

DRAFT: Regional Assessment of Fallowing Programs

Lower Rio Grande Basin

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Prepared by:

Kullman Water Engineering, LLC

P.O. Box 5464

Santa Fe, NM 87502

505-690-1432

www.kullmanwater.com



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Executive Summary

Competing demand for water in river basins throughout the western U.S. has necessitated cooperative and creative solutions. Pressured by drought, municipal growth, environmental needs, declining aquifer levels and other institutional demands such as compact compliance, water users are strategically adapting. Temporary fallowing of irrigated agriculture is one such strategy that continues to gain momentum. It promises a way to keep agriculture economically viable in the long-term, while simultaneously providing water as needed for competing, alternative uses.

In 2020, the New Mexico Interstate Stream Commission (NMISC) obtained appropriated funds from the New Mexico State Legislature for the purpose of developing a water management pilot program in the Lower Rio Grande Basin (LRG) of New Mexico, including the development of a rotational fallowing pilot program (LRG Pilot Program).

To support the development of the LRG Pilot Program, NMISC commissioned this work effort to include a literature review of existing fallowing programs and preparation of this Summary Report. This Summary Report provides a regional assessment of the following five fallowing programs:

- Fort Sumner Irrigation District (FSID)
- Lower Arkansas Valley Super Ditch Company (Catlin Canal)
- Upper Colorado River System Conservation Pilot Program (UCRB SCPP)
- Rio Grande Water Conservation District (Subdistrict No. 1)
- Palo Verde Irrigation District (PVID)

These five programs are located in the Pecos River Basin, Arkansas River Basin, Upper Colorado River Basin, Rio Grande River Basin, and Lower Colorado River Basin, respectively. Although these programs are located in different basins, were implemented for different reasons, and were operated for different lengths of time, much of the information gained through this work effort shows commonalities between programs. As highlighted in this Summary Report, these common characteristics provide insight into how the NMISC may structure the LRG Pilot Program.

For each fallowing program reviewed, this work effort also sought to answer key questions and examine elements related to implementation of each pilot program including:

- Project Operations and Contracting
- Price and Payment
- Advertising

- Land Management
- Fallowing Verification

The following summarize the primary results of this work effort:

Project Operations and Contracting:

- All programs required a contract or agreement between the participating farmer and the managing entity.
- In cases where the managing entity did not provide the source of funding for the fallowing program, or was not the direct recipient of the conserved water, additional contracts or agreements were also required.
- The length of the contract term between the participants and the managing entity ranged from a minimum of a partial season (e.g. April 30 to August 1) to a maximum of 10 years.
- In all programs, participants were required to verify that the lands to be fallowed had been previously irrigated within the recent past, if not the immediately preceding irrigation season.
- Many programs required either a minimum number of acres for enrollment and/or a maximum percentage of the farm to be fallowed.
- For programs with multi-year contracts, the fallowed lands were typically allowed to change location on an annual basis, provided the total amount of fallowing remained consistent year to year.

Price and Payment:

- A majority of the programs paid participants on a per-acre fallowing basis. One program, the UCRB SCPP, paid participants according to the amount of water conserved through fallowing, or on a per acre-foot basis. The Catlin Canal program paid participants under both approaches, by paying up front for the number of acres fallowed and then at the end of the irrigation season for the amount of water conserved.
- The per-acre fallowing price paid to the participants under the five programs ranged from \$144 per acre to \$1,665 per acre¹.
 - FSID: \$700 per acre
 - Catlin Canal: \$699 – \$1,030 per acre
 - UCRB SCPP: \$224 - \$343 per acre
 - Subdistrict No. 1: \$144 - \$200 per acre
 - PVID: \$1,665 per acre

¹ For the UCRB SCPP and Catlin Canal programs, the per acre-foot compensation component was converted to a per-acre fallowing basis for comparison purposes only.

- FSID had a partial year fallowing program whereby they paid \$400 per acre and Subdistrict No. 1 had an alfalfa deficit irrigation program whereby they paid \$60 per acre.
- Two of the programs paid participants in installments, with half of the payment made near the beginning of the season and remaining half made at the end of the season. Three of the programs paid participants in full at the end of the irrigation season, after fallowing could be verified.
- Most programs did not have a clearly defined process for determining the price to pay participants for fallowing. For programs where it was possible to contact individuals knowledgeable with first-hand operations, it was clear the process was multi-faceted, iterative, and unique to the local conditions. In all cases, the managing entity attempted to set the price high enough to attract participants, but not so low as to discourage participation.

