

**REFUGE WATER SUPPLY PROGRAM
CHARTERS
APPENDIX C**

**2019 ANNUAL WORK PLAN
PUBLIC DRAFT**

**CENTRAL VALLEY PROJECT IMPROVEMENT ACT
TITLE XXXIV OF PUBLIC LAW 102-575**

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Refuge Water Conveyance - Level 2 Supplies

Conveyance of surface water and groundwater pumping for refuges

DCN: RWSP2100
 Classification: Improvement, Refuge Surface
 Location: Central Valley Wide
 Funding Years: 2019 - 2021
 Benefits Start Year: 2019
 Priority: High
 Partners: CDFW, FWS, GWD

Authority

Provision	Percentage	Comment
(d)(1) Refuge Conveyance L2	100.0%	

Metrics

Name	Value	Units	Comment
Conveyance: L2 Refuge Water Convey (annual)	337222	acre-feet	L2 Surface Water Conveyance for WY2019
Conveyance: L2 Refuge Water Convey (annual)	13686	acre-feet	L2 Groundwater Pumped for WY2019
Conveyance: L2 Refuge Water Convey (annual)	50487	acre-feet	L2 Water from Diverse Sources at no Cost to RWSP for WY2019

Deliverables

Date	Title
Mar. 2019	Level 2 Water Conveyance to CVPIA Refuges

Narrative

Conveyance of Level 2 (L2) refuge water supplies to CVPIA refuges. This includes CVP surface water and water from diverse sources such as groundwater, mitigation water, water rights water, riparian rights water, and accretion water. The conveyance budget for FY2019 includes some assumptions to reduce the potential for over-estimations. For example, instead of using full L2 quantities for NOD conveyance cost estimates, an average of L2 deliveries for 2-3 recent years (excluding critically dry years) is used. Early in FY2019, the conveyance budget will be refined and recalculated. If the revised budget need is less than the allocated budget amount, the CVPIA Program Administrator and Refuge Water Supply Program

(RWSP) team will be informed to allow for a determination where the unneeded funds can be used to benefit other RWSP activities or CVPIA Program needs.

The conveyance of surface water supplies requires conveyance contracts with a number of conveying entities. Due to the geographical location of the refuges, direct delivery of water to a refuge boundary from Reclamation conveyance facilities can only be achieved for two of the 19 refuges. The remaining refuges receiving surface water deliveries require up to 3 conveying entities (including Reclamation facilities) for water to reach their boundaries. For the purpose of this charter, the primary conveyer represents the contracted conveyer conveying the initial diversion of refuge water supplies. In most cases, this water is then delivered to another conveying entity (secondary conveyer) with facilities in closer proximity to specific refuges. In some instances, the secondary conveyer completes the conveyance, delivering water to the refuge boundary. In other instances, a third conveying entity (tertiary conveyer) is necessary to complete refuge water conveyance due to the distances between certain refuges and available conveyance facilities. When a tertiary conveyer is utilized, the secondary conveyer moves refuge water into the tertiary conveyer’s system for final delivery to refuge boundaries.

A factor of 3% increase was applied to all FY2019 conveyance estimates to arrive at an estimate for FY2020, repeating the process for FY2021 estimates to meet the out-year planning estimates for the work plans, providing an adjustment to account for future rate increases. However, once each of those years moves up into the position of being the “next fiscal year” with an assigned Proposed President’s Budget, the Refuge Water Conveyance budget is reanalyzed, refined, and recalculated, incorporating upcoming-year rate estimates based on the then-prevailing rates for all conveyance contracts, applying the same process as described earlier above, again narrowing the budget closer to expected conditions.

There are no “fixed” conveyance costs for any of the 19 CVPIA refuges. Overall conveyance costs may vary according to hydrology; for example, in a critically dry year where refuges full L2 allocations are reduced by 25%, there may be a reduction in L2 conveyance costs as a result of delivering fewer L2 supplies. All current conveyance agreements contain provisions allowing for rate increases or include a rate escalator.

Data Management

Contract and agreement records are maintained in Acquisitions Division, MP-3800 and Resources Division, MP-410.

Risks

Risk	Likelihood	Impact
Conveyance contractor default	1	3
Unfavorable hydrology	1	2

Cost Estimate

Year	Fund	Total	BOR	FWS	DFW
2019	CVPRF	\$11,459,315	\$10,502,045	\$957,270	\$0
2019	SIK	\$145,000	\$0	\$0	\$145,000
2020	CVPRF	\$14,204,431	\$13,218,443	\$985,988	\$0
2020	SIK	\$145,000	\$0	\$0	\$145,000

Year	Fund	Total	BOR	FWS	DFW
2021	CVPRF	\$14,514,273	\$13,499,566	\$1,014,706	\$0
2021	SIK	\$145,000	\$0	\$0	\$145,000

Total Cost: \$40,613,019

Internal Agency Resources Table

2019

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
Implementation								
Agreement	Glenn-Colusa Irrigation District Agrmt #R13AC20502 - L2 Surface Water Conveyance	\$2,125,000	1.00	0.00	\$2,125,000	BOR	CVPRF	Convey surface water to Sacramento, Colusa and Delevan NWRs (AF included in 337,222 under Benefit section)
Agreement	Buena Vista Water Storage District Agrmt #R10AC20683 - L2 Surface Water Conveyance	\$273,000	1.00	0.00	\$273,000	BOR	CVPRF	Convey surface water directly to Kern NWR (AF included in 337,222 under Benefit section)
Agreement	San Luis & Delta-Mendota Water Authority Agrmt #80720X0354 - L2 Surface Water Conveyance	\$5,320,000	1.00	0.00	\$5,320,000	BOR	CVPRF	Actual funding need = \$7,320,000; \$2M will come from prior yr funds. Convey surface water to Volta & Mendota WAs; & to secondary & tertiary conveyors for Los Banos WA; China Is & Salt Slough Units of N. Grasslands WA; Freitas, Kesterson & E. Bear San Luis NWR; Kern NWR; & Grassland Resource Cons Distr
Agreement	Grassland Water District Contract #17WC205027 - L2 Surface Water Conveyance	\$421,000	1.00	0.00	\$421,000	BOR	CVPRF	Convey surface water supplies to Los Banos WA; Salt Slough Unit of N. Grasslands WA; and Freitas and Kesterson Units of San Luis NWR (AF included in 337,222 under Benefit section)

