



**APPENDIX 4-1 Supporting Documentation and Methodology
for Estimating Project Costs**

Att4_2015IRWM_Budget_2of2

West-Basin Re-Use Project

Construction costs for the West Basin Re-Use Project were provided by Stantec Engineering, the primary consultant for SSJID.

Table 1 Summary Bid Results Provided by Stantec Engineering for West Basin Re-Use Project (2011)

	Knife River	Preston	Teichert	Auburn Constructors	Marques Pipelines	Mountain Cascade	Steve Rados	Ranger Pipelines	Tidelands Construction	McGuire and Hester
Description	Contractor A	Contractor B	Contractor C	Contractor D	Contractor E	Contractor F	Contractor G	Contractor H	Contractor I	Contractor J
General	\$1,435,000	\$1,538,825	\$2,538,000	\$1,980,000	\$1,225,000	\$1,503,444	\$2,588,001	\$712,600	\$385,500	\$1,935,000
East Basin Site	\$4,651,000	\$5,136,000	\$4,300,000	\$5,623,500	\$4,900,000	\$5,321,500	\$4,638,500	\$5,823,000	\$5,501,500	\$5,372,500
West Basin Site	\$3,235,500	\$3,131,000	\$3,096,000	\$3,264,000	\$3,085,000	\$3,375,000	\$2,988,500	\$3,927,000	\$3,379,000	\$3,771,400
Main and Spur Line Pipeline and Appurtenances	\$12,771,000	\$12,988,660	\$13,386,000	\$12,572,000	\$15,118,500	\$14,244,500	\$14,624,000	\$14,874,049	\$16,507,000	\$17,597,501
Total Bid Amount	\$22,092,500	\$22,794,485	\$23,320,000	\$23,439,500	\$24,328,500	\$24,444,444	\$24,839,001	\$25,336,649	\$25,773,000	\$28,676,401

Table 2 Bid Sheet Provided by Stantec for Knife River Construction (2011)

Item	Description	Knife River
	General	
1.	Mobilization, Demobilization, Bonds, and Insurance	\$635,000
2.	Sheeting, Shoring, and Bracing	\$25,000
3.	Traffic Control	\$30,000
4.	Environmental Protection	\$50,000
5.	Operations and Maintenance Manuals	\$5,000
6.	Record Drawings	\$5,000
7.	All work required by the Contract Documents not described in other bid items.	\$595,000
8.	Tree Removal	\$25,000
9.	Surveying	\$65,000
	East Basin Site	
10.	East Basin Pressure and Flood Basin Pump Stations Structure	\$725,000
11.	East Basin Pressure and Flood Pump Station Equipment, Piping, and Valving	\$1,200,000
12.	East Basin Site Work	\$870,000
13.	East Basin Well, complete	\$265,000
14.	New 24" pressure main piping on-site	\$20,000
15.	New 36", 42", 48" Gravity Pipeline and Junction Boxes from East Basin Facilities to Existing Facilities	\$212,000
16.	East Basin Control Building	\$130,000
17.	Electrical and Instrumentation	\$1,150,000
18.	Flood Basin Pumps	\$69,000
19.	Hydroseeding	\$10,000
	West Basin Site	
20.	West Basin Pressure and Flood Basin Pump Stations Structure	\$450,000
21.	West Basin Pressure and Flood Pump Station Equipment, Piping, and Valving	\$620,000
22.	West Basin Site Work	\$590,000
23.	West Basin Well, complete	\$265,000
24.	24" Pressure Main Piping On-Site	\$48,000
25.	36", 42", 48" Pipeline and Junction Boxes. from West Basin Facilities to Existing Facilities	\$250,000
26.	West Basin Control Building	\$82,000
27.	Electrical and Instrumentation	\$900,000
28.	Flood Basin Pump	\$13,500
29.	Hydroseeding	\$17,000
	Main and Spur Line Pipeline and Appurtenances	
30.	Pipeline Clearing, Grubbing, Stripping, and Demolition	\$75,000
31.	Spur Line "A"	\$280,000
32.	Spur Line "D"	\$105,000
33.	Spur Line "E"	\$56,000
34.	Spur Line "F"	\$125,000
35.	Spur Line "G"	\$51,000

