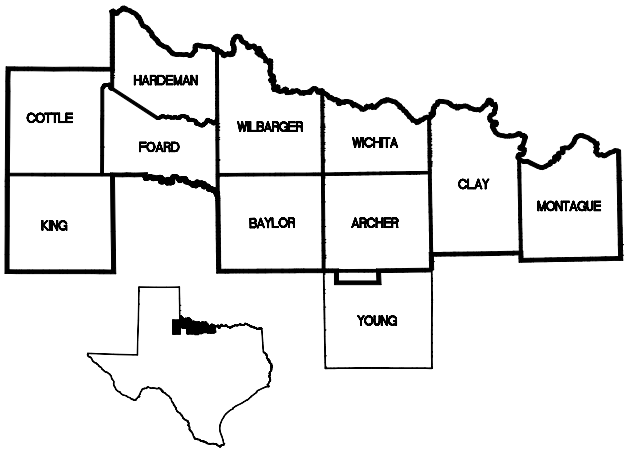
REGION B: WICHITA COUNTY
WATER IMPROVEMENT DISTRICT NO. 2
WATER CONSERVATION IMPLEMENTATION PLAN



Biggs & Mathews, Inc.
Freese and Nichols, Inc.
Alan Plummer Associates, Inc.
Red River Authority of Texas

REGION B

WICHITA COUNTY WATER IMPROVEMENT DISTRICT NO. 2 WATER CONSERVATION IMPLEMENTATION PLAN

Prepared for

Region B Water Planning Group

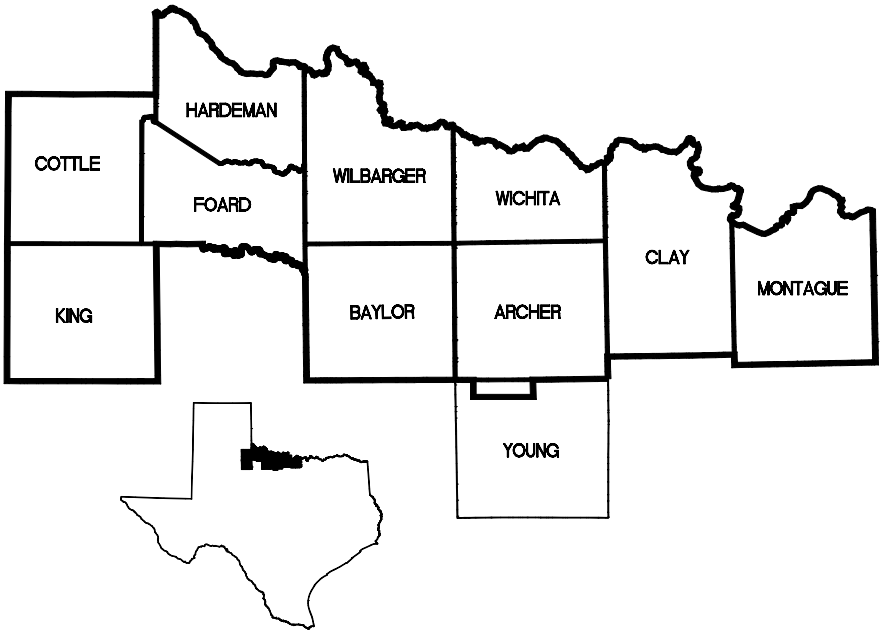
Members

Mr. Curtis W. Campbell, Chairman
Mr. Wilson Scaling, Vice Chairman
Mr. Dean Myers, Secretary

Mr. Jimmy Banks
Mr. Charlie Bell
Mr. J. K. (Rooter) Brite
Mr. Ed Garnett
Mr. Dale Hughes
Mayor Robert Kincaid
Judge Kenneth Liggett

Mr. Kenneth Patton
Mr. Jerry Payne
Mr. Mike McGuire
Dr. Pamela Stephens
Mr. Tom Stephens
Mr. Jeff Watts

November 2008



Biggs & Mathews, Inc.
Freese and Nichols, Inc.
Alan Plummer Associates, Inc.
Red River Authority of Texas

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1

CHAPTER 1 INTRODUCTION 1-1

1.1 Purpose of the projecT 1-1
1.2 Goals and Report Structure 1-2
1.3 Canal System overview 1-3
1.4 Study Performance 1-4

CHAPTER 2 IDENTIFICATION AND EVALUATION OF CANDIDATE LATERALS AND ESTABLISHMENT OF CRITERIA AND METHODS FOR THE IMPLEMENTATION PLAN ... 2-1

2.1 Identification of Candidate Laterals 2-1
2.1.1 Measurement of Water Losses from Laterals 2-1
2.1.2 Water Loss Measurements for Selected Laterals 2-7
2.2 Methods for Assessment of Laterals 2-10
2.3 Factors Selected for Lateral Seepage Evaluation 2-11
2.3.1 Soil Type 2-11
2.3.2 Lateral Vegetation 2-13
2.3.3 Lateral Condition 2-14
2.3.4 Calculation of the Soil-Condition Factor 2-14
2.4 Correlation of Lateral Condition to Water Loss 2-16

CHAPTER 3 PREPARE GIS MAPS OF SELECTED LATERALS 3-1

3.1 Initial Base Maps 3-1
3.2 Update of Maps Based on District Data and Aerial Photography 3-1
3.3 GIS Data Fields 3-1
3.4 Data Collected 3-3

CHAPTER 4 ESTIMATE OF POTENTIAL WATER SAVINGS 4-1

4.1 Estimates of Water Loss for Laterals 4-1
4.2 Ranking of Lateral Segments by Water Loss 4-1

DRAFT

CHAPTER 5 PRELIMINARY OPINION OF COST 5-1

CHAPTER 6 OTHER RELEVANT FACTORS CONSIDERED 6-1

6.1 Urban Encroachment 6-1

6.2 Frequency of Use per Lateral 6-2

CHAPTER 7 POTENTIAL SOURCES OF FUNDING 7-1

7.1 WCWID No. 2 Funds and Other Local Funds 7-1

7.2 State Funding 7-1

7.3 Federal Funding 7-3

CHAPTER 8 WATER CONSERVATION IMPLEMENTATION PLAN 8-1

8.1 Prioritization of Laterals for Replacement 8-1

8.2 Implementation Options for Lateral Replacements 8-4

8.2.1 Full Project Option 8-4

8.2.2 Phased Project Option 8-4

DRAFT

TABLES

Table ES-1 Laterals with the Greatest Apparent Water Losses ES-2
Table ES-2 Flow Measurements ES-4
Table ES-3 High Water Loss Segments ES-7
Table ES-4 Summary of Lateral Conversion Cost ES-8
Table ES-5 Priority Groups for Lateral Replacement ES-11
Table ES-6 Project Financing Options ES-14

Table 2-1 Laterals and Current Type of Construction 2-2
Table 2-2 Laterals with the Greatest Apparent Water Losses 2-5
Table 2-3 Flow Measurements and Locations 2-8
Table 2-4 Permeability Factors 2-13
Table 2-5 Lateral Vegetation Factors 2-13
Table 2-6 Lateral Condition Factors 2-14
Table 2-7 2-15

Table 4-1 4-3
Table 4-2 High Water Loss Segments 4-4

Table 5-1 Unit Costs for Pipelines 5-2
Table 5-2 Summary of Lateral Conversion Cost 5-12

Table 6-1 Urbanization Weighting Factor for Laterals 6-2
Table 6-2 Frequency of Use Ranking for Laterals 6-3

Table 8-1 Frequency of Use Ranking for Laterals 8-1
Table 8-2 Priority Groups for Lateral Replacement 8-2
Table 8-3 Project Financing Options 8-6

DRAFT

FIGURES

Figure ES-1 Location of Flow Measurements ES-3
Figure ES-2 Priority Laterals ES-12

Figure 1-1 General Location Map 1-5
Figure 2-1 Location of Laterals 2-3
Figure 2-2 Priority Laterals 2-4
Figure 2-3 Location of Flow Measurements 2-9
Figure 2-4 Lateral Condition Assessment 2-12
Figure 2-5 Correlation of Water Loss to the Soil-Condition Rating 2-17

Figure 3-1 Aerial Photo Base Map 3-3
Figure 3-2 Priority Laterals 3-4

DRAFT

ABBREVIATIONS

AF/YR	
APAI	Alan Plummer Associates, Inc.
AWCF	Agricultural Water Conservation Fund
AWCLP	Agricultural Water Conservation Loan Program
BMI	Biggs and Mathews
CIG	Conservation Innovation Grants
City	City of Wichita Falls
ET	evapotranspiration
FNI	Freese & Nichols
FSA	Farm Service Agency
GIS	Geographic Information System
LCRA	Lower Colorado River Authority
LF	
LNVA	Lower Neches Valley Authority
MGD	
NRCS	Natural Resource Conservation Service
RRA	Red River Authority
SWQM	Surface Water Quality Monitoring Procedures Manual
TEIP	Texas Environmental Infrastructure Program
TWDB	Texas Water Development Board
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WCWID No. 2 or District	Wichita County Water Improvement District No. 2
WIF	Water Infrastructure Fund
WRDA	Water Resources Development Act

DRAFT

EXECUTIVE SUMMARY

INTRODUCTION

The purpose of this project is to facilitate the implementation of recommendations in the Region B Regional Water Plan (January 2006) (Region B Plan) with respect to meeting the irrigation needs in the region by evaluating the Wichita County Water Improvement District No. 2 (WCWID No. 2 or District) conveyance system and developing a Water Conservation Implementation Plan. The Region B Plan concluded that a shortage of irrigation water supply of 275 ac-ft per year may occur as early as 2010 increasing to 25,460 acre-feet per year by 2060. The recommendation adopted in the Region B Plan is to develop 8,577 ac-ft per year through water conservation achieved by enclosing laterals in pipe by 2040.

GOALS AND REPORT STRUCTURE

The goals for this study as identified in the scope of work are listed below along with the chapter of the report where each is addressed.

- Identify and Evaluate Candidate Laterals and Establish Criteria and Methods for the Implementation Plan (Chapter 2).
- Prepare Maps of Selected Laterals (Chapter 3).
- Estimate Potential Water Savings (Chapter 4) – by applying the procedures for estimating water savings previously developed.
- Prepare Preliminary Opinions of Cost (Chapter 5) – develop preliminary opinions of cost for design and construction of improvements.
- Document Other Relevant Factors (Chapter 6) – identification of factors that impact the priority for implementation of projects.
- Identify Potential Sources of Funding for the Project to Pipe Laterals (Chapter 7) – evaluate state and federal funding opportunities.
- Prepare Water Conservation Implementation Plan (Chapter 8) – develop a plan of action for converting earthen laterals to pipelines, including consideration of project ranking, available funding, and other factors.

IDENTIFICATION OF CANDIDATE LATERALS

The WCWID No. 2 facilities consist of over 40 laterals supplied by the South Side Canal, North

DRAFT

Side Canal or Call Field Canal. The WCWID No. 2 identified, based on experience operating the system, 10 priority laterals known to have higher water loss (Figure ES-1). These laterals were the initial focus of the evaluation. The WCWID No. 2 staff identified the laterals in two groups (Table ES-1), indicating that Group 1 (first 5 laterals) were estimated to have potentially greater water loss than Group 2 (second 5 laterals). However, no water loss measurements had been made by the District to confirm the relative magnitude of the losses. Field water measurement studies were performed on 5 of the laterals (Group 1) by a team composed of staff from the District, Red River Authority (RRA), and Alan Plummer Associates, Inc. (APAI).

Table ES-1
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

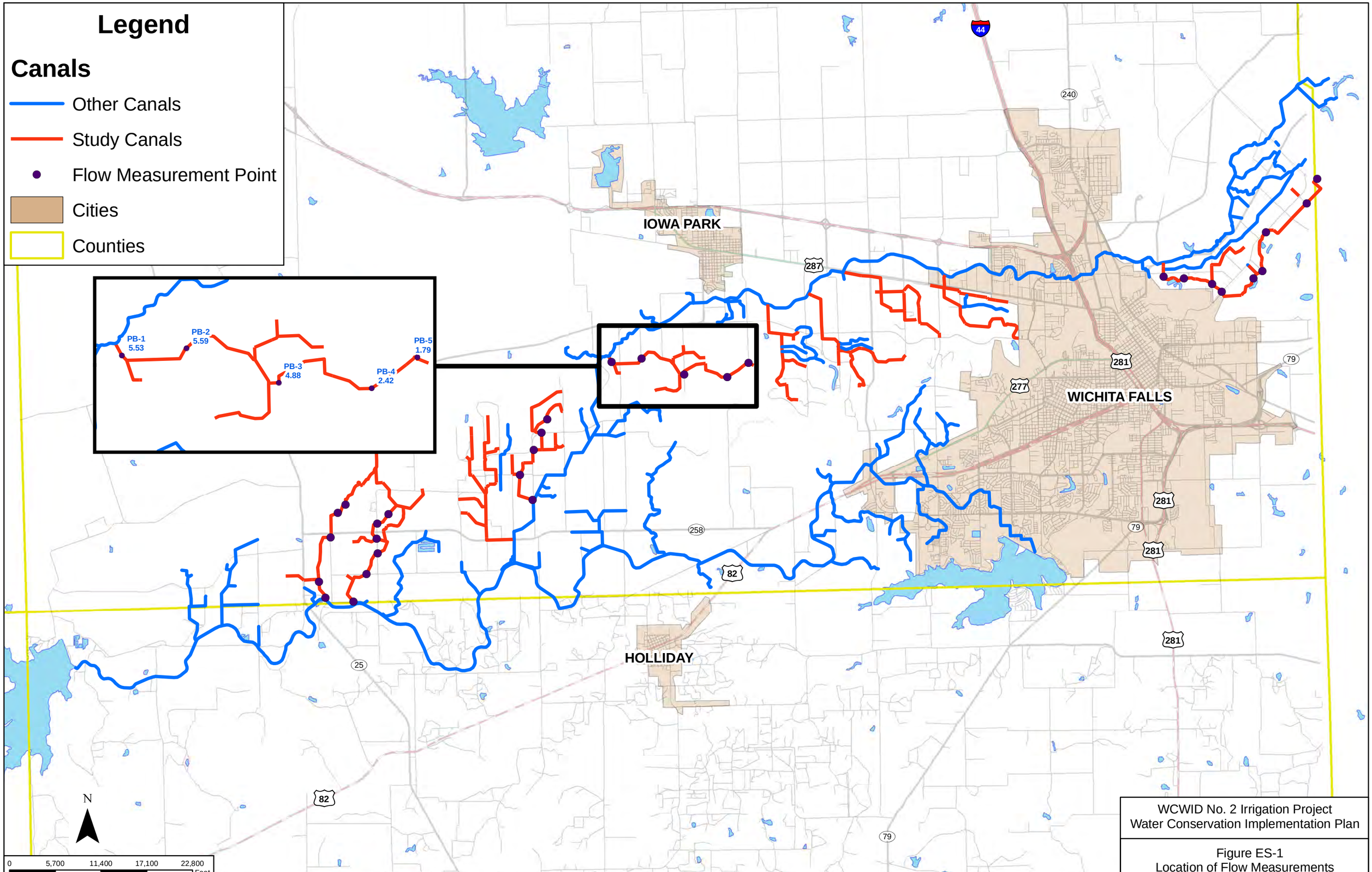
Laterals with the Greatest Apparent Water Losses

Group 1—High Loss Laterals Flow Measurements	Group 2 – High Loss Laterals No Flow Measurements
SJ	NB
SK	PM
NF	PO
PB	RR
WJ	RRG

DRAFT

Flow Measurement Technique

A direct inflow-outflow measurement technique was applied to assess losses within each segment. This method includes flow measurement at the upstream and downstream ends of a lateral segment with the losses in the segment being the difference between the two flow measurements. This method was selected over indirect methods or other direct methods such as ponding tests that may be more accurate but would have required significantly more construction/setup effort and interruption of district operations. The flow measurement locations are also identified on Figure ES-1.



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure ES-1
Location of Flow Measurements

Table ES-2
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Flow Measurements

Flow Measurement Station	Flow (cfs)	Flow Measurement Station	Flow (cfs)
SJ-1	6.1	PB-1	5.5
SJ-2	6.3	PB-2	5.5
SJ-3	5.7	PB-3	4.8
SJ-4	2.3	PB-4	2.4
SJ-5	Spill—No meas.	PB-5	1.8
SK-1	10.1	WJ-1	10.2
SK-2	10.2	WJ-2	12.0
SK-3	9.04	WJ-3	10.6
SK-4	8.6	WJ-4	9.75
SK-5	8.1	WJ-5	8.76
SK-6	8.3	WJ-6	8.44
NF-1	12.4	WJ-7	7.88
NF-2	7.3	WJ-8	7.34
NF-3	4.4	WJ-9	9.82
NF-4	4.3		
NF-5	4.2		

DRAFT

It is clear from reviewing the data in Table ES-2 that some lateral segments have significantly greater loss than other segments. The challenge is in determining the factors that contribute to these differences in seepage loss across the system. If the factors that contribute to seepage loss can be evaluated and a relationship developed, then these same factors can be applied in evaluating seepage losses in other laterals.

Methods for Assessment of Laterals

Many factors were evaluated to assess potential seepage loss within each lateral segment. These included:

- Lateral cross section—shape relative to the original design cross section.
- Lateral condition—stability and condition of the bottom and side slopes.

- Soil type—textural classification and permeability.
- Underlying geology—contributes to the permeability.
- Vegetation size and density—contributing to degradation of lateral side slopes and creates highly porous zones.

Based on the data available for evaluation of the WCWID No. 2 and consideration of the methods others have used for assessment of seepage loss from laterals, three factors were identified as having the greatest effect on seepage loss—soil type and permeability, lateral condition, and vegetation condition. Measurement and evaluation parameters were developed for each of these factors. A soil factor ranging from 0.05 to 3.0 was related to each of the different soil types based on subsoil permeability. A lateral vegetation factor (1 through 5) was based on the size and density of vegetation along the laterals, and a lateral condition factor (0.5 through 1.5) was based on the condition of the bottom, side slopes, and embankment along the lateral.

Correlation of Lateral Condition to Water Loss

The objective of performing a correlation between the lateral conditions and water loss is to demonstrate a method that can be used to assess water loss in the five Group 2 laterals where flow was not measured. Further, demonstration of this method for the Group 2 laterals can then establish an approach that the WCWID No. 2 can use to assess water loss in other laterals.

The soil, vegetation, and lateral condition factors were combined to develop a combined soil-condition factor for each segment/subsegment of lateral. The water losses were distributed according to this factor and correlated to develop a relationship between water loss and the soil-condition factor. The resulting exponential relationship produced the equation:

$$\text{Water Loss (cfs/1,000 ft)} = 0.0898 \times e^{0.5162 \times \text{(Soil-Condition Factor)}}$$

This equation was applied to estimate soil loss in the 5 laterals where flow measurements were not taken.

DRAFT

PREPARE GIS MAPS OF SELECTED LATERALS

GIS maps were developed for the entire WCWID No. 2 system. Initial maps were developed from base maps provided by the RRA. These maps were updated based on aerial photography obtained from the U. S. Department of Agriculture (USDA) Farm Service Agency (FSA). Laterals alignments were adjusted to coincide with the alignments shown on the aerial photos and WCWID No. 2 staff assisted in identifying changes in the designation of the lateral materials to reflect current conditions. The District staff also assisted the team by performing the evaluation of the lateral segments and classifying the vegetation and lateral condition for all 10 priority laterals. In addition, the GIS was updated to provide for capture of the following information:

- Lateral Data.
  - Flow Measurements.
  - Lateral Material.
  - Irrigated acreages.
  - Soils.
  - Turnout locations.
  - Vegetation Condition.
  - Lateral Condition.
- Turnout Data
  - Irrigated acreage served by the turnout.
  - Type of turnout.
  - Size of turnout.
- Parcel boundary and Texas Land Survey Abstract names.

ESTIMATE OF POTENTIAL WATER SAVINGS

The water loss equation was applied along with the information collected in the map development effort to estimate water loss by subsegment for the five laterals in Group 2: NB, PM, PO, RR, and RRG. This was combined with the assessment of water loss by subsegment for the five laterals in Goup 1 and evaluated for total water loss by segment and unit water loss (cfs/1,000 ft) for the entire irrigation season. The “high-water-loss segments” were considered as being segments with total season losses greater than 100 ac-ft per 1,000 feet of lateral or

DRAFT

300 ac-ft per lateral segment. The segments and laterals classified as high-water-loss are shown in Table ES-3. It should be noted that lateral PM that was initially included in the group of ten priority laterals, but was not identified has having high-water-loss. The total water savings that could be achieved by converting all of these segments to pipelines is estimated at 9,245 ac-ft per year.

Table ES-3
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

High Water Loss Segments

Lateral name	Segment	Length	Season Loss per 1,000 ft (ac-ft/1,000 ft)	Season Water Loss (ac-ft/yr)
NF	0 - 1,550	1,550	242	374
NF	1,550 - 2,050	500	171	85
NF	2,050 - 4,350	2,300	451	1,037
NF	4,350 - 5,950	1,600	201	322
NF	7,150 - 8,700	1,550	302	467
PB	14,175 - 15,450	1,275	302	385
SJ	8,650 - 9,375	725	288	209
SJ	9,375 - 12,175	2,800	288	807
SK	4,800 - 7,850	3,050	113	344
WJ	2,825 - 3,825	1,000	279	279
WJ	6,075 - 7,675	1,600	153	245
RR	12,950 - 15,000	2,050	252	516
PO	0 - 530	530	532	282
PO	530 - 5,940	5,410	196	1,062
PO	5,940 - 8,860	2,920	126	367
PO	10,310 - 16,880	6,570	56	371
RRG	0 - 5,000	5,000	72	362
RRG	7,385 - 15,295	7,910	75	593
RRG	15,295 - 17,415	2,120	126	266
NB	0 - 9,200	9,200	70	644
NB	17,750 - 18,900	1,150	196	226
Total		60,810		9,245

DRAFT

PRELIMINARY OPINION OF COST

Cost estimates were developed for conversion of each of the lateral segments included in Table ES-3 to underground pipe systems. Costs were developed based on conversion of all high-water-loss segments of the lateral to pipeline in a single project. This avoids piece-meal construction across the District, which could significantly increase project costs. Table ES-4 provides the summary of the capital and annualized costs for each of the lateral segments included in the evaluation, and the cost savings per acre-foot of water saved as a result of the proposed conversion.

Table ES-4
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Summary of Lateral Conversion Cost

Pipe Diameter Inches	Lateral Name	Length (ft.)	Supply (ac-ft/yr)	Capital Cost (Thousands $)	Annual Costs ($)	Unit Cost ($/ac-ft)
27-24	SJ	3,525	1,016	337.5	29,722	29.25
30	SK	3,050	344	356.8	31,428	91.36
30-15	NB	10,350	870	1,145.2	100,858	115.93
36-30	NF	7,500	2,286	979.3	86,248	37.73
27	PB	1,275	385	132.6	11,679	30.33
24-18	PO	15,430	2,082	1,299.0	114,410	54.95
18	RR	2,050	516	146.6	12,781	25.02
24	RRG	15,030	1,222	1,406.8	123,899	101.39
24-30	WJ	2,600	524	280.8	24,731	47.20
Total		**58,690**	**9,245**	**6,084.6**	**535,756**	**57.95**

DRAFT

OTHER RELEVANT FACTORS CONSIDERED

Two factors were identified in addition to the unit cost of conserved water that may be worthy of consideration in prioritizing the laterals to convert to pipelines. These factors included the degree of urbanization and the frequency of use per lateral. The urbanization factor was evaluated as reducing the priority for conversion if the area served is being urbanized or

converted to rural subdivisions. Conversely, if the area served is not converting to urban land use but the lateral flows through an urbanized area, then this was viewed as increasing the priority for conversion by reducing risk. The frequency of use factor was evaluated by the District as positively impacting operations and affecting water savings. The District provided a frequency of use ranking for the nine high-water-loss laterals.

POTENTIAL SOURCES OF FUNDING

Three funding sources were evaluated to identify options that may be used to fund the $6,000,000 of proposed improvements to convert high-loss-lateral segments to pipelines. These sources included:

- WCWID No. 2 and other local funds.
- State Funding Programs.
- Federal Funding Programs.

WCWID No. 2 Funds

WCWID No. 2 derives about $250,000 per year of total operating revenue from the District tax. Other district revenues are set by long term contracts and are not a viable source for increasing additional revenue. Tax increases of 3 percent each of the last two years have resulted in the district having about $20,000 to $30,000 per year available in excess of other required expenditures for use in implementing improvements. The District has installed about 2,000 feet of pipe with these funds, using District forces. Each 3 percent increase in the tax rate increases District revenue by about $6,000. Conversion of approximately 11 miles of lateral to pipeline would reduce maintenance costs saving the District about $19,000 per year. Therefore, total funds available for improvements are estimated to be from $39,000 to $49,000 per year without further tax increases.

State Funding Programs

The most viable options for state funding include the Texas Environmental Infrastructure Program (TEIP) which is a 75 percent grant with a local matching share of 25 percent. This program is funded with Federal appropriations through the Water Resources Development Act (WRDA). It is targeted for construction projects rather than for planning projects.

DRAFT

In addition there are two programs that may be available to assist the District in funding the local share of the costs for improvements: the Agricultural Water Conservation Loan Program (AWCLP) and the Water Infrastructure Fund (WIF). Both of these programs have subsidized loan rates that are at least 2 percent below the Texas Water Development Board's (TWDB's) standard loan rate, which is less than market loan rates. Current loan rates for these programs are 1.66 percent for the AWCLP and 2.15 percent for the WIF.

Federal Funding Programs

Several Federal funding programs are available, but none of these programs were specifically identified as having funds available to implement construction projects for the type proposed in this study. There are currently actions underway by Congress that may result in funds becoming available, and these actions need to be monitored over the next several months.

WATER CONSERVATION IMPLEMENTATION PLAN

Prioritization of Laterals for Replacement

The laterals were prioritized for replacement based a matrix of factors that include the unit cost for conserved water, the urbanization factor, and the frequency of use factor. Table ES-5 provides the priority of ranking and further divides the project into three priority groups based on ranking and total cost. A subtotal project cost target in the range of about $2 million was used as the basis for dividing the priority groups shown in the table. The actual costs for each group of projects are expected to range from about $1.7 million to about $2.5 million. The laterals identified for each priority group are shown on Figure ES-2

Implementation Options for Lateral Replacements

The preferred option is implementation of the entire effort as a single project. This would yield the full 9,245 ac-ft per year of conservation. However, the cost may be greater than the District can support with local cooperation. Therefore, an alternative approach that treats funding each of the Priority Groups (A through C), separately in a phased project, may be a viable approach. Both project options are developed on the basis of obtaining grant funds for 75 percent of the project costs and loan funds to assist the District with local 25 percent match.

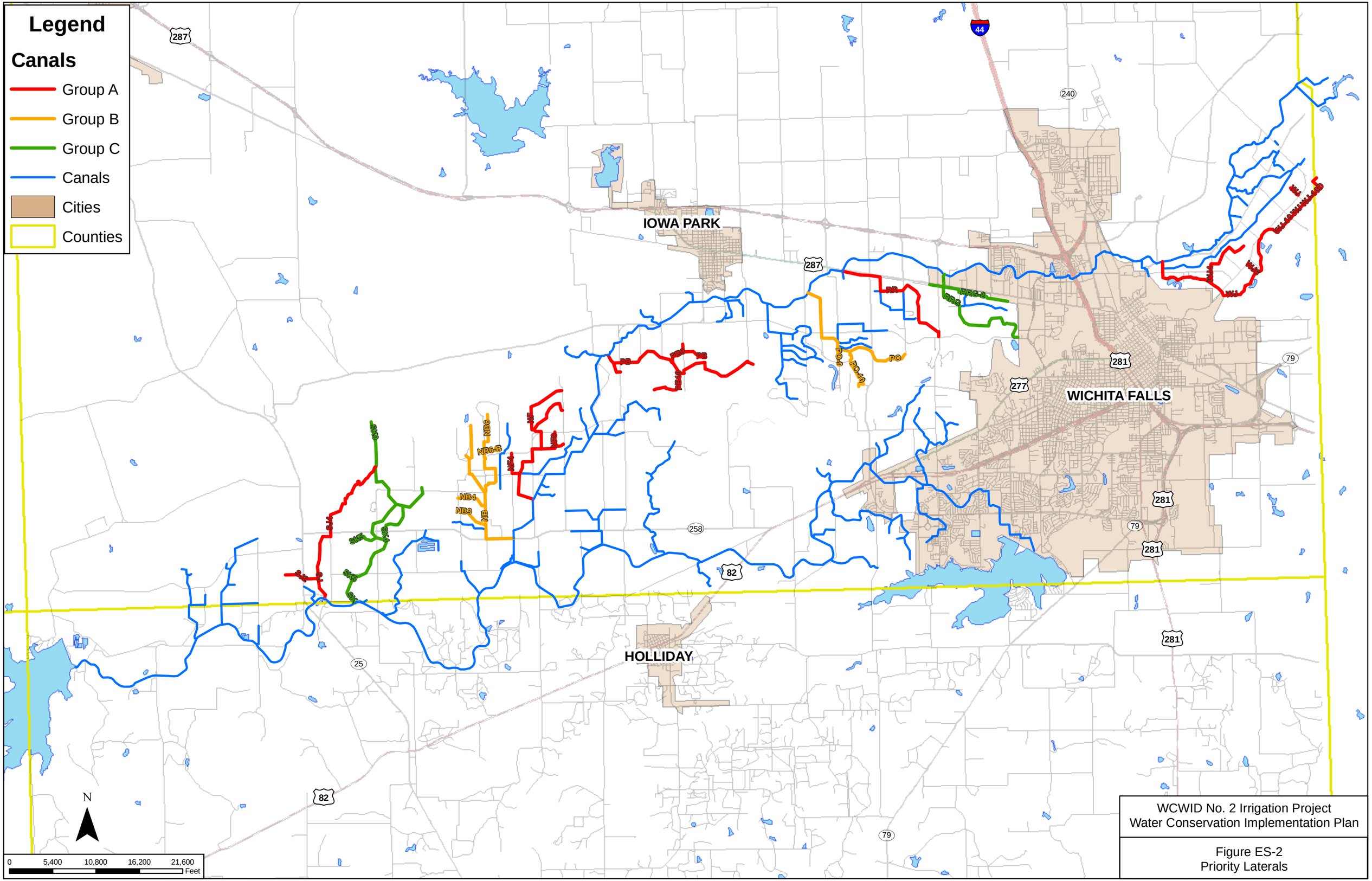
DRAFT

Table ES-5
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Priority Groups for Lateral Replacement

Lateral	Ranking	Supply (ac-ft/yr)	Capital Cost (Thousands $)	Annual Cost ($)	Unit Cost ($/ac-ft)
Priority Group A					
PB	1	385	132.6	11,679	30.33
RR	2	516	146.6	12,781	25.02
WJ	3	524	280.8	24,731	47.20
SJ	4	1,016	337.5	29,722	29.25
NF	5	2,286	979.3	86,248	37.73
Subtotal		***4,727***	***1876.8***	***165,161***	***36.19***
Priority Group B					
PO	6	2,082	1,299.0	114,410	54.95
NB	7	870	1,145.2	100,858	115.93
Subtotal		***2,952***	***2,444.2***	***215,268***	***65.76***
Priority Group C					
RRG	8	1,222	1,406.8	123,899	101.39
SK	8	344	356.8	31,428	91.36
Subtotal		***1,566***	***1,763.6***	***155,327***	***99.19***
Total		**9,245**	**6,084.6**	**535,756**	**57.95**

DRAFT



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure ES-2
Priority Laterals

Full Project Option

The cost to implement the full project is estimated at $6,084,600. A 75 percent grant would cover just over $4.5 million of this cost as presented in Table ES-6. A loan would cover the remaining $1.5 million. Depending upon the loan program used for the local share of the costs, and interest rate (WIF is currently 2.15% and AWCF is 1.66%), the loan payments could range from $90,000 to $95,000 per year. This exceeds the District's current annual resources of $39,000 to $49,000 that would be available for improvements with implementation of the full project. The District would need to increase its tax rate by about 20 percent to develop an additional $41,000 in revenue, if this were the sole source of funding.

Phased Project Option

An alternative to implementing the entire project at one time is to phase the project in three steps corresponding to the three priority groups identified above. This approach would require three separate funding and construction efforts staged at 10-year intervals. The cost of each phase is based on 75 percent grant funding (Table ES-6) and 25 percent local match through use of a loan program. The loan payments range from about $26,000 per year to $38,000 per year for each phase, depending upon the phase and loan program available. Annual payments would increase after the first 10-year interval and continue as shown at the bottom of Table ES-6 for two decades (2020-2039: $60,000 to $70,000 per year) and would then decrease for the last decade (2040-2049: $26,000 to $27,500), assuming all three phases are implemented.

DRAFT

Table ES-6
WCWID No. 2 Irrigation Project, Water Conservation Implementation Plan

Project Financing Options

PROJECT OPTIONS			**Payment Period**			
Full Project Option (loan in 2009, payment begins 2010)			**2010-2019**	**2020-2029**	**2030-2039**	**2040-2049**
Full Project Cost		**$6,084,600**				
Grant (75%)	$4,563,450					
Local Share (25%)	$1,521,150					
Annual Loan Payment (WIF option at 2.15%)		**$94,381**	$94,381	$94,381		
Annual Loan Payment (AWCF option at 1.66%)		**$90,004**	$90,004	$90,004		
Staged Project Option (by Priority Groups A-C)						
Priority Group A (loan in 2009, payment begins 2010)						
Short Term Project		**$1,876,800**				
Grant (75%)	$1,407,600					
Local Share (25%)	$469,200					
Annual Loan Payment (WIF option at 2.15%)		**$29,112**	$29,112	$29,112		
Annual Loan Payment (AWCF option at 1.66%)		**$27,762**	$27,762	$27,762		
Priority Group B (loan in 2019, payment begins 2020)						
Short Term Project		**$2,444,200**				
Grant (75%)	$1,833,150					
Local Share (25%)	$611,050					
Annual Loan Payment (WIF option at 2.15%)		**$37,913**		$37,913	$37,913	
Annual Loan Payment (AWCF option at 1.66%)		**$36,155**		$36,155	$36,155	
Priority Group C (loan in 2029, payment begins 2030)						
Short Term Project		**$1,763,600**				
Grant (75%)	$1,322,700					
Local Share (25%)	$440,900					
Annual Loan Payment (WIF option at 2.15%)		**$27,356**			$27,356	$27,356
Annual Loan Payment (AWCF option at 1.66%)		**$26,087**			$26,087	$26,087
Total Annual Payments for 3 phase effort						
WIF Loan			$29,112	$67,025	$65,269	$27,356
AWCF Loan			$27,762	$63,917	$62,242	$26,087

DRAFT

Chapter 1

INTRODUCTION

CHAPTER 1
INTRODUCTION

1.1 PURPOSE OF THE PROJECT

The purpose of this project is to facilitate the implementation of recommendations in the Region B Regional Water Plan (January 2006) (Region B Plan) with respect to meeting the irrigation needs in the region by evaluating the Wichita County Water Improvement District No. 2 (WCWID No. 2 or District) conveyance system and developing a Water Conservation Implementation Plan.

Senate Bill 1 of the 75th Texas legislature was passed in 1997 to establish the process for development of a state water plan with the Texas Water Development Board (TWDB) serving as the lead agency for funding and administration of the planning process. To accomplish this task, the state was divided into 16 water planning regions. The Region B Water Planning Group developed and adopted the first Region B, Regional Water Plan (January 2001) and updated that plan in January, 2006.

In June of 2006, the TWDB proposed a modification of the planning process that would split the funding for the 2006-2011 planning cycle into two phases to correspond with biennial legislative funding and modify the focus of the planning studies. Based on stakeholder feedback the TWDB determined that the 2006-2011 studies should primarily focus on special studies that: “advance water management strategies toward implementation, update information due to changed conditions, address problems realized in the previous planning cycle, make refinements for small communities and rural county populations, or provide interregional coordination.”

In response to this change in focus and to address some of the key issues identified in the 2006 Region B Plan, Region B proposed the WCWID No. 2 Irrigation Project, Water Conservation Implementation Plan. The Region B Plan concluded that a shortage of irrigation water supply of 275 ac-ft per year may occur as early as 2010 within Archer County (9 ac-ft per year), Clay County (7 ac-ft per year), and Wichita County (259 ac-ft per year). By year 2060, the shortage was estimated to increase to 25,460 acre-feet per year within Archer County (1,370 ac-ft per year), Clay County (513 ac-ft per year), and Wichita County (23,577 ac-ft per year). The Wichita County Water Improvement District No. 2 (WCWID No. 2) is a major provider of irrigation water in Wichita and Archer Counties in addition to supplying municipal and industrial water from the

DRAFT

Lake Kemp-Lake Diversion system. Due to reservoir sedimentation the volume available for irrigation is expected to decline from the 100,650 ac-ft per year available in 2000 to 39,250 ac-ft per year in 2060. The Region B Plan identified potential improvements to the WCWID No. 2 conveyance system to reduce water losses from the laterals as a key management strategy, saving as much as 15,000 acre-feet per year by converting 100 miles of earthen laterals to pipelines. The recommendation adopted in the Region B Plan is to develop 8,577 ac-ft per year through water conservation achieved by enclosing laterals in pipe by 2040.