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
In-Kind Equipment or Materials	Water District Conveyance Fees	\$145,000	1.00	0.00	\$145,000	DFW	SIK	District fees to convey water to primary and secondary lands within the Gray Lodge Wildlife Area.
Agreement	Henry Miller Reclamation District Contract #17WC205028 - L2 Surface Water Conveyance	\$236,000	1.00	0.00	\$236,000	BOR	CVPRF	Convey surface water to Los Banos WA and Grassland Resource Conservation District (AF included in (AF included in 337,222 under Benefit section)
Agreement	Sutter NWR/RD-1004 Pilot Conveyance Project #17WC205119	\$0	1.00	0.00	\$0	BOR	CVPRF	2 Year pilot project to test delivering CVP water to Sutter NWR via Sacramento River thru RD-1004, then down Butte Creek to E. Borrow Ditch to Sutter NWR. Cost for conveyance of these supplies to Sutter NWR. FY19 funds needs covered with prior yr funding. (AF included in 337,222 under Benefit sec)
Agreement	CA Dept. of Water Resources Agrmt #12WC204346 - L2 Surface Water Conveyance	\$46,000	1.00	0.00	\$46,000	BOR	CVPRF	Convey surface water to tertiary conveyor for Kern NWR (AF included in 337,222 under Benefit section)
Agreement	Central California Irrigation District Contract #17WC205023 - L2 Surface Water Conveyance	\$1,267,000	1.00	0.00	\$1,267,000	BOR	CVPRF	Convey surface water to China Island Unit of N. Grasslands WA; and to tertiary conveyor for Los Banos WA; Salt Slough Unit of N. Grasslands WA; Freitas & Kesterson Units of San Luis NWR; Grassland Resource Conservation District (AF included in 337,222 under Benefit section)
Agreement	Biggs-West Gridley Water District Agrmt #R10AC20559 -	\$110,000	1.00	0.00	\$110,000	BOR	CVPRF	Convey surface water to Gray Lodge WA (AF included in 337,222 under Benefit section)

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	L2 Surface Water Conveyance							
Agreement	Henry Miller Reclamation District Agrmt #11650-2-0013 (with FWS) - L2 Surface Water Conveyance	\$703,931	1.00	0.00	\$703,931	FWS	CVPRF	Convey surface water to San Luis and West Bear Creek Units of the San Luis NWR (AF included in 337,222 under Benefit section)
Implementation								
Agreement	Water from Diverse Sources at No Cost to RWSP	\$0	1.00	0.00	\$0	BOR	CVPRF	L2 surface water from diverse sources with NO conveyance/power cost to Refuge Program. Sutter 12,423 AF riparian rights; Gray Lodge 18,800 AF water rights; Los Banos 3,995 AF mitigation; Merced 8,548 AF mitigation via Merced ID (FERC license); GRCD 4407 groundwater; Volta 2314 AF accretion flows.
Implementation								
Agreement	FWS Costs for Groundwater Pumping and Lift Pumping L2 Water (BOR-FWS Interagency 'Split' Agrmt)	\$253,339	1.00	0.00	\$253,339	FWS	CVPRF	1)Groundwater pumping at Merced (4,952 AF--part of 13,686 in Benefit section);2)temp lift pumps rental for fall @Sutter (AF included in 337,222 in Benefit);3)lift pumping to elevate surface water at Colusa & Sutter (Triangle) ref boundaries (AF included in 337,222 under Benefit)
Agreement	BOR Costs Groundwater/Lift Pumping L2 Water (CDFW Reimb #s15WC204671 & 16WC204795;	\$610,699	1.00	0.00	\$610,699	BOR	CVPRF	Total need=\$1,028,496; \$417,797 covered by prior yr funds. Costs pumping L2 groundwater & lift pumping reqd to elevate surface water @ refuge boundaries, incl Project Use Energy. (Groundwater AF incl in L2 Groundwater Pumped Benefit 13,686)

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	PG&E #R15PD00454							Pixley, Gray Lodge, Volta, Los Banos, Mendota, China Island, Salt Slough, E. Bear Cr
Monitoring								
Equipment or Materials	Bear Creek Flow Meters Measurements & Maintenance	\$50,000	1.00	0.00	\$50,000	BOR	CVPRF	Contract to provide necessary flow measurement system; to be located on Bear Creek for purpose of determining water losses in deliveries to E. Bear Cr. Unit.
Agreement	Sutter NWR/RD-1004 Pilot Project Water Quality Monitoring	\$36,402	1.00	0.00	\$36,402	BOR	CVPRF	2nd Year of 2-Year L2 conveyance pilot project: Convey CVP water to Sutter NWR via Sacramento River thru RD-1004, then down Butte Creek to E. Borrow Ditch to Sutter NWR. Monitor water quality at Point of Acceptance, RD1004 Point of Delivery, and final Point of Delivery at Sutter NWR boundary.
Agreement	Water Quality Monitoring - Gray Lodge WA - 2 LABS: APPL - BPA #R11PA20027; Basic - BPA #R11PA20029	\$6,944	1.00	0.00	\$6,944	BOR	CVPRF	Contract laboratory water sampling analysis costs and supply costs for Gray Lodge Wildlife Area water quality monitoring program for both groundwater and surface water supplies.

2020

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
Implementation								
Agreement	CA Dept. of Water Resources Agrmt	\$46,000	1.00	0.03	\$47,380	BOR	CVPRF	Convey surface water to tertiary conveyer for Kern NWR (AF included in 337,222 under Benefit section)

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	#12WC204346 - L2 Surface Water Conveyance							
Agreement	Grassland Water District Contract #17WC205027 - L2 Surface Water Conveyance	\$421,000	1.00	0.03	\$433,630	BOR	CVPRF	Convey surface water supplies to Los Banos WA; Salt Slough Unit of N. Grasslands WA; and Freitas and Kesterson Units of San Luis NWR (AF included in 337,222 under Benefit section)
Agreement	Biggs-West Gridley Water District Agrmt #R10AC20559 - L2 Surface Water Conveyance	\$110,000	1.00	0.03	\$113,300	BOR	CVPRF	Convey surface water to Gray Lodge WA (AF included in 337,222 under Benefit section)
In-Kind Equipment or Materials	Water District Conveyance Fees	\$145,000	1.00	0.00	\$145,000	DFW	SIK	District fees to convey water to primary and secondary lands within the Gray Lodge Wildlife Area.
Agreement	San Luis Delta-Mendota Water Authority Agrmt #80720X0354 - L2 Surface Water Conveyance	\$7,320,000	1.00	0.03	\$7,539,600	BOR	CVPRF	Convey surface water to Volta & Mendota WAs; and to secondary & tertiary conveyors for Los Banos WA; China Island and Salt Slough Units of N. Grasslands WA; Freitas & Kesterson Units of San Luis NWR; Kern NWR; & Grassland Resource Conservation District (AF included in 337,222 under Benefit section)
Agreement	Henry Miller Reclamation District Contract #17WC205028 - L2 Surface	\$236,000	1.00	0.03	\$243,080	BOR	CVPRF	Convey surface water to Los Banos WA and Grassland Resource Conservation District (AF included in 337,222 under Benefit section)

