurement and Use Orders Issued
(Number of wells)

1998 Irrigation Year

Water District	Measurement	Measurement & Use	Use	Other	Total
10	40	12	50	5	107
11	12	6	41	18	77
12	18	7	22	5	52
13	4	5	13	0	22
14	58	3	41	2	104
15	7	0	8	2	17
16	7	4	13	0	24
17	65	0	86	1	152
19	3	2	5	0	10
67	23	1	9	1	34
Totals	237	40	288	34	599

Note: "Other" includes expanded use of exempt permit, no permit or decree, plug and abandon, etc.