1.2 GOALS AND REPORT STRUCTURE

The goals of this project as identified in the scope of services proposed to the TWDB include the primary and secondary elements listed below, with the report chapters identified for each component.

- Identify and Evaluate Candidate Laterals and Establish Criteria and Methods for the Implementation Plan (Chapter 2).
  - Identify the conveyance system laterals that have the greatest potential for water savings, increasing the agricultural water supply by 8,577 ac-ft per year.
  - Perform evaluations of the identified laterals.
  - Develop procedures for estimating potential water savings.
- Prepare Maps of Selected Laterals (Chapter 3).
  - Develop geographic information system (GIS) maps of the conveyance system laterals.
  - Identify data relevant to the evaluation and management of the laterals.
  - Collect and incorporate data in the data management portion of the GIS.
  - Review maps with the District.
- Estimate Potential Water Savings (Chapter 4) – by applying the procedures for estimating water savings previously developed.
- Prepare Preliminary Opinions of Cost (Chapter 5) – develop preliminary opinions of cost for design and construction of improvements.
- Document Other Relevant Factors (Chapter 6) – identification of factors that impact the priority for implementation of projects.
- Identify Potential Sources of Funding for the Project to Pipe Laterals (Chapter 7) – evaluate state and federal funding opportunities.
- Prepare Water Conservation Implementation Plan (Chapter 8) – develop a plan of action for converting earthen laterals to pipelines, including consideration of project ranking, available funding, and other factors.

DRAFT

1.3 CANAL SYSTEM OVERVIEW

The WCWID No.2 system is composed of impoundments and irrigation canals known locally as the Wichita Valley Irrigation Project. Mr. J. A. Kemp, an area landowner and rancher, originally conceived a system of impoundments and canals to supply water for irrigation in this area in the latter part of the 19th century. However, construction of the lakes, canals, and laterals associated with the canal system did not begin until 1922. The system, as originally designed, was completed in 1925. This irrigation system serves a significant portion of the farming community in the Wichita River basin west of the City of Wichita Falls (City) and in northern Archer County. The WCWID No. 2 jointly owns the lakes with the City, but solely owns the irrigation canals and laterals. The system is operated and maintained by the District.

Figure 1-1 depicts the general location of the canal system within Region B. Shown are the two reservoirs (Kemp and Diversion) and the three main canals (South Side, North Side, and Call Field) that comprise the primary components of the system. Water is stored in Lake Kemp and released as needed to Lake Diversion. The WCWID No. 2 operates the canal system on an "on demand" basis. However, irrigation water is only released to downstream users after an adequate quantity of water has been requested to justify the use of the main canal system. Release of water at Lake Diversion is monitored at the upper end of the South Side Canal by the U. S. Geological Survey (USGS) gauge number 07312110 near Dundee.

The quantity of water released through laterals, sublaterals, and farm turnouts (gates regulating flow to farms) for irrigation is not metered. As a result, a water balance for the system that accounts for the water released from Lake Diversion relative to the total water delivered to agricultural, municipal, and industrial uses cannot be developed to assess the losses to evaporation, seepage, and spills for the entire system or individual elements of the system.

A significant quantity of water (sometimes called "push water") is needed to effectively transport irrigation water to the users near the end of the laterals. Ideally, the water needed by the last irrigator on the end of a lateral would balance the flow in the system, like spending the last penny in a bank account, and there would be no remaining balance or spillage from the lateral. However, with the available system operation and flow controls, some excess push water is always required to satisfy the end-of-lateral demands, and this results in water that drains (directly or indirectly) to the Wichita River. These end-of-lateral spills are often called "management losses" because it is difficult, if not impossible, to manage an open canal/lateral

DRAFT

system so that no water is spilled.

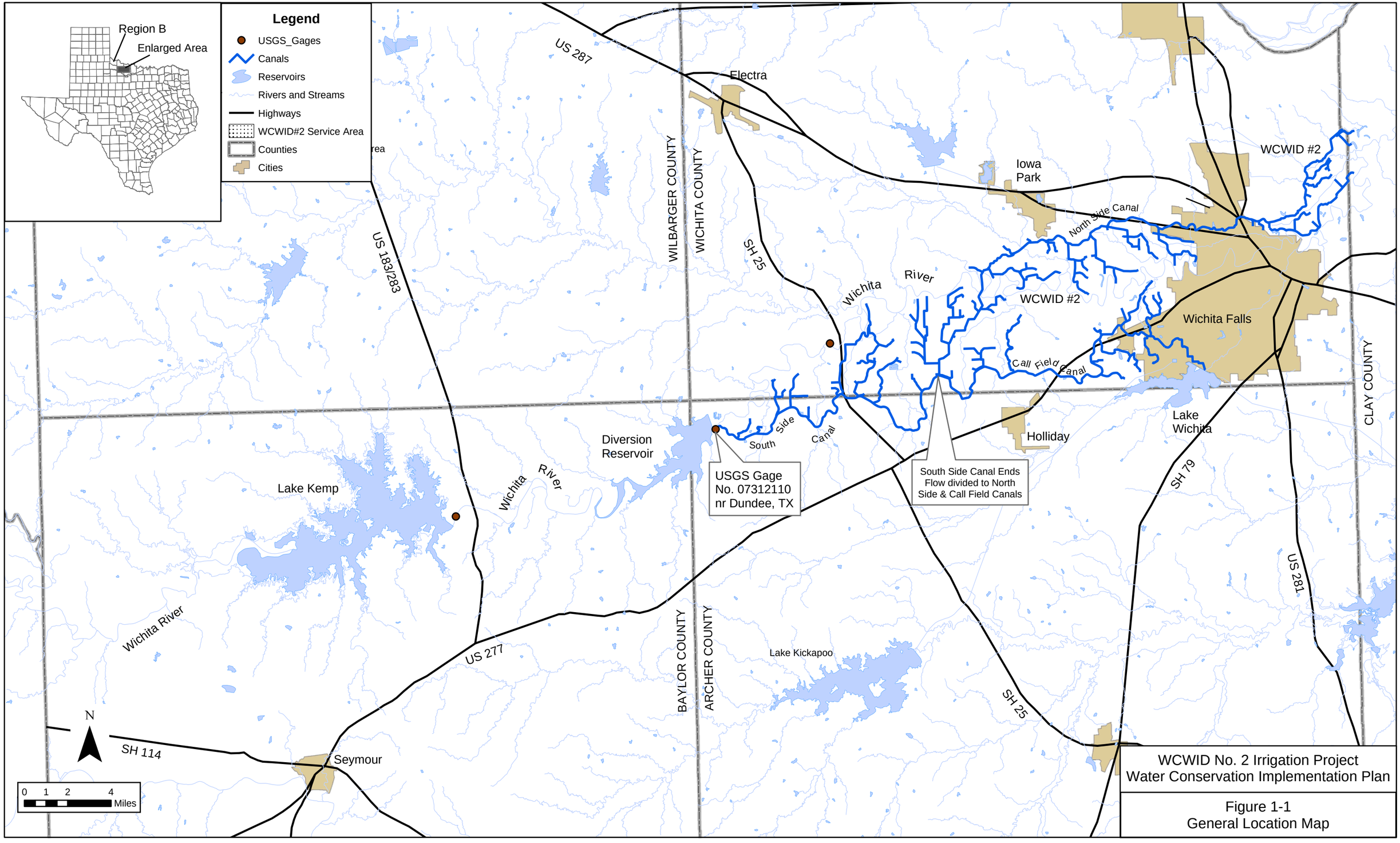
Diversion of water for irrigation is seasonal. Diversions generally begin each year in April and end in October depending upon weather conditions a total of about 200 days out of the year. During the irrigation season, total diversions range from 170 to 190 cfs with flow varying substantially from day to day, depending on irrigation demand.

Diversion gates at the dam are closed between the end of one irrigation season and the beginning of the next. Minor leakage through the gates produces minimal flow in the South Side Canal during the winter season. The gates at the end of the South Side Canal hold most of this water in the South Side Canal during the winter season. Water levels in the South Side Canal generally drop below the level of the lateral gates or outlets during this period of the year.

1.4 STUDY PERFORMANCE

The study team is headed by Biggs and Mathews, Inc. (BMI), of Wichita Falls and includes support from Alan Plummer Associates, Inc. (APAI), Freese & Nichols, Inc. (FNI), the Red River Authority (RRA), and WCWID No. 2. The field work for this study was a joint effort of the WCWID No. 2, Red River Authority (RRA), and Alan Plummer Associates, Inc. (APAI). Management and staff of the WCWID No. 2, RRA, APAI, and BMI collaborated in the development of the water conservation implementation plan and development of the supporting materials. FNI provided leadership in developing the GIS maps and acquiring information from the WCWID No. 2 to catalog the condition of the laterals and support the analytical work. WCWID No.2 provided significant support in identifying laterals of interest, reviewing maps, assessing the current condition of the laterals, and reviewing proposed pipe replacements.

DRAFT



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure 1-1
General Location Map

Chapter 2

IDENTIFICATION AND EVALUATION OF CANDIDATE LATERALS AND ESTABLISHMENT OF CRITERIA AND METHODS FOR THE IMPLEMENTATION PLAN

CHAPTER 2
IDENTIFICATION AND EVALUATION OF CANDIDATE LATERALS AND ESTABLISHMENT OF CRITERIA AND METHODS FOR THE IMPLEMENTATION PLAN

2.1 IDENTIFICATION OF CANDIDATE LATERALS

The WCWID No. 2 facilities consist of over 40 laterals supplied by the South Side Canal, North Side Canal or Call Field Canal as shown in Figure 2-1. The scope of this project does not provide for a detailed evaluation of every lateral in the system. Therefore, it is necessary to identify the laterals that might initially provide the greatest opportunity for water conservation savings. A listing of all of the laterals and current type of construction (earthen, concrete lined or underground pipeline) is provided below in Table 2-1.

Through discussions with the management of WCWID No. 2 it became apparent that through the routine operations, the District staff had identified canals that may have the most significant losses, and thereby, present the greatest opportunity for water conservation. The study team asked the District staff to select the 10 laterals that might present the greatest opportunity for water conservation. Figure 2-2 identifies the 10 laterals that were initially identified by the District as high-water-loss laterals. All high-water-loss laterals were identified as being served by the South Side and North Side Canals with none served by the Call Field Canal.

The WCWID No. 2 staff identified the laterals in two groups (Table 2-2), indicating that Group 1 (first 5 laterals) were estimated to have potentially greater water loss than Group 2 (second 5 laterals). However, no water loss measurements had been made by the District to confirm the relative magnitude of the losses.

2.1.1 Measurement of Water Losses from Laterals

Water seepage losses from canal and lateral systems are usually evaluated using either direct or indirect methods. The indirect methods include water balance calculations for canal or lateral segments and application of known soil and/or geologic characteristics of the lateral materials to estimate seepage rates.

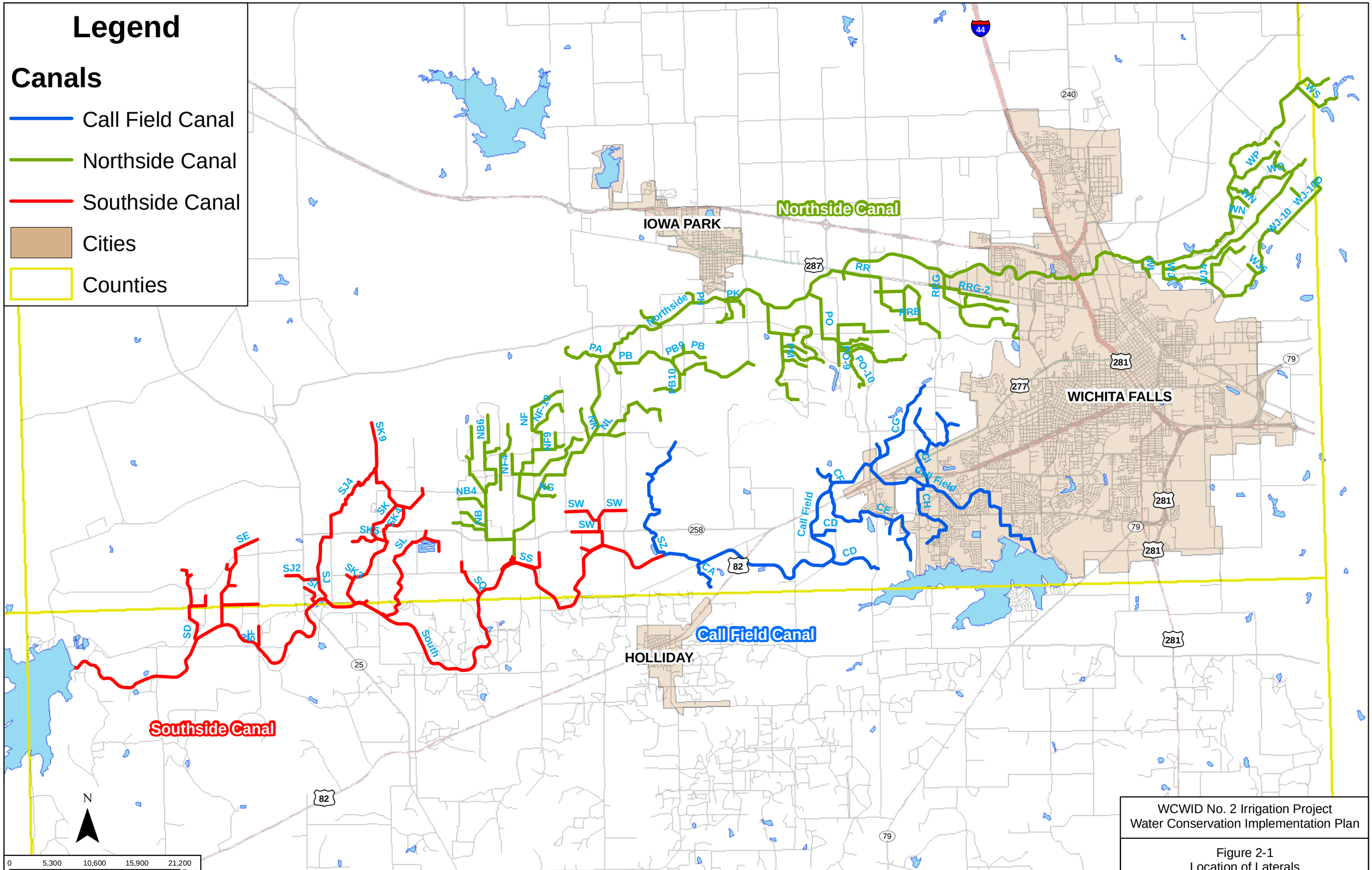
DRAFT

Table 2-1
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Laterals and Current Type of Construction

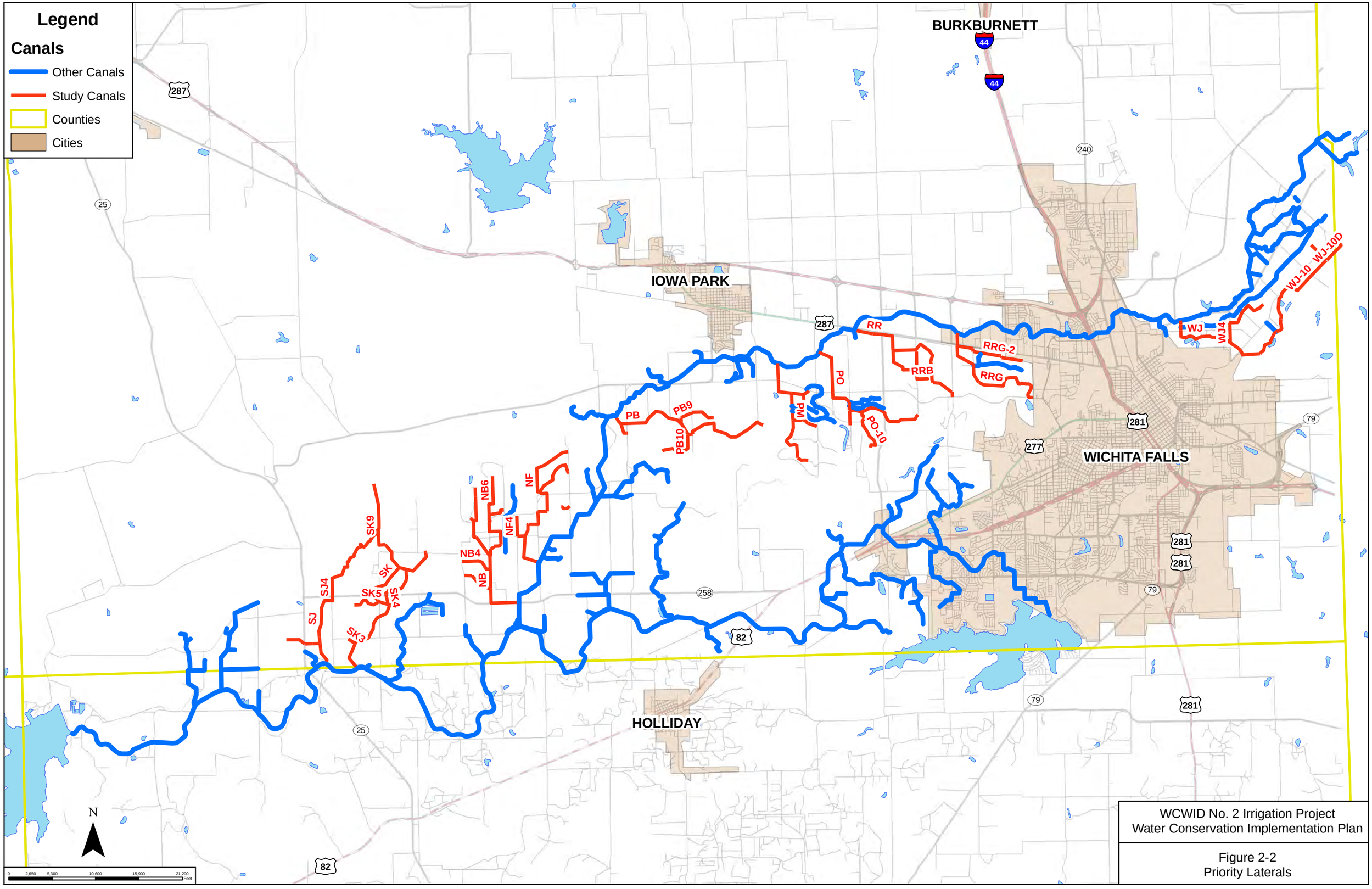
Lateral	Type of Construction	Lateral	Type of Construction
South Side Canal			
SA	Earthen—partially lined	SJ	Earthen
SB	Earthen—fully lined	SK	Earthen—partially lined
SD	Earthen	SL	Earthen with some pipe and some lined sections
SE	Earthen with pipe end section		
SF	Earthen	SQ	Earthen with pipe end section
SI	Earthen	SS	Earthen
North Side Canal			
NB	Earthen	PO	Earthen with some pipe and some lined sections
NF	Earthen		
NG	Earthen	RR	Earthen with 3 pipe sections
NK	Earthen	RRG	Earthen
NL	Mostly pipe	WI	Earthen
PA	Earthen	WJ	Earthen with 2 pipe sections
PB	Earthen with pipe end section	WM	Earthen
PG	Earthen	WO	Earthen
PH	Earthen	WP	Mostly pipe
PK	Pipe	WS	Earthen
PM	Earthen with 2 pipe sections		
Call Field Canal			
SW	Earthen	CF	Earthen
SZ	Earthen	CG	Earthen
CA	Earthen	CH	Earthen with 2 pipe sections
CB	Earthen	CI	Earthen
CDD	Earthen	Call Field end section	Earthen/ with a section in pipe
CE	Earthen		

DRAFT



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure 2-1
Location of Laterals



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure 2-2
Priority Laterals

Table 2-2
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Laterals with the Greatest Apparent Water Losses

Group 1—High Loss Laterals Flow Measurements	Group 2 – High Loss Laterals No Flow Measurements
SJ	NB
SK	PM
NF	PO
PB	RR
WJ	RRG

It has already been mentioned that all flows within the laterals and water deliveries are unmeasured so the water balance approach for estimating seepage loss cannot be used. Estimates based on the soil properties can be applied, but these methods generally require collection of significant data regarding lateral cross section, water depth, and other characteristics to develop accurate estimates. A study was performed in 1978 by Alf A. Lewis in preparing an application for a U.S. Bureau of Reclamation (USBR) Small Projects Loan (Small Projects Act of 1956, Public Law 1984 of the Eighty-fourth Congress). Mr. Lewis applied an indirect method in estimating losses for laterals by applying three different leakage rates (high leakage laterals - 0.67 cubic feet per square foot per day, average laterals - 0.33 cubic feet per square foot per day, and lined laterals - 0.25 cubic feet per square foot per day). This approach is satisfactory if the entire system is to be rehabilitated to a uniform standard, but the current project anticipates that pipe replacements for laterals will be prioritized, so it is essential to evaluate each lateral segment based on its unique seepage and loss characteristics.

Three methods for direct measurement of seepage loss from laterals are commonly applied:

- Ponding Tests
- Seepage Meter
- Inflow-outflow Measurement

Ponding tests are the most accurate means of measuring seepage loss in that a specific segment of lateral is blocked on both ends, multiple cross sections are collected to define the

DRAFT

volume of the segment, an elevation or water level measurement device is installed, and the segment is filled with water. The water level is then monitored over a 24-hour period. The measured water loss is used to develop estimates of seepage loss over time for the various operating levels of the lateral. This system requires installation of temporary blockages, which are usually plastic-lined earthen embankments placed in the lateral that require removal following completion of the test. In addition, all losses through gates, valves, or turnouts must be monitored and accounted. Therefore, it is clear that a single ponding test can be a fairly significant undertaking. This method was not selected for use in this study.

A seepage meter is a device that monitors flow rates through soil from a water source, similar to an infiltrometer, but it functions in reverse by capturing the seepage into a flexible bag located at the same level as the water surface in the lateral. This device must be installed in the soil adjacent to the lateral. Therefore, multiple devices are required to assess the seepage rate at multiple locations. The accuracy of this technique can be affected by the soil disturbance in the vicinity of the meter during the installation. Often, some period of time is allowed for the soils to settle and the seepage in the vicinity of the meter to stabilize prior to acquiring accurate measurements. This method was not selected for use in this study.

The inflow-outflow measurement technique is a simple method to apply, but accuracy can be affected by many factors. In this method a meter such as a USGS standard Pygmy meter, Ott velocity meter, or acoustic flow meter is employed to monitor velocity and measure the cross section of the lateral to develop flow rate through the section. To accurately apply this technique the flow through the lateral needs to be stable, such that there is no change in flow over the period of measurement. The lateral soils need to be stabilized in terms of seepage, so that the seepage rate is not expected to vary during the flow measurement period and evaporation rate can be estimated. The basic water balance equation applied to this approach is:

$$Q_{IN} - Q_{OUT} = L_S + L_E + L_O$$

Where:

Q_{IN} = Measured inflow rate at the upstream end of the lateral segment (cfs)

Q_{OUT} = Measured outflow rate at the downstream end of the segment (cfs)

DRAFT

L_S = Seepage Loss (cfs)

L_E = Evaporative Loss (cfs) – may be negligible during the flow measurement period

L_O = Other losses (cfs) – includes leakage at turnouts or gates connecting sublaterals.

Spills or losses from the lateral segment are either eliminated or monitored to assess this outflow volume from the segment. This is the method that was chosen for water loss measurement in the WCWID No. 2 system, utilizing an acoustic flow meter.

2.1.2 Water Loss Measurements for Selected Laterals

The Group 1 laterals were selected for water loss measurement to assess seepage and spills applying the inflow-outflow measurement technique. The flow measurement locations across the District are shown in Figure 2-3. The flow measurements were conducted on three visits to the WCWID No. 2 system.

The first flow measurements were taken for laterals SJ and SK on September 26, 2007, and for lateral PB on September 27, 2007. Flow measurements were taken for the NF lateral on October 18, 2007 and for lateral WJ on October 24, 2007. The results of the flow measurements are summarized in Table 2-3. Staff of the RRA and WCWID No. 2 assisted in obtaining the flow measurements utilizing a Marsh-McBirney Flo-Mate portable velocity meter and procedures established by the TCEQ in the Surface Water Quality Monitoring (SWQM) Procedures Manual. Flow was measured at each location by taking water depth measurements and instantaneous flow velocities at regular intervals across the lateral. The flow for each interval is the product of the interval width, the water depth, and the instantaneous velocity measured at the appropriate depth. The total flow at the location is the sum of the individual interval flows. In other locations where the flow was controlled through a conduit, such as a culvert, the flow was taken at the midpoint of the submerged culvert.

It is clear from reviewing the flow measurement data that some lateral segments have significantly greater loss than other segments. The challenge is in determining the factors that contribute to these differences in seepage loss across the system. If the factors that contribute to seepage loss can be evaluated and a relationship developed, then these same factors can be applied in evaluating seepage losses in other laterals.

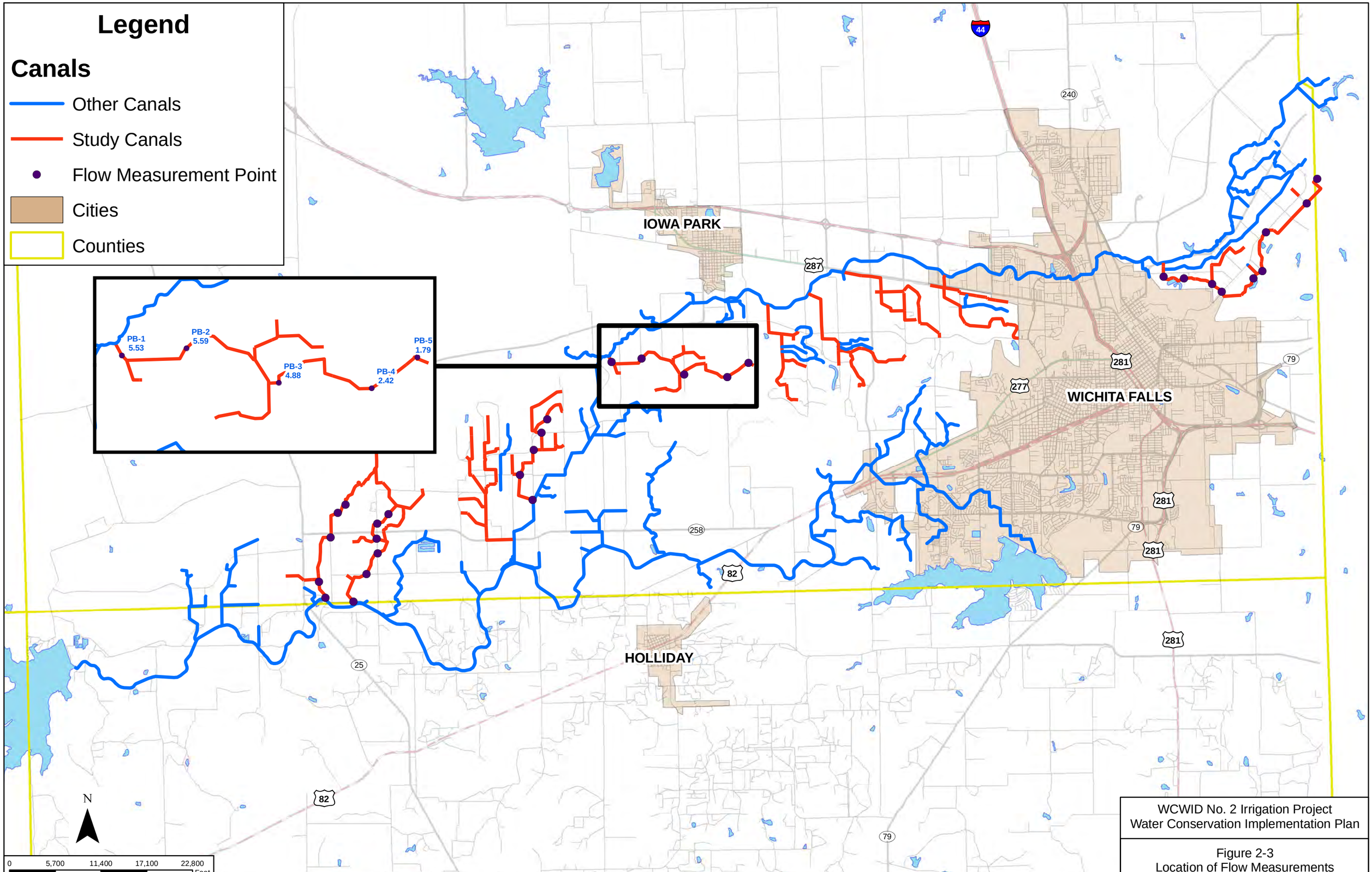
DRAFT

Table 2-3
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Flow Measurements and Location

Flow Measurement Station	Coordinates								Flow (cfs)
	Latitude				Longitude				
	deg	min	sec		deg	min	sec		
SJ-1	33	50	8.99	N	98	28	57.43	W	6.1
SJ-2	33	50	32.00	N	98	28	27.86	W	6.3
SJ-3	33	51	22.80	N	98	27	46.54	W	5.7
SJ-4	33	51	52.70	N	98	27	32.28	W	2.3
SJ-5	33	52	2.78	N	98	26	44.97	W	Spill—No meas.
SK-1	33	50	3.49	N	98	26	31.77	W	10.1
SK-2	33	50	36.58	N	98	26	24.79	W	10.2
SK-3	33	51	1.74	N	98	25	23.05	W	9.04
SK-4	33	51	19.87	N	98	25	5.04	W	8.6
SK-5	33	51	38.16	N	98	44	38.92	W	8.1
SK-6	33	51	50.12	N	98	44	56.38	W	8.3
NF-1	33	52	2.05	N	98	44	34.95	W	12.4
NF-2	33	52	34.21	N	98	44	22.91	W	7.3
NF-3	33	53	3.25	N	98	44	13.92	W	4.4
NF-4	33	53	24.83	N	98	49	7.60	W	4.3
NF-5	33	53	41.43	N	98	48	46.98	W	4.2
PB-1	33	54	49.80	N	98	48	29.48	W	5.5
PB-2	33	54	52.51	N	98	48	30.60	W	5.5
PB-3	33	54	31.54	N	98	48	29.12	W	4.8
PB-4	33	54	27.23	N	98	48	11.08	W	2.4
PB-5	33	54	44.00	N	98	49	48.83	W	1.8
WJ-1	33	56	14.30	N	98	49	57.35	W	10.2
WJ-2	33	56	11.60	N	98	49	38.53	W	12.0
WJ-3	33	56	3.65	N	98	49	26.61	W	10.6
WJ-4	33	55	53.68	N	98	49	15.01	W	9.75
WJ-5	33	56	8.54	N	98	42	36.61	W	8.76
WJ-6	33	56	17.60	N	98	41	52.48	W	8.44
WJ-7	33	57	5.29	N	98	40	49.48	W	7.88
WJ-8	33	57	39.30	N	98	39	46.06	W	7.34
WJ-9	33	58	9.82	N	98	39	14.39	W	9.82

DRAFT



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure 2-3
Location of Flow Measurements

2.2 METHODS FOR ASSESSMENT OF LATERALS

There are many factors that may contribute to the amount of seepage that occurs. Some of these could include:

- Lateral cross section—shape relative to the original design cross section.
- Lateral condition—stability and condition of the bottom and side slopes.
- Soil type—textural classification and permeability.
- Underlying geology—contributes to the permeability.
- Vegetation size and density—contributing to degradation of lateral side slopes and creates highly porous zones.

Assessment of these parameters has been applied in other studies to evaluate lateral condition and develop estimates for seepage loss. Studies that were considered as a reference for this evaluation include:

- Efforts of the Lower Neches Valley Authority (LNVA) to control vegetation on their irrigation laterals and the resulting significant water savings as described in direct communication.
- Lower Colorado River Authority (LCRA) Irrigation District Canal Flow Modeling and Analysis, Parsons, January 2006.
- Demonstration of the Rapid Assessment Tool: Analysis of Canal Conditions in Hidalgo County Irrigation District No. 1, by the Irrigation Technology Resource Center, Texas AgriLife, February 2003.

Although seepage loss measurements were not made in the LNVA study to evaluate the impact of removing heavy vegetation from individual laterals, the District staff indicates that from 25 percent to 50 percent of the total irrigation water volume was saved.

Parsons assessed three levels of lateral vegetation density (low, medium, or high) in the work on the LCRA system. They estimated water losses based on the evapotranspiration (ET) rates for vegetation and the increased effective area that results from the vegetation on the lateral banks. The ET rates were estimated at 2, 4, or 6 acre-feet per acre per year, corresponding to the low, medium, or high vegetation density classification, respectively.

The staff of TexasAgriLife developed a Rapid Assessment Tool for assessment and analysis of irrigation lateral conditions that included consideration of the general condition of the lateral, density of vegetation, and presence of cracks in the lining. Together, these factors identified the

DRAFT

need for rehabilitation rather than providing a basis for seepage loss estimates.

2.3 FACTORS SELECTED FOR LATERAL SEEPAGE EVALUATION

Based on the data available for evaluation of the WCWID No. 2 and consideration of the methods others have used for assessment of seepage loss from laterals, the following factors are identified as having the greatest potential impact on seepage loss:

- Soil type—textural classification and permeability in inches per hour.
- Lateral condition—shape and condition of the cross section indicating an increased potential for leakage.
- Vegetation condition—size and density of vegetation that contributes to an increase in effective width of the lateral.

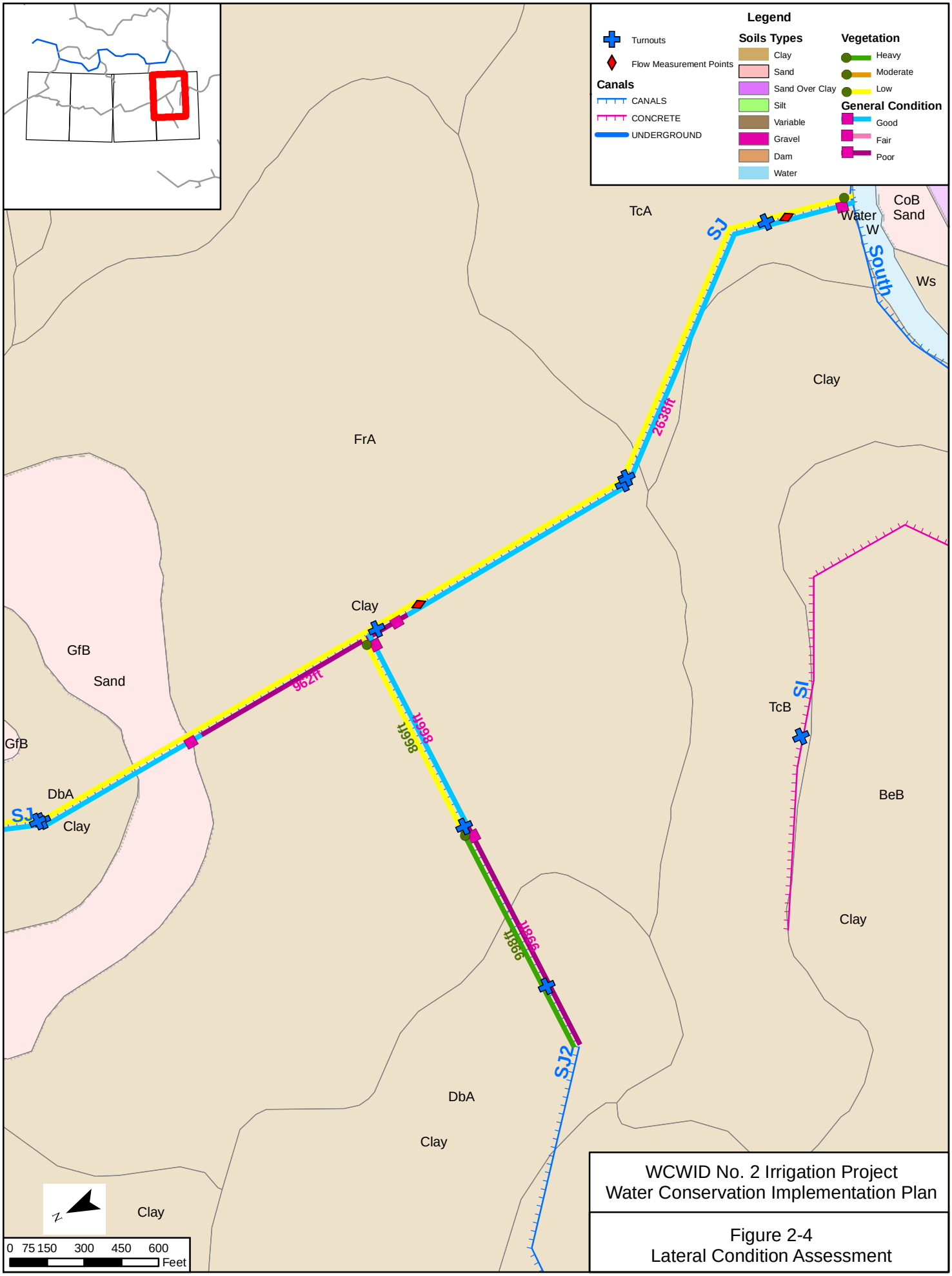
These factors were evaluated for the ten laterals identified as having high water loss. This effort is described in Chapter 3 as part of the development of the GIS maps for the laterals. Figure 2-4 provides an example of a segment of lateral showing the lateral classification for condition and vegetation overlain on the soils map.