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	Water Conveyance							
Agreement	Central California Irrigation District Contract #17WC205023 - L2 Surface Water Conveyance	\$1,267,000	1.00	0.03	\$1,305,010	BOR	CVPRF	Convey surface water to China Island Unit of N. Grasslands WA; and to tertiary conveyor for Los Banos WA; Salt Slough Unit of N. Grasslands WA; Freitas & Kesterson Units of San Luis NWR; Grassland Resource Conservation District (AF included in 337,222 under Benefit section)
Agreement	Glenn-Colusa Irrigation District Agrmt #R13AC20502 - L2 Surface Water Conveyance	\$2,125,000	1.00	0.03	\$2,188,750	BOR	CVPRF	Convey surface water to Sacramento, Colusa and Delevan NWRs (AF included in 337,222 under Benefit section)
Agreement	Buena Vista Water Storage District Agrmt #R10AC20683 - L2 Surface Water Conveyance	\$273,000	1.00	0.03	\$281,190	BOR	CVPRF	Convey surface water directly to Kern NWR (AF included in 337,222 under Benefit section)
Agreement	Henry Miller Reclamation District Agrmt #11650-2-0013 (with FWS) - L2 Surface Water Conveyance	\$703,931	1.00	0.03	\$725,049	FWS	CVPRF	Convey surface water to San Luis and West Bear Creek Units of the San Luis NWR (AF included in 337,222 under Benefit section)
Implementation								
Agreement	FWS Costs for Groundwater Pumping and	\$253,339	1.00	0.03	\$260,939	FWS	CVPRF	1)Groundwater pumping at Merced (4,952 AF--part of 13,686 in Benefit section);2)temp lift pumps rental for fall

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	Lift Pumping L2 Water (BOR-FWS Interagency 'Split' Agrmt)							@ Sutter (AF included in 337,222 in Benefit);3)lift pumping to elevate surface water at Colusa & Sutter (Triangle) ref boundaries (AF included in 335,222 under Benefit)
Agreement	BOR Costs Groundwater/Lift Pumping L2 Water (CDFW Reimb #s15WC204671 & 16WC204795; PG&E #R15PD00454	\$1,028,496	1.00	0.03	\$1,059,351	BOR	CVPRF	Costs for pumping L2 groundwater & lift pumping required to elevate surface water supplies @ refuge boundaries incl Project Use Energy (Groundwater AF included in L2 Groundwater Pumped Benefit 13,686) Refuges: Pixley NWR; Gray Lodge, Volta, Los Banos, & Mendota; China Island & Salt Slough Units; E. Bear Cr. Unit.
Implementation								
Agreement	Water from Diverse Sources at No Cost to RWSP	\$0	1.00	0.00	\$0	BOR	CVPRF	L-2 surface water from diverse sources with NO conveyance/power cost to Refuge Program. Sutter 12,423 AF riparian rights; Gray Lodge 18,800 AF water rights; Los Banos 3,995 AF mitigation; Merced 8,548 AF mitigation via Merced ID (FERC license); GRCD 4,407 groundwater; Volta 2314 AF accretion flows.
Monitoring								
Agreement	Water Quality Monitoring - Gray Lodge WA - 2 LABS: APPL - BPA #R11PA20027; Basic - BPA #R11PA20029	\$6,944	1.00	0.03	\$7,152	BOR	CVPRF	Contract laboratory water sampling analysis costs and supply costs for Gray Lodge Wildlife Area water quality monitoring program for both groundwater and surface water supplies.

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
Labor	Bear Creek Water Loss Study	\$0	1.00	0.00	\$0	BOR	CVPRF	Collect and evaluate flow data to determine conveyance water losses to the East Bear Creek Unit of the San Luis NWR Complex. Costs included in 'RWSP Technical Support' charter for labor.

2021

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
Implementation								
Agreement	Water from Diverse Sources at No Cost to RWSP	\$0	0.00	0.00	\$0	BOR	CVPRF	L-2 surface water from diverse sources with NO conveyance/power cost to Refuge Program. Sutter 12,423 AF riparian rights; Gray Lodge 18,800 AF water rights; Los Banos 3,995 AF mitigation; Merced 8,548 AF mitigation via Merced ID (FERC license); GRCD 4,407 groundwater; Volta 2314 AF accretion flows.
Implementation								
Agreement	BOR Costs Groundwater/Lift Pumping L2 Water (CDFW Reimb #s15WC204671 & 16WC204795?; PG&E #R15PD00454	\$1,028,496	1.00	0.06	\$1,090,206	BOR	CVPRF	Costs for pumping L2 groundwater & lift pumping required to elevate surface water supplies @ refuge boundaries incl Project Use energy. (Groundwater AF incl in L2 Groundwater Pumped Benefit 13,686) Refuges: Pixley NWR; Gray Lodge, Volta, Los Banos, & Mendota; China Island & Salt Slough Units; E. Bear Cr.
Agreement	FWS Costs for Groundwater Pumping and	\$253,339	1.00	0.06	\$268,539	FWS	CVPRF	1)Groundwater pumping at Merced (4,952 AF--part of 13,686 in Benefit section);2)temp lift pumps rental for fall