Advertising:

- It was not possible to verify methods of advertising in all programs. For programs where it was possible to verify, advertising ranged anywhere from written notice to potential participants via mail and email announcements to face-to-face networking with likely participants.

Land Management:

- Aside from the UCRB SCPP program, all other programs included specific obligations and/or restrictions related to the fallowed lands.
- The participant's obligations typically included weed control and mitigation of dust and soil erosion, at the participant's expense. In some cases, specific methods for achieving these objectives were defined.
- In all cases, the contracts clearly defined what participants were allowed or not allowed to do on the fallowed lands (e.g. tilling, level, grazing, harvesting, etc.).

Fallowing Verification:

- In all programs, the participant agreed (with notification) to allow access to the fallowed lands for verification and monitoring purposes. Access was typically granted to the managing entity and also any regulatory or funding agencies involved in the project (e.g. State Engineer or municipality).
- In some cases, monetary penalties for non-compliance with fallowing were included, while in other cases, failure to comply was to result in a breach of contract or no payment under the program.

Section 1: Introduction

1.1 Background

In 2020, the NMISC obtained appropriated funds from the New Mexico State Legislature for the purpose of developing a water management pilot program in the LRG. Under the LRG Pilot Program, NMISC is tasked with assessing a myriad of water management projects and tools that can be used to better manage water and reduce water consumption in the LRG. More specifically, the water management projects and tools identified include rotational fallowing, aquifer recharge, infrastructure improvements and supply augmentation, with the primary focus in fiscal year 2020 2021 being the implementation of a rotational fallowing program for irrigated lands in the LRG.

In an effort to support the implementation of a rotational fallowing program in the LRG, the NMISC directed this work effort, which included a literature review of existing fallowing programs and preparation of this Summary Report. This Summary Report provides a regional assessment of five fallowing programs of interest to the NMISC that are currently operational or have otherwise already been implemented in river basins throughout the western U.S. including the Rio Grande Basin, Pecos River Basin, Upper and Lower Colorado River Basin and the Arkansas River Basin. As summarized in this document, the selected regional programs reviewed highlight important characteristics of fallowing programs and provide insight into how the NMISC may structure the LRG Pilot Program.

1.2 Analysis of Existing Programs

Dozens of programs that involve both short-term and long-term fallowing of irrigated agriculture have been implemented in the last decade throughout the west. The reasons and rationale for developing these programs have been far-reaching and diverse, but have primary included a growing and competing demand for water in an inherently water scarce environment. These fallowing tools continue to be implemented successfully to respond to pressures associated with drought, municipal growth, environmental needs, increased groundwater consumption and compact compliance. Several programs identified by the NMISC were reviewed through this work effort, including:

- Fort Sumner Irrigation District (FSID)
- Lower Arkansas Valley Super Ditch Company (Catlin Canal)
- Upper Colorado River System Conservation Pilot Program (UCRB SCPP)
- Rio Grande Water Conservation District (Subdistrict No. 1)
- Palo Verde Irrigation District (PVID)

In the process of working to institute a rotational following program in the LRG, the NMISC has identified key questions and elements that need to be answered or understood before proceeding with actual implementation of the LRG Pilot Program. Since these key questions and elements are believed to be somewhat universal among existing following programs, a comprehensive literature review was completed. This document summarizes common elements and key questions of interest to the NMISC within each of these regional programs, including:

- Project Operations and Contracting
 - How are contracts organized between participating individuals and the involved entities?
 - What length of agreement terms are entered between the participating parties (e.g., single year contracts, multi-year contracts)?
 - What other general terms are required under the agreements (e.g. minimum acreage enrollment, maximum percentage of farm to be enrolled, partial field following, partial season following)?
- Price and Payment
 - How much are the participants compensated for the following (e.g. per-acre basis, per acre-foot conserved basis)?
 - What factors were used to determine price?
 - When during the program were participants compensated (e.g., payment portions and timing)?
- Advertising
 - How was the program advertised to potential participants (e.g. website, mailings, face-to-face networking)?
- Land Management
 - What obligations related to land management were required of participants (e.g. weed control, dust and soil erosion mitigation)?
 - What restrictions were set in place regarding the use of the lands (e.g. tillage and leveling, harvesting, grazing, and irrigation system improvements)?
- Following Verification
 - What methods were used to monitor and verify following occurred (e.g. site visits, affidavits)?
 - What penalties were instituted to encourage compliance (e.g. fines and fees)?

