

Review Draft
July, 1963

PURGATOIRE RIVER WATER CONSERVANCY DISTRICT OPERATING CRITERIA

These operating criteria set forth in detail the criteria governing the District's administration of the District water supply in conformity with the general principles and provisions contained in the "Operating Principles - Trinidad Dam and Reservoir Project." The District shall be responsible for administering the delivery of the District water supply to the irrigable lands within District boundaries in accordance with these operating criteria and the above mentioned general operating principles.

Agreements, satisfactory to the Secretary of the Interior, shall be entered into between the District and the ditch companies and other owners of affected water rights to insure that these criteria and the operation described herein shall be adopted. In order that the repayment ability of the District will not be impaired, such agreements shall include provision for differential water charges within the District irrigable area reflecting payment capacities by land classes and variation in benefits accruing to each ditch system.

The details of the operating criteria are contained in the following four parts: Part A - "Definitions"

Part B - "Allocations"

Part C - "Operations"

Part D - "Exercise of Water Rights"

Provisions for review and amendment of these operating criteria are contained in Part E - "Review and Amendment."

Part A - Definitions

The definition of terms as used in the "Operating Principles - Trinidad Dam and Reservoir Project," apply in these criteria in addition to the following definitions as used herein:

1. "General Operating Principles" means the Operating Principles - Trinidad Dam and Reservoir Project.
2. "Model Space Reservation" means the 6,000 acre-feet of space reserved within the irrigation capacity of Trinidad Reservoir for storing water, as available, for the exclusive use of the Model Land and Irrigation Company.
3. "Model Account" means the quantity of water in storage within the Model space reservation which will be used for the exclusive diversion to Model lands.
4. "Project Account" means the quantity of water in storage within the irrigation capacity of Trinidad Reservoir, other than that in the Model Account, which will be used for diversion to the entire District irrigable area.
5. "Transferred Model Right" means the Model storage right of 1908 which will be transferred from its present site and owner to Trinidad Reservoir and the District and made part of the District storage right.

Part B - Allocations

As set forth in Article IV of the General Operating Principles, an allocation will be made to provide each acre of the District irrigable area an equitable share of the District water supply, provided such allocation will not exceed the irrigation requirement at the farm head-gate. The following details shall apply to the allocation:

1. In advance of the irrigation season the District shall determine the reasonable minimum District water supply expected to be available for allocation for the following irrigation season. This determination shall be based on the water currently in storage, plus the reasonable minimum reservoir inflow and stream gains below Trinidad Dam which are forecasted to be available to the District during the irrigation season, less the reservoir evaporation chargeable to the irrigation capacity and less that quantity reserved for the Model Land and Irrigation Company as provided for in B.1.(a) below.

(a) In advance of the irrigation season the District shall reserve for the exclusive use of the Model Land and Irrigation Company a maximum of 1,200 acre-feet of that water presently in storage credited to the Model Account and that which will be credited during the following irrigation season to the Model Account in the manner hereafter set forth in Part C - "Operations."

2. In advance of the irrigation season the District shall make the initial allotment based on the reasonable minimum District water supply expected to be available for allocation as determined in B.1. above.

3. The allotment shall be expressed as the total volume of water in acre-feet available at the river for the lands lying under each of the ditch systems so as to provide, with an allowance for the canal and lateral losses of the individual ditch systems, each acre of the District irrigable area an equitable share at the farm headgate except as set forth in B.4.(e) below.
4. The initial allotment shall be made in the following manner:
 - (a) That part of the expected reasonable minimum District water supply that consists of stream gains below Trinidad Dam which are divertable to the District irrigable area and reservoir inflow used directly for irrigation shall be equitably allocated as part of the initial allotment to each acre of the District irrigable area.
 - (b) The water presently in storage credited to the Model Account and the reasonable minimum expected to be credited to the Model Account during the following irrigation season, exclusive of that reserved under B.1.(a) above, shall be allocated as part of the initial allotment to the acreage of the Model Land and Irrigation Company, but limited to the extent that such allotment plus the allocation made under B.4.(a) above, will not exceed irrigation requirements.
 - (c) The water presently in storage credited to the Project Account and the reasonable minimum expected to be credited to the Project Account during the following irrigation season, shall be allocated as part of the initial allotment

to each acre of the District irrigable area other than those of the Model Land and Irrigation Company so that each acre receives an allotment equivalent to that of the acreage of the Model Land and Irrigation Company.