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	Lift Pumping L2 Water (BOR-FWS Interagency 'Split' Agrmt)							@ Sutter(AF included in 337,222 in Benefit);3)lift pumping to elevate surface water at Colusa & Sutter (Triangle) ref boundaries (AF included in 337,222 under Benefit)
Implementation								
Agreement	Central California Irrigation District Contract #17WC205023 - L2 Surface Water Conveyance	\$1,267,000	1.00	0.06	\$1,343,020	BOR	CVPRF	Convey surface water to China Island Unit of N. Grasslands WA; and to tertiary conveyer for Los Banos WA; Salt Slough Unit of N. Grasslands WA; Freitas & Kesterson Units of San Luis NWR; Grassland Resource Conservation District (AF included in 337,222 under Benefit section)
Agreement	Henry Miller Reclamation District Agrmt #11650-2-0013 (with FWS) - L2 Surface Water Conveyance	\$703,931	1.00	0.06	\$746,167	FWS	CVPRF	Convey surface water to San Luis and West Bear Creek Units of the San Luis NWR (AF included in 337,222 under Benefit section)
Agreement	Buena Vista Water Storage District Agrmt #R10AC20683 - L2 Surface Water Conveyance	\$175,000	1.00	0.06	\$185,500	BOR	CVPRF	Convey surface water directly to Kern NWR (AF included in 357,366 under Benefit section)
In-Kind Equipment or Materials	Water District Conveyance Fees	\$145,000	1.00	0.00	\$145,000	DFW	SIK	District fees to convey water to primary and secondary lands within the Gray Lodge Wildlife Area.
Agreement	Grassland Water District Contract #17WC205027 - L2 Surface	\$421,000	1.00	0.06	\$446,260	BOR	CVPRF	Convey surface water supplies to Los Banos WA; Salt Slough Unit of N. Grasslands WA; and Freitas and Kesterson Units of San Luis NWR (AF

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	Water Conveyance							included in 337,222 under Benefit section)
Agreement	CA Dept. of Water Resources Agrmt #12WC204346 - L2 Surface Water Conveyance	\$46,000	1.00	0.06	\$48,760	BOR	CVPRF	Convey surface water to tertiary conveyor for Kern NWR (AF included in 337,222 under Benefit section)
Agreement	Biggs-West Gridley Water District Agrmt #R10AC20559 - L2 Surface Water Conveyance	\$110,000	1.00	0.06	\$116,600	BOR	CVPRF	Convey surface water to Gray Lodge WA (AF included in 337,222 under Benefit section)
Agreement	Glenn-Colusa Irrigation District Agrmt #R13AC20502 - L2 Surface Water Conveyance	\$2,125,000	1.00	0.06	\$2,252,500	BOR	CVPRF	Convey surface water to Sacramento, Colusa and Delevan NWRs (AF included in 337,222 under Benefit section)
Agreement	Henry Miller Reclamation District Contract #17WC205023 - L2 Surface Water Conveyance	\$236,000	1.00	0.06	\$250,160	BOR	CVPRF	Convey surface water to Los Banos WA and Grassland Resource Conservation District (AF included in 337,222 under Benefit section)
Agreement	San Luis Delta-Mendota Water Authority Agrmt #80720X0354 - L2 Surface	\$7,320,000	1.00	0.06	\$7,759,200	BOR	CVPRF	Convey surface water to Volta & Mendota WAs; and to secondary & tertiary conveyors for Los Banos WA; China Island and Salt Slough Units of N. Grasslands WA; Freitas & Kesterson

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	Water Conveyance							Units of San Luis NWR; Kern NWR; & Grassland Resource Conservation District (AF included in 337,222 under Benefit section)
Monitoring								
Labor	Bear Creek Water Loss Study	\$0	1.00	0.00	\$0	BOR	CVPRF	Collect and evaluate flow data to determine conveyance water losses to the East Bear Creek Unit of the San Luis NWR Complex. Costs included in 'RWSP Technical Support' charter for labor.
Agreement	Water Quality Monitoring - Gray Lodge WA - 2 LABS: APPL - BPA #R11PA20027; Basic - BPA #R11PA20029	\$6,944	1.00	0.06	\$7,361	BOR	CVPRF	Contract laboratory water sampling analysis costs and supply costs for Gray Lodge Wildlife Area water quality monitoring program for both groundwater and surface water supplies.

Water Acquisition - Incremental Level 4

Purchase of Incremental Level 4 and Exchange of L2 Refuge Water

DCN: RWSP2101
Classification: Improvement, Water Acquisition
Location: South of Delta Refuges and Wildlife Areas
Funding Years: 2019 - 2021
Benefits Start Year: 2019
Priority: High
Partners: GWD, CDFW, FWS

Authority

Provision	Percentage	Comment
(d)(2) Refuge Acquisition IL4	100.0%	

Metrics

Name	Value	Units	Comment
d2 Refuge: Inc L4 Water Acquisition, including Replacement Water	0	acre-feet	Amount of IL4 acquired to be determined

Deliverables

Date	Title
Oct. 2019	Incremental Level 4 Water

Narrative

Full Level 4 is the total amount of water identified for delivery to CVPIA refuge boundaries for optimum wetlands and wildlife habitat development and management. IL4 water is the difference between full Level 4 and Level 2 volumes. CVPIA section 3406(d)(2) specifies that IL4 must be acquired through voluntary measures which include water conservation, conjunctive use, purchase, lease, donations, or similar activities, or a combination of such activities which do not require involuntary reallocations of project yield. Incremental Level 4 water in the amount of 133,264 acre-feet plus conveyance losses must be acquired in order to meet refuge water delivery requirements under the CVPIA. Under this charter, water will be purchased from various contractors to increase IL4 supplies.

Data Management

Water contract records are maintained in the Resources Mgt. Division, MP-410. Incremental Level 4 delivery and losses data is maintained in Resources Mgt. Division, MP-410.

Risks

Risk	Likelihood	Impact
Water Not Available for Purchase	1	1

Cost Estimate

Year	Fund	Total	BOR	FWS
2019	CVPRF	\$10,500,000	\$10,500,000	\$0
2020	CVPRF	\$10,219,000	\$10,219,000	\$0
2021	CVPRF	\$10,219,000	\$10,219,000	\$0

Total Cost: \$30,938,000

Internal Agency Resources Table

2019

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Acquisition</i>								
Agreement	Water Purchase Contracts with Various Contractors	\$10,500,000	1.00	0.00	\$10,500,000	BOR	CVPRF	Acquire water to meet IL4 demands
Labor	Refuge L2 Exchanges to Acquire IL4	\$0	1.00	0.00	\$0	BOR	CVPRF	Various L2 exchanges are anticipated that would result in additional IL4 water being made available. Costs to negotiate and administer agreements would be covered under admin costs - no additional costs are anticipated

2020

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Acquisition</i>								
Labor	Refuge L2 Exchanges to Acquire IL4	\$0	1.00	0.00	\$0	BOR		Various L2 exchanges are anticipated that would result in additional IL4 water being made available. Costs to negotiate and administer agreements would be covered under admin costs - no additional costs are anticipated.
Agreement	Water Purchase Contracts with Various Contractors	\$10,219,000	1.00	0.00	\$10,219,000	BOR	CVPRF	Acquire water to meet IL4 demands

2021

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Acquisition</i>								
Agreement	Water Purchase Contracts with Various Contractors	\$10,219,000	1.00	0.00	\$10,219,000	BOR	CVPRF	Acquire water to meet IL4 demands
Labor	Refuge L2 Exchanges to Acquire IL4	\$0	1.00	0.00	\$0	BOR	CVPRF	Various L2 exchanges are anticipated that would result in additional IL4 water being made available. Costs to negotiate and administer agreements would be covered under admin costs - no additional costs are anticipated.