Section 2: Programs Analyzed

Several forms of information were analyzed for the literature review component of this work effort. Example contracts between participating individuals and the contracting agencies were reviewed in each of the five regional programs. For some programs, additional reports or summary documents were available and generally described findings or the outcomes of the programs. In four of the five programs, individuals knowledgeable with first-hand operation and implementation of the programs were contacted. A detailed list of these information sources is included at the end of this Summary Report. In this section, a brief description of each project is provided, followed by a detailed tabulation of each program and the associated elements or key questions that were analyzed.

Fort Sumner Irrigation District: The FSID, located within the Pecos River Basin, New Mexico, implemented its fallowing program for a period of five years, ending in 2014. The purpose of the program was to reduce diversions by FSID from the Pecos River to augment flows for the endangered Pecos bluntnose shiner during periods of low flow. See **Table 2.1**.

Lower Arkansas Valley Super Ditch Company: The Catlin Canal program is currently operating under a 10-year pilot project which began in 2015 in the Arkansas River Basin, Colorado. The purpose of the program is to test the efficacy of providing water on a temporary basis to growing municipalities as an alternative to permanent water transfers. See **Table 2.2**.

Upper Colorado River System Conservation Pilot Program: The UCRB SCPP program operated between 2015 and 2018 in the Upper Colorado River Basin, including the states of New Mexico, Colorado, Utah and Wyoming. The purpose of the program was to determine whether temporary fallowing could serve as a tool for mitigating declining levels in Lake Powell and for drought contingency planning. See **Table 2.3**.

Rio Grande Water Conservation District: The Subdistrict No. 1 program is currently operating under a 4-year pilot project which began in 2018 in the Rio Grande Basin, Colorado. The purpose of the program is to reduce groundwater consumption and recharge declining aquifer levels. See **Table 2.4**.

Palo Verde Irrigation District: The PVID, located in the Lower Colorado River Basin, California, implemented its fallowing program for a period of one-year (2009). The purpose of the program was to provide additional water supplies to municipalities on a temporary, emergency basis in response to extreme drought conditions. See **Table 2.5**.

Table 2.1**Fort Sumner Irrigation District (FSID)**

Project Description	
River Basin/State:	Pecos River Basin, New Mexico
Parties to Agreement(s):	Fort Sumner Irrigation District, United States Secretary of the Interior, and individual farmers.
General Description of Project:	FSID diverts water from the Pecos River to irrigate up to 6,300 acres. The Pecos River is also home to the Pecos bluntnose shiner, which has been listed as a threatened species under the Endangered Species Act, and resides in sections of the Pecos River that are prone to low flows during periods of drought. To augment flows in the Pecos River, FSID agreed to enter into temporary, one-year agreements, with individual FSID farmers to fallow land and augment river flows with foregone irrigation supplies. Through an agreement with FSID, the United States agreed to provide the funds used to compensate the plan participants. The FSID operated the program for a number of years, but not since 2014.
Project Operations and Contracting	
General Description of Contract:	This project included two contracts. The first contract was between FSID and the United States and generally described obligations related to the role and operational requirements for FSID and payment and compensation obligations for the United States. The second contract(s) were between FSID and each individual farmer participating in the program. The 2014 agreements were reviewed as part of this work effort.
Sources of Conserved Water:	Decreed surface water rights on the Pecos River
Agreement Length:	One irrigation season occurring during 2014. Two options for farmers/participants: (1) Full season (April 30 - October 31), or (2) Partial season (April 30 - August 1)
Other Terms:	(1) Participants had to enroll a minimum of 50 acres in the following program to be eligible. (2) Lands designated for full season fallowing were allowed to change designated acreage between the initial period (April 30 - August 1) and final period (August 2 - October 31) as long as the total fallowing acreage remained the same throughout the full season. (3) Participants had to certify they owned or leased the acreage to be fallowed and that such acreage would have otherwise been irrigated during the contracted year.
Price and Payment	
Unit Price:	\$700/acre for full season fallowing \$400/acre for partial season fallowing
Factors Determining Price:	The price determined during the first year of the program was largely based upon a negotiation between the United States and FSID, which was \$400/acre for a full season (partial season fallowing was not offered initially). Due to limited interest by FSID members initially, the price was increased in subsequent years, and the partial year fallowing option was added, in order to obtain sufficient participation.
Payment Terms:	Participants were to be paid within 15 days after receipt of payment to FSID by the United States. The United States was to pay FSID 50% + 5% administrative fee initially and then the remaining 50% + 5% administrative fee at the end of the program, but not after December 31.
Other Fees & Costs:	Fallow payments were used to bring farmer current on delinquent taxes, assessments, levies, etc. (if any).