2.3.1 Soil Type

Soil type was selected as the base parameter for evaluation of seepage loss from the laterals where flow measurements had been collected because this parameter establishes the rate of water movement through the soils. The permeability rates ranged from less than 0.06 inches per hour to as much as 6.0 inches per hour for the subsoils. The permeability rates for the subsoils were selected for comparison because the laterals are either mostly excavated or significantly constructed of fill material excavated from a depth greater than the thickness of the top soil layer.

The permeability was not applied directly but established as a permeability rating parameter, with each of the permeability ranges assigned a permeability rating factor as a means of relating the magnitude of permeability between soils. The subsoil permeability could not be directly correlated with measured water loss. The permeability rate of 0.6 to 2.0 inches per hour was established as a permeability rating factor of 1.0. Permeability factors assigned to the other permeability ranges are shown in Table 2-4.

DRAFT



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure 2-4
Lateral Condition Assessment

Table 2-4
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Permeability Factors

Permeability Range (inches/hour)	Permeability Factor
< 0.06	0.05
0.06 – 0.2	0.1
0.2 – 0.6	0.3
0.6 – 2.0	1.0
2.0 – 6.0	3.0

2.3.2 Lateral Vegetation

Vegetation is considered to be the factor that can most greatly impact the permeability of the lateral soils through creation of root pathways that function as large pores, effectively increasing the potential for water movement. Heavy vegetation also conceals animal burrows and other lateral defects that can contribute to significant increases in seepage or leaks. The heaviest vegetation often consists of phreatophytes that extract water from the phreatic surface in the soil, effectively increasing the dimensions of the saturated layer of soil. Several different weighting factors for vegetation density were evaluated for correlation with measured losses, but the selected weighting, as described later in this section, provided the strongest correlation with seepage losses. Table 2-5 provides the lateral vegetation factors that were assigned to the vegetation categories captured in the GIS.

Table 2-5
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Lateral Vegetation Factors

Lateral Vegetation Rating	Factor
Low	1
Moderate	3
Heavy	5

DRAFT

2.3.3 Lateral Condition

Lateral condition also affects the potential for seepage through the soils comprising the laterals, but to a much lesser extent than does the vegetation. As with the vegetation factor, several different weighting factors were evaluated for correlation with measured losses, but the selected weighting, as described later in this section, provided the strongest correlation with seepage losses. The lateral condition ratings recorded in the GIS were also assigned a factor as shown in Table 2- 6.

Table 2-6
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Lateral Condition Factors

Lateral Condition Rating	Factor
Good	0.5
Fair	1.0
Poor	1.5

2.3.4 Calculation of the Soil-Condition Factor

The three factors described above were used to calculate a soil-condition factor. The lateral vegetation and lateral condition rating factors were first summed. Together, these factors were then treated as a multiplier for the soil permeability factor. For example, a segment of lateral having heavy vegetation (5.0 factor) and fair condition (1.0 factor) would have a total vegetation-condition factor of 6.0. This would then be multiplied by the appropriate permeability factor such as 0.05, resulting in a soil-condition factor of 0.3.

Similar soil-condition factors were evaluated for each segment of lateral, often dividing a lateral into several subsegments between flow measurement points. The soil-condition factors were then used in conjunction with the length of the subsegments to distribute the measured seepage loss to the subsegments between the measurement points. The seepage losses for the lateral subsegments for the five laterals included in the flow measurement effort are provided in Table 2-7.

DRAFT

Table 2-7
WCWID No. 2 Irrigation District, Water Conservation Implementation Plan

Rating Factors and Seepage Losses for Group 1 Laterals

Location ID	Measured Flow (cfs)	Segment	Vegetation Condition	Vegetation Condition Factor	Lateral Condition	Lateral Condition Factor	Soil Type	Subsoil Permeability (in/hr)	Permeability Factor	Soil-Condition Factor	Water Loss (cfs/1,000 ft)	Season Loss per 1,000 ft (ac-ft/1,000 ft)	Season Water Loss (ac-ft/yr)
SJ-1	6.10	0 - 2,300	low	1	good	0.5	TcA	0.06-0.2	0.1				
SJ-2	6.27	2,300 - 2,350	low	1	good	0.5	FrA	0.2-0.6	0.3	1.22	0.098	29	1
		2,350 - 3,300	low	1	poor	2	FrA	0.2-0.6	0.3	2.44	0.195	58	55
		3,300 - 3,350	low	1	good	0.5	FrA	0.2-0.6	0.3	1.22	0.098	29	1
		3,350 - 3,600	low	1	good	0.5	GfB	0.6-2.0	1	0.75	0.060	18	4
		3,600 - 4,425	low	1	good	0.5	DbA	<0.6	0.05	1.45	0.116	35	28
		4,425 - 5,225	low	1	good	0.5	GfB	0.6-2.0	1	0.75	0.060	18	14
		5,225 - 8,200	low	1	good	0.5	WnA	0.6-2.0	1	0.75	0.060	18	53
		8,200 - 8,650	low	1	good	0.5	GfB	0.6-2.0	1	0.75	0.060	18	8
SJ-3	5.71	8,650 - 9,375	low	1	good	0.5	GfB	0.6-2.0	1	0.75	0.969	288	209
		9,375 - 12,175	low	1	good	0.5	WnA	0.6-2.0	1	0.75	0.969	288	807
SJ-4	2.30	12,175 - 12,400	low	1	good	0.5	WnA	0.6-2.0	1				
		12,400 - 12,850	low	1	fair	1	WnA	0.6-2.0	1				
		12,850 - 13,800	low	1	fair	1	GfB	0.6-2.0	1				
SJ-5	spill point--no flow meas.	13,800 - 13,800											
SK-1	10.11	0 - 4,750	moderate	3	fair	1	TcA	0.06-0.2	0.1				
		4,750 - 4,800	low	1	fair	1	HoA	0.06-0.2	0.1				
SK-2	10.20	4,800 - 7,850	low	1	fair	1	TfB	0.06-0.2	0.1	1.87	0.379	113	344
SK-3	9.04	7,850 - 11,250	low	1	fair	1	TfB	0.06-0.2	0.1	1.87	0.142	42	143
SK-4	8.56	11,250 - 12,325	low	1	fair	1	TfB	0.06-0.2	0.1	1.87	0.193	58	62
		12,325 - 13,625	low	1	fair	1	TfB	0.06-0.2	0.1	1.87	0.193	58	75
		13,625 - 13,675	heavy	5	fair	1	GfB	0.6-2.0	1	3.00	0.311	93	5
SK-5	8.08	13,675 - 15,625	heavy	5	fair	1	GfB	0.6-2.0	1				
SK-6	8.32	15,625 - 15,625											
NF-1	12.36	0 - 1,550	moderate	3	fair	1	Ws	0.6-2.0	1	2.00	0.812	242	374
		1,550 - 2,050	moderate	3	fair	1	Oe	-	1.5	1.41	0.574	171	85
		2,050 - 4,350	moderate	3	fair	1	TfB	0.06-0.2	0.1	3.73	1.515	451	1,037
NF-2	7.33	4,350 - 5,950	moderate	3	fair	1	DbA	<0.06	0.05	3.86	0.676	201	322
		5,950 - 7,150	low	1	fair	1	Wna	0.6-2.0	1	1.00	0.175	52	62
		7,150 - 8,700	heavy	5	fair	1	DbA	<0.06	0.05	5.80	1.014	302	467
		8,700 - 8,850	low	1	fair	1	TcA	0.06-0.2	0.1	1.87	0.326	97	15
NF-3	4.42	8,850 - 12,025	low	1	fair	1	Wna	0.6-2.0	1	1.00	0.027	8	26
NF-4	4.33	12,025 - 15,225	low	1	fair	1	TcA	0.06-0.2	0.1	1.87	0.038	11	36
NF-5	4.21	15,225 - 15,225											
PB-1	5.50	0 - 3,875	low	1	fair	1	Ca	0.6-2.0	1				
PB-2	5.56	3,875 - 4,125	low	1	fair	1	Ca	0.6-2.0	1	1.00	0.078	23	6
		4,125 - 7,500	moderate	3	fair	1	Ca	0.6-2.0	1	2.00	0.156	46	157
		7,500 - 10,625	moderate	3	fair	1	Yo	2.0-6.0	3	0.50	0.039	12	36
		10,625 - 10,875	moderate	3	fair	1	Ca	0.6-2.0	1	2.00	0.156	46	12
PB-3	4.85	10,875 - 10,925	moderate	3	fair	1	Ca	0.6-2.0	1	2.00	0.525	156	8
		10,925 - 14,175	low	1	fair	1	Ca	0.6-2.0	1	1.00	0.263	78	254
		14,175 - 15,450	moderate	3	fair	1	Ma	<0.06	0.05	3.86	1.015	302	385
		15,450 - 15,950	low	1	fair	1	Ca	0.6-2.0	1	1.00	0.263	78	39
		15,950 - 18,050	low	1	fair	1	Yo	2.0-6.0	3	0.25	0.066	20	41
PB-4	2.41	18,050 - 20,450	low	1	fair	1	Yo	2.0-6.0	3	0.25	0.259	77	185
		20,450 - 21,300	PIPE				Yo	2.0-6.0	3				
PB-5	1.78	21,300 - 21,300											
WJ-1	10.20	0 - 2,425	PIPE		good	0.5	Ma	<0.06	0.05				
		2,425 - 2,825	heavy	5	good	0.5	Ca	0.6-2.0	1				
WJ-2	12.04	2,825 - 3,825	heavy	5	fair	1	Ca	0.6-2.0	1	3.00	0.937	279	279
		3,825 - 6,075	low	1	good	0.5	Ca	0.6-2.0	1	0.75	0.234	70	157
WJ-3	10.57	6,075 - 7,625	low	1	good	0.5	Ca	0.6-2.0	1	0.75	0.490	146	226
		7,625 - 7,675	moderate	3	fair	1	Ca	0.6-2.0	1	2.00	1.306	389	19
												153	245
WJ-4	9.75	7,675 - 10,450	moderate	3	fair	1	Ca	0.6-2.0	1	2.00	0.212	63	175
		10,450 - 11,700	heavy	5	fair	1	Ca	0.6-2.0	1	3.00	0.319	95	118
WJ-5	8.76	11,700 - 12,450	heavy	5	fair	1	Ca	0.6-2.0	1	3.00	0.319	95	71
		12,450 - 13,300	moderate	3	fair	1	Ca	0.6-2.0	1	2.00	0.212	63	54
WJ-6	8.44	13,300 - 14,550	moderate	3	fair	1	Ca	0.6-2.0	1	2.00	0.188	56	70
		14,550 - 16,100	low	1	poor	1.5	Cc	0.6-2.0	1	1.25	0.117	35	54
		16,100 - 18,200	low	1	good	0.5	Ca	0.6-2.0	1	0.75	0.070	21	44
WJ-7	7.88	18,200 - 19,250	low	1	good	0.5	Ca	0.6-2.0	1	0.75	0.147	44	46
		19,250 - 22,250	PIPE				Ca	0.6-2.0	1				
		22,250 - 24,900	low	1	good	0.5	Ca	0.6-2.0	1	0.75	0.147	44	116
WJ-8	7.34	24,900 - 29,025	low	1	good	0.5	Ca	0.6-2.0	1				
WJ-9	9.82	29,025 - 29,025											

2.4 CORRELATION OF LATERAL CONDITION TO WATER LOSS

The objective of performing a correlation between the lateral conditions and water loss is to demonstrate a method that can be used to assess water loss in the five Group 2 laterals where flow was not measured. Further, demonstration of this method for the Group 2 laterals can then establish an approach that the WCWID No. 2 can use to assess water loss in other laterals. This is a significant benefit to the District because collection of accurate flow measurements to assess loss requires that flow be maintained at a constant rate in individual laterals and that no turnouts be opened. Flows cannot be measured during normal operations when flow rates are continuously changing in response to opening/closing of turnouts and adjustment of lateral inflows. The operations to obtain accurate flow measurements result in use of water for the flow measurement period that is not used for irrigation and produces system spills.

The measured seepage losses were distributed to the subsegments between measurement points to calculate a seepage loss rate in cubic feet per second (cfs) per 1,000 feet of lateral length and assess total seasonal water loss for the subsegment (Table 2-7). As previously mentioned, each of the individual parameters (soil permeability rating, vegetation condition rating, and lateral condition rating) were correlated to water loss, and no significant correlation could be established. In addition several combinations of factors and various weightings were considered. The approach described in Section 2.3.4 to calculate a soil-condition factor produced the strongest correlation with water loss.

The soil-condition factors were correlated to the seepage loss rate in cfs per 1,000 feet of lateral. The resulting exponential relationship is provided in Figure 2-5. It is important to note that although the coefficient of determination (r-squared value) is low, the exponential relationship was chosen rather than a linear relationship because it provides a visibly close fit to the higher-density of data points in the lower soil condition range, and in the higher soil-condition range it tends to provide a lower estimate of water loss. Water loss could be overstated by applying a linear relationship, which has a lower coefficient of determination. Therefore, the exponential relationship presents a conservative estimate for water loss in that it tends to present a reasonable estimate without overstating loss, particularly in the lower range of soil-condition ratings.

DRAFT

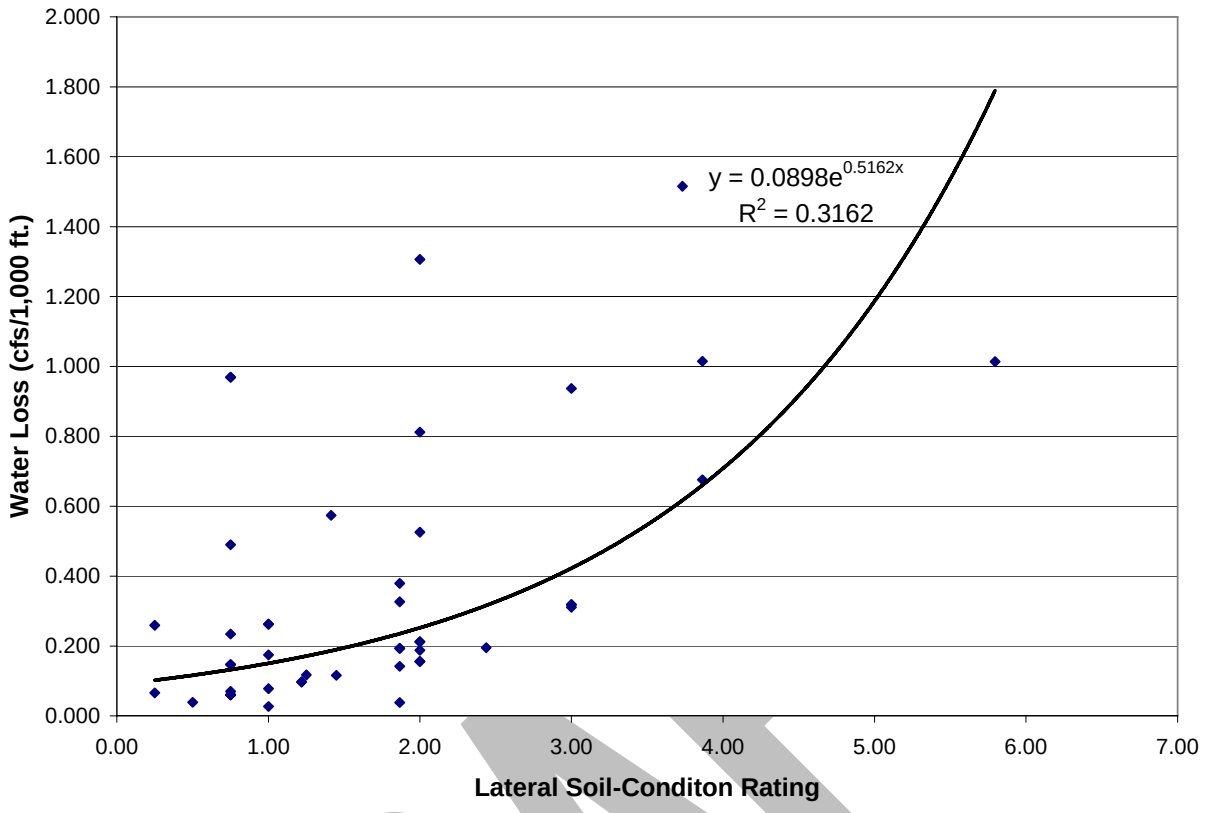


Figure 2-5
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Correlation of Water Loss to the Soil-Condition Rating

DRAFT

Chapter 3

PREPARE GIS MAPS OF SELECTED LATERALS

CHAPTER 3
PREPARE GIS MAPS OF SELECTED LATERALS

3.1 INITIAL BASE MAPS

Initial base maps for the GIS mapping effort were obtained from the RRA based on previous mapping work that the Authority had supported the WCWID No. 2 in developing. These maps had not been updated for several years. Some of the laterals had undergone minor relocations in segments and some sections had recently been converted to pipe. Beyond this basic information on construction and location, the GIS maps did not include additional data on the vegetation and condition of the laterals, locations of turn outs, or other information pertinent to the system. Therefore, several steps were needed to develop the maps into a form that could be used to help assess seepage loss and provide a structure for future data capture. These steps included:

- Update the base map to verify alignment with property boundaries.
- Update existing construction material information.
- Add information to the database needed to estimate seepage loss.
- Add provisions for capture of additional information that may be useful to the WCWID No. 2 in managing the system to reduce water loss.

3.2 UPDATE OF MAPS BASED ON DISTRICT DATA AND AERIAL PHOTOGRAPHY

Recent aerial photography that had been rectified was obtained from the U.S. Department of Agriculture's (USDA) Farm Service Agency (FSA). These aerial photographs were imported into ArcMap and used as a background image for the existing GIS maps of the district. The lateral alignments were adjusted to visually coincide with the lateral alignments shown on the aerial photos and property boundaries. An example map showing a lateral alignment on the new aerial photo base map is provided in Figure 3-1. The lateral alignments were checked for all laterals in addition to the 10 laterals of interest identified in Chapter 2.

3.3 GIS DATA FIELDS

One of the great benefits of a GIS is that significant amounts of additional data can be captured that can be used for analysis or management of the system. In reviewing the system with the WCWID No.2 several key data fields and/or map layers were identified to support evaluation of the laterals or turnouts:

DRAFT

- Lateral Data
  - Flow Measurements—coordinates for the measurement points, date of measurement, and the measured flow for all of the flow measurements utilized in Chapter 2.
  - Lateral Material—lined, unlined, or pipe.
  - Irrigated acreages—irrigable or nonirrigable acreage served by the lateral.
  - Soils—a data layer acquired form the USDA NRCS SSURGO data set.
  - Turnout locations—locations identified from the aerial photos or marked by the WCWID No. 2 staff.
  - Vegetation Condition—low, medium, or high.
  - Lateral Condition—good, fair, or poor.
- Turnout Data
  - Irrigated acreage served by the turnout—irrigable and nonirrigable acreage.
  - Type—screw gate or valve.
  - Size—size of gate or valve.
- Parcel boundary—original District abstract boundary and name.

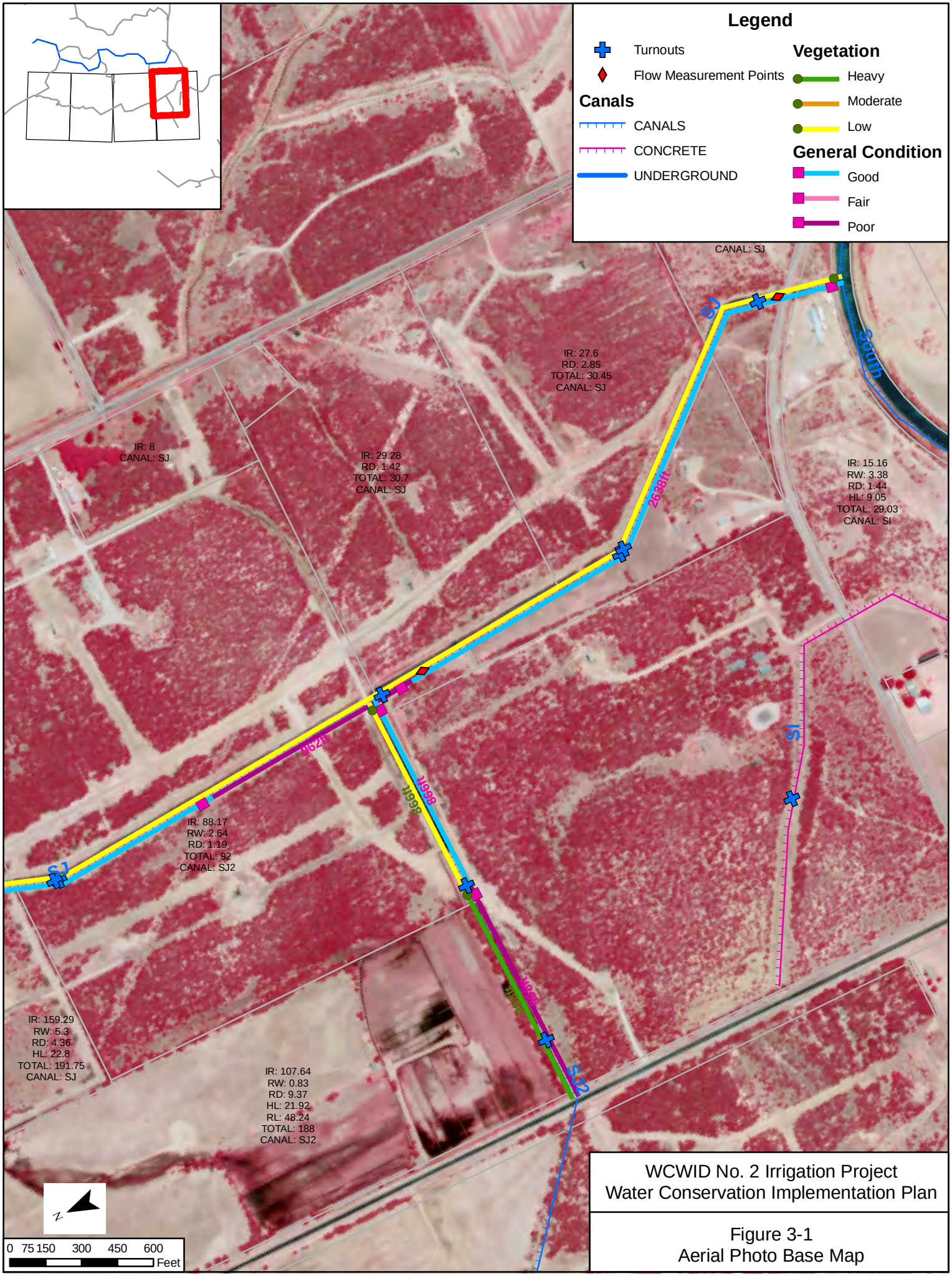
Figure 3-1 provides an example of a map that provides some of the additional data collected and recorded in the GIS.

3.4 DATA COLLECTED

WCWID No. 2 staff assisted in collecting data to classify the vegetation and condition of the 10 laterals identified in Chapter 2. The following descriptions were used as the basis for designating the vegetation condition and lateral canal condition.

- Vegetation Condition — Classify the amount of vegetation on the laterals as “low”, “moderate” or “heavy”.
  - Low vegetation—includes a limited amount of woody vegetation with most woody vegetation having stems smaller than 1-inch diameter and less than 10% canopy.

DRAFT



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure 3-1
Aerial Photo Base Map

- Moderate vegetation—includes no more then 50% canopy coverage with woody vegetation having stems that are 1 to 2-inches in diameter.

- Heavy vegetation—has over 50% canopy and woody vegetation stems larger than 2-inches in diameter.

- General Condition — Classify the general condition of the canals as “good”, “fair” or “poor”.
  - Good condition—includes canals with stable banks, little to no ruts along the embankments, and no sloughing or undercutting of the embankments.

  - Fair condition—includes some ruts and/or cracks in the embankments, irregular side slopes and/or cross sections, minor erosion, visible signs of leakage (damp or wet areas along canal lateral, which may be demonstrated by wetland vegetation).

  - Poor condition—may include major ruts, animal trails, large cracks in the embankment, significant irregular side slopes and/or cross sections, bank erosion, and significant signs of leakage (ponding and wet areas along the lateral).

An example of the maps developed by applying the information collected by WCWID No.2 is presented in Chapter 2, Figure 2- 4. A complete set of the maps developed to support the lateral classification is provided in Appendix A.

DRAFT

This page Intentionally left blank.

DRAFT

Chapter 4

ESTIMATE OF POTENTIAL WATER SAVINGS

CHAPTER 4
ESTIMATE OF POTENTIAL WATER SAVINGS

4.1 ESTIMATES OF WATER LOSS FOR LATERALS

The method developed in Chapter 2 to estimate water loss by subsegment was applied to the five laterals in Group 2: NB, PM, PO, RR, and RRG. This required classification of each lateral segment and assignment of condition scores. These scores were assigned as described in Chapter 2 utilizing the GIS maps as the source of information. Following the scoring of the lateral segments and subsegments, as appropriate, water loss was calculated for the Group 2 laterals utilizing the exponential equation presented in Figure 2-5. The summary of the scoring and water loss estimates for the Group 2 laterals is presented in Table 4-1.

4.2 RANKING OF LATERAL SEGMENTS BY WATER LOSS

Water loss estimates have been developed for segments or subsegments of 10 laterals. The loss by segment was either estimated by distributing the measured loss utilizing the soil condition factor or calculated by applying the soil condition factor to the exponential equation. The high-loss segments were considered as being segments with total season losses greater than 100 ac-ft per 1,000 feet of lateral or 300 ac-ft per lateral segment. This resulted in the following list of segments (Table 4-2) for consideration for replacement with pipe. Of this list, "high-water-loss" segments were identified for nine of the ten laterals studied. Lateral PM did not contain any segments with water loss above 100 ac-ft per 1,000 feet or 300 ac-ft for an entire lateral segment.

The segments included in Table 4-2 could be sorted and ranked by either loss per 1,000 feet of lateral or loss per segment, but ranking would be premature until the cost and other factors can be considered. The key conclusion from this table is that the total water savings that may result from converting just over 11.5 miles of lateral is estimated to be about 9,245 ac-ft per year. This is in excess of the project goal of increasing agricultural water supply by 8,577 ac-ft per year.

DRAFT

Table 4-1
WCWID No. 2 Irrigation District, Water Conservation Implementation Plan

Rating Factors and Seepage Losses for Group 2 Laterals

Location ID	Segment Length (ft)	Segment	Vegetation Condition Rating	Vegetation Condition Factor	Lateral Condition Rating	Lateral Condition Factor	Soil Type	Dominant Texture	Subsoil Permeability (in/hr)	Permeability Factor	Soil-Condition Factor	Water Loss (cfs/1,000 ft)	Season Loss per 1,000 ft (ac-ft/1,000 ft)	Season Water Loss (ac-ft/yr)
NB	9200	0 - 9,200	low	1	fair	1	HoA	clay	0.06-0.2	0.1	1.87	0.235	70	644
	3050	9,200 - 12,250	moderate	3	fair	1	WnA	clay	0.6-2.0	1	2.00	0.252	75	229
	5500	12,250 - 17,750	low	1	fair	1	WnA	clay	0.6-2.0	1	1.00	0.150	45	246
	1150	17,750 - 18,900	moderate	3	fair	1	Ma	clay	<0.06	0.05	3.86	0.660	196	226
PM	2010	0 - 2,010	low	1	good	0.5	DbA	clay	<0.06	0.05	1.45	0.190	56	113
	3080	2,010 - 5,090	low	1	fair	1	DbA	clay	<0.06	0.05	1.93	0.243	72	223
	6470	5,090 - 11,560	Pipeline				DbA	clay	<0.06	0.05	0.00			
	1560	11,560 - 13,120	moderate	3	fair	1	Ca	silty clay loam	0.6-2.0	1	2.00	0.252	75	117
	1400	13,120 - 14,520	Pipeline				Ca	silty clay loam	0.6-2.0	1	0.00			
PO	530	0 - 530	heavy	5	fair	1	DbA	clay	<0.06	0.05	5.80	1.789	532	282
	5410	530 - 5,940	moderate	3	fair	1	DbA	clay	<0.06	0.05	3.86	0.660	196	1,062
	2920	5,940 - 8,860	heavy	5	fair	1	WnA	clay	0.6-2.0	1	3.00	0.422	126	367
	1450	8,860 - 10,310	Pipeline		good	0.5	Ws	clay	0.2-0.6	0.3	0.41			
	6570	10,310 - 16,880	low	1	good	0.5	Ma	clay	<0.06	0.05	1.45	0.190	56	371
RR	2380	0 - 2,380	Pipeline				DbA	clay	<0.06	0.05	0.00			
	3720	2,380 - 6,100	moderate	3	fair	1	WnA	clay	0.6-2.0	1	2.00	0.252	75	279
	3050	6,100 - 9,150	low	1	fair	1	WnA	clay	0.6-2.0	1	1.00	0.150	45	137
	3800	9,150 - 12,950	moderate	3	fair	1	As	silt loam	0.6-2.0	1	2.00	0.252	75	285
	2050	12,950 - 15,000	moderate	3	poor	1.5	Mc	clay	<0.06	0.05	4.35	0.847	252	516
	2700	15,000 - 17,700	low	1	poor	1.5	Mc	clay	<0.06	0.05	2.41	0.312	93	251
RRG	5000	0 - 5,000	low	1	fair	1	DbA	clay	<0.06	0.05	1.93	0.243	72	362
	275	5,000 - 5,275	moderate	3	fair	1	WnB	clay	0.6-2.0	1	2.00	0.252	75	21
	2110	5,275 - 7,385	low	1	fair	1	Ma	clay	<0.06	0.05	1.93	0.243	72	153
	7910	7,385 - 15,295	moderate	3	fair	1	Ca	silty clay loam	0.6-2.0	1	2.00	0.252	75	593
	2120	15,295 - 17,415	heavy	5	fair	1	Ca	silty clay loam	0.6-2.0	1	3.00	0.422	126	266

Table 4-2
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

High Water Loss Segments

Lateral name	Segment	Length	Season Loss per 1,000 ft (ac-ft/1,000 ft)	Season Water Loss (ac-ft/yr)
NF	0 - 1,550	1,550	242	374
NF	1,550 - 2,050	500	171	85
NF	2,050 - 4,350	2,300	451	1,037
NF	4,350 - 5,950	1,600	201	322
NF	7,150 - 8,700	1,550	302	467
PB	14,175 - 15,450	1,275	302	385
SJ	8,650 - 9,375	725	288	209
SJ	9,375 - 12,175	2,800	288	807
SK	4,800 - 7,850	3,050	113	344
WJ	2,825 - 3,825	1,000	279	279
WJ	6,075 - 7,675	1,600	153	245
RR	12,950 - 15,000	2,050	252	516
PO	0 - 530	530	532	282
PO	530 - 5,940	5,410	196	1,062
PO	5,940 - 8,860	2,920	126	367
PO	10,310 - 16,880	6,570	56	371
RRG	0 - 5,000	5,000	72	362
RRG	7,385 - 15,295	7,910	75	593
RRG	15,295 - 17,415	2,120	126	266
NB	0 - 9,200	9,200	70	644
NB	17,750 - 18,900	1,150	196	226
Total		60,810		9,245

DRAFT

Chapter 5

PRELIMINARY OPINION OF COST

CHAPTER 5
PRELIMINARY OPINION OF COST

Cost estimates were developed for conversion of each of the lateral segments included in Table 4-2 to underground pipe systems. Costs were developed for the each lateral based on conversion of all high-water-loss segments of the lateral to pipeline in a single project. This avoids piece-meal construction across the District, which could significantly increase project costs. The cost estimates that follow were prepared in general compliance with TWDB guidelines and capital costs based on the latest cost estimates for similar type work recently completed within Region B. The cost estimates are based on use of plastic pipe and an allowance in the unit cost is provided to cover the installation of turnout valves. Both capital costs and annual costs are identified for each strategy in addition to the cost of water delivered per acre-foot and cost of water delivered per 1,000 gallons.

Capital costs include all conveyance system construction (pipelines, vegetation clearing, excavation, backfill, and regrading of the completed lateral) and all related capital improvement expenditures with engineering, contingencies, financial and legal being calculated as 30% of construction costs. The typical installation will either require that the lateral be completely filled with the existing lateral embankment material, followed by excavation of the pipeline trench and installation of the pipeline, or that the pipeline be installed in the bottom of the existing lateral, followed by backfill and grading. The unit costs for the pipelines are sufficient to cover either approach. The unit costs for installation plastic pipe are summarized in Table 5-1.

Operations and Maintenance costs only include the annual required maintenance expenditures. These costs were calculated as 1.0 percent of the annual debt service rather than 1 percent of the capital costs. This is based on the District's maintenance cost history for pipelines that have replaced laterals. Maintenance costs are reduced significantly because these pipelines operate as gravity flow lines at low pressure and with relatively low velocities compared to most pressurized pipe systems.

All debt service was calculated over 20 years at a six percent (6%) interest rate.

DRAFT

Table 5-1
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Unit Costs for Pipelines

Pipeline Diameter (inches)	Unit Cost ($/foot)
15	46
18	55
24	72
27	80
30	90
36	108

The following pages provide the cost estimates for replacement of the high-water-loss segments of each lateral. A summary of the capital costs, annualized costs, and unit costs (dollars per ac-ft) for each lateral are provided in Table 5-2 on page 5-12.