Refuge Water Conveyance - Incremental Level 4

Conveyance of surface water and groundwater pumping for refuges

DCN: RWSP2102
 Classification: Improvement, Refuge Surface
 Location: Central Valley Wide
 Funding Years: 2019 - 2021
 Benefits Start Year: 2019
 Priority: High
 Partners: GWD, CDFW, FWS

Authority

Provision	Percentage	Comment
(d)(2) Refuge Conveyance IL4	100.0%	

Metrics

Name	Value	Units	Comment
Conveyance: Inc L4 Refuge Water Conveyance (annual)	12500	acre-feet	Inc L4 Water with no Conveyance Cost to RWSP for WY2019
Conveyance: Inc L4 Refuge Water Conveyance (annual)	39757	acre-feet	Inc. L4 Surface Water Conveyance for WY2019
Conveyance: Inc L4 Refuge Water Conveyance (annual)	2500	acre-feet	Inc. L4 Groundwater Pumping for WY2019

Deliverables

Date	Title
Mar. 2019	Conveyance of Inc. Level 4 Water Supplies

Narrative

Conveyance of Incremental (Inc.) Level 4 refuge water supplies to CVPIA refuges. This includes annually acquired surface water, purchased permanent surface water, and pumped groundwater.

The conveyance of surface water supplies requires conveyance contracts with a number of conveying entities. Due to the geographical location of the refuges, direct delivery of water to a refuge boundary from Reclamation conveyance facilities can only be achieved for two of the 19 refuges. The remaining refuges receiving surface water deliveries require up to 3 conveying entities (including Reclamation facilities) for water to reach their boundaries. For the purpose of this charter, the primary conveyor

represents the contracted conveyor conveying the initial diversion of refuge water supplies. In most cases, this water is then delivered to another conveying entity (secondary conveyor) with facilities in closer proximity to specific refuges. In some instances, the secondary conveyor completes the conveyance, delivering water to the refuge boundary. In other instances, a third conveying entity (tertiary conveyor) is necessary to complete refuge water conveyance due to the distances between certain refuges and available conveyance facilities. The secondary conveyor moves refuge water into the tertiary conveyor's system for final delivery to refuge boundaries.

Inc. Level 4 metrics (acre-feet estimates), both surface and groundwater, for FY2019-2021 were developed with data available as of 6/2018.

Data Management

Contract and agreement records are maintained in Acquisitions Division, MP-3800 and Resources Division, MP-410.

Risks

Risk	Likelihood	Impact
Conveyance contractor default	1	3
Unfavorable hydrology	1	3

Cost Estimate

Year	Fund	Total	BOR	FWS
2019	CVPRF	\$2,399,713	\$2,399,713	\$0
2020	CVPRF	\$2,517,797	\$2,517,797	\$0
2021	CVPRF	\$2,604,911	\$2,604,911	\$0

Total Cost: \$7,522,421

Internal Agency Resources Table

2019

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
Implementation								
Agreement	Henry Miller Reclamation District Contract #17WC205028 - IL4 Surface Water Conveyance	\$18,000	1.00	0.00	\$18,000	BOR	CVPRF	Convey surface water to Los Banos WA and Grassland Resource Conservation District. (AF included in 39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	Central California Irrigation District Contract #17WC205023 - IL4 Surface Water Conveyance	\$310,000	1.00	0.00	\$310,000	BOR	CVPRF	Convey surface water to China Island Unit of N. Grasslands WA and to tertiary conveyor for Los Banos WA; Salt Slough Unit of N. Grasslands WA; and Grassland Resource Conservation District. (AF included in 39,575 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	San Luis Delta-Mendota Water Authority Agrmt #80720X0 354 - IL4 Surface Water Conveyance	\$1,326,000	1.00	0.00	\$1,326,000	BOR	CVPRF	Convey surface water to secondary & tertiary conveyors for Kern NW; Los Banos & Mendota WAs; China Island & Salt Slough Units of N. Grasslands WA; and Grassland Resource Conservation District. (AF included in 39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	Grassland Water District Agrmt #17WC205027 - IL4	\$144,000	1.00	0.00	\$144,000	BOR	CVPRF	Convey surface water to Los Banos WA and Salt Slough Unit of N. Grasslands WA. (AF included in

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	Surface Water Conveyance							39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	CA Dept. of Water Resources Agrmt #12WC204346 - IL4 Surface Water Conveyance	\$46,000	1.00	0.00	\$46,000	BOR	CVPRF	Convey surface water to tertiary conveyor for Kern NWR (1,706 AF of permanent purchased NOD Inc. Level 4 water via reallocation/transfer from NOD to SOD; and 5,600 AF via E. Bear Creek Unit groundwater/CVP exchange projects). (Included in Inc. L4 Surface Water Conveyance in Benefit 39,757).
Agreement	Buena Vista Water Storage District Agrmt #R10AC20683 - IL4 Surface Water Conveyance	\$174,000	1.00	0.00	\$174,000	BOR	CVPRF	Convey surface water to Kern NWR (1,706 AF of permanent purchased NOD Inc. Level 4 water via reallocation/transfer from NOD to SOD; and 5,600 AF via E. Bear Creek Unit groundwater/CVP exchange projects). (Included in Inc. L4 Surface Water Conveyance in Benefit 39,757).
Agreement	Glenn-Colusa Irrigation District Agrmt #R13AC20502 - IL4 Surface Water Conveyance	\$285,000	1.00	0.00	\$285,000	BOR	CVPRF	Convey surface water to Delevan NWR (10,455 AF of permanent purchased NOD Incremental Level 4 water (Corning, Thomes, & Proberta WDs; Anderson-Cottonwood ID; 485 AF transfer from TNC/Kopta Slough Property. (Included in Inc. L4 Surface Water Conveyance in 39,575 AF in Benefit section).
Implementation								