Table 2.1
Fort Sumner Irrigation District (FSID)

Advertising	
How Program Advertised:	Because the membership of FSID is fairly small, advertising about the program was accomplished through email or written communication.
Land Management	
Participant Obligations:	None
Restrictions on Use of Land:	Agreement did not prevent participant from continuing to farm or harvest crops from the fallowed lands; it just prevented irrigation of the fallowed lands.
Fallowing Verification	
Monitoring Methods:	(1) Participant agreed to allow representatives of FSID and the United States to inspect fallowed lands during the contracted year to verify non-irrigation. (2) Participant agreed to allow the Interstate Stream Commission and State Engineer to inspect irrigation works and flows to determine the hydrologic effect of fallowing.
Penalties:	Any failure to abide with the fallowing agreement was to result in forfeiture of the entire payment and the participant was to be assessed a penalty of 50% of the forfeited payment. Further, participant would not be allowed to participate in future fallowing programs at FSID and would liable to FSID for all attorney fees and costs incurred to remedy any violation.

Table 2.2**Lower Arkansas Valley Super Ditch Company (Catlin Canal)**

Project Description	
River Basin/State:	Arkansas River Basin, Colorado
Parties to Agreement(s):	Lower Arkansas Valley Super Ditch Company, individual farmers, and municipalities (Town of Fowler, City of Fountain, & Security Water and Sanitation District).
General Description of Project:	The Super Ditch project was created in response to an increase in the permanent transfer of water between farmers in the Arkansas River Basin and growing municipalities. Comprised of shareholders from six different ditch organizations, the Super Ditch was formed to serve as a managing entity and working group to implement programs, such as rotational fallowing, to provide water for alternative uses on a temporary basis. The Catlin Canal Pilot Project was the first program implemented under the Super Ditch project and Colorado HB 13-1248 and included rotational fallowing over a 10-year period on six farms starting in 2015. The conserved water supplies were paid for through leases by upstream municipalities.
Project Operations and Contracting	
General Description of Contract:	This project was organized into three contracting components. First, the Super Ditch applied to the State of Colorado for approval under a Pilot Project Program created under Colorado HB 13-1248 (this functioned more as a permit). Second, per Criteria & Guidelines established under HB 13-1248, the Super Ditch entered into individual contracts with participating farmers located under the Catlin Canal system. Third, the Super Ditch entered into individual contracts with municipalities to lease the foregone water use.
Sources of Conserved Water:	Decreed senior water rights on the Arkansas River
Agreement Length:	10-year agreement term, with an annual option to lease or not lease. Fallowing is rotated to adhere to requirements under HB 13-1248 whereby the Super Ditch can lease all the water for 3 years during the 10-year period or lease 30% of the water each year of the 10-year period. Super Ditch given the sole discretion to determine whether or not to exercise the annual lease option requested in any given year.
Other Terms:	(1) Super Ditch agreed to notify the participant by September 15 each year if the annual lease requested by participant is desired and if so, would work with participant to designate lands to be fallowed by December 1. (2) The land to be fallowed must have been historically irrigated and no partial year fallowing was allowed (per Criteria & Guidelines). (3) Fallowed parcels had to be at least 10 acres in size and parcels that represented a portion of an existing field could only be split in the same direction of irrigation if physical separation was approved (e.g., with a ditch or tilled strip) (per Criteria & Guidelines).