Item	Description	Knife River
36.	Spur Line "H"	\$70,000
37.	Spur Line "I"	\$26,000
38.	Spur Line "L"	\$47,000
39.	Spur Line "M"	\$210,000
40.	Spur Line "N"	\$185,000
41.	Spur Line "O"	\$20,000
42.	Spur Line "P"	\$58,000
43.	Spur Line "Q"	\$29,000
44.	Spur Line "S"	\$17,000
45.	Spur Line "T"	\$190,000
46.	Spur Line "U"	\$33,000
47.	24" Pipeline	\$4,500,000
48.	36" Pipeline and Junction Box	\$155,000
49.	Imported Pipeline Backfill	\$11,000
50.	6" Type I Turnout	\$45,000
51.	8" Type I Turnout	\$324,000
52.	10" Type I Turnout	\$441,000
53.	6" Type V Turnout	\$13,000
54.	8" Type VI Turnout	\$72,000
55.	10" Type VII Turnout	\$273,000
56.	Type IV Turnout – 90° Short Distance	\$240,000
57.	Type III Turnout – 90° Dip Under Pipe	\$80,000
58.	Mainline and Spur Line Isolation Valves	\$72,000
59.	Air Vent, Pressure Relief, and Flush Out Assemblies	\$690,000
60.	Electrical and Instrumentation	\$4,200,000
61.	Type VIII Turnout- For Tee Only Future Connection	\$78,000
62.	Cathodic Protection Joint Bonding	\$0
	TOTAL BID AMOUNT	\$22,092,500
	Contractor's Bid Amount	

On-Farm Conservation Program

Implementation cost estimates for the On-Farm Conservation Program were arrived at by using metrics from the existing program for 2011-2014 and the anticipated conversions for 2016.

Table 1: On-Farm Conservation Program Metrics

	2011	2012	2013	2014	Totals
Total Acres Assisted	5,450.40	5,519.66	5,351.52	810.29	17,131.87
Number of Applications	143	160	154	19	476
Flow Meters (Delivery Measurement)	\$ 39,388	\$ 36,603	\$ 75,425	\$ 10,419	\$ 161,835
Conversions to Sprinkler & Drip Systems	\$ 389,494	\$ 578,673	\$ 578,529	\$ 180,778	\$ 1,727,474
Tailwater Recovery Systems	\$ 41,871	\$ -	\$ -	\$ -	\$ 41,871
Scientific Irrigation Scheduling & Soil Moisture Monitoring	\$ 89,954	\$ 85,543	\$ 61,354	\$ 2,558	\$ 239,409
Grower Proposals	\$ 144,261	\$ 248,536	\$ 218,416	\$ -	\$ 611,213
Totals	\$ 704,968	\$ 949,355	\$ 933,724	\$ 193,755	\$ 2,781,802

Source: SSJID

Based on data from the previous 3+ years of the program, we expect the On-Farm Conservation Program to benefit 5,300 acres with a total savings of 2,700 acre-feet per year. The following table provides a projection of the number of fields and acres to participate in the program based on available funding and assumptions related to cost share amounts per field, field size, and other factors. These estimates are meant to be a rough estimate of the number of applications that will be approved. It is assumed that all fields converting to sprinkler or drip/micro irrigation will also participate in delivery measurement for pumped deliveries.

Table 2: Anticipated Grower Participation and Cost Share Values for SSJID and Each Grower

Anticipated Project Participation		SSJID Cost Share				Grower Cost Share			
Conservation Measure	Parcels	Total	Average	\$/acre	% of Total	Total	Average	\$/acre	% of Total
Delivery Measurement	27	\$39,388	\$1,459	\$39	85%	\$6,899	\$256	\$7	15%
Sprinkler Conversion	7	\$125,571	\$17,939	\$462	30%	\$289,018	\$41,288	\$1,063	70%
Drip Conversion	19	\$263,923	\$13,891	\$343	44%	\$339,070	\$17,793	\$439	56%
Tailwater Recovery	3	\$41,871	\$13,957	\$184	39%	\$65,107	\$21,702	\$286	61%
Irrigation Scheduling	23	\$49,500	\$2,152	\$54	57%	\$37,584	\$1,634	\$41	43%
Moisture Monitoring	79	\$40,454	\$512	\$15	74%	\$13,926	\$176	\$5	26%
Grower Proposed	9	\$140,088	\$15,565	\$783	45%	\$170,394	\$18,933	\$953	55%