

## ES.4.2 CONCEPTUAL-LEVEL ENGINEERING DETAILS

Four conceptual designs at each of the study sites were created and evaluated during the Phase II process. A BAFF, FFGS, IFF, and Gate were considered for Georgiana Slough, Threemile Slough, Turner Cut, and Columbia Cut while a BAFF, FFGS, Gate, and SDIP Gate were considered for the Head of Old River. Each of the conceptual designs took into consideration the evaluation criteria discussed above. The conceptual designs for each of the options are in Appendix B.

The cost comparison of each of the options including the initial construction, annual operations and maintenance, and present worth cost are shown in Figure ES-2.

Cost Comparison - Site Specific Engineering Options				
		Initial Construction	Annual O&M	Present Worth
<b>Georgiana Slough</b>	Bio-Acoustic Fish Fence	\$12,800,000	\$510,000	\$25,600,000
	Floating Fish Guidance Structure	\$6,300,000	\$340,000	\$18,200,000
	Infrasound Fish Fence	\$7,600,000	\$390,000	\$21,400,000
	Gate	\$47,100,000	\$200,000	\$50,600,000
<b>Threemile Slough</b>	Bio-Acoustic Fish Fence	\$35,400,000	\$880,000	\$59,900,000
	Floating Fish Guidance Structure	\$12,800,000	\$710,000	\$38,800,000
	Infrasound Fish Fence	\$17,400,000	\$790,000	\$45,400,000
	Franks Tract Project	\$148,400,000	\$210,000	\$152,300,000
<b>Head of Old River</b>	BAFF	\$6,800,000	\$440,000	\$17,700,000
	FFGS	\$800,000	\$130,000	\$3,600,000
	South Delta Improvements Program	\$41,200,000	\$200,000	\$44,800,000
	Gate	\$43,200,000	\$200,000	\$46,800,000
<b>Turner Cut</b>	Bio-Acoustic Fish Fence	\$18,500,000	\$860,000	\$40,000,000
	Floating Fish Guidance Structure	\$7,200,000	\$390,000	\$20,000,000
	Infrasound Fish Fence	\$6,500,000	\$390,000	\$18,700,000
	Gate	\$70,000,000	\$200,000	\$73,700,000
<b>Columbia Cut</b>	Bio-Acoustic Fish Fence	\$16,600,000	\$840,000	\$37,600,000
	Floating Fish Guidance Structure	\$7,600,000	\$450,000	\$23,400,000
	Infrasound Fish Fence	\$8,400,000	\$440,000	\$23,300,000
	Gate	\$82,100,000	\$270,000	\$85,800,000

Source: DWR 2015

**Figure ES-2. Summary of Options Costs by Locations**

## ES.5 ENGINEERING EVALUATION RESULTS

The WRAM assessments conducted for engineering evaluations, summarizes assessments results, and discusses assessment limitations. The WRAM assessment method utilizes the four steps below to evaluate each option:

- ▶ Step 1 - identifying the evaluation criteria;
- ▶ Step 2 - weighting the importance of each criterion (calculating the relative importance coefficients [RICs]);