Table 2.2

Lower Arkansas Valley Super Ditch Company (Catlin Canal)

Price and Payment	
Unit Price:	Participants were paid per acre of fallowed land (\$150/acre fallowed) and per acre-foot of consumptive use water delivered (\$500/acre-foot delivered), so annual payments varied due to climate and operational factors. Calculated on a per acre basis, total payments have been on average: \$1,030/acre (2015), \$1,004/acre (2016), \$982/acre (2017), 2018 not available, \$699/acre (2019).
Factors Determining Price:	A steering committee was created to consider several options related to farmer profitability, including selling a water right, leasing a water right and using the water right for crop production. It was ultimately determined that compensation equal to at least \$500 per acre would be required in order to incentivise an irrigator to continue production, as opposed to selling a water right (estimated at the time to be \$5,000 per acre-foot).
Payment Terms:	When the annual option to lease was exercised, participants were to be paid the per acre fallow price 30 days after final determination of lands to be fallowed (December 31). Participants were then to be paid the per acre-foot delivered amount twice annually. These payment were to be made within 30 days of receipt of payment from the municipal parties. In years the annual option to lease was not exercised, no payments were to be made.
Other Fees & Costs:	(1) The Super Ditch retained a lease administration fee equal to \$25/acre from the revenue it received from leasing the water to the municipalities. (2) The participant was required to pay assessments related to the water rights/shares. The Super Ditch agreed to pay any outstanding assessments that existed and to deduct such amounts from subsequent lease payments.
Advertising	
How Program Advertised:	The program was not advertised. Farmers that were believed to be likely participants were sought out to join the program.
Land Management	
Participant Obligations:	For the fallowed lands, participant agreed to: (1) meet local government land use requirements, (2) prevent erosion and blowing soils, and (3) comply with local county noxious weed requirements. Participants, at their sole cost, agreed to undertake operations to mitigate soil erosion and control weed growth.
Restrictions on Use of Land:	(1) For alfalfa & pasture grass fields: harvesting & grazing could occur with approval. If subirrigation is determined to have occurred, the amount of lease payment was reduced. (2) For stubble & open fields: if inadequate to prevent soil erosion, furrowing or chiseling was allowed. Cover crops could also be planted and irrigated for establishment and grazed or harvested. (3) For weed control: measures allowed included mowing, grazing, and application of herbicides. (4) Other activities: participant allowed to level lands and install sprinkler or drip irrigation systems or make other system improvements.
Fallowing Verification	
Monitoring Methods:	(1) Participant granted the Super Ditch permission to enter fallowed lands to post signs indicating "dry-up" and to monitor for compliance. (2) Participant agreed to submit an affidavit to Super Ditch verifying prior season dry-up by December 31.
Penalties:	Participant agreed that failure to cease irrigation of fallowed lands, to mitigate erosion and weed growth, or to comply with terms and conditions established by the State of Colorado under HB 13-1248 would constitute a default and breach of the agreement.