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
Agreement	PG&E Contract #R15PD00454 - IL4 Groundwater Pumping (Power Costs)	\$75,519	1.00	0.00	\$75,519	BOR	CVPRF	Electrical power costs for pumping IL4 groundwater from wells on Pixley NWR. (1000 AF included in Inc. L-4 Groundwater Pumped Benefit of 2,500).
Agreement	CA Dept. of Fish & Wildlife Reimb Agrmt #15WC204671 - IL4 Groundwater Pumping SOD	\$0	0.00	0.00	\$0	BOR	CVPRF	\$57,750 pumping costs covered with existing unused funds on agrmt. Costs for pumping Inc. L4 groundwater water developed on SOD Wildlife Areas & lift pumping of Inc. L4 surface water onto SOD WAs-1,500 AF developed groundwater (acre-feet incl in Incremental Level 4 Groundwater Pumped Benefit of 2,500)
Implementation								
Agreement	Incremental Level 4 Conveyance at NO Cost to RWSP	\$0	0.00	0.00	\$0	BOR	CVPRF	Inc L4 water delivered with no conveyance costs to RWSP. (2,500 AF surface water via Merced ID FERC license mitigation requirement.) (AF included in Inc L4 Water with No Conveyance Cost to RWSP Benefit section)
Monitoring								
Equipment or Materials	IL4 Water Quality Monitoring SOD WAs - 2 LABS: SD Ag - BPA #R13PA20140; and WET - BPA #R11PA20028	\$21,194	1.00	0.00	\$21,194	BOR	CVPRF	Costs for laboratory analysis of water samples and supplies for Inc. L4 groundwater quality monitoring program related to CDFW SOD WAs Reimbursement Agrmt.

2020

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
Implementation								
Agreement	PG&E Contract #R15PD00454 - IL4 Groundwater Pumping (Power Costs)	\$75,519	1.00	0.03	\$77,785	BOR	CVPRF	Electrical power costs for pumping IL4 groundwater from wells on Pixley NWR. (1000 AF included in Inc. L-4 Groundwater Pumped Benefit of 2,500).
Agreement	CA Dept. of Fish & Wildlife Reimb Agrmt #15WC204671 - IL4 Groundwater Pumping SOD	\$57,750	1.00	0.03	\$59,483	BOR	CVPRF	Costs for pumping Inc. L4 groundwater water developed on SOD Wildlife Areas (WA) and lift pumping of Inc. L4 surface water onto SOD WAs – 1,500 AF developed groundwater. (Acre-feet included in Incremental Level 4 Groundwater Pumped Benefit of 2,500)
Implementation								
Agreement	San Luis Delta-Mendota Water Authority Agrmt #80720X0 354 - IL4 Surface Water Conveyance	\$1,326,000	1.00	0.03	\$1,365,780	BOR	CVPRF	Convey surface water to secondary & tertiary conveyors for Kern NW; Los Banos & Mendota WAs; China Island & Salt Slough Units of N. Grasslands WA; and Grassland Resource Conservation District. (AF included in 39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	Henry Miller Reclamation	\$18,000	1.00	0.03	\$18,540	BOR	CVPRF	Convey surface water to Los Banos WA and Grassland

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	District Contract #17WC205028 - IL4 Surface Water Conveyance							Resource Conservation District. (AF included in 39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	Grassland Water District Contract #17WC205027 - IL4 Surface Water Conveyance	\$144,000	1.00	0.03	\$148,320	BOR	CVPRF	Convey surface water to Los Banos WA and Salt Slough Unit of N. Grasslands WA. (AF included in 39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	Central California Irrigation District Contract #17WC205023 - IL4 Surface Water Conveyance	\$310,000	1.00	0.03	\$319,300	BOR	CVPRF	Convey surface water to China Island Unit of N. Grasslands WA and to tertiary conveyor for Los Banos WA; Salt Slough Unit of N. Grasslands WA; and Grassland Resource Conservation District. (AF included in 39,575 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	Glenn-Colusa Irrigation District Agrmt #R13AC20502 - IL4 Surface Water Conveyance	\$272,000	1.00	0.03	\$280,160	BOR	CVPRF	Convey surface water to Delevan NWR (10,455AF of permanent purchased NOD Incremental Level 4 water (Corning-Thomes-Proberta WDs). (Included in Inc. L4 Surface Water Conveyance in Benefit 39,757).
Agreement	Buena Vista Water Storage District Agrmt #R10AC20683 - IL4 Surface Water Conveyance	\$174,000	1.00	0.03	\$179,220	BOR	CVPRF	Convey surface water to Kern NWR (1,706 AF of permanent purchased NOD Inc. Level 4 water via reallocation/transfer from NOD to SOD; and 5,600 AF via E. Bear Creek Unit groundwater/CVP exchange

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
								projects). (Included in Inc. L4 Surface Water Conveyance in Benefit 39,757).
Agreement	CA Dept. of Water Resources Agrmt #12WC204346 - IL4 Surface Water Conveyance	\$46,000	1.00	0.03	\$47,380	BOR	CVPRF	Convey surface water to tertiary conveyor for Kern NWR (1,706 AF of permanent purchased NOD Inc. Level 4 water via reallocation/transfer from NOD to SOD; and 5,600 AF via E. Bear Creek Unit groundwater/CVP exchange projects). (Included in Inc. L4 Surface Water Conveyance in Benefit 39,757).
Implementation								
Agreement	Incremental Level 4 Conveyance at NO Cost to RWSP	\$0	1.00	0.00	\$0	BOR	CVPRF	Inc L4 water delivered with no conveyance costs to RWSP. (2,500 AF surface water via Merced ID FERC license mitigation requirement.) (AF included in Inc L4 Water with No Conveyance Cost to RWSP Benefit section)
Monitoring								
Equipment or Materials	IL4 Water Quality Monitoring SOD WAs - 2 LABS: SD Ag - BPA #R13PA20140; and WET - BPA #R11PA20028	\$21,194	1.00	0.03	\$21,830	BOR	CVPRF	Costs for laboratory analysis of water samples and supplies for Inc. L4 groundwater quality monitoring program related to CDFW SOD WAs Reimbursement Agrmt.