DRAFT

Irrigation Lateral NF Improvements

Assumption: Enclose Lateral in 36" and 30" Pipe

Recovered Water Loss: 2,286 AF/YR

Construction Costs:				
Install 36" Pipe	4,350 LF	@	$108	$469,800
Install 30" Pipe	3,150 LF	@	$90	$283,500
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$225,990
Total Capital Costs:				**$979,290**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$85,394
Operation and Maintenance @ 1.0%				$854
Total Annual Costs:				**$86,248**
Available Water (AF/YR)				2,286
Available Water (MGD)				2.04
Cost of Water Delivered ($/AF)				**$37.73**
Cost of Water Delivered ($/1,000 Gals)				**$0.12**

DRAFT

Irrigation Lateral PB Improvements

Assumption: Enclose Lateral in 27" Pipe

Recovered Water Loss: 385 AF/YR

Construction Costs:				
Install 27" Pipe	1,275 LF	@	$80	$102,000
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$30,600
Total Capital Costs:				**$132,600**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$11,563
Operation and Maintenance @ 1.0%				$116
Total Annual Costs:				**$11,679**
Available Water (AF/YR)				385
Available Water (MGD)				0.34
Cost of Water Delivered ($/AF)				**$30.33**
Cost of Water Delivered ($/1,000 Gals)				**$0.09**

DRAFT

Irrigation Lateral SJ Improvements

Assumption: Enclose Lateral in 27" and 24" Pipe

Recovered Water Loss: 1.016 AF/YR

Construction Costs:				
Install 27" Pipe	725 LF	@	$80	$58,000
Install 24" Pipe	2,800 LF	@	$72	$201,600
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$77,880
Total Capital Costs:				**$337,480**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$29,428
Operation and Maintenance @ 1.0%				$294
Total Annual Costs:				**$29,722**
Available Water (AF/YR)				1,016
Available Water (MGD)				0.91
Cost of Water Delivered ($/AF)				**$29.25**
Cost of Water Delivered ($/1,000 Gals)				**$0.09**

DRAFT

Irrigation Lateral SK Improvements

Assumption: Enclose Lateral in 30" Pipe

Recovered Water Loss: 344 AF/YR

Construction Costs:				
Install 30" Pipe	3,050 LF	@	$90	$274,500
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$82,350
Total Capital Costs:				**$356,850**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$31,117
Operation and Maintenance @ 1.0%				$311
Total Annual Costs:				**$31,428**
Available Water (AF/YR)				344
Available Water (MGD)				0.31
Cost of Water Delivered ($/AF)				**$91.36**
Cost of Water Delivered ($/1,000 Gals)				**$0.28**

DRAFT

Irrigation Lateral WJ Improvements

Assumption: Enclose Lateral in 30" and 24" Pipe

Recovered Water Loss: 524 AF/YR

Construction Costs:				
Install 30" Pipe	1,600 LF	@	$90	$144,000
Install 24" Pipe	1,000 LF	@	72	$72,000
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$64,800
Total Capital Costs:				**$280,800**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$24,486
Operation and Maintenance @ 1.0%				$245
Total Annual Costs:				**$24,731**
Available Water (AF/YR)				524
Available Water (MGD)				0.47
Cost of Water Delivered ($/AF)				**$47.20**
Cost of Water Delivered ($/1,000 Gals)				**$0.14**

DRAFT

Irrigation Lateral RR Improvements

Assumption: Enclose Lateral in 18" Pipe

Recovered Water Loss: 516 AF/YR

Construction Costs:				
Install 18" Pipe	2,050 LF	@	$55	$112,750
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$33,825
Total Capital Costs:				**$146,575**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$12,781
Operation and Maintenance @ 1.0%				$128
Total Annual Costs:				**$12,909**
Available Water (AF/YR)				516
Available Water (MGD)				0.46
Cost of Water Delivered ($/AF)				**$25.02**
Cost of Water Delivered ($/1,000 Gals)				**$0.08**

DRAFT

Irrigation Lateral PO Improvements

Assumption: Enclose Lateral in 24" and 18" Pipe

Recovered Water Loss: 2,082 AF/YR

Construction Costs:				
Install 24" Pipe	8,860 LF	@	$72	$637,920
Install 18" Pipe	6,570 LF	@	55	$361,350
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$299,781
Total Capital Costs:				**$1,299,051**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$113,277
Operation and Maintenance @ 1.0%				$1,133
Total Annual Costs:				**$114,410**
Available Water (AF/YR)				2,082
Available Water (MGD)				1.86
Cost of Water Delivered ($/AF)				**$54.95**
Cost of Water Delivered ($/1,000 Gals)				**$0.17**

DRAFT

Irrigation Lateral RRG Improvements

Assumption: Enclose Lateral in 24" Pipe

Recovered Water Loss: 1,222 AF/YR

Construction Costs:				
Install 24" Pipe	12,910 LF	@	$72	$1.082,160
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$324,648
Total Capital Costs:				**$1,406,808**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$122,673
Operation and Maintenance @ 1.0%				$1,226
Total Annual Costs:				**$123,899**
Available Water (AF/YR)				1,222
Available Water (MGD)				1.0
Cost of Water Delivered ($/AF)				**$101.39**
Cost of Water Delivered ($/1,000 Gals)				**$0.34**

DRAFT

Irrigation Lateral NB Improvements

Assumption: Enclose Lateral in 30" and 15" Pipe

Recovered Water Loss: 870 AF/YR

Construction Costs:				
Install 30" Pipe	9,200 LF	@	$90	$828,000
Install 15" Pipe	1,150 LF	@	46	$52,900
Other Project Costs:				
Engineering Contingencies and Legal @ 30%				$264,270
Total Capital Costs:				**$1,145,170**
Annual Costs:				
Debt Service (20 yrs @ 6%)				$99,859
Operation and Maintenance @ 1.0%				$999
Total Annual Costs:				**$100,858**
Available Water (AF/YR)				870
Available Water (MGD)				0.78
Cost of Water Delivered ($/AF)				**$115.93**
Cost of Water Delivered ($/1,000 Gals)				**$0.35**

DRAFT

Table 5-2
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Summary of Lateral Conversion Cost

Pipe Diameter Inches	Lateral Name	Segment	Length (ft.)	Supply (ac-ft/yr)	Capital Cost (Thousands $)	Annual Costs ($)	Unit Cost ($/ac-ft)
27	SJ	8,650 – 9,375	725	1,016	337.5	29,722	29.25
24	SJ	9,375 – 12,175	2,800				
30	SK	4,800 – 7,850	3,050	344	356.8	31,428	91.36
30	NB	0 – 9,200	9,200	870	1,145.2	100,858	115.93
15	NB	17,750 – 18,900	1,150				
36	NF	0 – 1,550	1,550	2,286	979.3	86,248	37.73
36	NF	1,550 – 2,050	500				
36	NF	2,050 – 4,350	2,300				
30	NF	4,350 – 5,950	1,600				
30	NF	7,150 – 8,700	1,550				
27	PB	14,175 – 15,450	1,275	385	132.6	11,679	30.33
24	PO	0 – 530	530	2,082	1,299.0	114,410	54.95
24	PO	530 – 5,940	5,410				
24	PO	5,940 – 8,860	2,920				
18	PO	10,310 – 16,880	6,570				
18	RR	12,950 – 15,000	2,050	516	146.6	12,781	25.02
24	RRG	0 – 5,000	5,000	1,222	1,406.8	123,899	101.39
24	RRG	7,385 – 15,295	7,910				
24	RRG	15,295 – 17,415	2,120				
24	WJ	2,825 – 3,825	1,000	524	280.8	24,731	47.20
30	WJ	6,075 – 7,675	1,600				
Total			**58,690**	**9,245**	**6,084.6**	**535,756**	**57.95**

DRAFT

Chapter 6

OTHER RELEVANT FACTORS CONSIDERED

CHAPTER 6
OTHER RELEVANT FACTORS CONSIDERED

The scope of work for this effort identified the following factors that might be considered in either assessing the priority for conversion of laterals to pipelines or as potential alternatives to the current irrigation supply.

- Degree of encroaching urbanization.
- Potential for other sources of water to support irrigation.
- Other socio-economic factors.

The only one of these factors that may play a significant role in prioritizing the conversion of laterals to pipelines is the degree of encroaching urbanization. There are limited alternative water sources for irrigation. The available groundwater and surface water sources are fully utilized and the only other potential source of irrigation water is reclaimed wastewater from the City of Wichita Falls. This source of water would require a pipeline and pumping to connect to the WCWID No 2 system, and then water quality is a concern due to high total dissolved solids or salts.

No socio-economic factors have been identified that might impact prioritization of conversion of laterals to pipelines.

Other factors related to the WCWID No. 2 operations were considered to evaluate whether they might impact the priority for conversion of laterals to pipelines. The only additional factor identified by the WCWID No. 2 staff was the frequency of use per lateral.

6.1 URBAN ENCROACHMENT

Maps of the laterals were reviewed to evaluate laterals that may have the greatest impact due to urbanization. This includes laterals that either flow through areas of the City of Wichita Falls or laterals that flow through rural subdivisions. Conversion of these laterals to pipelines could reduce risks for the District and eliminate a potential safety hazard in an urban setting. The City of Wichita Falls has grown along major transportation corridors. This growth is pushing the western limit of the City and stimulating rural development. Growth between US 287 and US 82 is having the greatest impact on laterals RR and RRG. Some segments toward the end of these

DRAFT

laterals may be converted from agricultural use to urban use, decreasing the demand for irrigation water.

There is also some urban expansion along the Wichita River to the northeast of the City. The first portions of the WJ lateral are most impacted, but the influence of urbanization decreases as the lateral continues further away from the City. The priority for conversion of a portion of this lateral to pipeline is high due to the potential safety issues.

Priority weighting factors are assigned to the high-water-loss laterals based on urbanization as a simple plus one (+1 = decreased priority) or minus one (-1 = increased priority) depending upon impact. The summary of these factors is provided in Table 6-1. Laterals that have no specific urbanization impact are assigned a zero (0) weighting.

Table 6-1
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Urbanization Weighting Factor for Laterals

Lateral	Urbanization Weighting Factor	Lateral	Urbanization Weighting Factor
SJ	0	PO	0
SK	0	RR	+1
NB	0	RRG	+1
NF	0	WJ	-1
PB	0		

DRAFT

6.2 FREQUENCY OF USE PER LATERAL

The District was requested to review the list of nine high-water-loss laterals and to evaluate them based on the frequency of use criteria that they had identified. The District staff rated the priority for conversion from earthen laterals to pipelines by ranking the laterals from one to nine, with one representing the highest priority. The rankings are provided in Table 6-2.

Table 6-2
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Frequency of Use Ranking for Laterals

Lateral	Frequency of Use Ranking	Lateral	Frequency of Use Ranking
WJ	1	RR	6
PB	2	SJ	7
PO	3	SK	8
NF	4	RRG	9
NB	5		

DRAFT

Chapter 7

POTENTIAL SOURCES OF FUNDING

CHAPTER 7
POTENTIAL SOURCES OF FUNDING

Multiple funding sources were considered to assist the WCWID No. 2 and the Region in converting earthen laterals to pipe. These sources include:

- WCWID No. 2 Funds or Other Local Funds
- State Funding Sources
- Federal Funding Sources

7.1 WCWID NO. 2 FUNDS AND OTHER LOCAL FUNDS

WCWID No. 2 has total revenues from water sales and other agreements of just over $1.0 million, with about $250,000 derived from the District's tax base. The District has about $20,000 to $30,000 per year that is allocated to purchasing and installing about 2,000 feet of pipe using District resources. It is further estimated that the District could save an additional $19,000 per year in operation and maintenance costs due to conversion of the laterals to pipe. This would provide total resources of about $39,000 to $49,000 per year.

Options for additional funding include increasing the tax rate or increasing the water revenue through adjustment of water contracts. Although the District has increased the tax rate over the last few years, the incremental increases are usually small and the additional funding that results is not substantial. A 3 percent increase in tax rate generates about $6,000 in additional funds. The District has increased the tax rate by 3 percent each of the past two years. The District's current revenues are largely established through long term contracts and it is unlikely that these agreements could be adjusted until the end of the existing contract period. The District shares some operation and maintenance costs through an agreement with the City of Wichita Falls. The City is sharing in the payments for a Federal Loan for improvements to the dams, for which they share ownership. It is not clear whether the City would be willing to participate in sharing the cost of repaying a loan for water conservation improvements.

7.2 STATE FUNDING

The TWDB has several programs that may be considered as potential sources of funding to help support implementation of this project. Three programs are components of the Agricultural Water Conservation Loan Program. The Board annually makes an allocation of available funds

DRAFT

between the three programs. The application requirements for all three programs are fairly similar.

In addition, the Water Infrastructure Fund can be used to fund projects recommended in either the regional water plans or State water plan. This includes the conversion of laterals to pipelines for the WCWID No. 2. The Board also funds the Texas Environmental Infrastructure Program when federal funds are available to support this program.

The Agricultural Water Conservation Loan Program provides loan funds to political subdivisions in the state for use in improving systems or to individuals to implement water conservation practices on their farms. Additional information on this program is provided in Appendix B.

The Agricultural Water Conservation Grants Program offers grants to state agencies and political subdivisions for technical assistance, demonstration, technology transfer, research and education, and metering projects that conserve water. Grant Requests for Proposals are published on an annual basis. Grant topics vary from year to year to address current issues and topics in agricultural water conservation.

The Agricultural Water Conservation Demonstration Initiatives are two long-term grant projects that the TWDB authorized for funding in 2004. There are no current plans to fund new initiatives.

The Texas Environmental Infrastructure Program (TEIP) was funded in 2008. An announcement has been posted for funding the 2009 program with $40 million available for projects. The program is funded through the Water Resources Development Act (WRDA), a federal program with funding passed down to the states. These grants provide 75 percent of the funding for projects with the local sponsors providing 25 percent. The deadline for application for these funds is January 14, 2009. Preference is given for the construction phase of projects that produce additional water supply. This is a significant current opportunity. Additional information regarding this funding option is included in Appendix B.

The Water Infrastructure Fund (WIF) is a subsidized interest rate loan, with the rate set at two percent below the current TWDB loan rate. The loan can be used for planning, engineering, or

DRAFT

construction with a maximum 20-year repayment period. The availability of funding is contingent upon debt service appropriations from the Legislature. The current Board request to the Legislature for the 2009 session for funding for the 2010-2011 biennium includes $905 million for the WIF. Additional information on the WIF is located in Appendix B.

7.3 FEDERAL FUNDING

Federal funds are primarily available from three sources: U.S. Army Corps of Engineers (USACE), U.S. Bureau of Reclamation (USBR) and the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS).

The USACE has previously funded the **Texas Water Allocation Assessment** (TWAA) a program to help support water resources development in Texas for project identified in the State water planning process. The availability of funding for a project requires that USACE already have an interest in the project. The Lake Kemp Reallocation Study was funded by $100,000 from this source during 2008 out of a $702,000 total appropriation. The USACE requested $1,000,000 but $713,000 was included in the 2009 Continuing Resolution Spending Bill for TWAA. A major share of this funding is designated to support TWDB hydrographic surveys.

The USBR has recently announced funding available under the **Water for America Initiative**. However, this program is primarily designed to help fund studies similar to the one the TWDB has already funded to evaluate the WCWID No. 2 system. The maximum available for a single project is $300,000, and 50 percent of the total project funding must be supplied locally. Additional information on this program is provided in Appendix C.

The USDA NRCS has recently announced funding available under the **Conservation Innovation Grants** (CIG). This is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while also addressing environmental enhancement and protection, in conjunction with agricultural production. Up to $10 million may be available for proposals addressing one or more of the CIG natural resource concerns. The closing date for application for these grants is usually in February. Other sources of funding may be available under the 2008 Farm Bill, but the rules and application requirements are still under development.

DRAFT

Chapter 8

WATER CONSERVATION IMPLEMENTATION PLAN

CHAPTER 8
WATER CONSERVATION IMPLEMENTATION PLAN

There are several options available for implementing a project or projects to convert the high-water-loss laterals to pipelines. Some implementation options may only provide partial funding rather than funds for all of the proposed improvements. This requires that the laterals be prioritized for implementation. This Chapter provides the prioritization of the laterals for replacement and presents the potential implementation scenarios.

8.1 PRIORITIZATION OF LATERALS FOR REPLACEMENT

The laterals will be prioritized for replacement based a matrix of factors that include the cost and water savings as well as the factors presented in Chapter 6. The specific components of the matrix (Table 8-1) include:

- Unit cost – dollars per acre-foot of water saved as presented in Chapter 5 but weighted by a factor of 2 relative to the other parameters.
- Urbanization weighting factor as presented in Chapter 6.
- Frequency of use ranking as presented in Chapter 6.

Table 8-1
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Frequency of Use Ranking for Laterals

Lateral	Unit Cost ($/ac-ft)	Unit Cost Ranking x2	Urbanization Weighting	Frequency of Use	Total Score	Ranking
PB	30.33	6	0	2	8	**1**
RR	25.02	2	+1	6	9	**2**
WJ	47.20	10	-1	1	10	**3**
SJ	29.25	4	0	7	11	**4**
NF	37.73	8	0	4	12	**5**
PO	54.95	12	0	3	15	**6**
NB	115.93	18	0	5	23	**7**
SK	91.36	14	0	8	26	**8**
RRG	101.39	16	+1	9	26	**8**

DRAFT

Based on the priority ranking the shown in Table 8-1 the lateral replacement projects can be divided into three priority groups (Table 8-2) totaling from $1.7 million to $2.4 million, in the event that the entire pipe lateral replacement effort cannot be funded as a single project.

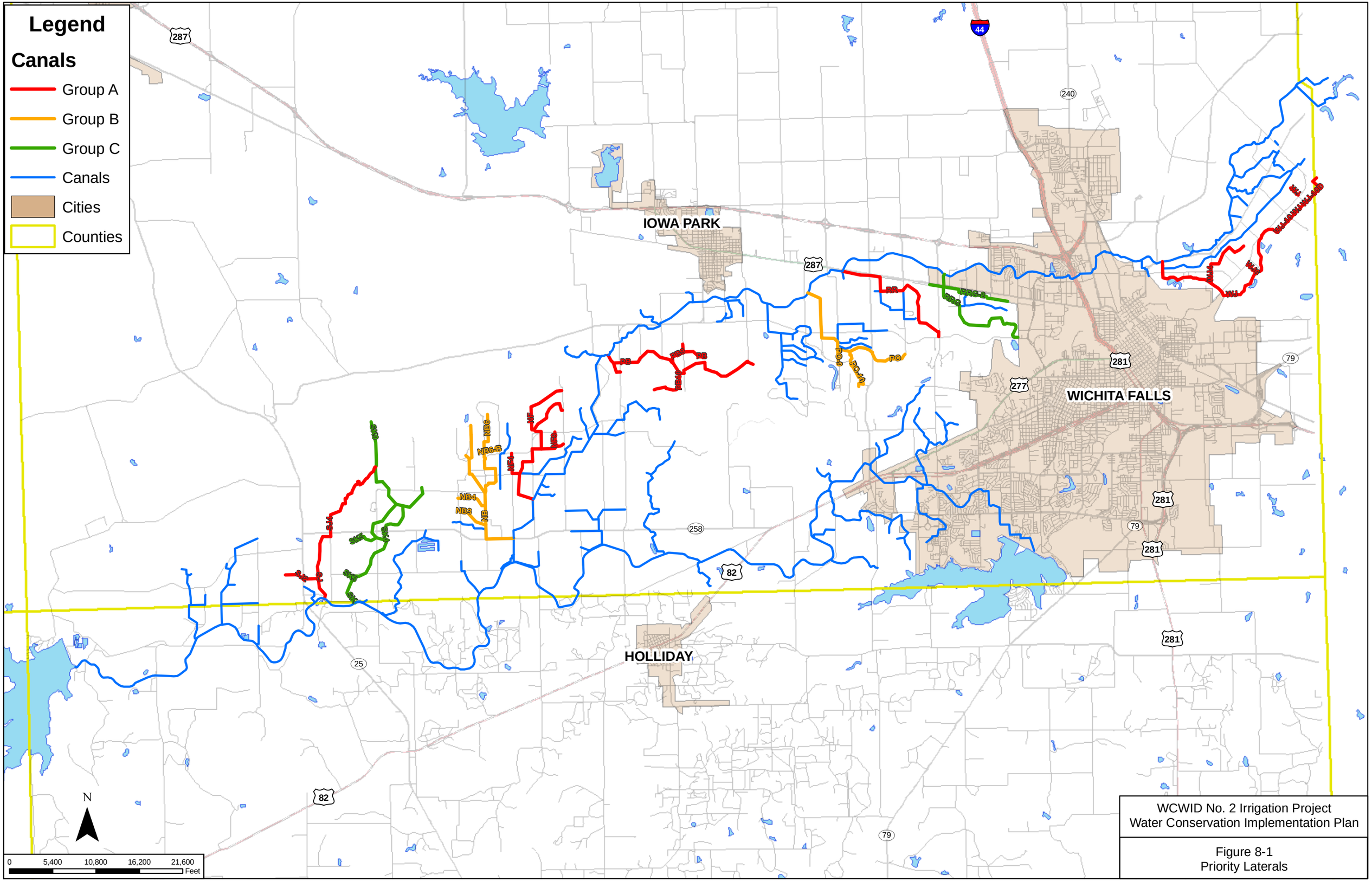
Table 8-2
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Priority Groups for Lateral Replacement

Lateral	Ranking	Supply (ac-ft/yr)	Capital Cost (Thousands $)	Annual Cost ($)	Unit Cost ($/ac-ft)
Priority Group A					
PB	1	385	132.6	11,679	30.33
RR	2	516	146.6	12,781	25.02
WJ	3	524	280.8	24,731	47.20
SJ	4	1,016	337.5	29,722	29.25
NF	5	2,286	979.3	86,248	37.73
Subtotal		***4,727***	***1,876.8***	***165,161***	***36.19***
Priority Group B					
PO	6	2,082	1,299.0	114,410	54.95
NB	7	870	1,145.2	100,858	115.93
Subtotal		***2,952***	***2,444.2***	***215,268***	***65.76***
Priority Group C					
RRG	8	1,222	1,406.8	123,899	101.39
SK	8	344	356.8	31,428	91.36
Subtotal		***1,566***	***1,763.6***	***155,327***	***99.19***
Total		**9,245**	**6,084.6**	**535,756**	**57.95**

DRAFT

A map showing the location of the three priority groups is provided as Figure 8-1.



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure 8-1
Priority Laterals

8.2 IMPLEMENTATION OPTIONS FOR LATERAL REPLACEMENTS

Several implementation options may be conceived for completing the lateral replacements depending upon available funding. The preferred option is implementation of the entire effort as a single project. This would yield the full 9,245 ac-ft per year of conservation. However, the cost may be greater than the District can support with local cooperation. Therefore, an alternative approach that treats funding each of the Priority Groups (A through C), separately, may be a viable approach. Both funding options are presented below. Both project options are developed on the basis of obtaining grant funds for 75 percent of the project costs.

8.2.1 Full Project Option

A scenario for this approach assumes that a grant could be obtained for 75 percent of the cost (TEIP or similar) and that 25 percent would be funded locally utilizing a subsidized loan (AWCF or WIF) for the District share of the cost. The key benefit to this approach is that all high-water-loss segments are converted to pipelines in a single project, and the project is completed without being impacted by increasing construction costs. The current project, at just over $6 million includes about 11 miles of pipeline. A proposal for Bureau of Reclamation loan funding in 1978 included just over 100 miles of pipeline and other improvements to the irrigation system for just over $11 million. This project was not performed in its entirety. Some elements have been performed, but at significantly higher costs than estimated in 1978.

The 75 percent grant would cover just over $4.5 million of the project cost (Table 8-3) and the loan would cover the remaining $1.5 million. Depending upon the loan program used for the local share of the costs, and interest rate (WIF is currently 2.15% and AWCF is 1.66%), the loan payments could range from $90,000 to $95,000 per year. This exceeds the District's current annual resources of $39,000 to $49,000 which would be available with implementation of the improvements. The District would need to increase its tax rate by about 20 percent to develop an additional $41,000 in revenue, if this were the sole source of funding. Alternatively, the District could obtain funding support from other sources as discussed in Chapter 7.

8.2.2 Phased Project Option

An alternative to implementing the entire project at one time is to phase the project in three steps corresponding to the three priority groups identified above. This approach would require three separate funding and construction efforts staged at 10-year intervals. The start of each phase would require the identification of grants or loans as the need for the additional water

DRAFT

increases in accordance with the future demands. There is no assurance that the programs that have been identified in this report will remain in effect to fund the future project phases.

The cost of each phase is based on 75 percent grant funding (Table 8-3). For the first phase of the effort (Priority Group A) this amounts to a grant of about $1.4 million and a loan of about $470,000. The annual loan payments would range from $27,700 to $29,100 depending upon the loan interest rate. Both of these quantities are within the amount that the District could pay from existing resources. The first phase effort should save about 4,700 ac-ft per year.

The second phase effort (Priority Group B) would begin in 2019 with another 75% grant of slightly more than $1.8 million and loan of about $611,000. The loan payments would range from $36,100 to $37,900, assuming the loan interest rates at the time would be similar to current rates. Since the payments for the Priority Group A projects would continue for another 10 years the total loan payments required from 2020 to 2029 would range from $63,900 to $67,000. After, 2029 the loan payments would revert to the $36,100 to $37,900 level if the third phase is not pursued.

The third phase effort (Priority Group C) would begin in 2029 with another 75% grant of about $1.3 million and loan of about $440,900. The loan payments would range from $26,000 to $27,400, assuming the loan interest rates at the time would be similar to current rates. Since the payments for the Priority Group A projects would continue for another 10 years the total loan payments required from 2030 to 2039 would range from $62,200 to $65,300. After 2039, the loan payments would revert to a cost of about $26,000 to $27,400.

DRAFT

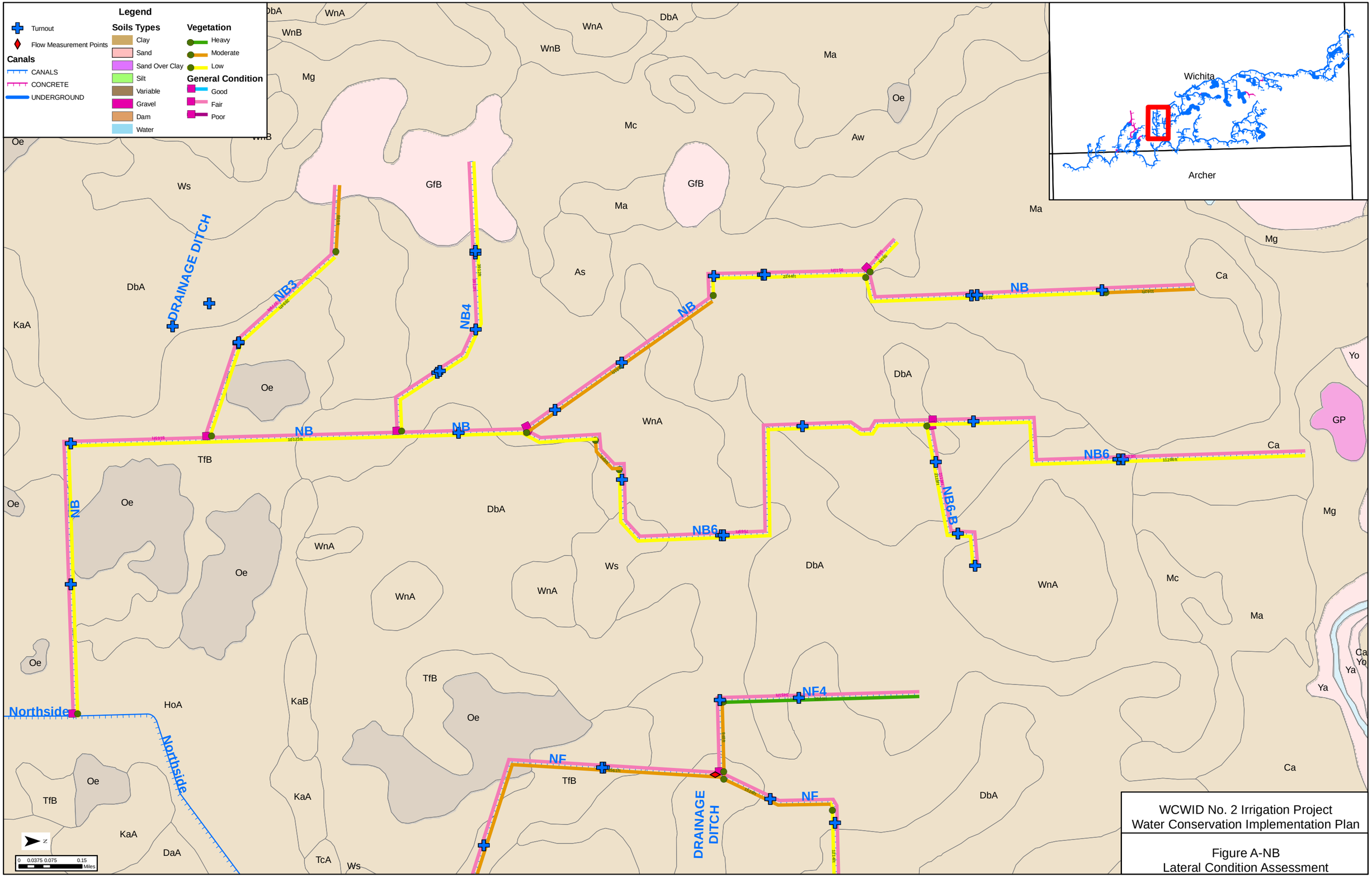
Table 8-3
WCWID No. 2 Irrigation Project, Water Conservation Implementation Plan

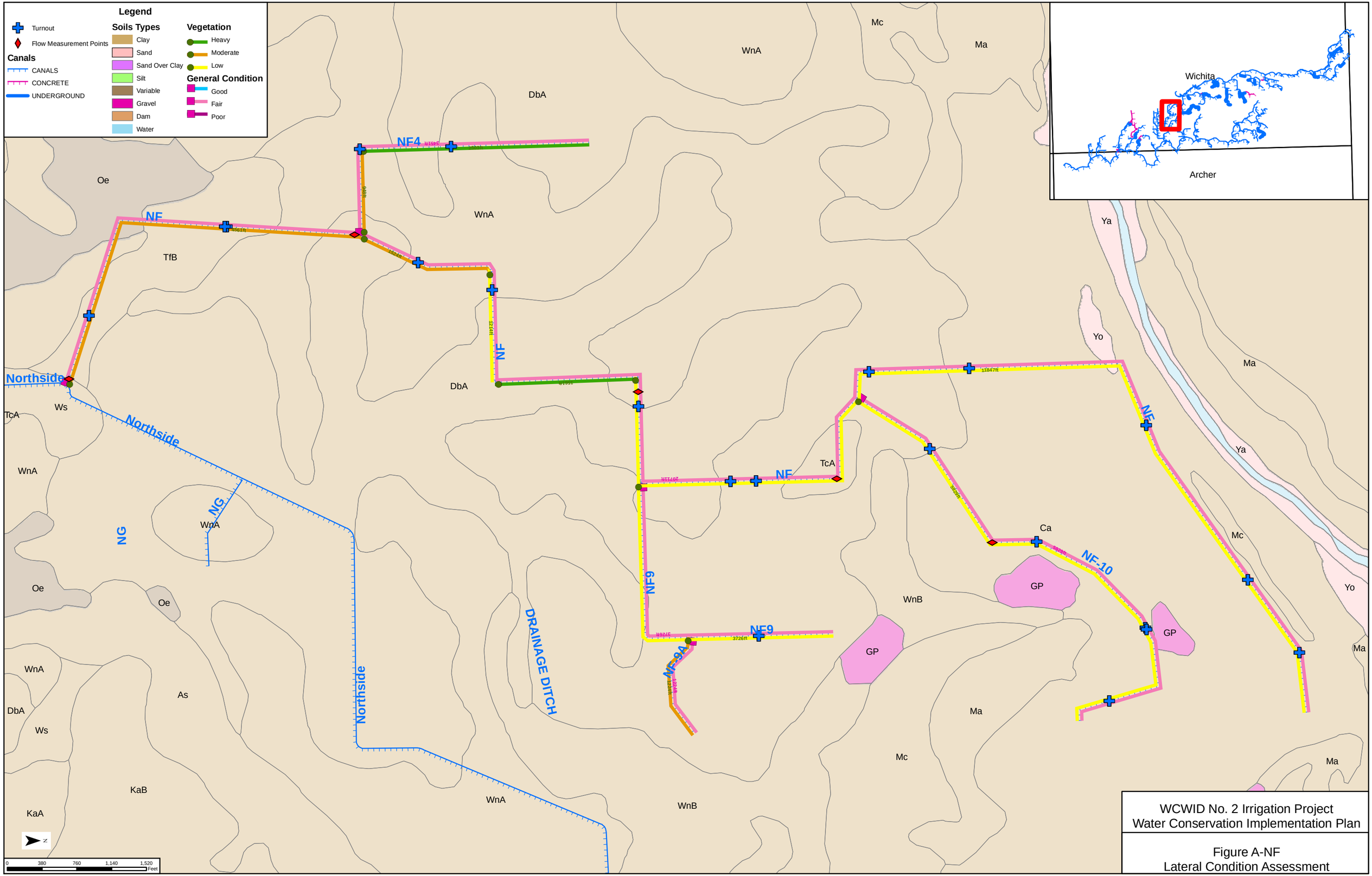
Project Financing Options

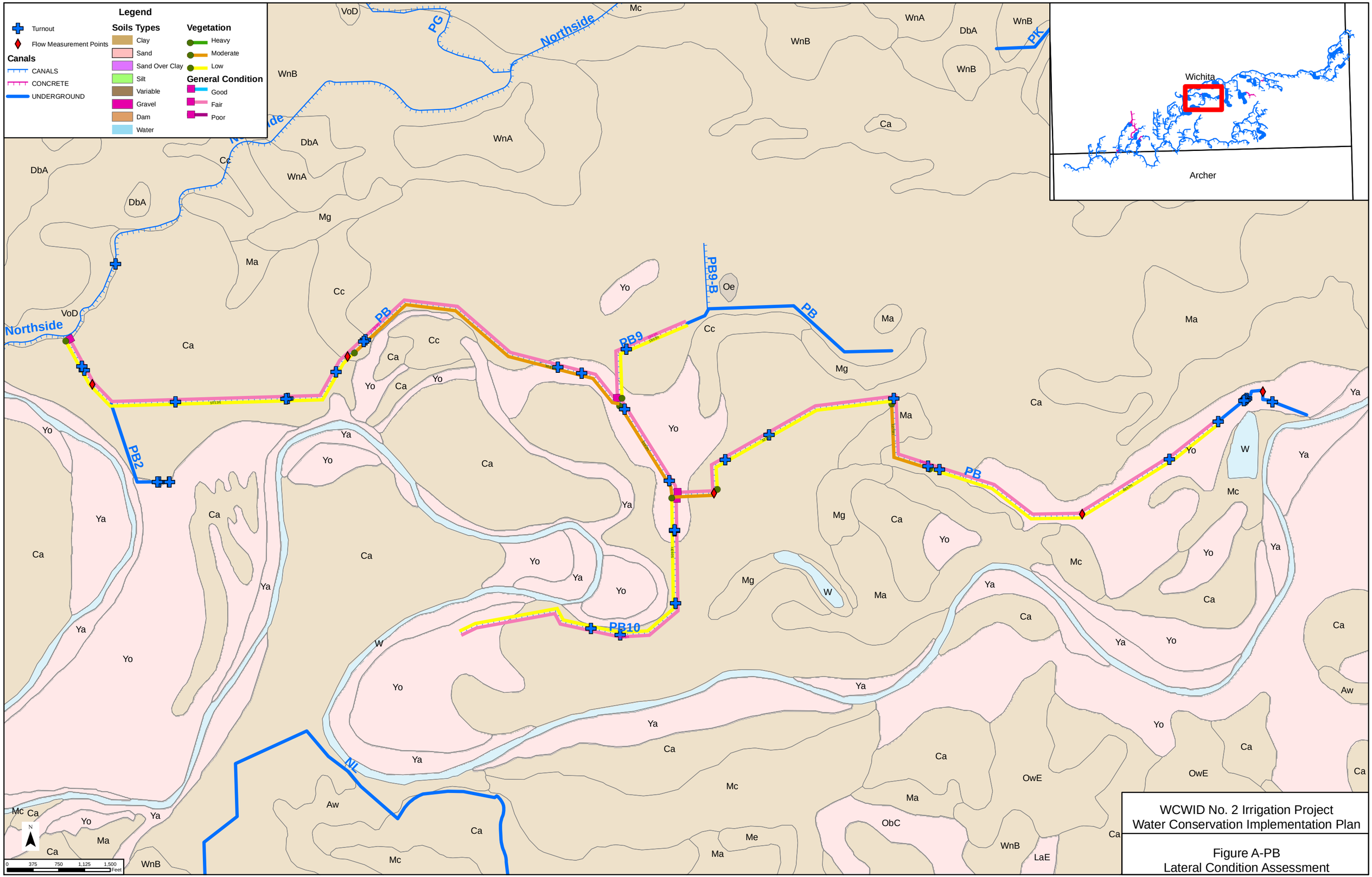
PROJECT OPTIONS			**Payment Period**			
Full Project Option (loan in 2009, payment begins 2010)			**2010-2019**	**2020-2029**	**2030-2039**	**2040-2049**
Full Project Cost		**$6,084,600**				
Grant (75%)	$4,563,450					
Local Share (25%)	$1,521,150					
Annual Loan Payment (WIF option at 2.15%)		**$94,381**	$94,381	$94,381		
Annual Loan Payment (AWCF option at 1.66%)		**$90,004**	$90,004	$90,004		
Staged Project Option (by Priority Groups A-C)						
Priority Group A (loan in 2009, payment begins 2010)						
Short Term Project		**$1,876,800**				
Grant (75%)	$1,407,600					
Local Share (25%)	$469,200					
Annual Loan Payment (WIF option at 2.15%)		**$29,112**	$29,112	$29,112		
Annual Loan Payment (AWCF option at 1.66%)		**$27,762**	$27,762	$27,762		
Priority Group B (loan in 2019, payment begins 2020)						
Short Term Project		**$2,444,200**				
Grant (75%)	$1,833,150					
Local Share (25%)	$611,050					
Annual Loan Payment (WIF option at 2.15%)		**$37,913**		$37,913	$37,913	
Annual Loan Payment (AWCF option at 1.66%)		**$36,155**		$36,155	$36,155	
Priority Group C (loan in 2029, payment begins 2030)						
Short Term Project		**$1,763,600**				
Grant (75%)	$1,322,700					
Local Share (25%)	$440,900					
Annual Loan Payment (WIF option at 2.15%)		**$27,356**			$27,356	$27,356
Annual Loan Payment (AWCF option at 1.66%)		**$26,087**			$26,087	$26,087
Total Annual Payments for 3 phase effort						
WIF Loan			$29,112	$67,025	$65,269	$27,356
AWCF Loan			$27,762	$63,917	$62,242	$26,087