Table 2.3**Upper Colorado River System Conservation Pilot Program (UCRB SCPP)**

Project Description	
River Basin/States:	Upper Colorado River Basin, including Colorado, Wyoming, Utah and New Mexico
Parties to Agreement(s):	Upper Colorado River Commission (UCRC) and individual farmers.
General Description of Project:	The SCPP was operated between 2015 and 2018. The goal of the SCPP was to determine whether a reduction in consumptive use in the Upper Colorado River Basin (through temporary fallowing) could be a feasible method or tool for mitigating declining water levels in Lake Powell, for drought contingency planning and compact compliance. Between 2015 and 2017, SCPP funded 45 projects located within all four Upper Basin states, which resulted in a total consumptive use reduction of 22,116 acre-feet. The UCRC was the facilitating and contracting agency for the individual projects and the project was funded by four Colorado River Basin municipalities.
Project Operations and Contracting	
General Description of Contract:	This project generally included two forms of contracts. First, the UCRC entered into Facilitation Agreement(s) with the funding agencies, including four Colorado River Basin municipalities. Second, the UCRB entered into individual contracts with participating farmers for SCPP projects that were approved under the program.
Sources of Conserved Water:	Surface water or storage water rights tributary to the Colorado River.
Agreement Length:	Variable, depending on specific project. Some contracts were single year, while some were multi-year contracts.
Other Terms:	(1) Multiple types of projects were selected including: full season fallowing, split season fallowing, single-year fallowing, multi-year fallowing, multi-year rotational fallowing, alternative cropping and deficit irrigation. (2) The participant must have had the intent to divert the water for beneficial consumptive use during the term of the contract. (3) The participant was required to have the legal right and authority to use the water and property to be fallowed.
Price and Payment	
Unit Price:	Participants were paid a per acre-foot price for the estimated crop consumptive use amount determined for the fallowed lands. The acre-foot price varied by tributary and by year, but ranged from \$161/acre-foot to \$670/acre-foot. Expressed on a per acre fallowing basis, the range was from \$224/acre to \$343/acre (for 2015-2017 only). Actual crop consumptive use was determined after the end of the irrigation season, but did not impact compensation to participants.
Factors Determining Price:	Payment based on the amount of water conserved was selected to ensure that all projects were compensated fairly since acre-to-acre comparisons between projects were not equal (i.e. different crops grown, different climate conditions, different term lengths, etc). The price was set sufficiently high in order to attract participants to the program. In some cases, increased interest in the program after two years of operation allowed for additional price negotiation (or lease price reduction) during subsequent years of the program.
Payment Terms:	Participants were to be paid 50% of the total amount within 60 days after the effective date of the contract and the remaining 50% no later than 60 days after completion of the project provided the project was completed according to the terms of the contract.
Other Fees & Costs:	None

Table 2.3**Upper Colorado River System Conservation Pilot Program (UCRB SCPP)**

Advertising	
How Program Advertised:	In New Mexico, participation by the Navajo Nation was sought out specifically by the Interstate Stream Commission. Other project participants were informed through word of mouth; no formal advertising was done. In other states, primarily Colorado and Wyoming, Trout Unlimited and The Nature Conservancy did extensive on-the-ground outreach to obtain and encourage participation under the program.
Land Management	
Participant Obligations:	The SCPP did not require land management measures, such as weed growth and erosion control, for participating projects. Some projects voluntarily implemented measures such as weed suppression and tilling to control erosion and dust.
Restrictions on Use of Land:	No irrigation water could be applied to enrolled parcels for the duration of the irrigation season, or for split season deficit irrigation projects, no irrigation water could be applied to the specific period of the irrigation season as defined in the contract (e.g., June 1 through September 30).
Fallowing Verification	
Monitoring Methods:	(1) Verification Plans were developed and attached to the participant contracts for the purpose of defining how verification will be completed during the irrigation season. Verification was primarily completed through site visits (to verify fallowed lands and observe water flow structures), which were conducted as needed. (2) Participant agreed to provide UCRC (and/or its subcontractors) and designated state representatives access to the fallowed property upon at least 24 hours' notice for monitoring purposes.
Penalties:	(1) If participant did not conform to terms of the contract regarding verification and monitoring, UCRC was to require the participant to promptly conform at participant's expense.