- (d) The Project Account not allocated under B.4.(c) above, shall be equitably allocated as part of the initial allotment to each acre of the District irrigable area.
- (e) If the Project Account is insufficient to furnish an allotment equivalent to that allocated from the Model Account as in B.4.(b) above, then the initial allotment to the acreage of the Model Land and Irrigation Company will exceed the initial allotment to the other acres of the District irrigable area.
5. If, as the irrigation season advances, more water than expected becomes available as the District water supply, an additional allotment will be added to the existing allotment according to the provisions in B.4. above.
6. Any part of an allotment that remains unused at the end of the irrigation season shall revert to the account from which it was allocated.
7. Each ditch will be responsible for administering and maintaining records of District allocations to landowners under that ditch so as to assure proper scheduling and delivery of each landowner's allotment.
8. Any future increase in transportation efficiencies derived from improved facilities shall accrue to the benefit of

those responsible for the improvement of facilities, to the extent such water will still be used beneficially and in accordance with the General Operating Principles.

9. Nothing herein shall be construed to prevent rental of part or all of an allocation from one portion of the District irrigable area to another.

Part C - Operations

The water stored in the irrigation capacity will be credited to two accounts, the Model Account and the Project Account. The following criteria apply to the operation of these two accounts.

1. General Provisions

- (a) Water credited to the Model Account shall be stored only in the Model space reservation. Water shall be stored in the Model space reservation under the transferred Model right in the manner set forth in C.2.(a) and C.2.(b) below.
- (b) Water credited to the Project Account may be stored in any of the irrigation capacity not occupied by the Model Account so long as such storage does not interfere with the crediting of water to the Model Account.
- (c) The cumulative total of water credited to the Model Account shall be limited to 6,000 acre-feet in any one year period beginning at the end of the irrigation season and the maximum quantity in the Model Account, including holdover storage, shall be limited to 6,000 acre-feet at any time.

- (d) That quantity reserved for the exclusive use of the Model Land and Irrigation Company under B.1.(a) shall be retained in the Model Account until the Project Account is determined empty by the District, at which time it will become available for the exclusive use on the lands of the Model Land and Irrigation Company within the District irrigable area.
- (e) Trinidad Reservoir evaporation and seepage chargeable to the irrigation capacity shall be deducted from the two accounts in proportion to the water in the accounts.

2. Manner of Crediting

(a) Storing during the non-irrigation season

- (1) Reservoir inflow stored under the transferred Model right during the non-irrigation season will be credited one-third to the Model Account, and two-thirds to the Project Account until the limitations defined in C.1.(c) above are reached, after which all reservoir inflow storable under the transferred Model right will be credited to the Project Account.
- (2) All reservoir inflow storable in the unused sediment capacity during the non-irrigation season shall be stored and credited to the Project Account.

(b) Storing during the irrigation season

- (1) Of the first 300 second-feet of reservoir inflow, that portion not required for the current actual irrigation

requirements shall be stored and credited to the Project Account.

(2) During the irrigation season, inflow to the reservoir in excess of a daily mean of 300 cubic feet per second of time or current actual irrigation requirements, whichever is greater, shall be stored in the Model Account until filled, thereafter such excess shall be stored in the Project Account until filled, at which time any excess may be utilized under Model direct-flow rights and John Flood rights up to a total of 323.63 cubic feet per second.

(3) All reservoir inflow storable in the unused sediment capacity during the irrigation season shall be stored and credited to the Project Account.

3. Manner of Release

When the reservoir inflow and stream gains below Trinidad Dam which are divertable to the District irrigable area are insufficient to meet District irrigation requirements releases will be made from the irrigation capacity within allotments to augment the available direct flow supplies. These releases will be made as part of the allocated District water supply from the two accounts as follows:

(a) Such releases for lands, other than the lands of the Model Land and Irrigation Company shall be charged to the Project Account.