Appendix A

GIS Maps of High Priority Laterals

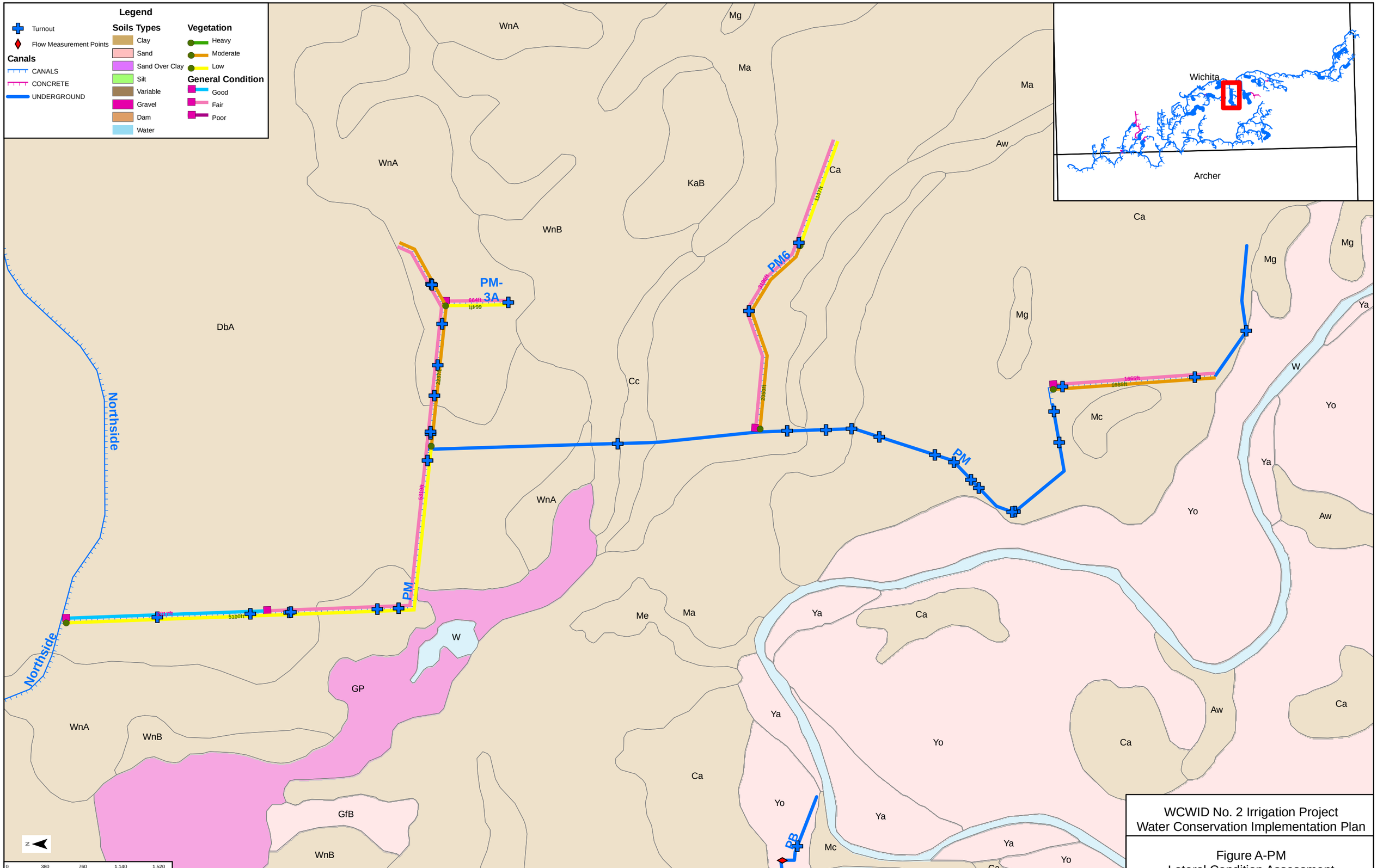

Legend
Turnout
Flow Measurement Points
Canals
CANALS
CONCRETE
UNDERGROUND
Soils Types
Clay
Sand
Sand Over Clay
Silt
Variable
Gravel
Dam
Water
Vegetation
Heavy
Moderate
Low
General Condition
Good
Fair
Poor
Wichita
Archer
DRAINAGE DITCH
NB3
NB4
NB
NB6
NB6-B
NF4
NF
Northside
DRAINAGE DITCH
0 0.0375 0.075 0.15 Miles
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan
Figure A-NB
Lateral Condition Assessment


Legend
Turnout
Flow Measurement Points
Canals
CANALS
CONCRETE
UNDERGROUND
Soils Types
Clay
Sand
Sand Over Clay
Silt
Variable
Gravel
Dam
Water
Vegetation
Heavy
Moderate
Low
General Condition
Good
Fair
Poor
Wichita
Archer
NF4
NF
Northside
NG
DRAINAGE DITCH
NF9
NF9A
NF-10
GP
Oe
TfB
WnA
DbA
TcA
Ws
Mc
Ma
Ya
Yo
Ca
WnB
As
KaB
KaA
0 380 760 1,140 1,520 Feet
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan
Figure A-NF
Lateral Condition Assessment



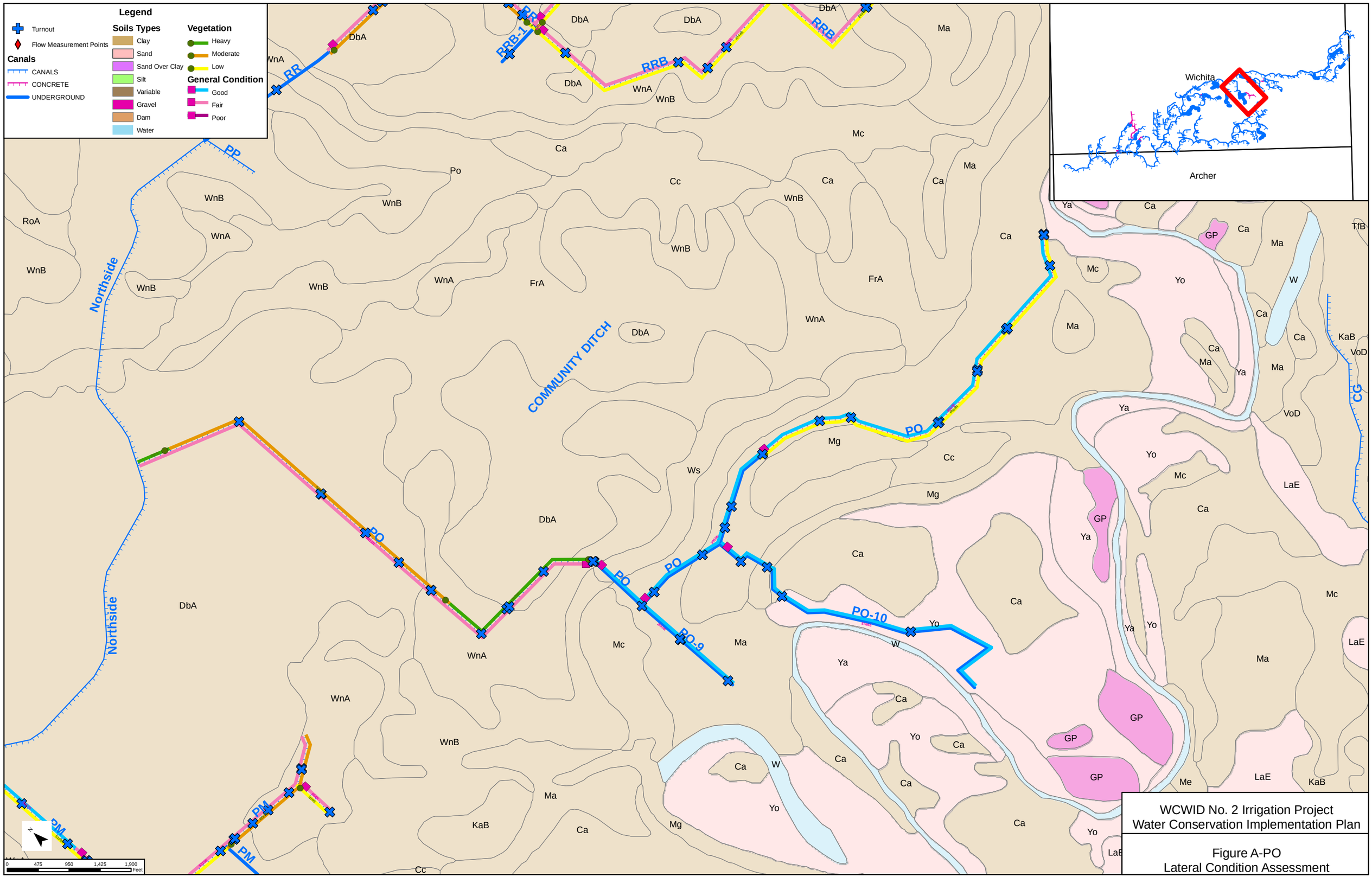
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure A-PB
Lateral Condition Assessment



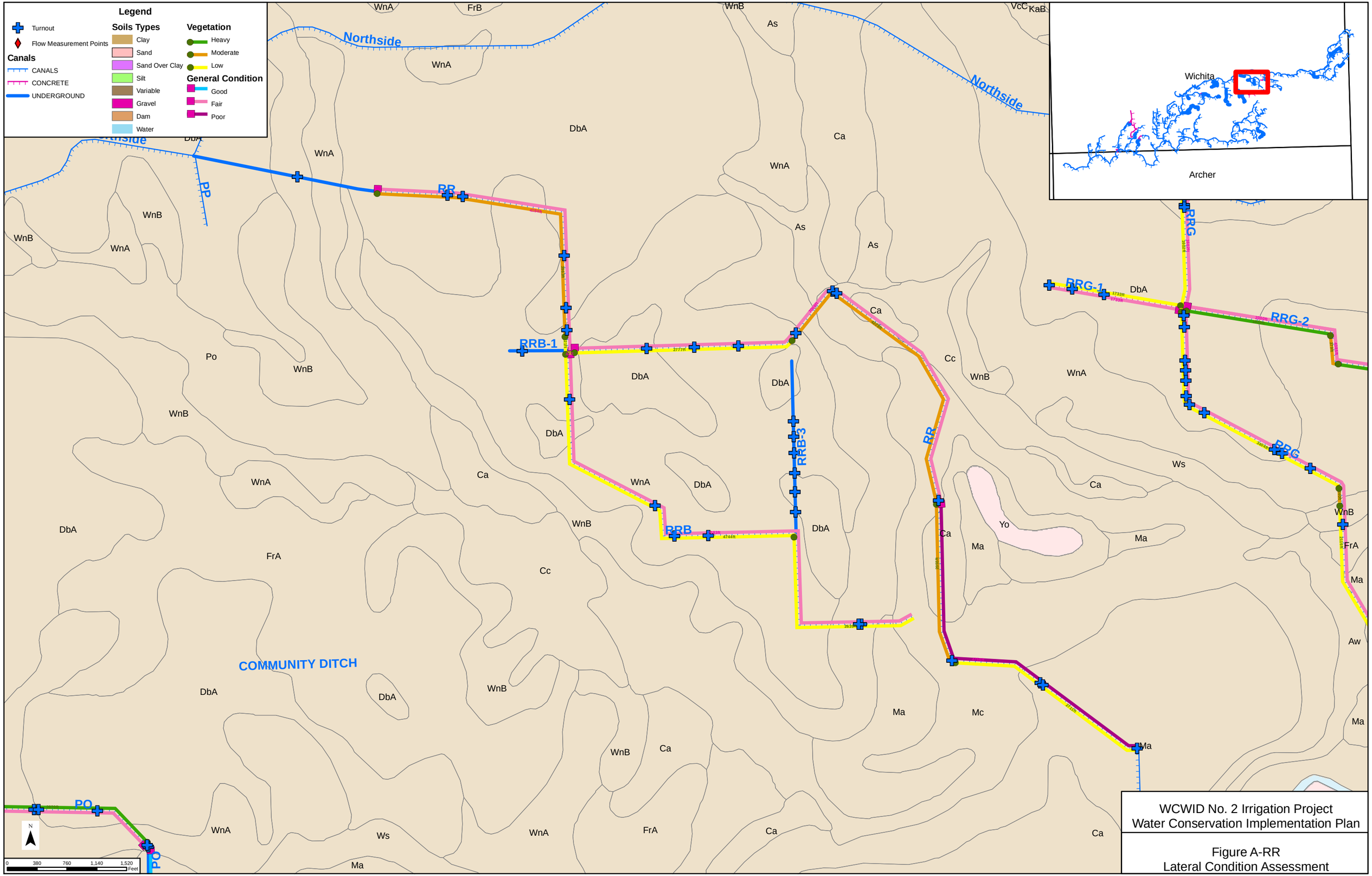
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure A-PM
Lateral Condition Assessment



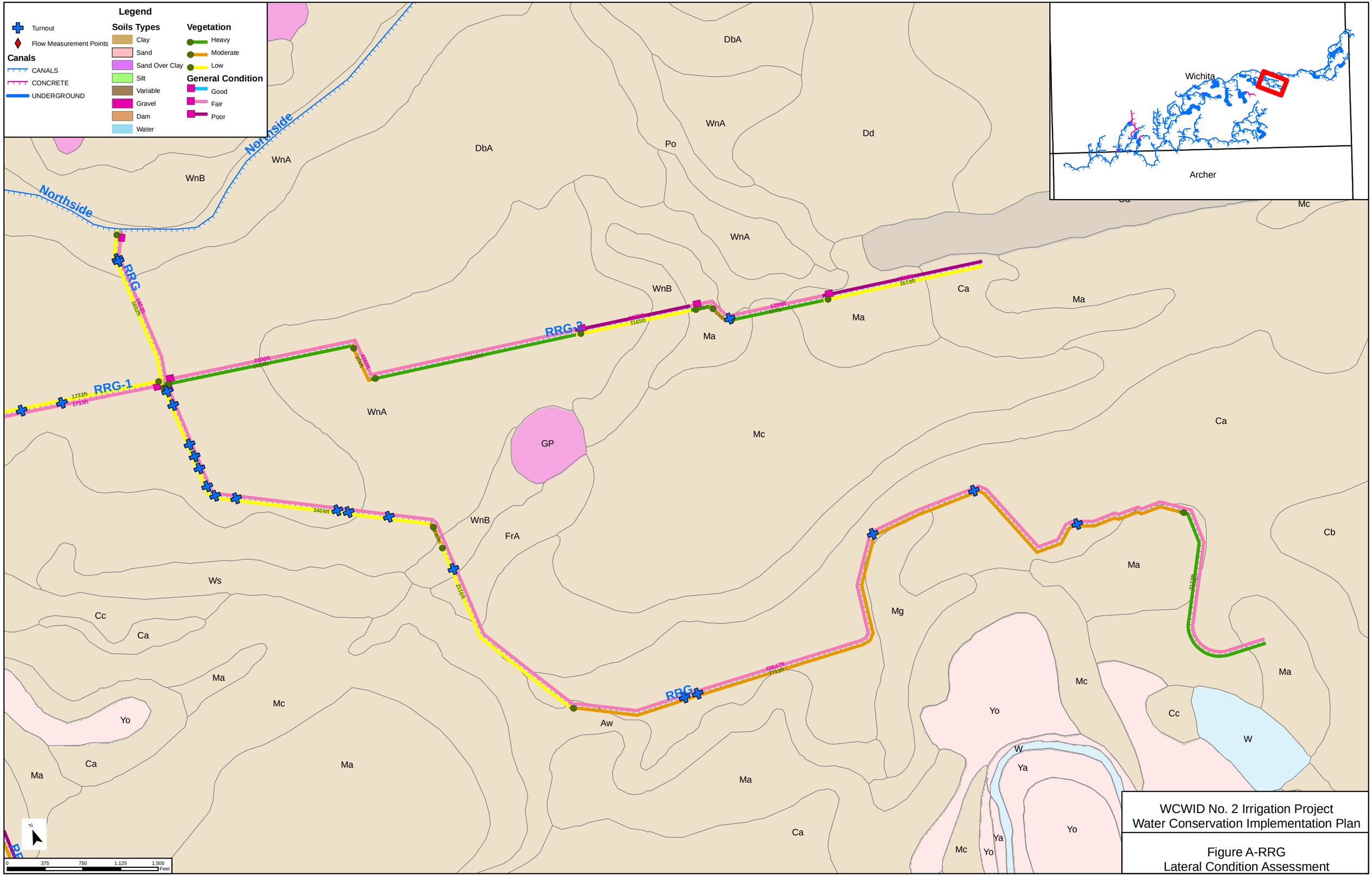
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure A-PO
Lateral Condition Assessment



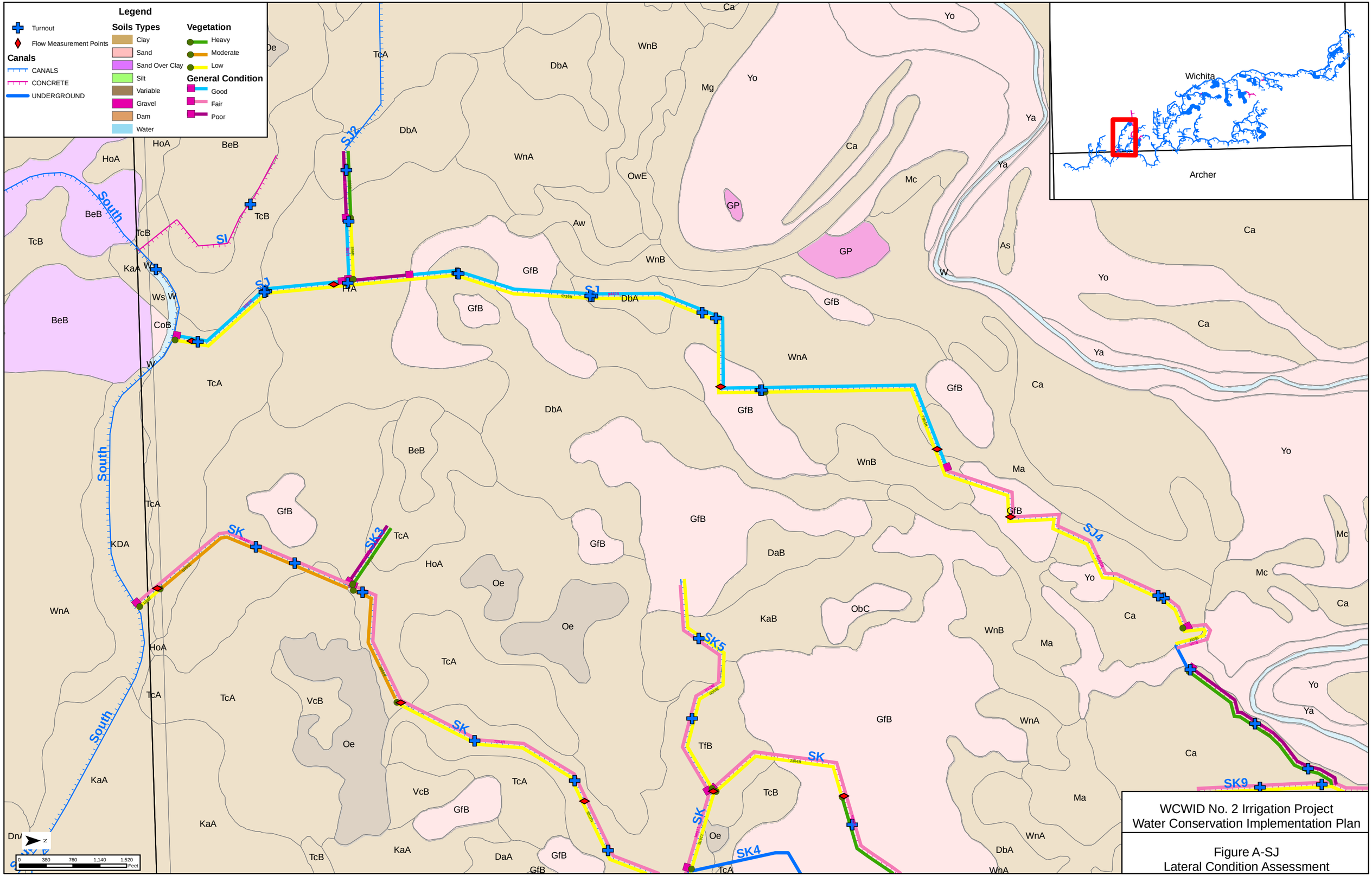
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure A-RR
Lateral Condition Assessment



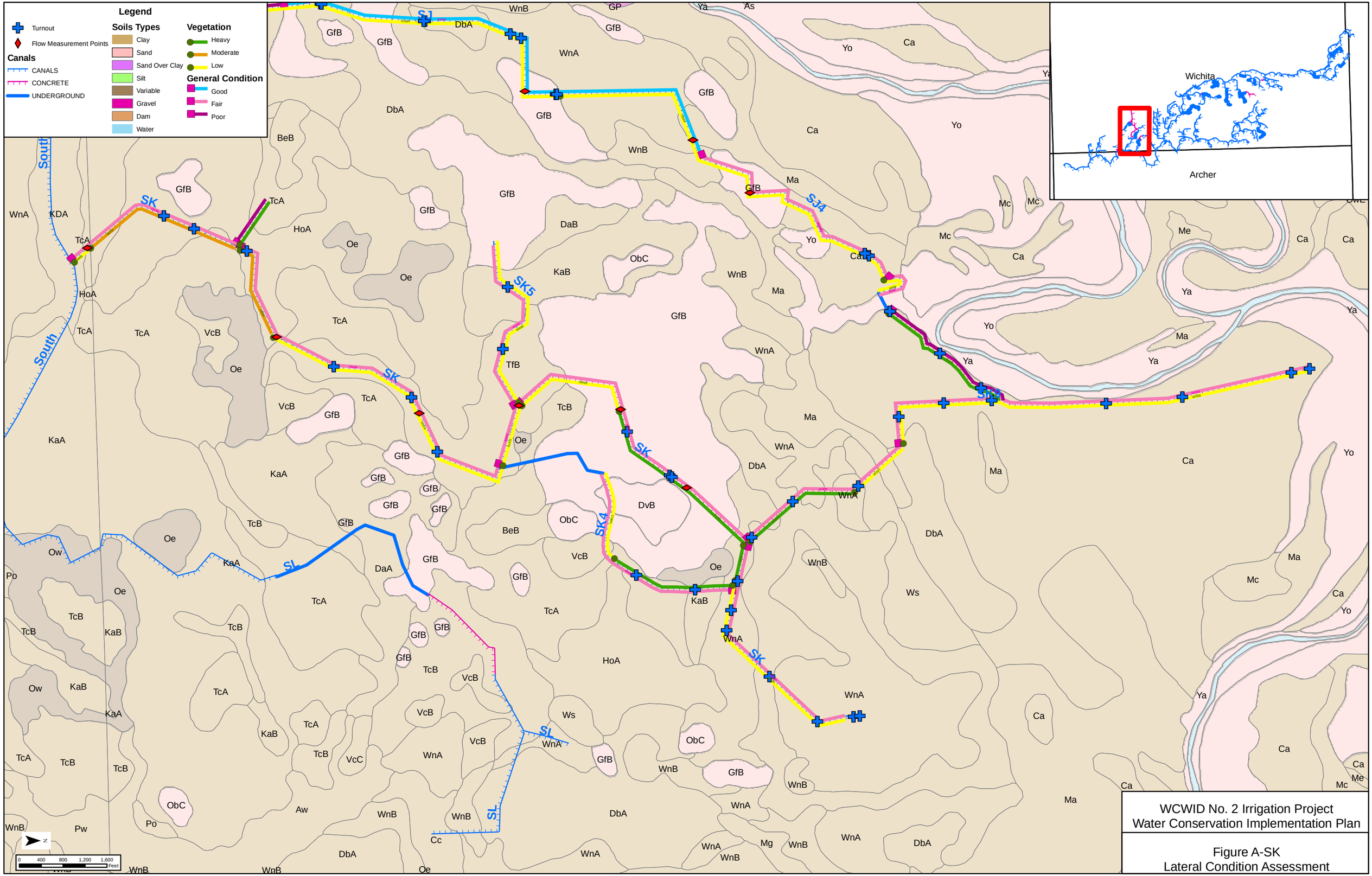
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure A-RRG
Lateral Condition Assessment



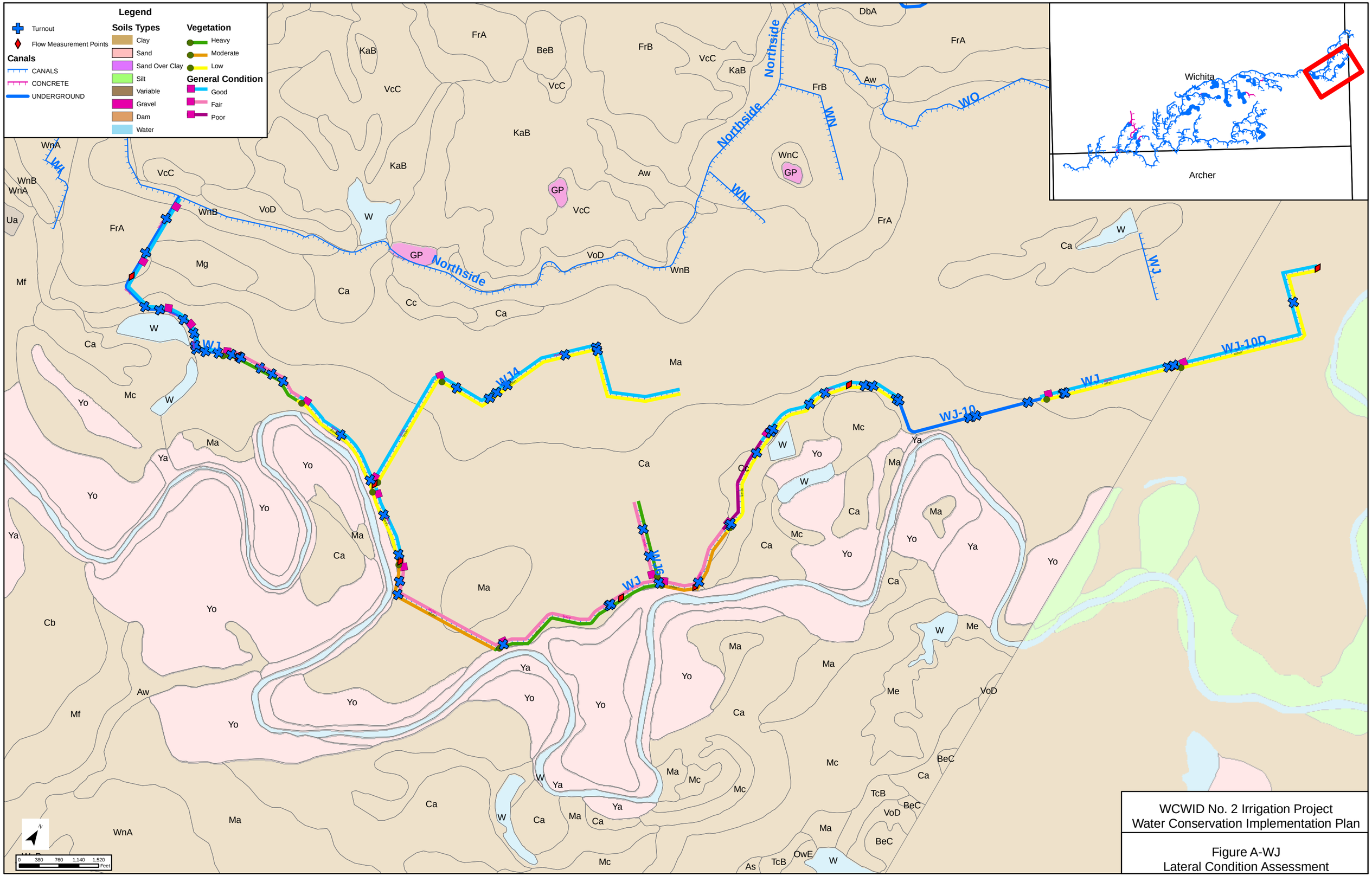
WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure A-SJ
Lateral Condition Assessment



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure A-SK
Lateral Condition Assessment



WCWID No. 2 Irrigation Project
Water Conservation Implementation Plan

Figure A-WJ
Lateral Condition Assessment

Appendix B

TWDB Funding Information

TEXAS WATER DEVELOPMENT BOARD

P.O. Box 13231,
Capitol Station
Austin, TX
78711-3231

Phone: 512.463.7847
FAX: 512.475.2053

URL Address:
http://www.twdb.state.tx.us

Email Address:
info@twdb.state.tx.us

Texas Natural Resources Information System (TNRIS)
http://www.tnris.state.tx.us

StratMap
http://www.stratmap.org

Borderlands Information Center (BIC)
http://www.bic.state.tx.us

Water Information Integration and Dissemination (TWDB WIID System)
http://wiid.twdb.state.tx.us/

AGRICULTURAL WATER CONSERVATION LOAN AND GRANT PROGRAM

As a result of Senate Bill 1053, passed by the 78th Texas Legislature, the Texas Water Development Board's (TWDB) agricultural water conservation program has been expanded. Under the new consolidated Agricultural Water Conservation Loan Program, the TWDB can provide agricultural water conservation loans to political subdivisions to use for improvements on their facilities or as loans to individuals. The TWDB may also provide grants to state agencies and political subdivisions for agricultural water conservation programs, including demonstration projects, technology transfers and educational programs.

AGRICULTURAL WATER CONSERVATION LOANS

TO POLITICAL SUBDIVISIONS

WHO CAN APPLY?

Any political subdivision such as a City, County, Soil and Water Conservation District, Underground Water Conservation District or Irrigation District can apply. Political Subdivisions include a district or authority created under Section 52, Article III, or Section 59, Article XVI, of the Texas Constitution; a municipality; a county; an institution of higher education as defined by Section 61.003, Education Code; any interstate compact commission to which the state is a party; and any nonprofit water supply corporation created and operating Under Chapter 67 of the Texas Water Code.

WHAT CAN BE FUNDED?

A conservation program or project, including a conservation program that provides funding to a political subdivision or person for a conservation project.

A Conservation Program is:

1. An agricultural water conservation technical assistance program, including a program for an on-farm soil and water conservation plan developed jointly by a landowner, an operator, and a local soil and water conservation district as provided by Subchapter H, Ch.201, Agriculture Code;
2. A research, demonstration, technology transfer, or educational program relating to agricultural water use and conservation;
3. A precipitation enhancement program in an area of the state where the program, in the TWDB's judgment, would be most effective; and
4. Other state agency or political subdivision-administered water conservation programs that provide loans to a person for a conservation project.

➢

A Conservation Project is a project that:

1. Improves the efficiency of water delivery to and application on existing irrigation systems;
2. Prepares irrigated land for conversion to dry land conditions;
3. Prepares dry land for more efficient use of natural precipitation;
4. Purchases and installs on public or private property devices designed to indicate the amount of water withdrawn for irrigation purposes; or
5. Prepares and maintains land to be used for brush control activities in areas of the state where those activities, in the TWDB's judgment, would be most effective, including activities conducted under Ch.203, Agriculture Code.

The costs of a conservation program or project eligible for financial assistance under Section 17.899 of the Texas Water Code are the costs of the capital equipment, materials, labor, preparation, installation, or administration directly associated with implementing and completing the program or project.

WHAT IS THE APPLICATION PROCESS?

For information on the application process, contact the TWDB at 512-463-0991.

WHAT IS THE REVIEW PROCESS FOR LOAN APPLICATIONS FROM POLITICAL SUBDIVISIONS?

In reviewing an application by a political subdivision for a loan, the TWDB must find that:

1. The public interest is served by providing the loan;
2. The political subdivision has the ability to repay the loan; and
3. The loan will further water conservation in the state.

For the linked deposit program, the individual bank application and credit review policy will apply to applications.

WHAT IS THE INTEREST RATE?

The interest rate to the political subdivision shall be equal to the asking yield for a U.S. Treasury Note with a twelve-month maturity on the date rates are set.

AGRICULTURAL WATER CONSERVATION GRANTS

Another component of the expanded Agricultural Water Conservation Program allows grants to state agencies and political subdivisions for agricultural water conservation programs.

WHAT CAN BE FUNDED?

Grants may be made available for demonstrations, education, research, technical assistance, and technology transfer. Grants may also be made to political subdivisions for agricultural water conservation projects for purchase and installation, on either public or private property, of metering devices to measure irrigation water use in order to quantify effects of different water conservation strategies.

WHAT IS THE REVIEW PROCESS FOR GRANT APPLICATIONS?

In reviewing applications for agricultural water conservation grants, the TWDB will consider:

1. The commitment of the entity to water conservation;
2. The benefits that will be gained by making the grant;
3. The degree to which the political subdivision has used other available resources to finance the use for which the application is being made;
4. The willingness and ability of the political subdivision to raise revenue;
5. A finding that the grant will supplement rather than replace money of the applicant;
6. A finding that the grant will serve the public interest. In making this finding the TWDB shall include a finding that the grant will assist in the implementation of a water conservation water management strategy identified in the most recent applicable approved regional water plan or state water plan; and
7. That the grant will further water conservation in the State.

Information on grant guidelines and application instructions is available at:
www.twdb.state.tx.us/assistance/conservation/grants.asp, or contact the TWDB at 512-463-7940.

AWCLGP 0208L

Our Mission
Provide leadership, planning, financial assistance, information, and education for the conservation and responsible development of water for Texas.

EQUAL OPPORTUNITY EMPLOYER
The Texas Water Development Board does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in employment or the provision of services, programs or activities.
1-800-RELAY TX (for the hearing impaired)

Water Infrastructure Fund (WIF)

- Type: loans -- Loans for planning, design, and construction can be funded through the WIF. All loans through the WIF are offered at a subsidized interest rate which is 2 percent below the TWDB's cost of funds. Repayment periods are a maximum of 20 years. Certain loans for development costs have an additional financial opportunity. In order to advance projects which have significant development lead times, a portion of the WIF is available specifically for planning, design, permitting, and other costs associated with state or federal regulatory activities. Utilizing this WIF-Deferred, an applicant may defer all interest and principal payments for up to 10 years, or until the end of construction of the project, whichever is sooner. Interest is not accrued during the deferral period and the loan is amortized over the final remaining years.

- Uses: Projects must be recommended water management strategies in the most recent Texas Water Development Board (TWDB) approved regional water plan or approved State Water Plan. Funds may not be used to maintain a system or to develop a retail distribution system.

- Applicants: a political subdivision of the state. Political subdivisions include municipalities, counties, river authorities, special law districts, water improvement districts, water control and improvement districts, irrigation districts, and groundwater districts.

- Availability: Contingent upon debt service appropriations from the Legislature for bonds issued by the TWDB.

- Application Forms: Applications include a preliminary engineering feasibility report and known environmental information, as well as general, fiscal and legal application information. Application Procedure Guidelines can be found on the TWDB web site (Form WRD-006)

- Applications must be received by the first business day in January or July. Project applications received by those dates will be prioritized relative to all other project applications received for that round of funding. The projects will be prioritized based on whether they meet the priority criteria relative to all other projects being assessed. The tie-breaker will be the projects with the lowest annual median household income based on the most current data available from the U.S. Census Bureau for all of the areas to be served by the project.

Water Infrastructure Fund (WIF)
Texas Water Development Fund

Frequently Asked Questions

1. Who is eligible to apply?
   - Eligible political subdivisions are municipalities, counties, river authorities, special law districts, water improvement districts, irrigation districts, water control and improvement districts, and groundwater districts with a groundwater management plan certified by the board.

2. What kinds of projects are eligible?
   - Projects that are recommended water management strategies in the adopted 2007 State Water Plan (Plan) or the Board approved 2006 Regional Water Plan. Please contact the appropriate Board Regional Water Planning Project Manager to confirm eligibility.

3. Do the projects have to be specifically listed in the Plan?
   - Yes. The project must be a recommended strategy. For example, if the project is listed in the Plan as "construction of a reservoir" but does not list the pipeline for delivery of that water, the pipeline would not be eligible for WIF.

4. How can I get projects that are not in the Plan to become eligible?
   - The appropriate Regional Water Plan would have to be amended to include the project prior to submittal of an application to the Board.

5. What kind of funding is available?
   - Funding is available for all aspects of a project including planning, design, permitting, acquisition, and construction. Currently there are no grants available through WIF but interest rates for all loans are subsidized at 200 basis points below the Board's cost of funds. The loan will be amortized over 20 years with a level debt service. There are various funding structures available for different portions of the project.

6. Is there a deferred payment option?
   - Applications for only planning, design and permitting costs have a deferred payment plan available. The deferment can be up to 10 years or until the end of construction, whichever is sooner.
   - The WIF-deferred payment option is targeted at those projects which have long development periods where the applicant must spend considerable time and money before actual delivery of water and the accompanying revenue stream materializes. The loan is structured on a 20 year term with up to the first 10 years requiring no principal or interest payments. There is also no accrued interest. The loan is amortized over the remaining 10 years.

7. For the WIF-deferred payment option when does the applicant receive the funds and when does interest start to accrue?
   - Assuming a 10 year deferral, the applicant must close the full loan within one year of the date of commitment. Interest would start to accrue 10 years from the closing date.

Water Infrastructure Fund (WIF)
Texas Water Development Fund

Frequently Asked Questions

8. How is a regular WIF loan structured?
   - The loan must be closed in its entirety within one year from the commitment date. The loan will be amortized over 20 years with level debt service. All loans must be closed entirely within one year from the commitment date.