Table 2.4**Rio Grande Water Conservation District (Subdistrict No. 1)**

Project Description	
River Basin/State:	Rio Grande Basin, Colorado
Parties to Agreement(s):	Special Improvement District No. 1 of the Rio Grande Water Conservation District (Subdistrict No. 1) and individual farmers.
General Description of Project:	Groundwater levels within Subdistrict No. 1 have been rapidly declining due to a decrease in available water supplies (from prolonged drought) and an increase in groundwater consumption. Subdistrict No. 1 has taken steps to reduce groundwater consumption in the basin, including implementation of a 4-year fallowing program, which began in 2018 and allows farmers to temporarily fallow lands under 1-year, 2-year and 4-year contracts. The short-term leasing program is funded directly by the Rio Grande Water Conservation District.
Project Operations and Contracting	
General Description of Contract:	There are several contract forms in use between Subdistrict No. 1 and participating farmers, including 1-year, 2-year, and 4-year fallowing contracts and a 1-year alfalfa deficit program contract. Contracts are accepted and funded on a first-come, first-serve basis.
Sources of Conserved Water:	Surface water and groundwater available in the Rio Grande Basin.
Agreement Length:	Depending on the form of the contract used, the term can be 1-year, 2-year, or 4-year. The annual term generally runs from the effective date of the agreement through October 31 or the end of the irrigation season, whichever date is later. For the 1-year alfalfa deficit program the term runs from June 15 to July 20.
Other Terms:	(1) Fallow lands must have been irrigated the calendar year prior to enrollment in the plan. For the alfalfa deficit program, there must be an established alfalfa crop. (2) Under multi-year contracts, the parcels to be fallowed can be moved around annually within the enrolled farm unit during the consecutive years of the contract, but they cannot be moved between farm units. (3) Participant required to enroll entire parcels only. No half pivots or partial fields can be fallowed.
Price and Payment	
Unit Price:	\$144 per acre per year for previously flood irrigated land \$200 per acre per year for previously sprinkler irrigated land \$60 per acre per year for established alfalfa crop under deficit program
Factors Determining Price:	Several factors are analyzed on an annual basis to determine the per acre compensation including the price of water in Subdistrict No. 1 (this price set annually by RGWCD), the amount of water anticipated for use by crops, and the current commodity prices for crops. Generally, RGWCD tries to keep prices fairly stable year to year and set the price just right to attract a reasonable number of participants.
Payment Terms:	Participants enrolled in the regular fallow contract were to be paid in one lump sum after December 1 but before December 31, provided all terms of the contract were met. Participants enrolled in the deficit fallow contract were to be paid in one lump sum after August 1 but before August 31, provided all terms of the contract were met.
Other Fees & Costs:	Participant agreed to be responsible for all fees assessed by Subdistrict No. 1, as if the parcel were fully irrigated.

Table 2.4**Rio Grande Water Conservation District (Subdistrict No. 1)**

Advertising	
How Program Advertised:	A variety of methods used to advertise program including face-to-face communication including attending agricultural seminars and gatherings, email and physical mailing through existing distribution lists, and advertising on local radio stations and information posted on website.
Land Management	
Participant Obligations:	(1) Participant required to provide all federal farm program information, preventative planting insurance and other agreements as requested by Subdistrict No. 1. (2) Participant agreed to utilize any acceptable practice of erosion control. (3) Participant agreed to leave lands unplowed with stubble, develop a cover crop, or leave as unplowed alfalfa (if applicable).
Restrictions on Use of Land:	(1) Participant agreed to not apply groundwater or surface water to the fallowed lands during the contract period. (2) Participant allowed to graze, till, and mechanically harvest the fallowed lands provided the planned activities are reported to Subdistrict No. 1 prior to initiation.
Fallowing Verification	
Monitoring Methods:	(1) Participant agreed to install, maintain and monitor a well meter that meets the requirements of the Measurement Rules established for Water Division No. 3 in Colorado (no partial fields or half pivots allowed because compliance verified through meter readings). (2) Participant granted permission to Subdistrict No. 1 personnel to enter the fallowed lands to verify meter readings and other fallowing criteria with prior notice.
Penalties:	(1) Participant agreed that if any irrigation water is applied to the fallow lands during the contract period, the contract is void and no payments will be made to the participant.