2021

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Implementation</i>								
Agreement	Central California Irrigation District Contract #17WC205023 - IL4 Surface Water Conveyance	\$310,000	1.00	0.06	\$328,600	BOR	CVPRF	Convey surface water to China Island Unit of N. Grasslands WA and to tertiary conveyer for Los Banos WA; Salt Slough Unit of N. Grasslands WA; and Grassland Resource Conservation District. (AF included in 39,575 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	San Luis Delta-Mendota Water Authority Agrmt #80720X0 354 - IL4 Surface Water Conveyance	\$1,326,000	1.00	0.06	\$1,405,560	BOR	CVPRF	Convey surface water to secondary & tertiary conveyors for Kern NW; Los Banos & Mendota WAs; China Island & Salt Slough Units of N. Grasslands WA; and Grassland Resource Conservation District. (AF included in 39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	CA Dept. of Water Resources Agrmt #12WC204346 - IL4 Surface Water Conveyance	\$46,000	1.00	0.06	\$48,760	BOR	CVPRF	Convey surface water to tertiary conveyer for Kern NWR (1,706 AF of permanent purchased NOD Inc. Level 4 water via reallocation/transfer from NOD to SOD; and 5,600 AF via E. Bear Creek Unit groundwater/CVP exchange projects). (Included in Inc. L4 Surface Water Conveyance in Benefit 39,757).
Agreement	Buena Vista Water Storage District	\$174,000	1.00	0.06	\$184,440	BOR	CVPRF	Convey surface water to Kern NWR (1,706 AF of permanent

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	Agrmt #R10AC20683 - IL4 Surface Water Conveyance							purchased NOD Inc. Level 4 water via reallocation/transfer from NOD to SOD; and 5,600 AF via E. Bear Creek Unit groundwater/CVP exchange projects). (Included in Inc. L4 Surface Water Conveyance in Benefit 39,757).
Agreement	Glenn-Colusa Irrigation District Agrmt #R13AC20502 - IL4 Surface Water Conveyance	\$285,000	1.00	0.06	\$302,100	BOR	CVPRF	Convey surface water to Delevan NWR (10,455 AF of permanent purchased NOD Incremental Level 4 water (Corning-Thomes-Proberta WDs). (Included in Inc. L4 Surface Water Conveyance in Benefit 39,575).
Agreement	Henry Miller Reclamation District Contract #17WC205028 - IL4 Surface Water Conveyance	\$18,000	1.00	0.06	\$19,080	BOR	CVPRF	Convey surface water to Los Banos WA and Grassland Resource Conservation District. (AF included in 39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Agreement	Grassland Water District Contract #17WC205027 - IL4 Surface Water Conveyance	\$144,000	1.00	0.06	\$152,640	BOR	CVPRF	Convey surface water to Los Banos WA and Salt Slough Unit of N. Grasslands WA. (AF included in 39,757 of Inc. L4 Surface Water Conveyance in Benefit section).
Implementation								
Agreement	PG&E Contract #R15PD00454 - IL4 Groundwater Pumping (Power Costs)	\$75,519	1.00	0.06	\$80,050	BOR	CVPRF	Electrical power costs for pumping IL4 groundwater from wells on Pixley NWR. (1000 AF included in Inc. L-4 Groundwater Pumped Benefit of 2,500).
Agreement	CA Dept. of Fish & Wildlife Reimb Agrmt #15WC204671 - IL4	\$57,750	1.00	0.06	\$61,215	BOR	CVPRF	Costs for pumping Inc. L4 groundwater water developed on SOD Wildlife Areas (WA) and lift pumping of Inc. L4 surface water

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
	Groundwater Pumping SOD							onto SOD WAs – 1,500 AF developed groundwater. (Acre-feet included in Incremental Level 4 Groundwater Pumped Benefit of 2,500)
Implementation								
Agreement	Incremental Level 4 Conveyance at NO Cost to RWSP	\$0	1.00	0.00	\$0	BOR	CVPRF	Inc L4 water delivered with no conveyance costs to RWSP. (2,500 AF surface water via Merced ID FERC license mitigation requirement.) (AF included in Inc L4 Water with No Conveyance Cost to RWSP Benefit section)
Monitoring								
Equipment or Materials	IL4 Water Quality Monitoring SOD WAs - 2 LABS: SD Ag - BPA #R13PA20140; and WET - BPA #R11PA20028	\$21,194	1.00	0.06	\$22,466	BOR	CVPRF	Costs for laboratory analysis of water samples and supplies for Inc. L4 groundwater quality monitoring program related to CDFW SOD WAs Reimbursement Agrmt.

Refuge Construction - Biggs-West Gridley/Gray Lodge WA Project

Project implementation or contract and construction management service

DCN: RWSP2103
 Classification: Improvement, Refuge Facility
 Location: Sutter Buttes Region, North of Delta Refuges and Wildlife Areas
 Funding Years: 2019 - 2021
 Benefits Start Year: 2021
 Priority: High
 Partners: Ducks Unlimited, FWS, Gray Lodge, BWDWD, CDFW
 Related Programs: CVPIA b2

Authority

Provision	Percentage	Comment
(d)(5)-(1) Refuge Facility L2	80.0%	Facilities Construction for Level 2 benefits (Reimbursable by water and power users)
(d)(5)-(2) Refuge Facility IL4	20.0%	Facilities Construction for Level 4 benefits (Non-reimbursable and subject to State Cost Share)

Metrics

Name	Value	Units	Comment
Full Level 4 Delivery Capacity	44000	acre-feet	Amount of water required for optimum management of wetlands, subject to water supply availability.

Deliverables

Date	Title
Oct. 2018	FY19 Service Agreement (MP-410 and MPCO)
Oct. 2019	FY20 Service Agreement (MP-410 and MPCO)
Oct. 2020	FY21 Service Agreement (MP-410 and MPCO)
May. 2021	Construction Completion

Narrative

This charter is for Reclamation's Mid-Pacific Construction Office (MPCO) construction contract and management support services to be provided to Ducks Unlimited for the implementation of the Gray Lodge Wildlife Area Water Supply Project (formally known as the Biggs-West Gridley Water District (BWGWD) Conveyance Improvement Project). The project includes improvements to the BWGWD water conveyance system to increase system capacity and accommodate deliveries of full Level 4 water

supplies to the Gray Lodge WA, a CVPIA refuge. This Project builds upon previous phases of BWGWD conveyance improvements completed between 2013-15 and funded by Reclamation.

The resulting MPCO Service Agreement will be for contract management and construction management services to monitor the project construction activities. MPCO personnel will be on site to help coordinate construction work, verify that work is constructed per the design and specifications, monitor schedules and budgets, attend weekly project management meetings, provide construction/engineering support as needed, and prepare written daily and weekly construction update reports. BWGWD was awarded a grant from the California Natural Resources Agency (CNRA) to implement the construction Project. BWGWD is working with Ducks Unlimited, a RWSP NGO partner, to perform the construction work. MPCO will be supporting Ducks Unlimited who is the construction contract administrator for this project. The total CNRA (state) contribution to this project is \$52,458,449.

Data Management

Project notes, data (daily updates and weekly reports) and reports will be maintained by Reclamation’s Construction Office (MPCO) and Reclamation’s Resources Management Division, Program Management Branch (MP-410).