9. Can I submit more than one project in an application?
   - Yes. However, the projects will be prioritized separately for funding so they must be segregated in the application. For example, an applicant might submit for a reservoir project and a re-use project. Those projects would be prioritized separately and compared to the other projects received for consideration. So, an applicant could receive a commitment for one of their projects but not the other, based on the priority received.

10. How does the priority system work?
    - Applications must be received by the first business day in January or July. Project applications received by the dates will be prioritized relative to all other project applications received for that round of funding. The projects will be prioritized based on they meet the priority criteria relative to all other projects being assessed. The tie-breaker will be the projects with the lowest annual median household income based on the most current data available from the U.S. Census Bureau for all of the areas to be served by the project.

11. What are the priority criteria?
    - The following factors are considered by the Executive Administrator when ranking the applications:
      - projects which result in the development of a new, usable supply of water;
      - projects which have the earliest identified need, as identified in the water plan;
      - entities that have already demonstrated significant water conservation savings; or will achieve significant water conservation savings by implementing the proposed project.

12. What is the tie breaker?
    - If two or more projects receive the same priority ranking, priority will be given to the project having the service area with the lowest median annual household income based upon the most current data available from the U.S. Bureau of the Census for all the areas to be served by the project.

13. What if my project does not rank high enough to receive funding?
    - An applicant could receive partial funding, depending on the availability of funds and the project's priority. If there are insufficient funds during the funding round in which the applicant has applied, the project may be resubmitted for the next round of funding. The project will be prioritized relative to all projects submitted for that round of funding. There are no additional points awarded for prior submittals.

Water Infrastructure Fund (WIF)
Texas Water Development Fund

Frequently Asked Questions

14. What if my project serves an economically distressed area or a rural area?
    - Grants and loans are available for water plan projects through the Economically Distressed Areas Program (EDAP) for projects that serve areas that qualify as either economically distressed or rural.
    - To be considered economically distressed, the service area must have a median household income which is not greater than 75% of the state median income. Grant amounts are limited to 50% of the total funding commitment unless the applicant provides a finding from the Texas Department of State Health Services that a nuisance dangerous to the public health and safety exists resulting from the water supply in the area to be served by the proposed project.
    - A rural political subdivision is one which serves areas outside metropolitan statistical areas and has a population of less than 5,000. The EDAP grant amount is limited to 50% of the total project costs.

15. Are there additional conditions or requirements for economically distressed and rural projects to receive grants?
    - Yes. Grants are only available through the EDAP so applicants will have to meet the requirements of that program. One major additional requirement is adoption of model subdivision rules by the political subdivision and the county(ies) in which its service area resides. Please refer to TAC Chapter 363 Subchapter E. Economically Distressed Areas for further requirements.

16. What happens if there are not enough funds for economically distressed of rural water plan projects in EDAP?
    - Rural and disadvantaged projects that have applied through EDAP but did not receive a commitment because of insufficient funds will receive first priority in the WIF.

17. Are there special engineering requirements for WIF?
    - WIF funding follows 31 TAC Chapter 363 rules for state financial assistance programs.

18. Are there special environmental requirements for WIF?
    - WIF funding follows 31 TAC Chapter 363.16 (relating to Pre-design Funding Option) for those projects which are deemed eligible for pre-design funding. The Executive Administrator may recommend to the board that projects be eligible for pre-design if, based on available information, there appear to be no significant permitting, social, environmental, engineering, or financial issues associated with the project.
    - Reservoir projects are not eligible for pre-design funding. Projects not eligible for pre-design funding must follow 31 TAC Chapter 363.14 (relating to Environmental Assessment)

19. What kind of repayment pledge does the Board require?
    - The Board considers all types of pledges that the applicants have legal authority to pledge. The most common pledges are revenue, tax, tax and revenue and contract revenue.

Water Infrastructure Fund (WIF)
Texas Water Development Fund

Frequently Asked Questions

20. What information is necessary in order to apply?
    - Application Procedures guidelines are available on the Board's website (www.twdb.state.tx.us). The guidance is Financial Assistance Application WRD-006.

REQUEST FOR STATEMENTS OF INTEREST (SOI) FOR FEDERAL FUNDING UNDER THE TEXAS ENVIRONMENTAL INFRASTRUCTURE PROGRAM (TEIP)

The Texas Water Development Board (board) is requesting Statements of Interest (SOIs) from interested political subdivisions under the Texas Environmental Infrastructure Program (TEIP). "Political subdivision" includes a county, city, or other body politic or corporate of the state, including any district or authority created under Article III, Section 52 or Article XVI, Section 59 of the Texas Constitution and including any interstate compact commission to which the state is a party. Contingent on congressional appropriations, approximately $40,000,000 will be available through TEIP for water resources projects identified by the board.

The board's objective is to support construction of projects (or discrete increments of projects) to meet near-term water supply needs. Pre-construction activities are also eligible for TEIP assistance, but preference will be given to those SOIs that support construction of water supply within a reasonable time frame.

TEIP Background

The TEIP is administered by the U.S. Army Corps of Engineers (USACE) under Public Law 110-114, the Water Resources Development Act of 2007 (WRDA). TEIP authorizes the USACE to provide financial assistance to develop water supply projects in Texas, including implementation of water management strategies recommended in "Water for Texas - 2007," the Texas State Water Plan, and not otherwise authorized under WRDA. This assistance is "in the form of planning, design and construction assistance for water-related environmental infrastructure and resource protection and development projects in Texas, including projects for water supply, storage, treatment and related facilities, environmental restoration, and surface water resource protection and development."

Funding Limitations

The $40,000,000, if appropriated, will be dedicated to a cost-sharing program. The federal share of a project cost will be 75%, which may be provided in the form of grants or reimbursements of project costs. The non-federal share of 25% may be provided in the form of materials and in-kind services, including planning, design, construction and management services, as determined to be necessary for the project. Design work carried out before the date of project funding under WRDA may be credited toward the non-federal share. Additionally, the non-federal share may be in the form of a credit for land, easements, rights-of-way, and relocations. More details on eligibility for the non-federal cost-share will be available upon the release of USACE implementation guidance for

TEIP. (Upon receipt, the board will make the USACE guidance available to all interested political subdivisions.) Finally, the eligible applicant may apply for funding of the non-federal 25% share through one of the board's state authorized funding programs.

Contingent on congressional appropriations, funds will be distributed directly from the USACE to the political subdivision.

Eligibility and Ranking

The board's executive administrator will prioritize SOIs on the basis of the criteria specified herein, and forward the prioritized list of eligible SOIs to Congress and the USACE by February 2009 for consideration in Fiscal Year 2010 appropriations. The list also will be posted to the TWDB website and provided to all political subdivisions that submit a SOI.

The ranking criteria to be used by the executive administrator are as follows:

1. Whether the proposed project is identified in the State Water Plan;
2. Whether the proposed project is for new water supply;
3. Construction projects are preferred over pre-construction projects;
4. Projected completion date;
5. Status of federal 404 permit authorization; and
6. Other benefits.

General Requirements

Interested political subdivisions or their authorized representative should submit an SOI to the address below no later than 5:00 p.m. on January 14, 2009. Responses should be limited to ten pages, excluding necessary maps.

The SOI shall contain the following information:

1. Name and address and geographical jurisdiction of the project sponsor(s);

2. Name, phone number and email address of main points of contact for the sponsor;

3. Name of project as identified by page number in the State Water Plan, "Water for Texas - 2007," and in the applicable Regional Water Plan;

4. Description of the physical boundaries of the project and the geographic area and region to be served by the project and the congressional district(s) in which the project is located;

5. Brief description of overall project and estimated total cost of entire project;

6. Brief description of the portion of the project for which federal funding is requested under the TEIP, and estimated cost of the portion, date of the cost estimate, and estimated time to complete the project;

   If requesting funding for a discrete portion of a project, the portion must be a 'usable increment' to be defined in the USACE implementation guidelines.

7. A resolution from the governing body of the political subdivision approving the project and committing non-federal cost share. If, due to the schedule for governing body meetings, the applicant cannot provide a resolution by the January 14, 2009 deadline for SOI, then the board will accept a letter from the chair or chief executive of the governing body stating the intent to request a resolution at the next regularly scheduled meeting (must include date of the meeting) of the governing body; and

8. Statement by the project sponsor that the project has not been authorized in WRDA 2007 or previous Acts.

Submission of SOI and Questions

The SOI shall be submitted by U.S. Mail, electronic mail or facsimile to:
Mr. Dave Mitamura
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711-3231
Phone: (512) 463-7965
Fax: (512) 475-2053
Email: dave.mitamura@twdb.state.tx.us

The SOI must be received by 5:00 p.m., January 14, 2009.

Interest Rates

LENDING RATE MEMORANDUM

October 31, 2008

Listed below are the Current Average Lending Rates (ALR) used by the Texas Water Development I **assuming a level debt service**. *Actual rates will vary with length and structure.* The ALR listed belo subject to change and availability of funds. These rates are listed for comparative and marketing pur

	AVERAGE	AVERAGE RATE	
GENERAL OBLIGATION BONDS1)	**LOAN YRS**	**MARKET (2)**	**TWDB**
Development Fund (Tax Exempt)	22	6.40%	5.65%
Development Fund (Taxable)	22	8.96%	7.91%
EDAP/Tax Exempt:	22	6.40%	5.11%
State Participation*	35	6.80%	5.54%
Agricultural Loans (Taxable)	7	6.58%	1.66%
Rural Water Assistance Fund (AMT)	40	N/A	5.15%
Water Infrastructure Fund	20	6.40%	2.15%
	AVERAGE	AVERAGE RATE	
STATE REVOLVING FUNDS	**LOAN YRS**	**MARKET**	**TWDB (3)**
Clean Water SRF (**Insured**)**	20	5.10%	4.15%
Clean Water SRF (**Non-Rated**) **	20	6.00%	5.05%
Drinking Water SRF (**Insured**) ***	20	5.10%	3.60%

Drinking Water SRF (**Non-Rated**)***	**20**	**6.00%**	**4.50%**

Note: new fixed GO bond rates approved by resolution at Board Meeting on 12/04/07

(1) Municipal bond insurance is not applicable on GO bonds.

(2) The GO Market ALR are based on a Baa (88 scale) rating assuming most entities are non-rated.

(3) Borrower's rates for Clean Water and Drinking Water SRF loans will depend upon the security, w pledged, and the entity's corresponding rating. Actual rates are based upon market rates minus a su 45 days before closing. Lending rates will be set from the daily Delphis Hanover Scale as required b 375, Texas Administrative Code.

*Includes administrative cost recovery fee of .77%

**Includes loan origination charge of 1.85%

***Includes loan origination charge of 2.25%

Rates are for illustrative purposes only.
<<Contact the TWDB staff in the Program and Policy Development Division of the Office of Project F and Construction Assistance at (512) 463-7853 for lending rate scale or other inquiries>>

---

page maintained by Sandy Simon ssimon@TWDB.State.Tx.US

Open Records Requests | Privacy & Security Policies | Accessibility Policy | Link Policy | Contact Webmaster | Site Map | Co Texans

Texas Water Development Board (TWDB) - All Rights Reserved

Appendix C

USBR Funding Information

Commissioner's Office
Washington, D.C.
Media Contact:
Peter Soeth
303-445-3615

Released On: October 20, 2008

Water Marketing and Efficiency Grant Funding Opportunity Announced for Fiscal Year 2009 under the Water for America Initiative

Bureau of Reclamation Commissioner Bob Johnson has announced the first funding opportunity for fiscal year 2009 under the Water for America Challenge Grant Program is now available online at www.grants.gov. Reclamation is seeking proposals for cooperative projects that create water banks and markets or improve the water delivery efficiency of a system through conservation or operational improvements.

"Population growth, climate variability, chronic water supply shortages, and increased competition for water will challenge communities in the West," said Johnson. "This initiative is aimed at helping communities address the twenty-first century water challenges and ensure they have adequate water supplies now and into the future."

Water Marketing and Efficiency grants were previously known as Challenge Grants under the Water 2025 Initiative. In previous years, this program funded 137 projects which represented a combined investment of more than $127 million in water improvements, including a non-federal cost share of $97.7 million.

The Water for America initiative was developed under Secretary of the Interior Dirk Kempthorne to help state, tribal, and local governments better conserve, manage and develop their vital water resources to meet future challenges and demands. Projects will be selected for funding through a competitive process and should meet the goals of the initiative.

Entities that may submit proposals are irrigation and/or water districts, water authorities of federally recognized Tribes and other entities created under State or Territory law with water management authority. Applicants must also be located in the Western United States or United States Territories.

Proposals must be submitted as indicated on www.grants.gov by January 14, 2009, at 4:00 p.m. MST. It is anticipated the awards will be made during the summer of 2009.

For more information on Water for America visit www.usbr.gov/wfa.

# # #

Reclamation is the largest wholesale water supplier and the second largest producer of hydroelectric power in the United States, with operations and facilities in the 17 Western States. Its facilities also provide substantial flood control, recreation, and fish and wildlife benefits. Visit our website at www.usbr.gov.

Relevant Links:

Water for America: Water Marketing and Efficiency Grants for Fiscal Year 2009 on grants.gov

Water For America

RECLAMATION
Managing Water in the West

Water for America Initiative
Proposed Implementation Plan

U.S. Department of the Interior
Bureau of Reclamation

July 2008

Water for America Initiative

Proposed Implementation Plan

For Public Comment

U.S. Department of the Interior
Bureau of Reclamation
Policy and Program Services
Denver, Colorado

July 2008

MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Table of Contents

Page

***Water for America* Initiative** **1**
Overview of the Initiative 1
Budget and Authorization Requests 2
Collaboration with USGS 2
Public Outreach 3
Plan for Our Nation's Water Future **5**
Investigations Program 5
Basin Studies Program 5
Overview 5
Contents of the Basin Studies 5
Basin Studies Selection Process 7
Basin Studies Parameters 7
Basin Studies Selection Criteria 8
Expand, Protect, and Conserve Our Nation's Water Resources **9**
Water for America Challenge Grant Program 9
Overview 9
Challenge Grant Selection Process 10
Selection Criteria 11
Water Conservation Field Services Program Description 12
WCFSP Selection Process and Criteria for Financial Assistance 13
Acceleration of Critical ESA Compliance 14
Overview 14
Activities 14
Funding 15
Program Criteria 15
Conclusion **16**

Water for America Initiative

Overview of the Initiative

Watersheds throughout the West continue to be challenged by chronic water supply shortages, dramatic population growth, climate variability, and heightened competition for finite water supplies by cities, farms, and the environment. To respond to these 21st century water realities, the Bureau of Reclamation will partner with the U.S. Geological Survey (USGS) beginning in fiscal year (FY) 2009 to implement the *Water for America* Initiative (Initiative).

The Initiative includes three strategies: *Plan for Our Nation's Water Future*; *Expand, Protect, and Conserve Our Nation's Water Resources*; and *Enhance Our Nation's Water Knowledge*. Figure 1 depicts the three strategies and their relationship to the Initiative. Reclamation's efforts and this Implementation Plan focus on the first two of the Initiative's three strategies. The third strategy will be undertaken by USGS. Reclamation is coordinating closely with USGS on implementing the Initiative. Wherever possible, Reclamation will incorporate data made available by USGS through the Initiative into Reclamation's efforts.

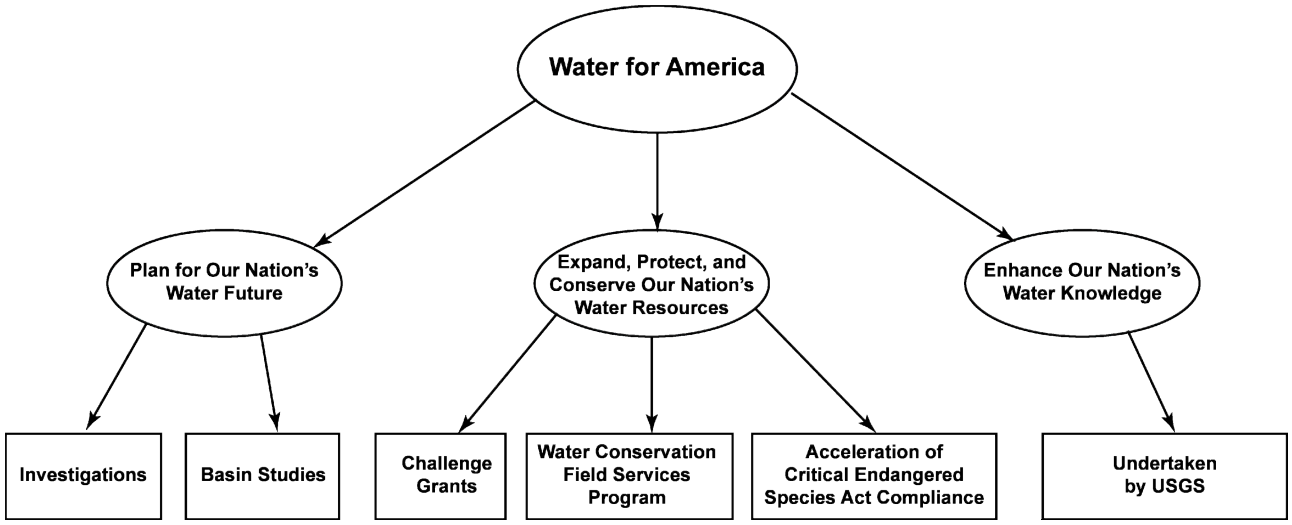


Figure 1. The three strategies of the *Water for America* Initiative.

The *Plan for Our Nation's Water Future* strategy will include Reclamation's long-standing Investigations Program and the new Basin Studies Program, which will consist of comprehensive water supply and demand studies to assess the impact of increased water demands on finite water sources. The *Expand, Protect, and Conserve Our Nation's Water Resources* strategy incorporates the most successful elements of two existing water conservation programs: Water 2025 and the Water Conservation Field Services Program (WCFSP). Through these two programs, Reclamation will increase water conservation, improve efficiency,

and help secure future water supplies through competitive grants and technical assistance. Also under this component of the Initiative, Reclamation will accelerate critical Endangered Species Act (ESA) compliance activities to maintain and improve existing populations of listed or proposed species and critical habitat affected by Reclamation's projects and programs.

Budget and Authorization Requests

In FY 2009, the President's budget requests $31.9 million for Reclamation's activities under the Initiative: $4 million for the Basin Studies Program; $4 million for the Investigations Program; $11 million for the Challenge Grant Program (previously Water 2025); $4 million for the Water Conservation Field Services Program; and $8.9 million for the acceleration of critical ESA compliance activities**.**

It is important to note that Reclamation will be able to fully implement all of the programs included in the Initiative in FY 2009 only if Congress approves the President's budget request and provides legal authority for Reclamation to enter into grants and cooperative agreements for these activities. If a Continuing Resolution is used to address the FY 2009 budget, Reclamation would generally be able to continue only programs and activities included in the FY 2008 budget, and would receive only a percentage of the total appropriations received for those activities in FY 2008. Programs implemented in FY 2008 that Reclamation could continue to implement under a Continuing Resolution include the Investigations Program, the Challenge Grants related to conservation, efficiency and water marketing, and the Water Conservation Field Services Program.

Currently, Reclamation is seeking permanent authority to enter into grants and cooperative agreements in support of the Challenge Grant program and the WCFSP. Additionally, we will request that annual authority be included in the FY 2009 appropriations law as a temporary measure, as has occurred during each of the past 4 years for our existing Water 2025 program.

Collaboration with USGS

Reclamation and USGS are collaborating to ensure that our efforts under the Initiative are complementary and that each agency can benefit to the greatest extent possible from the activities of the other agency. In particular, the Investigations Program and new Basin Studies Program that Reclamation will conduct under the Initiative present an opportunity for Reclamation to rely on some of the data and information that USGS will be collecting under its "regional" and "focused area" studies - an important part of the water census activities to be conducted as part of the Initiative.

USGS will conduct seven regional studies and three focused area studies every 3 years between FY 2009 and 2019. The regional studies will develop water budgets and analyze hydrologic trends in each of the 21 major river basins in the Nation over the next 10 years. The focused area studies will analyze hydrologic processes like ecological flows, aquatic habitat requirements, and ground and surface water interactions in smaller study areas. The USGS studies will build on and add to existing USGS hydrologic data, including data on precipitation and streamflows, the interaction between surface and ground water, and the impacts of saltwater intrusion and changing land uses on water availability, among other hydrologic conditions.

Reclamation is currently coordinating its *Water for America* activities with USGS with the objective of incorporating the most current data available from the focused area studies into Reclamation's Investigations and Basin Studies Programs.

Public Outreach

Reclamation is seeking comments from Reclamation stakeholders and the public on this proposed implementation plan. Those interested in providing comments should do so through the Web site, available at: http://www.usbr.gov/wfa. In order for your comments to be most helpful to Reclamation, please submit them by August 12, 2008. If you have any questions about the *Water for America* Initiative, please contact Ms. Avra Morgan at 303-445-2906 or wfa@do.usbr.gov. Your interest in this important initiative is appreciated.

This page intentionally left blank.

Plan for Our Nation's Water Future

The *Plan for Our Nation's Water Future* strategy of the Initiative will be implemented through the ongoing Investigations Program, also known as the Geographically Defined Program, and the new Basin Studies Program.

Investigations Program

The Investigations Program is an ongoing activity, budgeted for and executed by Reclamation's five regional offices. This program includes planning studies conducted by Reclamation on a geographically defined basis, almost always in partnership with Federal, State, and local government entities; Tribes; or appropriate nongovernmental entities. Investigations Program planning studies focus on specific water resources problems, issues, needs, and opportunities within a geographically defined and relatively localized study area. These studies have multiple activities, goals, and deliverables to provide a focus on issues relevant to the area of investigation. The President's budget requests $4 million for the Investigations Program in FY 2009.

Basin Studies Program

Overview

Beginning in FY 2009, Reclamation will work in conjunction with state and local partners to initiate and perform two to three comprehensive water supply and demand studies in the West. The studies will be cost shared on a 50/50 basis with willing State and local partners and will generally last 2 years in duration. The Basin Studies are critical to the West as we deal with the impacts of climate variability, record droughts, and population increases. The studies will be focused on major river basins and sub-basins in the 17 Western States, in areas where there are major imbalances between water supply and water demand. The President's budget requests $4 million for the new Basin Studies Program in FY 2009.

Contents of the Basin Studies

Each study will include: (1) state-of-the-art projections of future supply and demand by river basins; (2) an analysis of how the basin's existing water and power infrastructure and operations will perform in the face of changing water realities; and (3) recommendations on how to optimize operations and

infrastructure in the basin to supply adequate water in the future. Each of these three components of the Basin Studies is more fully described in the following paragraphs.

State-of-the-Art Projections of Supply and Demand

Working with partners and experts in climate and hydrologic modeling, demographics, and water forecasting, the studies will be designed to assess the new western water reality and apply cutting edge modeling on a river basin scale to describe what we can expect the 21st century water supply to look like. This will include any necessary revisions to definitions of "normal," "dry," and "wet" years, as well as projections of how precipitation (both rainfall and snowpack) and temperature patterns may change.

The studies will be designed to simultaneously forecast future water demands based on expected changes in water-use patterns due to population growth, transfer of irrigation supplies to municipal and industrial use, increased demand for hydropower, production of biofuels, changing needs of the environment, and other factors.

The studies will link the basin-wide supply and demand data with key elements of the hydrologic system. Typical linkages could include, but are not limited to, ground water/surface water interaction and return flows.

Analysis of Existing Water and Power Operations and Infrastructure

Based on the projections described above, the studies will assess the capability of current operations and infrastructure to meet future demand, addressing the essential question: To what extent will we still be able to provide adequate water and power with existing operations and infrastructure under various future scenarios?

Where supply and demand imbalances are indicated, alternatives will be developed to better support the basin's goals and objectives under various scenarios of supply and demand.

Recommendations

In conducting these studies, Reclamation and its non-Federal cost-share partners will engage basin stakeholders in identifying tradeoffs necessary to best satisfy the future water needs of the entire basin. Together, we will develop consensus recommendations to optimize current operations and existing infrastructure in the basin to supply adequate water in the future. Such recommendations could include identifying and prioritizing opportunities for water banking, water conservation, water reuse, advanced water treatment, conjunctive surface and ground water use, modifying flood operations criteria, additional authorities, changing or supplementing existing infrastructure and operations, and applying new technologies.

Basin Studies Selection Process

With the $4 million in funding requested for the Basin Studies in FY 2009, Reclamation plans to initiate two to three studies targeted for completion by 2010. In order to focus scarce resources on high-priority areas, Reclamation will select the studies to be performed from within the 17 Western states, based on a two-step selection process.

First, in late summer or early fall of 2008, Reclamation's regional offices will seek letters of interest from States and major stakeholders throughout the 17 Western States. The regional offices will initially select which studies to pursue based on those letters of interest and the program criteria. The regional or local area offices will then work with the selected studies to develop a short (10 pages maximum) proposal.

Second, the proposals will be submitted to a Reclamation-wide review team. The review team will prioritize all submitted proposals for selection based on the selection criteria set forth below. The team will rank the proposals and recommend which ones should receive funding in FY 2009. Proposals that meet program requirements but do not rank high enough to be selected in FY 2009 may be reconsidered in 2010, upon request by the non-Federal partners.

Basin Studies Parameters

All studies must meet the following minimum requirements:

- Studies must focus on major river basins or sub-basins in the 17 Western States;

- Non-Federal partners must contribute at least 50 percent of the total study costs with non-Federal funding;

- Eligible non-Federal partners include States, irrigation and water districts, cities, Tribes, and other local governmental entities with water management authority;

- Studies must be completed within 2 years from the date funding is awarded, unless Reclamation determines that a longer time period is warranted; and

- Studies must be conducted in accordance with the "Basin Study Framework" and in accordance with the memorandum of agreement applicable to the particular study, to be developed by Reclamation in cooperation with the non-Federal cost-share partner(s).

More detailed study parameters guiding the actual study process will be set forth in the Reclamation guidance, titled “Basin Study Framework,” which will be available through your local Reclamation office in the near future.

Basin Studies Selection Criteria

Proposals to conduct a Basin Study will be evaluated, scored, and ranked by the Reclamation-wide review team in accordance with the following selection criteria:

- Extent and consequences of water supply imbalances;
- Extent to which Federal involvement is needed due to the nature and complexity of the issues involved;
- The existence and quality of data and models available and applicable to the study;
- The level of stakeholder interest;
- Whether the study would duplicate or complicate ongoing efforts in the study area;
- Strength of any nexus between the Basin Study and a Reclamation project or activity; and
- Greater consideration for proposals offering more than 50-percent non-Federal cost-share

Expand, Protect, and Conserve Our Nation's Water Resources

This strategy will be implemented through two existing Reclamation programs--the *Water for America* Challenge Grant Program and the WCFSP, which together address the Initiative's objectives through financial and technical assistance to willing partners. This strategy also includes Accelerated Critical Endangered Species Act Compliance Activities, which are described in more detail below and are distinct from the Challenge Grants and WCFSP because of the exclusive focus on ESA activities conducted by Reclamation internally.

The Challenge Grant Program and the WCFSP complement one another but contain important differences. Through the Challenge Grant Program, Reclamation generally provides up to $300,000 in Federal funding per project, for projects that will improve water efficiency, demonstrate advanced water treatment technologies, and to benefit federally listed species and help to prevent the decline of candidate species. Challenge Grant funding is allocated through a West-wide competitive process that prioritizes projects that will address critical issues from a West-wide perspective.

The WCFSP, by contrast, provides smaller amounts of funding ($100,000 per project maximum) to recipients of Reclamation project water through local competitive processes within each region or area. The projects funded are generally smaller in scope than the Challenge Grant projects and are focused on water conservation planning and fundamental conservation improvements. In addition, Reclamation provides technical assistance to water users through the WCFSP and supports other water conservation activities not included as part of the Challenge Grant Program. The President's budget for FY 2009 requests $11 million for Challenge Grants and $4 million for the WCFSP.

Water for America Challenge Grant Program

Overview

The most effective aspects of the previous Water 2025 Program will be incorporated into the *Water for America* Challenge Grant Program. Specifically, Water Marketing and Efficiency Grants and System Optimization Review Grants (SORs) will continue under the *Water for America* Initiative. In addition, two new types of grant opportunities are being developed: grants that promote advanced water treatment (Advanced Water Treatment Grants) and grants to benefit federally listed species and help to prevent the decline of candidate species (Species of Concern Grants). These Challenge Grants will leverage scarce Federal funds to provide the greatest benefits to the West and Nation.

Advanced Water Treatment Grants

The Advanced Water Treatment Grants will provide funding for pilot or demonstration projects that will test the viability of advanced water treatment technologies. These grants will help create new water supplies to address water supply imbalances. Advanced water treatment technologies generally include methods that remove salt and other difficult to remove dissolved and suspended matter, including viruses and bacteria that are not removed by conventional treatment (i.e., simple screening, coagulation/flocculation, chlorination, chloramination, or ozonation). Anticipated proposals include projects to demonstrate reverse osmosis membranes, pretreatment processes, concentrate disposal, or other advanced water treatment processes. The purpose of these projects is to demonstrate the technical and economic viability of using an impaired water source within a specific locale. These grants will not be available for the construction of a full-scale plant.

Species of Concern Grants

The Species of Concern Grants will provide funding for planning, design and construction of proposals that will benefit federally listed species that are affected by a Reclamation facility or action, or that benefit federally recognized candidate species. These grants will provide an avenue for collaboration with stakeholders and will encourage actions to improve the status of a species before a water supply is threatened. Grants to benefit a federally listed species are limited to ESA listed species that are affected by a Reclamation facility or action. Grants that will benefit a candidate species are not limited to those species affected by a Reclamation facility or action. Anticipated proposals include fish screens, studies, monitoring, fish bypass, habitat restoration, and vegetation management.

Challenge Grant Selection Process

Applications for Challenge Grants will be accepted under four different funding opportunity announcements: System Optimization Review Grants, Water Marketing and Efficiency Grants, Advanced Water Treatment Grants, and Species of Concern Grants.

Reclamation does not yet have permanent legal authority to provide grants for these activities. In each of the past 4 years, authority has been provided in the annual appropriation law. Reclamation is currently working to transmit a legislative proposal for permanent legal authority to the Congress later this year. As an interim measure, we have requested that authority for the Challenge Grant Program be provided in the annual appropriation law.

Table 1 is a summary of the requirements that must be met to receive funding under any of the four funding opportunities of the *Water for America* Challenge Grant Program. These requirements are unchanged from the previous Water 2025 Program. More information about these requirements can be obtained by

reviewing the past FY 2008 Water 2025 Challenge Grant Implementation Funding Opportunity Announcement available at http://www.usbr.gov/water2025/grants.html.

Table 1. *Water for America* Challenge Grant Program Requirements

Eligibility	Irrigation districts, water districts, federally recognized tribal water authorities, and other governmental entities created under State law with water delivery authority in the 17 Western States and the U.S. Territories
Cost share requirement	Minimum 50-percent non-Federal cost share
Funding level	Up to $300,000
Length of project	Completion in 2 years
Selection process	Competitive process with three reviews: initial screening, application review committee, and managerial review

Selection Criteria

All four *Water for America* Challenge Grants will use the following criteria for 60 out of 100 points:

- Relevance to *Water for America (*30 points). Points are awarded based on how well the project will ensure sustainable water supplies for the 21st century and the extent to which the proposal is a collaborative effort.

- Demonstrated results (15 points). Points are awarded based on the reliability of the estimated project benefits and how the applicant plans to determine the final project benefits.

- Project financing and cost sharing (15 points). Points are awarded based on evaluating the reasonableness of the costs and the reliability of the non-Federal cost share.

For the remaining 40 out of 100 points, the criteria for the SOR grants and the Water Marketing and Efficiency Grants will undergo minor changes to reflect the goals of the *Water for America* Initiative. The criteria are available at the website mentioned above. The 40 out of 100 points for the new grants will be based on the following criteria:

Advanced Water Treatment Grants

- Extent to which the proposal addresses the water supply imbalance. This criterion will consider the amount of water that could potentially be treated by the full-scale plant relative to the imbalance in future water supply. Those proposals that will better meet future needs will score higher.

- Relation of the project to the current technology. Those proposals that are testing new technology will score higher.

- Likelihood of the grant to move the planned project forward. Those proposals that are more likely to result in a full-scale treatment plant will score higher.

- Likelihood to produce “new” water. Those proposals that will increase the water supply will be prioritized. Those that address water quality issues only will have a lower priority. New water is defined as water from an unused source, such as brackish water, seawater, or wastewater that was previously disposed of.

- Consideration of the qualifications (e.g. technical ability or management experience) of the management team.

Species of Concern Grants

- Extent to which the proposal would decrease the likelihood of the listing of a candidate species or improve the status of an ESA listed species. More points will be awarded to proposals with a higher benefit to the species.

- Extent to which the candidate species listing or ESA listed species affects the water supply, including the severity of the impacts from a potential interruption in a water supply. More points will be awarded when the interruption affects municipal and industrial water supply, or when established perennial crops will be affected. Also, the volume of water affected compared to the total available water supply affected will be considered.

- The likelihood of an interruption to the water supply and how quickly it could occur. More points will be awarded for those species with specific issues likely to lead to an interruption of water supply, for example: litigation, contentious political climate, precipitous decline, or localized species.

Water Conservation Field Services Program Description

Like the Challenge Grant Program, the WCFSP makes grants available for water conservation and efficiency improvements, including planning activities for water districts. However, the program differs in focus, as well as in the size and scope of grants and the scope of planning activities.

The WCFSP was created in 1996 to proactively encourage water conservation in the operations of recipients of Reclamation project water. The WCFSP is a decentralized program managed by each of Reclamation's five regions and implemented at the local level through Reclamation's area offices to address local

water conservation priorities, as well as Reclamation-wide goals. Through the program, Reclamation has established long-term partnerships with Reclamation water contractors in the 17 Western States through financial assistance for planning activities, on-the-ground efficiency improvements, demonstration projects, and education and training, as well as technical assistance from Reclamation staff. As part of *Water for America*, the WCFSP will continue to provide such assistance and to further those long-term partnerships, with minor changes to maximize the program's effectiveness.

The WCFSP makes funding available for smaller-scale activities, including creation and updating of water conservation plans and completion of smaller efficiency projects. Most WCFSP projects currently receive less than $50,000 in Federal funding, although there is currently no Reclamation-wide cap on the amount available for each WCFSP award.

To formalize the program's emphasis on smaller water conservation activities, Reclamation will limit WCFSP awards to no more than $100,000 in Federal funding per project beginning in FY 2009. (Some of Reclamation's regions may choose to limit funding available for each project to a lower amount, such as $50,000, to most effectively address local conditions.)

WCFSP Selection Process and Criteria for Financial Assistance

As part of *Water for America*, WCFSP financial assistance will continue to be administered through a series of Funding Opportunity Announcements posted by each of Reclamation's regional or area offices at http://www.grants.gov. Applicants will continue to compete with other applicants within their region or area for WCFSP financial assistance.

Beginning with FY 2009, Funding Opportunity Announcements developed by Reclamation's regional and area offices will incorporate Reclamation-wide selection criteria that reflect a priority on water conservation planning and on-the-ground efficiency improvements. Local water conservation priorities for allocating WCFSP funding vary from region to region, depending on local circumstances. For example, proposals in California that meet needs identified in the Central Valley Project Improvement Act may receive greater consideration for funding. Similarly, proposals in the Pacific Northwest Region that will provide benefits to tribal natural resources may receive additional consideration during the competitive application review process. For this reason, each announcement will include Reclamation-wide criteria, as well as other criteria developed at the regional or area office level, so that proposals funded under the WCFSP address Reclamation-wide goals, as well as local water conservation goals.

Reclamation-wide criteria for the program are currently under discussion and will be finalized in August 2008. In addition to financial assistance, Reclamation staff

will continue to provide technical assistance to address opportunities for additional water conservation benefits.

Acceleration of Critical ESA Compliance

Overview

Water shortages intensify competing needs for water by people, farmers, and endangered species. Under Section 7 of the ESA of 1973, Reclamation is required to ensure that its actions do not jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify critical habitat. Therefore, compliance with the ESA is critical to Reclamation's mission of delivering water and power to people, cities, and farms across the west.

Under this component of the Initiative, Reclamation will accelerate activities to maintain and improve existing populations of federally proposed or listed species and proposed or designated critical habitat affected by Reclamation's projects and programs. The acceleration of these ESA activities is vital to securing water supplies for 21st century America. Funding will not be made available to non-Federal entities under this component of the Initiative. Funding opportunities for ESA related activities are available to stakeholders under the Challenge Grant program component.

Activities

Funding is not always available for Reclamation to complete all aspects of the requirements of a biological opinion received from the U.S. Fish and Wildlife Service (Service) or the National Oceanic and Atmospheric Administration - National Marine Fisheries Service in a given funding year. Through the acceleration component of the Initiative, required elements of a biological opinion that would normally take as many as 5 or 10 years to implement could be completed sooner. This additional funding will allow Reclamation to implement the requirements stemming from formal ESA Section 7 consultations more quickly to resolve competing water needs as soon as possible.