**Table 2.5
Palo Verde Irrigation District (PVID)**

Project Description	
River Basin/State:	Colorado River Basin, California
Parties to Agreement(s):	The Metropolitan Water District of South California (Metropolitan) and individual farmers.
General Description of Project:	In 2009, California declared a state of emergency in response to extreme drought conditions and called upon Californians to work collectively to conserve water and alleviate drought impacts. In response, the Palo Verde Irrigation District (PVID) and Metropolitan agreed to implement a temporary one-year lease-fallowing program whereby PVID would forego some irrigation from the Colorado River in order to supply additional water to Metropolitan, at Metropolitan's expense. This short-term fallowing program is different from PVID's long-term, 35-year fallowing program.
Project Operations and Contracting	
General Description of Contract:	Contracts were established for a period of one-year between Metropolitan and the participating farmers. Metropolitan agreed to pay the participants directly for the fallowed land and also to pay PVID a nominal fee per acre to offset future increases in water tolls associated with the lands. PVID also agreed to confirm to Metropolitan that the fallowed lands were cleared of vegetation during the contract year and maintained to avoid weed growth and soil erosion.
Sources of Conserved Water:	Priority 1 Colorado River water.
Agreement Length:	Enrolled lands were fallowed for one continuous year, with fallowing beginning no earlier than April 15 and no later than August 1.
Other Terms:	(1) Participants allowed to enroll up to 15% of the land irrigated at the time with Priority 1 Colorado River water. (2) Participants agreed they had the authority to fallow the enrolled land for the contract year. (3) Participants agreed the lands to be fallowed were irrigated under PVID with Priority 1 Colorado River water during the prior irrigation season.
Price and Payment	
Unit Price:	\$1,665 per acre of fallowed land
Factors Determining Price:	Unable to verify.
Payment Terms:	Following verification by PVID that the fallowed lands were cleared of vegetation, payments were to be made by Metropolitan directly to the participants by September 1 during the contract year.
Other Fees & Costs:	(1) Participants were required to have all water tolls, standby and other charges owed to PVID paid before any delinquent date to be included within the program. (2) Metropolitan also paid PVID \$35/acre for the purpose of offsetting future increases in water toll charges.
Advertising	
How Program Advertised:	Unable to verify.

Table 2.5
Palo Verde Irrigation District (PVID)

Land Management	
Participant Obligations:	Participants agreed to a comprehensive list of land management measures, including: (1) weed control to prevent the consumptive use of water by the weeds, and to limit the spread of disease, insects and pests, and (2) wind erosion control measures including leaving fallowed lands with stubble or sod remnants, or clod plowing. In the event PVID or Metropolitan were to determine through inspection that additional measures were needed to prevent erosion, additional remedial measures would be required including spreading of mulch or manure or seeding a cover crop.
Restrictions on Use of Land:	Participants agreed to: (1) not grow agricultural crops or any other vegetation, (2) not apply water other than naturally occurring rainwater, (3) not extract or apply groundwater from the land, and (4) not use or collect surface water.
Fallowing Verification	
Monitoring Methods:	Participants agreed, with 24 hours notice, to allow PVID and/or Metropolitan to enter onto and inspect the fallowed land.
Penalties:	Participants agreed that by undertaking prohibited activities, Metropolitan has the right to be reimbursed for the amount paid under the agreement for each acre on which the prohibited activity occurred, in addition to accrued interest.

Section 3: Conclusions

This Summary Report provides a regional assessment of five fallowing programs of interest to the NMISC located in several river basins throughout the western U.S. Although the highlighted fallowing programs were implemented in different river basins for a variety of different reasons, much of the information gained through this work effort shows commonalities between programs. As highlighted in this Summary Report, these common characteristics provide insight into how the NMISC may structure the LRG Pilot Program.

This work effort included a review of example contracts between participating individuals and the contracting agencies, a review of additional reports or documents when available, and discussions with individuals knowledgeable with first-hand program information. Information of particular interest for each of the five programs included: (1) Project Operations and Contracting, (2) Price and Payment, (3) Advertising, (4) Land Management, and (5) Fallowing Verification. **Table 2.1** through **Table 2.5** include detailed and program specific information for each of these categories.

Through its planning process, the NMISC has been particularly interested in the determination of price under fallowing programs. This work effort shows that the per-acre fallowing price paid to the participants under the five programs ranged from \$144 per acre to \$1,665 per acre. More specifically for each program, the prices paid to participants ranged as follows:

- FSID: \$700 per acre
- Catlin Canal: \$699 – \$1,030 per acre
- UCRB SCPP: \$224 - \$343 per acre
- Subdistrict No. 1: \$144 - \$200 per acre
- PVID: \$1,665 per acre

Most of the fallowing programs examined did not have a clearly defined process for determining the price to pay participants for fallowing. Generally, the managing entities attempted to set the price high enough to attract participants, but not so low as to discourage participation. In some cases, a wide variety of locally based information (e.g. current market for selling/leasing water, crop water use, commodity pricing) was used to find or determine the appropriate price. In other cases, the prices were determined through negotiation between the managing entity and the funding entity. Although these processes, in all cases, reflect unique local conditions and circumstances, it may be possible for NMISC to use them as guidance when determining the price under the LRG Pilot Program.

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