- (b) When the Model Account is over 1,200 acre-feet, such releases for lands of the Model Land and Irrigation Company shall be charged to the Model Account.
 - (c) When the Model Account is 1,200 acre-feet or less, such releases for lands of Model Land and Irrigation Company shall be charged to the Project Account.
 - (d) The 1,200 acre-feet maximum reserved for the exclusive use of the Model Land and Irrigation Company under B.1.(a) shall be released at the request of the Model water users after the Project Account is determined empty by the District.
4. The daily deliveries of the District water supply will largely be governed by the requests by the ditches to receive water remaining in their allotments for their lands. However, the District shall reserve the right to maintain a schedule of diversions when necessary to reduce transportation losses and to facilitate irrigation practices.

Part D - Exercise of Water Rights

As provided in Article IV of the General Operating Principles, the District may not exercise any of the direct flow water rights when the irrigation capacity is determined to be empty by the District.

When the irrigation capacity is determined to be empty, the reservoir inflow and stream gains below Trinidad Dam which are divertable to the District irrigable area may be diverted by the water right owners exercising their rights in priority and the Model Land and Irrigation

Company may use the quantity of water reserved under B.1.(a), provided no diversion be made in excess of the irrigation requirement for any portion of the District irrigable area. Whenever reservoir inflow and stream gains below Trinidad Dam which are divertable to the District irrigable area should thereafter exceed such requirements, the District shall resume exercise of the direct flow water rights and shall store the excess under the District storage right.

The following details shall apply in determining when the irrigation capacity is empty:

1. The District shall declare in writing to the Colorado State Engineer, the Colorado Fish, Game and Parks Commission, the operating agency, and the District water users, the date, ten days in advance, on which the irrigation capacity will be considered empty and diversion by priority appropriation begin. Such date shall be based on the date the irrigation capacity, less that quantity reserved under B.1.(a) would be drawn down to less than one day's run of water if used to fully satisfy the current irrigation requirement of the District irrigable area.
2. The manner in which the ditches request delivery of their allotment shall not affect the declared date.
3. The declared date may be adjusted to compensate for changing water supply conditions. Notice of such adjustment shall be given by the District to the parties listed in D.1. above

by whatever means the District shall find most likely to convey such notice to said parties in relation to the circumstances of such adjustment.

4. The date the irrigation capacity is determined to be empty shall also be the date the Project Account is considered empty and the District water supply considered consumed.

Part E - Review and Amendment

These operating criteria may be subject to review by the District and the Bureau of Reclamation once each year during the development period of the Trinidad Dam and Reservoir Project, and subject to at least one review every 10 years thereafter. The object of such reviews will be amending these criteria to obtain the optimum beneficial use of water as conditions change, operating experience is gained, and more technical data becomes available.

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FAIRFIELD AND WOODS

PRELIMINARY STUDY PROPOSAL

CUMULATIVE CHANGES IN STREAMFLOW RESULTING
FROM UPSTREAM RUNOFF STORAGE IN SMALL, FLOOD-RETENTION
RESERVOIRS, PURGATOIRE RIVER BASIN, COLORADO

BACKGROUND: Hundreds of thousands of flood retention reservoirs have been built, primarily in arid, western States, for the purpose of soil and water conservation. These reservoirs typically impound runoff associated with intense rainfall during the summer period, although some snowmelt runoff may be stored during the early spring.

Previous hydrologic studies have indicated that reservoirs of this type significantly deplete downstream flow. In a study of the upper Cheyenne River basin in Wyoming, South Dakota, and Nebraska (9,100 square miles), Culler (1961) estimated this depletion to range from 19,000 acre-feet in a dry year (discharge about 50,000 acre-feet per year) to 80,000 acre-feet in a wet year (discharge about 180,000 acre-feet per year). Depletion of streamflow by such reservoirs in the upper Republican River basin (24,900 square miles; average discharge 1953-76 of 285,500 acre-feet per year), that includes portions of Colorado, Kansas, and Nebraska, has been estimated to average 197,300 acre-feet per year during the period 1949-78 (U.S. Bureau of Reclamation, 1980).