Where appropriate, Reclamation may also use some funding under this component of the Initiative to implement the discretionary portions of a formal Section 7 consultation, which often otherwise go unfunded due to limited budgets. These discretionary measures, known as conservation recommendations in a biological opinion, will help promote the long-term recovery of listed species and their habitats and ease the conflict between listed species and the delivery of water and power in the future.

By way of example, some of the endangered species activities identified for funding under the Initiative in FY 2009 include:

- **Columbia/Snake River Salmon Recovery**: Increase the number of Columbia/Snake River tributary habitat improvement projects and water acquisitions to accelerate recovery of 14 listed salmon and steelhead species in the Columbia Basin. Additional effort will add 1 cubic foot per second of stream flow improvement, 1 to 3 new fish screens, 4 to 8 miles of barrier removal, and approximately 1 mile of channel complexity.

- **Middle Rio Grande**: Construct about 0.5 miles of habitat restoration for the Rio Grande silvery minnow and Southwestern willow flycatcher. This would accelerate meeting the requirements of the March 2003 biological opinion by 14 months.

Funding

For FY 2009 approximately $8.9 million has been targeted towards the Acceleration of Critical ESA Compliance Activities. This funding was not redirected from Reclamation's ongoing ESA activities and is in addition to any funding already included in Reclamation's budget for other ESA activities outside of the Initiative.

Reclamation is on a 3-year budget cycle, where internal budget formulation is completed 3 years in advance of the funding year. Therefore, budget formulation for FY 2009 and 2010 has already been completed. The first year of funding for this portion of the Initiative (FY 2009) focuses on existing ESA and recovery programs that would not otherwise have received funding due to other competing demands for funds. In future years, projects will be selected for funding by each of Reclamation's five regions according to an established set of criteria. Reclamation envisions this program to be flexible and responsive so that activities can focus on the most current ESA needs and emerging ESA issues, to avoid crisis and promote recovery.

Program Criteria

Beginning with the FY 2011 budget formulation process, each of the five regions within Reclamation will develop projects or activities using the following broad program eligibility criteria. As a minimum requirement, the project or activity must:

- Target federally proposed or listed species and proposed or designated critical habitat;

- Involve a Reclamation project; and

- Have sufficient existing Reclamation project authority to implement.

Specific projects will then be developed by each region focusing on ESA activities that are critical to the region, utilizing regional budget prioritization criteria. The projects will then be incorporated into the existing Reclamation budgeting process for funding consideration following Reclamation-wide ESA categories to help evaluate and prioritize the activities across Reclamation. Historically, funding is focused first on mandatory (nondiscretionary) elements of a biological opinion such as implementation of reasonable and prudent alternatives, reasonable and prudent measures, and associated terms and conditions. Other mandatory requirements could include implementation of ESA activities associated with Secretarial Orders, settlement agreements, legislation, or any other activity that legally binds Reclamation.

Discretionary, proactive ESA activities, such as conservation recommendations or activities associated with implementation of a species Recovery Plan would typically be ranked lower. These activities may involve actions that contribute to the downlisting or delisting of a species and would be treated as discretionary for purposes of prioritization and funding.

Conclusion

Through the strategies and the programs described here, the *Water for America* Initiative will provide the vision and leadership necessary to help ensure sustainable water supplies in the West for the 21st century.

Appendix D

USDA NRCS Funding Information

Texas Alliance for Water Conservation

"Water is Our Future"

Texas Tech University, Box 42122, Lubbock, Texas 79409-2122
Phone: 806-742-2774; Fax 806.742.0988; Web address: www.depts.ttu.edu/tawc
The TAWC project was made possible through a grant from the Texas Water Development Board

An Overview of the Conservation Programs in the 2008 Farm Bill

Tom Sell, Combest, Sell & Associates, LLC

The Conservation Programs (Title II) contained in the Farm Bill were big winners in the 2007/2008 rewrite. Based on Congressional Budget Office's (CBO) latest estimate, the programs will put an additional $4 Billion on the ground over the next 5 years, with the bulk of the increase going to the existing EQIP program and the revised Conservation Stewardship Program (CSP – now CSIP (Cons. Stewardship Incentive Program)). This increase is on top of existing program expenditures which are expected to be roughly $21.7 Billion – thus giving us a roughly 18% overall increase in conservation spending over the 2008-12 period.

MAJOR PROGRAMS

Conservation Reserve Program (CRP)

The '02 Farm Bill increased the cap on total CRP acres from 36.4 million acres to 39.2 million acres. Even so, enrollment has remained at or just below 36 million acres for the last several years. Given current commodity prices and the expectation that several million acres will either not re-enroll, or totally opt out of the program, Congress decided to statutorily reduce the cap to 32 million acres nationwide beginning in 2010. Given that CBO had assumed more acres would stay in its baseline, this reduction created book savings of $2.6 Billion over 10 years that was then used to supplement additions to other conservation programs.

Wetlands Reserve Program (WRP)

The bill makes some changes to improve delivery of the program, and increases funding to the program by $1.46 billion (about 25%) – enough to enroll another 746,200 acres by 2012. This addition will bring the total number of wetland acres protected by the WRP to over 3 million.

Environmental Quality Incentives Program (EQIP)

Nationwide funding for this cost-share program will increase from the baseline level of $981 million in '08, to more than $1.7 Billion by 2012 (increased 20% over next 5 years, 35% in out years). Prior to the '02 Farm Bill, EQIP was funded at less than $200 million per year. The payment limitation on this program is $300,000 over a 6-year period, but the USDA is given authority to waive this for projects of special environmental significance. New special incentives are created for limited resource producers, and for water conservation.

Conservation Stewardship Program (CSP) – now CSIP

While CSP, created in the '02 Farm Bill, has only operated on a regional basis in specific watersheds to date, the renewed "Comprehensive Stewardship Incentive Program" (CSIP) is designed to be national in scope, enrolling up to 115 million acres over the next 10 years. Contracts (5 years in duration) will be ranked and prioritized by the resource concerns to be addressed. At a minimum, contracts should address 1 regional resource concern from the start, and at least one priority resource concern by the contracts end. The maximum payment for any contract will be $200,000

over the 5 years. In all, funding is increased by more than $1 billion over the next 5 years, which is more than a 37% increase to the program.

Farmland Protection Program (FPP)

More than doubled from $97m per year to $200m. This program is designed to protect farmland from urban sprawl by purchasing easements to prohibit development. It requires at least 50% cost share from the state or another qualified entity. This program was funded seriously for the first time in the '02 Farm Bill.

Grasslands Reserve Program (GRP)

This program was created in the 2002 Farm Bill to restore and protect rangeland and grasslands with $300 million provided to enroll 1.22 million new acres.

Wildlife Habitat Incentives Program (WHIP)

Program extended at $85m per year and better focused.

Ag. Water Enhancement Program (AWEP)

Formerly known as the Ground and Surface Water Conservation (GSWC), this program is now targeting $79 million per year to water conservation efforts is expanded to focus on special water quality as well as quantity issues, and given $40 million additional funding over the next 5 years.

Conservation Innovation Grants (CIG)

Increased to $37.5m per year with emphasis on air quality.

MINOR PROGRAMS

Small Watershed Rehabilitation program for aged dams provided $100 million.

Agricultural Management Assistance program for states that underuse crop insurance is expanded to include Hawaii and expanded from $10m to $15m per year.

Voluntary Public Access and Habitat Initiative is a new authority providing $50m in grants to states that compensate landowners for allowing public access to their land.

Chesapeake Bay Watershed Program targets $438m over the next 10 years to this geographic area. Funds will be spent through other authorities (i.e. EQIP, CSIP, etc.).

Desert Terminal Lakes are given $175m for conservation initiatives.

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Farm Bill 2008

July 2008

At a Glance:

Agricultural Water Enhancement Program

Overview

The Agricultural Water Enhancement Program (AWEP) is a voluntary conservation program under the Environmental Quality Incentives Program (EQIP). AWEP provides financial and technical assistance to farmers and ranchers to assist them in applying agricultural water enhancement activities that conserve ground and surface water and improve water quality on agricultural lands. NRCS may carry out AWEP by entering into contracts with agricultural producers who apply directly or through partnership agreements with entities that apply on behalf of agricultural producers.

Legislative Changes

The Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) establishes AWEP and replaces the Ground and Surface Water Conservation Program.

AWEP's purposes – to promote ground and surface water conservation and improve water quality – are achieved by having producers implement agricultural water enhancement activities. These include:

- Water quality or water conservation plan development, including resource condition assessment and modeling;
- Water conservation restoration or enhancement projects, including conversion to the production of less water-intensive agricultural commodities or dryland farming;
- Water quality or quantity restoration or enhancement projects;
- Irrigation system improvement or irrigation efficiency enhancement;
- Activities designed to mitigate the effects of drought; and
- Other related activities deemed by the Secretary to help achieve water quality or water conservation benefits on agricultural land.

An agricultural producer may apply directly to NRCS for financial or technical assistance to implement agricultural water enhancement activities. Producers who apply directly to NRCS must be eligible for EQIP and selected applications will be subject to applicable EQIP requirements.

A producer may also apply for AWEP assistance through an entity that submits a proposal on behalf of a group of agricultural producers. An eligible entity may be a Federally-recognized Tribe, State, unit of local government, agricultural or silvicultural association, or other such group of agricultural producers.

An application submitted by an entity is selected competitively and must include the following:

- Description of the geographic area to be covered by the agreement;
- Description of the agricultural water quality or water conservation issues to be covered by the agreement;
- Description of agricultural water enhancement objectives to be achieved through the partnership;
- Description of the partners collaborating to achieve the project objectives, as well as

the roles, responsibilities, and capabilities of each partner; and
- Description of the program resources required for the project.

In evaluating an application, NRCS may give higher priority to proposals that:
- Include a high percentage of agricultural land and producers in an region or area;
- Result in high levels of applied agricultural water quality and water conservation activities;
- Significantly enhance agricultural activity;
- Allow for monitoring and evaluation;
- Assist producers in meeting a regulatory requirement;
- Include the conversion of agricultural land from irrigated farming to dryland farming; and
- Leverage Federal funds with those provided by the potential partner.

Authorized Funding Levels
The 2008 Farm Bill provides $73 million for fiscal years 2009 and 2010; $74 million for fiscal year 2011; and $60 million for fiscal year 2012 and each year thereafter.

More Information
For more information and updates about AWEP and other Farm Bill topics, please refer to the U.S. Department of Agriculture Web site http://www.usda.gov/farmbill or the Natural Resources Conservation Service Web site http://www.nrcs.usda.gov/programs/awep.

BILLING CODE: 3410-16
DEPARTMENT OF AGRICULTURE
AGENCY: Natural Resources Conservation Service (NRCS), Commodity Credit Corporation
ACTION: NOTICE
Conservation Innovation Grants Fiscal Year 2008 Announcement of Program Funding

Catalog of Federal Domestic Assistance (CFDA) Number: 10.912

SUMMARY: NRCS requests applications for Conservation Innovation Grants (CIG) to stimulate the development and adoption of innovative conservation approaches and technologies. Applications are accepted from all 50 States, the Caribbean Area (Puerto Rico and the Virgin Islands), and the Pacific Basin Area (Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands). NRCS anticipates that the amount available for support of this program in FY 2008 will be approximately $20 million. Funds will be awarded through a nationwide competitive grants process. There are three CIG categories available in FY 2008: Natural Resource Concerns Category, Technology Category, and the Chesapeake Bay Watershed Category. Applications are requested from eligible government or non-government organizations or individuals for competitive consideration of grant awards for projects between one and three years in duration. This notice identifies the objectives for CIG projects, the eligibility criteria for projects and associated instructions needed to apply to CIG.

DATES: Applications must be received in the NRCS National Headquarters by 5 p.m., Eastern Standard Time (EST), on Wednesday, February 20, 2008.

ADDRESSES: The address for hand-delivered applications or applications submitted using express mail or overnight courier service is: USDA Natural Resources Conservation Service; Conservation Innovation Grants Program; Financial Assistance Programs Division, Room 5239-S; 1400 Independence Ave, SW; Washington, DC 20250. Contact phone numbers for hand-delivered applications are (202) 720-1845, (202) 720-2335, or (202) 205-1165.

Applications sent via the U.S. Postal Service must be sent to the following address: USDA Natural Resources Conservation Service; Conservation Innovation Grants Program; Financial Assistance Programs Division; Room 5239-S, Post Office Box 2890, Washington, D.C. 20013-2890.

To submit your application electronically, visit www.grants.gov/apply and follow the instructions.

For more information contact:

Tessa Chadwick
CIG National Program Manager
USDA NRCS
PO Box 2890, Room 5239-S
Washington, DC 20013-2890
Phone: (202) 720-2335
Fax: (202) 720-4265
e-mail: tessa.chadwick@wdc.usda.gov

Shani Harmon
CIG Program Assistant
USDA NRCS
PO Box 2890, Room 5239-S
Washington, DC 20013-2890
Phone: (202) 205-1165
Fax: (202) 720-4265
e-mail: shani.harmon@wdc.usda.gov

CIG Administrative Questions:
Karen Minor
Grants and Agreements Specialist
1400 Independence Ave, SW
Room 5222-S
Washington, DC 20250
Phone: (202) 720-2604 or (202) 720-4102
Fax: (202) 720-2262
e-mail: karen.minor@wdc.usda.gov

SUPPLEMENTARY INFORMATION
Table of Contents

PART I – FUNDING OPPORTUNITY DESCRIPTION
A. Legislative Authority 4
B. Overview 4
C. Innovative Conservation Projects or Activities.....4
D. CIG Categories……...…5
1. Natural Resource Concerns……..5
2. Chesapeake Bay Watershed…….....6
3. Technology……..…7

PART II – FUNDING AVAILABILITY
A. National Component……...7
B. State Component…….....8

PART III – ELIGIBILITY INFORMATION
A. Matching Funds……..8
B. Beginning and Limited Resource Farmers and Ranchers, and Indian Tribes…….....8
C. EQIP Payment Limitation and Duplicate Payments……..9
D. Project Eligibility……..9

PART IV – APPLICATION AND SUBMISSION INFORMATION
A. How to Obtain Application Materials……...10
B. Application Content and Format……...……10
C. How to Submit a Written Application……...….……...13
D. How to Submit a Application Electronically……...……14
E. Application Due Date……...……14
F. Acknowledgement of Submission……14
G. Funding Restrictions……14
H. Patents and Inventions……..15
I. Withdrawal of Applications……...15

PART V – APPLICATION REVIEW
A. Application Review and Selection Process……...…15
B. Criteria for Application Evaluation……...……16
C. Anticipated Announcement and Award Dates…….……16

PART VI – AWARD INFORMATION AND ADMINISTRATION
A. Award Notification 16
B. Grant Agreement 16
C. Reporting Requirements.....18

PART VII – AGENCY CONTACTS 18

PART VIII – OTHER INFORMATION
A. FY 2008 Application Checklist……...…19
B. NRCS State Conservationists……..20

I. FUNDING OPPORTUNITY DESCRIPTION

A. Legislative Authority

CIG was authorized as part of the Environmental Quality Incentives Program (EQIP) [16 U.S.C. 3839aa-8] under Section 1240H of the Food Security Act of 1985, as added by Section 2301 of the Farm Security and Rural Investment Act of 2002 (Public Law 107-171). The Secretary of Agriculture delegated the authority for the administration of EQIP and CIG to the Chief of the Natural Resources Conservation Service (NRCS), who is a Vice President of the Commodity Credit Corporation (CCC). EQIP is administered by NRCS under the authorities of the CCC.

B. Overview

The purpose of CIG is to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging the Federal investment in environmental enhancement and protection, in conjunction with agricultural production. CIG projects are expected to lead to the transfer of conservation technologies, management systems, and innovative approaches (such as market-based systems) into NRCS technical manuals, guides, and references, or to the private sector. CIG does not fund research projects. Instead, it is a vehicle to stimulate the development and adoption of conservation approaches or technologies that have been studied sufficiently to indicate a likelihood of success and to be candidates for eventual technology transfer or institutionalization. CIG funds projects targeting innovative on-the-ground conservation, including pilot projects and field demonstrations.

NRCS will accept applications for single or multi-year projects, not to exceed three years, submitted to NRCS from eligible entities, including Federally-recognized Indian Tribes, State and local governments, and non-governmental organizations and individuals. Applications are accepted from all 50 States, the Caribbean Area (Puerto Rico and the Virgin Islands), and the Pacific Basin Area (Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands).

Complete applications will be evaluated by a technical peer review panel and scored based on the Criteria for Application Evaluation identified in this document. There are eight review groups for FY 2008 applications: Water Quality-Livestock; Water Quality-Not Livestock; Water Quantity; Soils; Atmospheric; Grazing Land and Forest Health; Wildlife; and Energy. Applicants may indicate which of these review groups should review the application. Scored applications will be forwarded to a Grants Review Board. The Grants Review Board will make recommendations for project approval to the Chief. Final award selections will be made by the Chief of NRCS.

C. Innovative Conservation Projects or Activities

For the purposes of CIG, the proposed innovative project or activity must encompass the development and field testing, evaluation, and implementation of:

- Conservation adoption incentive systems, including market-based systems; or,
- Promising conservation technologies, practices, systems, procedures, or approaches.

To be given priority consideration, the innovative project or activity:

- Will have been studied sufficiently to indicate a good probability for success;

- Demonstrates, tests, evaluates, and verifies environmental (soil, water, air, plants, and animal) effectiveness, utility, affordability, and usability in the field;
- Adapts conservation technologies, practices, systems, procedures, approaches, and incentive systems to improve performance, and encourage adoption;
- Introduces conservation systems, approaches, and procedures from another geographic area or agricultural sector; and
- Adapts conservation technology, management, or incentive systems to improve performance.

D. CIG Categories

For Fiscal Year 2008, three categories of CIG will be offered. Applicants will need to identify which of the 3 categories applies to their proposed project.

1. National Natural Resource Concerns Category

Applications must demonstrate the use of innovative technologies or approaches, or both, to address a natural resource concern or concerns. The five natural resource concerns for possible funding through Conservation Innovation Grants for fiscal year 2008 are: Water Resources; Soil Resources; Atmospheric Resources; Grazing Land and Forest Health; and Wildlife Habitat. This Category also includes applications that focus on Market Based Approaches to address any or all of these five resource concern areas.

A. Water Resources

The objective of this natural resource concern is to implement new technologies and/or approaches to maintain, restore, or enhance water quality and/or quantity in watersheds with predominantly agricultural land uses while sustaining productivity. Subtopics include:

- Nutrient, pesticide, and/or pathogen transport to surface water and groundwater;
- Sediment transport to surface water;
- Aquifer recharge/maintenance of groundwater supplies;
- Increased water supplies/availability through alternative treatment; enhanced automation, monitoring or scheduling; reduced system losses; or reuse strategies; and
- Technologies scalable to small farms to maintain, restore, or enhance water quality and/or quantity.

B. Soil Resources

The objective of this conservation concern is to implement new technologies and/or approaches to maintain, restore, or enhance soil resources associated with agricultural and forest land uses while sustaining productivity. Subtopics include:

- Erosion reduction;
- Accumulation of harmful levels of constituents in soils, including nutrients, metals, or salts; and
- Improvement to soil quality and productivity.

C. Atmospheric Resources:

The objective of this conservation concern is to implement new technologies and/or approaches to maintain, restore, or enhance air quality and atmospheric resources through agricultural and forestry practices while sustaining productivity. Subtopics include:

- Agricultural emissions of particulates, odors, volatile organic compounds, and greenhouse gases;
- Carbon sequestration in soil and through other mechanisms;
- Bio-based energy opportunities; and
- Identification and quantification of management practices for air quality and atmospheric change concerns at animal operations.

D. Grazing Land and Forest Health

The objective of this conservation concern is to implement new technologies and/or approaches to maintain, restore, or enhance grazing land and forest health while sustaining productivity. Subtopics include:

- Invasive species management on grazing and forest land;
- Effects of pests, diseases, and fragmentation on forest and grazing land quality/health;
- Systems or practices to minimize overgrazing and restore lands suffering effects of overgrazing;
- Low-input approaches to increasing forage production;
- Alternative grasses or forages for livestock; and
- Systems or practices that integrate trees-forage-livestock (i.e., silvopasture).

E. Wildlife Habitat

The objective of this conservation concern is to implement new technologies and/or approaches for environmentally sound wildlife habitat management while sustaining agricultural productivity. Possible subtopics include:

- Riparian area management and restoration;
- Invasive species management;
- Pollinator protection
- Biodiversity; and,
- Wetland function and health.

F. Market-Based Approaches

The objective of this approach is to develop, implement, and or evaluate processes, technology tools, institutional arrangements, or systems that are 'market-based' in nature and address one of the above priority resource concerns. Possible subtopics include:

- Development and application of technology tools that measure environmental services (i.e. benefits) in order to document credits for trading;
- Greenhouse gas accounting tools and registries;
- Water quality improvement accounting tools;
- Nutrient trading and/or accounting tools;
- Demonstration of ecosystem-based services that facilitate conservation implementation; and
- Processes and institutional arrangements that develop, demonstrate, evaluate, and clarify successful approaches to market-based conservation involving private working lands.

2. Chesapeake Bay Watershed Category

Applications for the Chesapeake Bay Watershed Category are being accepted and reviewed by the National Fish and Wildlife Foundation. Information for submitting an

application for this category of CIG funding can be accessed at the following link http://www.nfwf.org/chesapeake.

3. National Technology Category

Applications must address one or more of the following specific technology needs areas identified by NRCS:

A. Improved On-Farm Energy Efficiency - Possible subtopics include:

- Renewable energy sources such as wind or solar;
- Methane recovery;
- Other innovative farm management or production technologies;
- Automated self energy audit technology;
- Energy audit worksheets; and
- Compilation of on-farm energy audits and audit processes.

B. Water Management (Both Drainage Water and Irrigation Water)

Drainage Water Management - Possible subtopics include:

- Implementation of drainage water management systems in small watersheds and application of tools to assess multiple effects (e.g., economic, wildlife habitat, soil quality, air quality, wetlands and water quality) at watershed scale;
- Achieving downstream nutrient reduction benefits through management of surface or sub-surface drainage systems;
- Improving water/nutrient accounting/budgeting;
- Improving design and management of drainage water management systems to improve benefits to producers and to the environment;
- Improving the ability of buffers to reduce nutrient loadings in tile drained landscapes; and
- Improving wetland creation, restoration, and enhancement to reduce nutrient loadings.

Irrigation Water Management - Possible subtopics include:

- New engineering software or modeling systems that would automate, demonstrate, and facilitate technically sound conservation decisions by the public pertaining to resource assessment, conservation planning, and conservation system installation and evaluation;
- Irrigation management for water conservation;
- Achieving multiple benefits (e.g., economic, enhanced crop production, recreation, wildlife habitat, soil quality, wetlands and water quality) through area-wide or regional irrigation water management, scheduled application, and supply or application of new or innovative technology; and
- Achieving nutrient or pollutant reduction benefits in downstream receiving waters through area-wide or regional irrigation water management, scheduled application, and supply or application of new or innovative technology.

II. FUNDING AVAILABILITY

A. National Component

NRCS anticipates that the amount available for support of this program in FY 2008 will be approximately $20 million. The anticipated funding breakdown for each category is:

- National Natural Resource Concerns Category: Up to $10 million
- Chesapeake Bay Watershed Category: Up to $5 million
- National Technology Category: Up to $5 million

Funds will be awarded through a nationwide competitive grants process. Funds not used in one category may be shifted to another category by the Chief. The maximum award amount for any project will not exceed $1 million. CIG will fund single- and multi-year projects, not to exceed three years.

The available funding for the three national categories is anticipated to fund approximately 50 to 60 awards based on previous years' experience in administering CIG. The anticipated start date for awarded projects is September 1, 2008.

B. State Component

The intent of the State Component is to provide flexibility to NRCS State Conservationists to target CIG funds to individual producers and smaller organizations that may possess promising innovations, but may not compete well on the larger scale of the national grants competition. For FY 2008, the State Component of CIG will be available in select states at the discretion of the State Conservationist. Project applications that request federal funds of $75,000 or less and are not multi-state in scope will be forwarded to the appropriate state program manager if that state is participating in the State Component. All applications that are forwarded will be notified in writing, and provided with a contact for State Component information. Funding availability and application and submission information for state competitions will be announced through public notices (and on State NRCS websites) separately from this national notice. State Conservationists will determine the funding level for state competitions, with individual grants not to exceed $75,000.

III. ELIGIBILITY INFORMATION

CIG applicants must be a Federally-recognized Indian Tribe; State or local unit of government; non-governmental organization; private business; or individual.

A. Matching Funds

Selected applicants may receive grants of up to 50 percent of the total project cost. Applicants must provide non-Federal funding (matching funds) for at least 50 percent of the project cost. Up to half of the applicant's matching funds (up to 25 percent of the total project cost) may be from in-kind contributions. Applicants must submit a letter from the matching source documenting the type of match being provided and the value.

B. Beginning and Limited Resource Farmers and Ranchers, and Indian Tribes

Information regarding the definitions for Limited Resource or Beginning Farmers and Ranchers can be found in the EQIP Final Rule, Federal Register, Vol. 68, No.104, Section 1466.3, Definitions. For the FY 2008 grant award process, up to 10 percent of the total funds available for CIG may be set-aside for applications from Beginning and Limited Resource Farmers and Ranchers, Indian Tribes, or community-based organizations comprised of or representing these entities. To compete for these set-aside funds, the applicant must make a declaration in the application as described in Part IV B.5. of this notice. Applications that are unsuccessful in the set-aside competition will be placed automatically in the general application pool for consideration. Funds not used in the set-aside pool will revert back into the general funding pool.

In addition, an exception regarding matching funds is made for projects funded out of the set-aside. Up to three fourths of the required matching funds for such projects (up to 37.5

percent of the total project cost) may derive from in-kind contributions. This exception is intended to help Beginning and Limited Resource Farmers or Ranchers and Indian Tribes meet the statutory requirements for receiving a Conservation Innovation Grant.

C. EQIP Payment Limitation and Duplicate Payments

Section 1240G of the Food Security Act of 1985 (as amended by the Farm Security and Rural Investment Act of 2002), 16 U.S.C. 3839aa-7, imposes a $450,000 limitation for all cost-share or incentive payments disbursed to individuals or entities under an EQIP contract between 2002 and 2008. The limitation applies to CIG in the following manner:

a. CIG funds are awarded through grant agreements; these grant agreements are not EQIP contracts. Thus, CIG awards in and of themselves are not limited by the payment limitation.

b. Direct or indirect payments made to an individual or entity using funds from a CIG award to carry out structural, vegetative, or management practices count toward each individual's or entity's EQIP payment limitation. Through project progress reports, CIG grantees are responsible for certifying that producers involved in CIG projects do not exceed the payment limitation. Further, all direct and indirect payments made to producers using CIG funds must be reported to the NRCS CIG program manager in the semi-annual report. Direct or indirect payments can not be made for a practice for which the producer has already received funds, or is contracted to receive funds, through any of the USDA Programs (EQIP, AMA, CSP, WHIP, etc) since this would be considered a duplicate payment.

Payment Limitation Examples

Following are two examples of how the $450,000 EQIP payment limitation applies to CIG projects:

a. A $500,000 CIG grant is awarded to a State environmental agency to demonstrate an innovative, market-based, water quality trading program. The money is used to finance the development of a market infrastructure, and none of the funds are used to implement structural, vegetative, or management practices. Producers in the trading market demonstration area may indirectly benefit from their eventual participation in the market, but there is no direct or indirect transfer payment of CIG dollars. If, on the other hand, part of the CIG award were used to make payments to producers who implement conservation practices on their land as part of a trading program, those payments would count toward each producer's $450,000 EQIP payment limitation.

b. A $1,000,000 CIG grant is awarded to a Conservation District to pilot a community-based animal waste treatment technology innovation. EQIP-eligible producers in the area transport their animal waste to a central treatment location. Because producers are not directly or indirectly receiving CIG funds, the payment limitation does not apply. If, however, the producers were paid for their waste, or for transporting their waste to the central treatment location using CIG funds, the payments would be subject to each producer's EQIP payment limitation.

D. Project Eligibility

All agricultural producers receiving direct or indirect payments through participation in a CIG project must meet the EQIP eligibility requirements as set forth in 16 U.S.C. 3839aa-1. Refer to http://www.nrcs.usda.gov/programs/eqip/ for more information on EQIP eligibility requirements. Participating producers are not required to have an EQIP contract.

A person or entity is not eligible if the three-year average adjusted gross income (AGI) exceeds $2.5 million with less than 75 percent derived from farming, ranching, or forestry-related sources at the time of application.

A person who is determined ineligible for USDA program benefits under the Highly Erodible Land Compliance (HELC) and Wetland Compliance (WC) provisions of the Food Security Act of 1985 will not be eligible to receive direct or indirect payments through CIG.

Technologies and approaches that are eligible for funding in a project's geographic area through EQIP are ineligible for CIG funding except where the use of those technologies and approaches demonstrates clear innovation. The burden falls on the applicant to sufficiently describe the innovative features of the proposed technology or approach (applicants should reference the appropriate State's EQIP Eligible Practices List by contacting the NRCS State office, or by visiting the EQIP web site: http://www.nrcs.usda.gov/programs/eqip/EQIP_signup/2008_EQIP_Signup/index.html.

The grantee is responsible for providing the technical assistance required to successfully implement and complete the project. NRCS will designate a Program Contact, an Administrative Contact, and a Technical Contact to provide oversight for each project receiving an award.

IV. APPLICATION AND SUBMISSION INFORMATION

A. How to Obtain Application Materials

All OMB standard forms necessary for CIG submission are posted on the following website: www.grants.gov/agencies/aapproved_standard_forms.jsp. An application checklist is available on the CIG website: www.nrcs.usda.gov/programs/cig.

B. Application Content and Format

Applications must contain the information set forth below in order to receive consideration for a grant. Applicants should not assume prior knowledge on the part of NRCS or others as to the relative merits of the project described in the application. Submit applications in the following format:

Applications should be typewritten or printed on 8½" x 11" white paper, double spaced. The text of the application should be in a font no smaller than 12-point, with one-inch margins. If submitting applications for more than one project, submit a separate, complete application package for each project.

Applications must include all required forms and narrative sections described below. Incomplete applications will not be considered.

1. **Cover Sheet:** Applicants must use **Standard Form (SF) 424** as the cover sheet for each project application. Standard Form 424 can be downloaded from www.grants.gov/agencies/aapproved_standard_forms.jsp or obtained from a NRCS State Office. (A list of NRCS State Offices is provided at the end of this announcement).

2. **Project Summary Sheet:** Applicants must submit a **Project Summary Sheet** (no more than 2 pages in length) that includes the listed information. A template for the Project Summary Sheet is available on the NRCS CIG website: www.nrcs.usda.gov/programs/cig.
    a. Project Title
    b. Project Director name and contact information (including e-mail)
    c. Names and affiliations of project collaborators
    d. Project Purpose
    e. Project Deliverables/Products
    f. Project Scope/Area
    g. Project Start and End Dates (Projects should plan to begin no earlier than September 1, 2008 and no later than September 30, 2008)
    h. CIG National Component Category (Natural Resource or Technology)
    i. Application Review Category (water quality-livestock, water quality-non livestock, water quantity, soils, atmospheric, grazing land and forest health, wildlife habitat, or energy)
    j. Declaration of EQIP eligibility
    k. Brief summary of project

3. **Project Description:** Each project must be completely and accurately described in no more than 10 double-spaced pages. The description must include the following information:
    a. Project background: Describe the history of, and need for, the proposed innovation. Provide evidence that the proposed innovation has been studied sufficiently to indicate a good probability for success of the project;
    b. Project objectives: Be specific, using qualitative and quantitative measures, if possible, to describe the project's purpose and goals. Describe how, based on the description of innovative conservation projects and activities provided in section I.C., the project is innovative;
    c. Project methods: Describe clearly the methodology of the project and the tools or processes that will be used to implement the project;
    d. Location and size of project or project area: Describe the location of the project and the relative size and scope (e.g., acres, farm types and demographics, etc.) of the project area. Provide a map, if possible;
    e. Producer participation: Estimate the number of producers involved in the project, and describe the extent of their involvement (all producers involved in the project must be eligible for EQIP);
    f. Project action plan and timeline: Provide a table listing project actions, timeframes, and associated milestones through project completion;
    g. Project management: Give a detailed description of how the project will be organized and managed. Include a list of key project personnel, their relevant education or experience, and their anticipated contributions to the project. Explain the level of participation required in the project by government and non-government entities. Identify who will participate in monitoring and evaluating the project;
    h. Benefits or results expected and transferability: Identify the results and benefits to be derived from the proposed project activities, and explain how the results will be measured. Identify project beneficiaries—for example, agricultural producers by type or region or sector; rural communities;

municipalities. Explain how these entities will benefit. In addition, describe how results will be communicated to others via outreach activities;

i. Project evaluation: Describe the methodology or procedures to be followed to evaluate the project, determine technical feasibility, and quantify the results of the project for the final report. (Grant recipients will be required to provide a semi-annual report of progress, quarterly financial reports, and a final project report to NRCS. Instructions for submitting quarterly reports will be detailed in the grant agreement.); and

j. Environmental impacts: Describe the anticipated environmental effects of the proposed project. This description will be used to determine whether an Environmental Assessment (EA) or Environmental Impact Statement (EIS) is needed for any given project, prior to the awarding of grant funds. The applicant is responsible for the cost of an EA or EIS, should one be required.

4. **Budget Information**: Must use **Standard Form (SF) 424-A Budget Information Non-Construction Programs** to document budget needs. SF 424-A is available at www.grants.gov/agencies/aapproved_standard_forms.jsp or can be obtained from a NRCS State Office. A budget form is required for each year of requested support. In addition, a cumulative budget is required detailing the requested total support for the overall project period. The budget form may be reproduced as needed by applicants. In addition to the SF 424-A, all applicants must provide a **detailed narrative** in support of the budget for the project, broken down by each project year. All budget categories for which support is requested, must be individually listed (with costs) in the same order as the budget and justified on a separate sheet of paper and placed immediately behind the Budget SF 424-A. Discuss how the budget specifically supports the proposed activities. Explain how such budget items as personnel, travel, equipment, etc., are essential to achieving project objectives. Justify the project cost effectiveness and include justification for personnel salaries. Indicate the total amount (both cash and in-kind) of non-Federal matching support that will be provided to the proposed project. **Include a signed letter from the matching source documenting the value and the nature (cash or in-kind) of the matching funds**. This letter serves as written verification of commitments of matching support. In-kind costs of equipment or project personnel cannot exceed 50 percent of the applicant's match (except in the case of projects carried out by either a Beginning or Limited Resource Farmer or Rancher, or Indian Tribe, or a community-based organization comprised of or representing these entities). The remainder of the match must be provided in cash. If claiming indirect costs, an applicant must provide an indirect cost rate agreement or indirect cost rate proposal as justification for the rate of indirect costs being claimed. **Indirect costs can not exceed 15 percent**.

5. **Declaration of Beginning Farmer or Rancher or Limited Resource Farmer or Rancher, or Indian Tribe**: If an applicant wishes to compete in the 10 percent set-aside funding pool (see Part III B. that describes the provision of a set-aside pool of funding for Beginning and Limited Resource Farmers or Ranchers, and Indian Tribes) and avail themselves of the in-kind contribution exception, applicants must make a declaration in writing of their status as a Beginning Farmer or Rancher or Limited Resource Farmer or Rancher, or Indian Tribe, or a community-based organization comprised of or representing these entities.

6. **Declaration of EQIP Eligibility**: Applicants must make a declaration in writing that they, or parties involved in the project, are eligible for EQIP.

7. **State Conservationist Letter of Review:** Applicants must send a copy of cover letter showing that the application was sent to the appropriate State Conservationist(s) for review. **If a project is multi-state in scope, all states in the project area must be sent the application for review**. The State Conservationist(s) will review the application for potential duplication of efforts, ethics concerns, consistency with overall EQIP objectives, and the expected benefits to EQIP implementation in their state(s). **Applicants must send their application (at least the Project Description (Item 3) and the Budget Information (Item 4)) to the appropriate State Conservationist(s) postmarked, or dated if electronic, no later than February 15, 2008.** State Conservationist(s) must submit letters to NRCS National Headquarters by March 7, 2008. A list of NRCS State Office addresses and phone numbers is included at the end of this notice. Applicants are encouraged to consult with the appropriate State Conservationist(s) during application development to discuss the letter of review.

8. **Certifications:** All applications must include a signed **Standard Form (SF) 424 B - Assurances, Non-construction Programs**. SF 424 B may be found at: www.grants.gov/agencies/aapproved_standard_forms.jsp or contact a NRCS State Office. Applicants, by signing and submitting an application, assure and certify that they are in compliance with the following from 7 Code of Federal Register (CFR):
   a. Part 3017, Government wide Debarment and Suspension (Non-procurement) http://www.access.gpo.gov/nara/cfr/waisidx_04/7cfr3o17_04.html
   b. Part 3018, New Restrictions on Lobbying http://www.access.gpo.gov/nara/cfr/waisidx_04/7cfr3018_04.html; and
   c. Part 3021, Government wide Requirements for Drug-Free Workplace (Financial Assistance) http://www.access.gpo.gov/nara/cfr/waisidx_04/7cfr3021_04.html.

9. **DUNS Number**: A Dun and Bradstreet (D&B) Data Universal Numbering System (DUNS) number is a unique nine-digit sequence recognized as the universal standard for identifying and keeping track of over 70 million businesses worldwide. A Federal Register notice of final policy issuance (68 FR 38402) requires a DUNS number in every application (i.e., hard copy and electronic) for a grant or cooperative agreement (except applications from individuals) submitted on or after October 1, 2003. For information about how to obtain a DUNS number go to http://www.grants.gov/RequestaDUNS or call 1-866-705-5711. **Please note that the registration may take up to 14 business days to complete.**

10. **Required CCR Registration:** The Central Contractor Registry (CCR) is a database that serves as the primary Government repository for contractor information required for the conduct of business with the Government. This database will also be used as a central location for maintaining organizational information for organizations seeking and receiving grants from the Government.

CIG applicants must register with the CCR. To register, visit http://www.ccr.gov. **Allow a minimum of 5 days to complete the CCR registration.**

C. How to Submit a Written Application

Applicants must submit one signed original copy of each project application. Hard copies must be accompanied by an electronic copy on a 3½-inch diskette or compact disc (CD). Electronic files must be either Microsoft Word or Adobe Acrobat (pdf) files. **Applications submitted via facsimile or e-mail will not be accepted.**

The address for hand-delivered applications or applications submitted using express mail or overnight courier service is:

USDA Natural Resources Conservation Service
Conservation Innovation Grants Program
Financial Assistance Programs Division, Room 5239-S
1400 Independence Ave, SW
Washington, DC 20250

Contact phone numbers for hand-delivered applications (needed to enter the USDA South Building) are (202) 720-1845, (202) 720-2335, or (202) 205-1165.

The address for applications sent regular mail is:

USDA Natural Resources Conservation Service
Conservation Innovation Grants Program
Financial Assistance Programs Division
Room 5239-S, Post Office Box 2890
Washington, D.C. 20013-2890

D. How to Submit an Application Electronically

Applicants may submit applications electronically through Grants.gov, the Federal government's e-grants portal. Applications submitted through Grants.gov must contain all of the elements of a complete application outlined above. Instructions for electronically submitting the required standard forms, abstract, narrative, and declarations are posted on Grants.gov. The cover letter requesting the State Conservationist letter of review may be scanned as an attachment to the application. Instructions for adding attachments are available on Grants.gov. Applications submitted electronically are date and time stamped by Grants.gov and must be received by the identified closing date. **Note that NRCS is not responsible for any technical malfunctions or website problems related to Grants.gov submissions. Applicants should begin the Grants.gov process well before the submission deadline to avoid problems.**

E. Application Due Date

Complete applications Must Be Received in Room 5239-S at NRCS National Headquarters by 5:00 pm EST on February 20, 2008. A postmark date is **NOT** a factor in whether an application is received on time. The applicant assumes the risk of any delays in application delivery. Applicants are strongly encouraged to submit completed applications via overnight mail or delivery service to insure timely receipt by NRCS.

F. Acknowledgement of Submission

Applications received by the due date will be acknowledged with an official letter. If an applicant has not received an acknowledgement within 30 days of the submission, they

must contact the NRCS programmatic contact (See Part VII). Failure to do so may result in the application not being considered for funding by the peer review panel.

G. Funding Restrictions

Awardees may not use un-recovered indirect costs as part of their matching funds.

CIG funds may not be used to pay any of the following costs unless otherwise permitted by law, or approved in writing by the Authorized Departmental Officer in advance of incurring such costs:

a. Costs above the amount of funds authorized for the project;
b. Costs incurred prior to the effective date of the grant;
c. Costs which lie outside the scope of the approved project and any amendments thereto;
d. Entertainment costs, regardless of their apparent relationship to project objectives;
e. Compensation for injuries to persons, or damage to property arising out of project activities;
f. Consulting services performed by a Federal employee during official duty hours when such consulting services result in the payment of additional compensation to the employee; and,
g. Renovation or refurbishment of research or related spaces; the purchase or installation of fixed equipment in such spaces; and the planning, repair, rehabilitation, acquisition, or construction of buildings or facilities.

This list is not exhaustive. Questions regarding the allowances of particular items of cost should be directed to the administrative contact person listed in this announcement.

H. Patents and Inventions

Allocation of rights to patents and inventions shall be in accordance with USDA regulation 7 CFR 3019.36. This regulation provides that small businesses normally may retain the principal worldwide patent rights to any invention developed with USDA support. In accordance with 7 CFR 3019.2, this provision will also apply to commercial organizations for the purposes of CIG. USDA receives a royalty-free license for Federal Government use, reserves the right to require the patentee to license others in certain circumstances, and requires that anyone exclusively licensed to sell the invention in the United States must normally manufacture it domestically.

I. Withdrawal of Applications

Applications may be withdrawn by written notice at any time before an award is made. Applications may be withdrawn in person by the applicant, or by an authorized representative thereof, if the representative's identity is made known and the representative signs a receipt for the application.

V. APPLICATION REVIEW

A. Application Review and Selection Process

Prior to technical review, each application will be screened for completeness and compliance with the provisions of this notice. Incomplete applications and those that do not meet the provisions of this notice will be eliminated from competition, and notification of elimination will be mailed to the applicant.

Applications meeting the provisions of this notice will be scored by a Peer Review Panel. The applications will be divided among the peer review groups, based on the area selected by the applicant. The eight review areas for FY 2008 applications are: Water Quality-Livestock; Water Quality-Not Livestock; Water Quantity; Soils; Atmospheric; Grazing Land and Forest Health; Wildlife Habitat; and Energy. Applications will be scored based on the Criteria for Application Evaluation below. Scored applications will be forwarded to a Grants Review Board, which will certify the rankings from the peer review panels, and ensure that the application evaluations are consistent with program objectives. The CIG Grants Review Board consists of five members of NRCS leadership, specifically the Deputy Chief for Soil Survey and Resource Assessment, the Deputy Chief for Science and Technology, the Deputy Chief for Programs, one Regional Assistant Chief, and one State Conservationist. The Grants Review Board will make recommendations to the Chief for final selection and funding decisions.

B. Criteria for Application Evaluation

Peer review panels will use the following criteria to evaluate project applications. Each of the four criterions carries an equal weight of 25 percent.

1. Purpose and goals:
    a. The purpose and goals of the project are clearly stated;
    b. The project adheres to the natural resource conservation concerns for FY 2008 stated in this notice; and,
    c. There is clear and significant potential for a positive and measurable outcome.
2. Soundness of approach or design:
    a. The project adheres to the description of innovative projects or activities found in Part I C. of this notice;
    b. Technical design and implementation strategy is based on sound science;
    c. There is a good likelihood of project success;
    d. The project substantively involves EQIP eligible producers; and,
    e. The project promotes environmental enhancement and protection in conjunction with agricultural production.
3. Project management:
    a. The application has clear milestones and timelines, designated staff, and demonstrates collaboration;
    b. The project staff has the technical expertise needed to do the work; and
    c. The budget is reasonable and adequately justified.
4. Transferability:
    a. There is great potential to transfer the approach or technology to others and/or to other geographical areas; and,
    b. The project will result in the development of technical or related materials (e.g., technical standards, technical notes, manuals, handbooks, software) that will help foster adoption of the innovative technology or approach by other producers, and in other geographic areas.

C. Anticipated Announcement and Award Dates

CIG Awards are anticipated to be announced by June 1, 2008. Funds are not awarded, and work may not start, until an agreement is signed by both NRCS and the grantee. All agreements are expected to be awarded by August 15, 2008.

VI. AWARD INFORMATION AND ADMINISTRATION

A. Award Notification

Applicants who have been selected will receive a letter of official notification from NRCS National Headquarters. This notice will indicate the need to work with the administrative contact to develop an agreement prior to starting work on the project. Applicants who are not selected will be notified by official letter.

B. Grant Agreement

The CCC, through NRCS, will use a grant agreement with selected applicants to document participation in the CIG component of EQIP. The grant agreement will include:

- project purpose;
- project objectives and deliverables;
- the final project plan listing cooperators in the project, and identifying the grant applicant and the project manager;
- the project timelines and expected project completion date;
- the project progress and budget reporting requirements;
- award amount and budget information;
- information regarding requests for advance of funds or reimbursement;
- the role of NRCS technical oversight in the project;
- reporting requirements including attendance at CIG grantee biannual meeting;
- changes in project plans; and
- other requirements and terms deemed necessary by the CCC to protect the interests of the United States.

C. Reporting Requirements

Grantees receiving an advance of Federal funds of more than $25,000 are required to submit a SF-272 (Report of Federal Cash Transactions), and when necessary, the continuation sheet, SF-272-A, no later than 15 days following the end of each quarter or 90 days after project completion. These reports are used to monitor cash advanced to recipients and to obtain disbursement and outlay information for each award.

Grantees must submit a Financial Status Report (SF 269) no later than 30 days after the end of each quarter and 90 days after completion of project. The SF-272 and SF-269 are available at: http://www.nrcs.usda.gov/programs/cig/InfoForGrantees.html.

In addition, every six months the grantee must submit a written performance progress report to the NRCS program contact and the NRCS technical contact. This report is distinct from the quarterly financial report described above. Each progress report shall cover work performed during the previous 6-month period, including any funded or unfunded time extensions, a comparison of actual accomplishments to project goals, and a statement of work projected to be completed in the next 6-month period.

The grantee is responsible for providing the technical assistance required to successfully implement and complete the project. NRCS will designate a Program Contact, an Administrative Contact, and a Technical Contact to provide oversight for each project receiving an award.

To satisfy the requirements of EQIP (7 CFR 1466) compliance measures, the grantee is required to submit as a component of the semi-annual progress report:

1. A list of producers, identified by name and social security number, of all EQIP-eligible producers or entities involved in the project.

2. The dollar amount of direct and indirect payment made to each individual producer or entity for any structural, vegetative, or management practices. Both quarterly and cumulative payment amounts must be submitted.
3. A self-certification indicating that each individual or entity receiving a direct or indirect payment through this grant is in compliance with the EQIP Payment Limitation, AGI, HEL, and Wetlands Conservation Compliance Farm Bill provisions.

A progress report template will be provided to grantees by the NRCS program contact. This template is also available on the NRCS CIG website at: http://www.nrcs.usda.gov/programs/cig/InfoForGrantees.html.

NRCS will designate a Program Contact and a Technical Contact for the project. These individuals will have technical oversight responsibility for the project. The grantee must send copies of each semi-annual progress report to these NRCS contacts, and comply with any requests for information from these individuals. NRCS recommends that the grantee work closely with these subject matter experts throughout the course of the project.

Upon passage of the completion date of the project, a final report must be submitted within 90 days detailing project activities, funding received, funding expended, results, and potential for transferability of results. The final report should address completion of the project deliverables listed in the grant agreement.

NRCS will host an annual meeting for CIG grantees and NRCS technical contacts. Grantees will be required to attend at least one of these sessions at their own expense.

VII. AGENCY CONTACTS

CIG Program Contact:

Tessa Chadwick
CIG National Program Manager
1400 Independence Ave, SW
Room 5237-S
Washington, DC 20250
Phone: (202) 720-2335
Fax: (202) 720-4265
e-mail: tessa.chadwick@wdc.usda.gov

CIG Administrative Contact:

Karen Minor
Grants and Agreements Team Leader
1400 Independence Ave, SW
Room 5222-S
Washington, DC 20250
Phone: (202) 720-2604 or (202) 720-4102
Fax: (202) 720-2262
e-mail: karen.minor@wdc.usda.gov

Additional information about CIG, including fact sheets and frequently asked questions (FAQs), is available on the CIG webpage: www.nrcs.usda.gov/programs/cig

Signed in Washington, D.C. on December 10, 2007.

ARLEN L. LANCASTER
Vice President
Commodity Credit Corporation
Chief
Natural Resources Conservation Service

VIII. OTHER INFORMATION

APPLICATIONS MISSING ANY OF THESE REQUIRED ITEMS WILL NOT BE CONSIDERED

FISCAL YEAR 2008 APPLICATION PACKAGE CHECKLIST

☐ **1. Application Cover Sheet**: Complete Standard Form 424 (SF-424).

☐ **2. Project Summary Sheet:** (2 page maximum; template available))

a. Project Title
b. Project Director name and contact information (including e-mail)
c. Names and affiliations of project collaborators
d. Project Purpose
e. Project Deliverables/Products
f. Project Scope/Area
g. Project Start and End Dates (Projects should plan to begin no earlier than September 1, 2008 and no later than September 30, 2008)
h. CIG National Component Category (Natural Resource or Technology)
i. Application Review Category (water quality-livestock, water quality-non livestock, water quantity, soils, atmospheric, grazing land and forest health, wildlife, or energy)
j. EQIP Eligibility Declaration
k. Brief summary of project

☐ **3. Project Description:** (10 pages maximum, double spaced, 12 point font)

a. Project background;
b. Project objectives;
c. Project methods;
d. Location and size of project area (include a map if possible);
e. Producer participation;
f. Project action plan and timeline;
g. Project management;
h. Benefits or results expected and transferability;
i. Project evaluation; and
j. Environmental impacts

☐ **4. Budget Information: Submit a completed SF-424A, a DETAILED budget narrative, and DOCUMENTATION showing matching funds available.**

☐ **5. Declaration of Beginning Farmer or Rancher, Limited Resource Farmer or Rancher, or Indian Tribe (Special Provisions):** If applicable, include a statement declaring your status as a Beginning Farmer or Rancher, Limited Resource Farmer or Rancher, Indian Tribe, or Community-based Organization representing these entities.

☐ **6. Declaration of EQIP Eligibility**: Include a statement indicating that all producers receiving direct or indirect payments will be eligible for EQIP participation.

☐ **7. Documentation that application was sent to all appropriate State Conservationist(s) requesting a letter of review.**

☐ **8. Certifications:** Complete Standard Form 424b (SF-424b).

☐ **9. DUNS Number**: For information about how to obtain a DUNS number go to http://www.grants.gov/RequestaDUNS or call 1-866-705-5711. Please note that the registration may take up to 14 business days to complete. (This number is entered on SF-424, item 1 above)

☐ **10 Required CCR Registration:** Visit www.ccr.gov to register. Needed to apply on Grants.gov.

Natural Resources Conservation Service State Conservationists and State Offices

Alabama: Gary Kobylski, 3381 Skyway Drive, Post Office Box 311, Auburn, AL 36830; phone: (334) 887-4500; fax: (334) 887-4552; gary.kobylski@al.usda.gov

Alaska: Robert Jones, Atrium Building, Suite 100, 800 West Evergreen, Palmer, AK 99645-6539; phone: (907) 761-7760; fax: (907) 761-7790; robert.jones@ak.usda.gov

Arizona: David McKay, Suite 800, 3003 North Central Avenue, Phoenix, AZ 85012-2945; phone: (602) 280-8808; fax: (602) 280-8809 or 8805; david.mckay@az.usda.gov

Arkansas: Kalven L. Trice, Federal Building, Room 3416, 700 West Capitol Avenue, Little Rock, AR 72201-3228; phone: (501) 301-3100; fax: (501) 301-3194; kalven.trice@ar.usda.gov

California: Ed Burton, Suite 4164, 430 G Street, Davis, CA 95616-4164; phone: (530) 792-5600; fax: (530) 792-5790; ed.burton@ca.usda.gov

Caribbean Area: Juan A. Martinez, Director, IBM Building, Suite 604, 654 Munoz Rivera Avenue, Hato Rey, PR 00918-4123; phone: (787) 766-5206; fax: (787) 766-6563; juan.martinez@pr.usda.gov

Colorado: James Allen Green, Room E200C, 655 Parfet Street, Lakewood, CO 80215-5521; phone: (720) 544-2810; fax: (720) 544-2965; allen.green@co.usda.gov

Connecticut: Margo L. Wallace, 344 Merrow Road, Tolland, CT 06084; phone: (860) 871-4011; fax: (860) 871-4054; margo.wallace@ct.usda.gov

Delaware: Russell Morgan, Suite 101, 1203 College Park Drive, Dover, DE 19904-8713; phone: (302) 678-4160; fax: (302) 678-0843; russell.morgan@de.usda.gov

Florida: T. Niles Glasgow, 2614 N.W. 43rd Street, Gainesville, FL 32606-6611, or Post Office Box 141510, Gainesville, FL 32614; phone: (352) 338-9500; fax: (352) 338-9574; niles.glasgow@fl.usda.gov

Georgia: James Tillman, Federal Building, Stop 200, 355 East Hancock Avenue, Athens, GA 30601-2769; phone: (706) 546-2272; fax: (706) 546-2120; james.tillman@ga.usda.gov

Hawaii: Lawrence T. Yamamoto, Room 4-118, 300 Ala Moana Boulevard, Honolulu, HI 96850-0002; phone: (808) 541-2600, ext. 100; fax: (808) 541-1335; larry.yamamoto@hi.usda.gov

Idaho: Richard W. Sims, Suite C, 9173 West Barnes Drive, Boise, ID 83709; phone: (208) 378-5700; fax: (208) 378-5735; richard.sims@id.usda.gov

Illinois: William J. Gradle, 2118 W. Park Court, Champaign, IL 61821; phone: (217) 353-6600; fax: (217) 353-6676; bill.gradle@il.usda.gov

Indiana: Jane E. Hardisty, 6013 Lakeside Boulevard, Indianapolis, IN 46278-2933; phone: (317) 290-3200; fax: (317) 290-3225; jane.hardisty@in.usda.gov

Iowa: Richard Van Klaveren, 693 Federal Building, Suite 693, 210 Walnut Street, Des Moines, IA 50309-2180; phone: (515) 284-6655; fax: (515) 284-4394; rick.vanklaveren@ia.usda.gov

Kansas: Harold Klaege, 760 South Broadway, Salina, KS 67401-4642; phone: (785) 823-4565; fax: (785) 823-4540; harold.klaege@ks.usda.gov

Kentucky: Michael Hubbs, Suite 110, 771 Corporate Drive, Lexington, KY 40503-5479; phone: (859) 224-7350; fax: (859) 224-7399; mike.hubbs@ky.usda.gov

Louisiana: Kevin Norton, 3737 Government Street, Alexandria, LA 71302; phone: (318) 473-7751; fax: (318) 473-7626; kevin.norton@la.usda.gov

Maine: Joyce Swartzendruber, Suite 3, 967 Illinois Avenue, Bangor, ME 04401; phone: (207) 990-9100, ext. 3; fax: (207) 990-9599; joyce.swartzendruber@me.usda.gov

Maryland: Jon Hall, John Hanson Business Center, Suite 301, 339 Busch's Frontage Road, Annapolis, MD 21401-5534; phone: (410) 757-0861 ext. 315; fax: (410) 757-0687; jon.hall@md.usda.gov

Massachusetts: Christine Clarke, 451 West Street, Amherst, MA 01002-2995; phone: (413) 253-4351; fax: (413) 253-4375; christine.clarke@ma.usda.gov

Michigan: Garry Lee, Suite 250, 3001 Coolidge Road, East Lansing, MI 48823-6350; phone: (517) 324-5270; fax: (517) 324-5171; garry.lee@mi.usda.gov

Minnesota: William Hunt, Suite 600, 375 Jackson Street, St. Paul, MN 55101-1854; phone: (651) 602-7900; fax: (651) 602-7913 or 7914; william.hunt@mn.usda.gov

Mississippi: Homer L. Wilkes, Suite 1321, Federal Building, 100 West Capitol Street, Jackson, MS 39269-1399; phone: (601) 965-5205; fax: (601) 965-4940; homer.wilkes@ms.nrcs.usda.gov

Missouri: Roger A. Hansen, Parkade Center, Suite 250, 601 Business Loop 70, West Columbia, MO 65203-2546; phone: (573) 876-0901; fax: (573) 876-0913; roger.hansen@mo.usda.gov

Montana: Jeff Burwell,acting, Federal Building, Room 443, 10 East Babcock Street, Bozeman, MT 59715-4704; phone: (406) 587-6811; fax: (406) 587-6761, jeff.burwell@co.usda.gov

Nebraska: Stephen K. Chick, Federal Building, Room 152, 100 Centennial Mall, North Lincoln, NE 68508-3866 phone: (402) 437-5300; fax: (402) 437-5327; steve.chick@ne.usda.gov

Nevada: Richard Vigil, 1365 Corporate Blvd.Building F, Suite 201, 5301 Longley Lane, Reno, NV 89511-180589502; phone: (775) 784-5863857-8500; fax: (775) 784-5939857-8524; richard.vigil@nv.usda.gov

New Hampshire: George W. Cleek, Federal Building, 2 Madbury Road, Durham, NH 03824-2043; phone: (603) 868-7581, ext. 125; fax: (603) 868-5301; george.cleek@nh.usda.gov

New Jersey: Thomas Drewes, 220 Davidson Avenue, 4th Floor, Somerset, NJ 08873-3157; phone: (732) 537-6040; fax: (732) 537-6095; thomas.drewes@nj.usda.gov

New Mexico: Dennis Alexander, Suite 305, 6200 Jefferson Street, N.E., Albuquerque, NM 87109-3734; phone: (505) 761-4400; fax: (505) 761-4481; dennis.alexander@nm.usda.gov

New York: Ron Alvarado, Suite 354, 441 South Salina Street, Syracuse, NY 13202-2450; phone: (315) 477-6504; fax: (315) 477-6550; ron.alvarado@ny.usda.gov

North Carolina: Mary K. Combs, Suite 205, 4405 Bland Road, Raleigh, NC 27609-6293; phone: (919) 873-2102; fax: (919) 873-2156; mary.combs@nc.usda.gov

North Dakota: J.R. Flores, Jr., Room 278, 220 E. Rosser Avenue, Post Office Box 1458, Bismarck, ND 58502-1458; phone: (701) 530-2000; fax: (701) 530-2110; jr.flores@nd.usda.gov.

Ohio: Terry Cosby, Room 522, 200 North High Street, Columbus, OH 43215-2478; phone: (614) 255-2500; fax: (614) 255-2548; terry.cosby@oh.usda.gov

Oklahoma: Ronald L. Hilliard, USDA Agri-Center Building, Suite 206, 100 USDA, Stillwater, Oklahoma 74074-2655; phone: (405) 742-1204; fax: (405) 742-1126; ron.hilliard@ok.usda.gov

Oregon: Robert Graham, 1201 NE Lloyd Blvd., Suite 900, Portland, OR 97232; phone: (503) 414-3200; fax: (503) 414-3103; bob.graham@or.usda.gov

Pacific Basin: Larry Yamamoto, Director, Suite 301, FHB Building, Suite 301 400 Route 8, Mongmong, GU 96910; phone: (671) 472-7490; fax: (671) 472-7288; larry.yamamoto@pb.usda.gov

Pennsylvania: Craig Derickson, Suite 340, 1 Credit Union Place, Harrisburg, PA 17110-2993; phone: (717) 237-2200; fax: (717) 237-2238; craig.derickson@pa.usda.gov

Rhode Island: Roylene Rides at the Door, Suite 46, 60 Quaker Lane, Warwick, RI 02886-0111; phone: (401) 828-1300; fax: (401) 828-0433; roylene.rides-at-the-door@ri.usda.gov

South Carolina: Walter W. Douglas, Strom Thurmond Federal Building, Room 950, 1835 Assembly Street, Columbia, SC 29201-2489; phone: (803) 253-3935; fax: (803) 253-3670; walt.douglas@sc.usda.gov

South Dakota: Janet L. Oertly, Federal Building, Room 203, 200 Fourth Street, S.W., Huron, SD 57350-2475; phone: (605) 352-1200; fax: (605) 352-1288; janet.oertly@sd.usda.gov

Tennessee: J. Kevin Brown, 675 U.S. Courthouse, 801 Broadway, Nashville, TN 37203-3878; phone: (615) 277-2531; fax: (615) 277-2578; kevin.brown@tn.usda.gov

Texas: Donald W. Gohmert, W.R. Poage Federal Building, 10l South Main Street, Temple, TX 76501-7602; phone: (254) 742-9800; fax: (254) 742-9819; don.gohmert@tx.usda.gov

Utah: Sylvia Gillen, W.F. Bennett Federal Building, Room 4402, 125 South State Street, Salt Lake City, UT 84111 or Post Office Box 11350, Salt Lake City, UT 84147-0350, phone: (801) 524-4550, fax: (801) 524-4403; sylvia.gillen@ut.usda.gov

Vermont: Judith Doerner, Suite 105, 356 Mountain View Drive, Colchester, VT 05446; phone: (802) 951-6795; fax: (802) 951-6327; judy.doerner@vt.usda.gov

Virginia: Jack Bricker, Culpeper Building, Suite 209, 1606 Santa Rosa Road, Richmond, VA 23229-5014; phone: (804) 287-1691; fax: (804) 287-1737; jack.bricker@va.usda.gov

Washington: Raymond L. “Gus" Hughbanks, Rock Pointe Tower II, Suite 450, W. 316 Boone Avenue, Spokane, WA 99201-2348; phone: (509) 323-2900; fax: (509) 323-2909; raymond.hughbanks@wa.usda.gov

West Virginia: Kevin Wickey, Room 301, 75 High Street, Morgantown, WV 26505; phone: (304) 284-7540; fax: (304) 284-4839; kevin.wickey@wv.usda.gov

Wisconsin: Patricia S. Leavenworth, 8030 Excelsior Drive, Suite 200, Madison, WI 53717; phone: (608) 662-4422; fax: (608) 662-4430; pat.leavenworth@wi.usda.gov

Wyoming: Xavier Montoya, Federal Building, Room 3124, 100 East B Street, Casper, WY 82601-1911; phone: (307) 261-6453; fax: (307) 261-6490; xavier.montoya@wy.usda.gov

Appendix E

US Army Corps of Engineers

Funding Information

Texas Water Allocation Assessments

In 1997, in response to recent droughts, the 75th Texas Legislature passed Senate Bill 1 to address water management and planning in Texas. Senate Bill 1 (SB1) put in place a regional approach to water planning. Sixteen regions were created across the State based on water sources, river basins, economic growth centers and other factors unique to the area. In each region, a Regional Water Planning Group (RWPG) managed a study to identify available water supplies and projected demands for the next fifty years. The RWPGs then identified water management strategies for entities with projected shortages and developed costs estimates. On a statewide basis, over $17 billion of improvements (1999 costs) were recommended to meet the projected demands by 2050. For many entities these improvements cannot be completed without outside assistance, and present local and state resources may not be sufficient. In response, the Texas Congressional Delegation requested a study on the potential for federal assistance with water supply in Texas.

LINKS

The documents on this page require the Adobe PDF Reader. Click **here** to download the reader.

In Fiscal Year 2001, initial funds were appropriated by Congress for the Corps of Engineers to assist the State of Texas in determining if existing water could be better allocated to support more balanced water use to meet future needs. This overall study effort was designated as the Texas Water Allocation Assessment, and a wide array of studies have been initiated under this authority. The studies initiated as of April 2003 include the following:

Review of Regional Water Plans [**578** pages - **14.8meg** PDF]

System Assessment Wright Patman and Jim Chapman Reservoirs [HTML Link]

Review of Corps of Engineers Water Supply Authorities [**145** pages - **2.99**meg PDF]

Brush Management Study [HTML Link]

Instream Flow Analysis – Sulphur Basin and Brazos Basin

Rural Issues Study [HTML Link]

Decision Support System for Water Management

About Us | Site Map | Section 508 Compliance | Disclaimers | Privacy Policy | Contact Us

Page Last Modified: 3/29/2006 | Page Counter: 003226

U.S. ARMY CORPS OF ENGINEERS

REQUEST

Support the appropriation of sufficient funds in Fiscal Year 2007 Energy and Water Development Appropriations for the Corps of Engineers to continue the ongoing comprehensive watershed planning efforts, which are essential to the future implementation of the Texas State Water Plan.

This paper is a representation of the ongoing collaboration between the State of Texas, the members of the Texas Water Conservation Association (TWCA), and the Corps of Engineers (Corps) with a focus of meeting the State's future water supply needs. Through continued funding of the ongoing Corps feasibility studies, this partnership will continue to expand as we work to meet the water supply requirements of future generations of Texans, while also preserving, improving, and enhancing the riverine and coastal environment of Texas.

The Corps has used the general authorities of the Texas Water Allocation Assessment and Planning Assistance to States Program to provide technical assistance to the TWDB as an aide in the implementation of the State Water Plan. However, in the fiscal year 2007 Corps budget request, these two programs are under funded. The following is a synopsis of these ongoing efforts that are supported by TWCA and TWDB.

- Texas Water Allocation Assessment (TWAA). Assistance provided from previous appropriations include hydrologic and hydraulic modeling, groundwater modeling, surface and ground water interaction modeling, instream flow analyses, reservoir systems operation assessments, sediment transport analyses, hydrographic surveys, environmental assessments, land use and vegetation cover survey and mapping, and streamlining federal and regulatory processes in anticipation of potential future projects identified in the state water plan. FY07 funding will allow the Corps to provide planning and technical assistance to the state. FY07 studies include hydrological, hydraulic, and environmental studies within several river basins for several regional planning groups. **(Request: Appropriations O&M. FY07 Budget Request: $100,000; FY07 Capability: $1,800,000)**

- Planning Assistance to States (PAS) Program. The Corps Planning Assistance to States (PAS) Program provides funding to the Corps to prepare comprehensive plans for the development, utilization, and conservation of water and related land resources. Typical studies conducted under the PAS program include water supply and demand studies, water quality studies, and environmental conservation/restoration studies. The TWDB has leveraged PAS funding to conduct hydrographic surveys of Texas lakes to determine the amount of available water supply storage. The TWDB provides the information and data obtained from PAS studies to the Regional Planning Groups for their use in identifying available surface water supply, and for updating the regional plans. (**Request: Appropriations GI: PAS: $500,000).**

The Corps has received funding on a number of studies and projects that are investigating the potential for the Federal government to assist members of the TWCA implement their Regional

Water Plan. However, in the fiscal year 2007 Corps budget request, many of these ongoing studies were either under funded or not funded. The following is a listing of the fiscal year 2007 budget request and capability amount for these ongoing efforts that are supported by TWCA and TWDB.

STUDY/PROJECT NAME	PHASE	FY06 APPROPS $	FY07 BUDGET REQUEST $	FY07 CAPABILITY $
Abilene, TX (Brazos River Basin)	FEAS	100,000	0	400,000
Colonias - LWR Rio Grande Basin Along TX & Mexico Border	PED	50,000	0	500,000
Cypress Valley Watershed, TX	RECON	0	0	100,000
Guadalupe and San Antonio River Basins, TX	FEAS	500,000	300,000	2,000,000
Lower Colorado River Basin, TX	FEAS	600,000	300,000	500,000
Lower Colorado River, Wharton/Onion	PED	0	0	1,600,000
Lower Brazos River, TX	RECON	0	0	150,000
Lower Guadalupe River Basin, TX	FEAS	50,000	0	1,000,000
Lower Sabine River, TX and LA	FEAS	0	0	500,000
Lower San Antonio River Basin Study (Tri-County), TX)	FEAS	150,000	0	350,000
Lower Trinity River Basin, TX	FEAS	0	0	525,000
Middle Brazos River, TX	FEAS	300,000	0	500,000
Neches River Basin, TX	RECON	0	0	500,000
Northwest El Paso, TX	FEAS	0	0	200,000
Nueces River & Tributaries, TX	FEAS	500,000	250,000	800,000
Roma Creek Watershed Project, Starr County, TX	FEAS	100,000	0	800,000
Raymondville Drain, TX	PED	300,000	0	1,500,000
Resacas at Brownsville, TX	FEAS	75,000	0	500,000
Rio Grande Basin, TX	FEAS	150,000	50,000	500,000
Rio Grande Basin, CO, NM, & TX, (Forgotten River)	FEAS	0	0	250,000
Sabine Pass to Galveston Bay, TX	FEAS	750,000	270,000	270,000
San Bernard Watershed, TX	RECON	0	0	100,000
Sparks Arroyo Colonia, El Paso County, TX	FEAS	0	0	125,000
South Main Channel, TX	PED	0	0	313,000
Sulphur River Environmental Restoration, TX	FEAS	0	0	910,000
Upper Colorado River Basin, TX	RECON	0	0	100,000
Upper Trinity River Basin, TX	FEAS	800,000	0	2,200,000
		4,425,000	**1,170,000**	**17,193,000**

The 2001 State Water Plan identified more than $18 billion of new infrastructure that is needed to ensure adequate water supply is available to meet the needs of the State of Texas. Many of the States local governments and agencies do not have the financial capability to fund these projects in a way that would result in a reasonable cost for the water. As one of the leading Federal water agencies, the Corps has the technical expertise needed to assist local and state governments in implementing their regional water plans.

HILL COUNTRY NEWS

Federal funds secured for water projects

Print Page

by Charles Wood, Hill Country News

As Central Texas grows, planning for future water needs is essential. How to use current water supplies as effectively as possible will be a major part of that planning.

The 2008 omnibus spending bill included funding for two water-related projects that could impact future water use in Williamson County and the rest of Central Texas.

The bill, passed by both houses of Congress and signed by the president late last year, includes $713,000 for a Texas Water Development Board water allocation assessment, and $250,000 for a Williamson County Regional Water Reuse system.

U.S. Congressman John Carter, who represents Williamson County, announced the funding for both projects last week. “Texas is booming and our water system must be able to keep up with the growing population and increased water needs,” he said. “I'm proud to have secured these funds for a critical assessment that will help the Texas Water Board plan for the future water needs of our state.”

Carter said Williamson County's growth explosion makes it critical “that we conserve our water supply and uncover new, clean and environmentally safe solutions to reuse our current water supply.”

Water allocation

The Texas Water Allocation Assessment will enable the U.S. Army Corps of Engineers to help water regions determine if current water supplies can be better allocated for future water needs.

In 1997, after the last major drought, the Texas Legislature directed the Texas Water Development Board to change its water planning process to help ensure the state has enough water for the next 50 years. The state was divided into regions, which develop water plans every five years and present them to the TWDB. The last plans were completed in 2007. The next plans are due in 2012. Williamson County is in Planning Group G.

With 28 reservoirs in Texas, including Georgetown Reservoir and other lakes in the Brazos River Basin, the Corps manages 35 percent of the state's surface water. Under the new assessment project, the Corps will work with the TWDB to determine if there are other ways of managing surface water that might improve water supplies.

“The Corps will work with the TWDB to develop additional data and information that can be used to make decisions about improvements to current plans,” said Ray Russo of the U.S. Army Corps of Engineers.

The Corps receives federal funding for that process every year. The extra funding will allow the planning groups to study the reservoirs managed by the Corps. Data from the planning groups' studies will be used to update the Corps' future plans.

Water reuse

One of the best ways to stretch water supplies is to reuse treated wastewater for irrigation and landscaping, rather than watering plants with drinking water. The Lower Colorado River Authority (LCRA) plans to combine several ongoing and future projects into a Williamson County Regional Reuse System.

The recently approved federal funds will be used to build pipelines and expand reuse capabilities at existing water treatment plants in Williamson County, including the Brushy Creek Regional Water Treatment Plant in Round Rock. The plant provides wastewater treatment services for the cities of Cedar Park, Round Rock and Austin.

Cedar Park currently sells reuse water to the Avery Ranch Golf Course. The water flows downstream from the Cedar Park treatment plant just south of Brushy Creek Road to Brushy Creek Lake Park. “We have a 2.5 million gallon per day plant,” said Cedar Park Water Treatment Director Kenneth Wheeler. “We sell up to 1 mgd to Avery Ranch.” Everything above that goes to the Brushy Creek Regional Water Treatment Plant in Round Rock.

The city of Leander hopes to take advantage of reuse water in its transit-oriented development (TOD) area, a mixed-use development to be built around the Capital Metro Park and Ride location.

Reuse water will likely be used to keep retention ponds full in the TOD. Retention ponds are used to improve water quality of storm runoff through sedimentation and treatment through biological processes (by contrast, detention ponds are used to slow runoff and reduce flooding). Retention ponds must be kept full to remain effective, which can be a challenge during dry periods.

The TOD can also irrigate greenbelt areas with reuse water. “We will be conserving water from Lake Travis by using it twice,” said Leander Public Works Director Wayne Watts.

A capital improvement study is already under way to evaluate and possibly establish impact fees in the TOD that would fund wastewater and reuse projects.

Leander Urban Design Officer Pix Howell said the city of Leander was open to further water reuse projects. “Definitely as a strategy, every community will have to use reuse water for irrigating green space.”

E-mail charles@hillcountrynews.com

Copyright © 2008 Hill Country News