Risks

Risk	Likelihood	Impact
Cost estimates and budget	1	2
Lack of Construction Office resources/expertise	1	2

Cost Estimate

Year	Fund	Total	BOR	FWS
2019	CVPRF	\$400,000	\$400,000	\$0
2020	CVPRF	\$400,000	\$400,000	\$0
2021	CVPRF	\$400,000	\$400,000	\$0

Total Cost: \$1,200,000

Internal Agency Resources Table

2019

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Construction</i>								
Agreement	Service Agreement	\$400,000	1.00	0.00	\$400,000	BOR	CVPRF	Contract management and on-site construction management services in FY19. State cost share for construction under CNRA grant is \$52,458,449.

2020

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Construction</i>								
Agreement	Service Agreement	\$400,000	1.00	0.00	\$400,000	BOR	CVPRF	Contract management and on-site construction management services in FY20.

2021

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Construction</i>								
Agreement	Service Agreement	\$400,000	1.00	0.00	\$400,000	BOR	CVPRF	Contract management and on-site construction management services in FY21.

Refuge Construction - East Bear Creek Pump Station Modifications Project

Service agreement for O&M support services

DCN: RWSP2104
 Classification: Improvement, Refuge Facility
 Location: San Luis NWR Complex, South of Delta Refuges and Wildlife Areas
 Funding Years: 2019 - 2021
 Benefits Start Year: 2020
 Priority: High
 Partners: FWS

Authority

Provision	Percentage	Comment
(d)(5)-(1) Refuge Facility L2	67.0%	Facilities Construction for Level 2 benefits (Reimbursable by water and power users)
(d)(5)-(2) Refuge Facility IL4	33.0%	Facilities Construction for Incremental Level 4 benefits (Non-reimbursable and subject to State Cost Share)

Metrics

Name	Value	Units	Comment
Full Level 4 water delivery capacity.	13290	acre-feet	Amount of water required for optimum wetland management, subject to water supply availability.

Deliverables

Date	Title
Oct. 2018	Service Agreement - FY19 (MP-410 and Tracey Office)
Feb. 2019	A/E design contract executed
Sep. 2019	A/E design contract deliverables completed/ being modifications
Oct. 2019	Service Agreement - FY20 (MP-410 and Tracey Office)

Narrative

The East Bear Creek Pump Station is the only facility available to divert water from Bear Creek for this San Luis Wildlife Refuge East Bear Creek Unit's wetlands. Therefore, it is critical to keep the facility fully operational throughout the year, addressing any electrical and mechanical issues quickly. Since the completion of the pump station in 2009, it has been plagued by mechanical and electrical issues. Funding is needed to:

1. Enter into a service agreement with Reclamation's Tracey Office to provide O&M (electrical and mechanical) services for the East Bear Creek pump station.
2. Enter into an A/E contract with a design firm to help assess and prioritize needed design and operational changes to the pump station to minimize unscheduled pump shutdowns.
3. Purchase materials for implementation of identified design and operational modifications to improve pump station performance (e.g., new valves, controls, electronics, etc.).
4. Enter into a service agreement with Reclamation's Engineering and Design Division (MP-200) to provide QA/QC technical review support of design and operational modifications.

Data Management

Data and reports will be maintained within Reclamation's Resources Management Division, Program Management Branch (MP-410).

Risks

Risk	Likelihood	Impact
Pump Plant failure - inability to pump water	2	2

Cost Estimate

Year	Fund	Total	BOR	FWS
2019	CVPRF	\$950,000	\$950,000	\$0
2020	CVPRF	\$250,000	\$250,000	\$0
2021	CVPRF	\$100,000	\$100,000	\$0

Total Cost: \$1,300,000

Internal Agency Resources Table

2019

Type	Name	Rate	Frack.	MU	Total	Agency	Fund	Description
<i>Construction</i>								
Agreement	Contract for Services	\$200,000	1.00	0.00	\$200,000	BOR	CVPRF	A/E contract with an engineering design firm to: (1) assess, identify and prioritize EBC pump plan operational and design issues and (2) modify designs/operations to address identified issues.
Agreement	Service Agreement	\$150,000	1.00	0.00	\$150,000	BOR	CVPRF	FY19 Service Agreement with Tracey Office to provide emergency call out repairs and O&M support to the refuge managers.
Agreement	Service Agreement	\$500,000	1.00	0.00	\$500,000	BOR	CVPRF	FY19 Service Agreement with MP-200 for QA/QC technical review support of design and operational modifications.
Agreement	Supplies and Materials	\$100,000	1.00	0.00	\$100,000	BOR	CVPRF	For supplies/materials needed to implement designs and operations modifications

2020

Type	Name	Rate	Frack.	MU	Total	Agency	Fund	Description
<i>Construction</i>								
Agreement	Service Agreements	\$150,000	1.00	0.00	\$150,000	BOR	CVPRF	FY20 Service Agreement with Tracey Office to provide emergency call out repairs and O&M support to the refuge managers.
Agreement	Supplies and Materials	\$100,000	1.00	0.00	\$100,000	BOR	CVPRF	For supplies/materials needed to implement designs/operations modifications.

2021

Type	Name	Rate	Frack.	MU	Total	Agency	Fund	Description
<i>Construction</i>								
Agreement	Service Agreement	\$100,000	1.00	0.00	\$100,000	BOR	CVPRF	FY21 Service Agreement with Tracey Office to provide emergency call out repairs and O&M support to the refuge managers.

Refuge Construction - Mendota Water Authority Water Supply Design

Developing water supply conveyance alternatives to address water delivery constraints at the Mendota WA.

DCN: RWSP2105
Classification: Reconnaissance, Refuge Facility
Location: Mendota Pool Vicinity, San Joaquin Upper Mainstem
Funding Years: 2019 - 2021
Benefits Start Year: 2022
Priority: High
Partners: CDFW

Authority

Provision	Percentage	Comment
(d)(5)-(1) Refuge Facility L2	93.0%	Level 2 Water Supply (Reimbursable by water & power customers)
(d)(5)-(2) Refuge Facility IL4	7.0%	IL4 Water Supply (Non-reimbursable and subject to State cost share)

Metrics

Name	Value	Units	Comment
Full Level 4 water delivery capacity.	29650	acre-feet	Amount of water required for optimum wetland habitat development and management.

Deliverables

Date	Title
Aug. 2019	Contract Award
Jan. 2021	Final Design

Narrative

The Mendota Wildlife Area (Mendota WA) has difficulties diverting by gravity sufficient water supplies for developing and managing its wetlands due to lower water surface elevations in the Mendota Pool area and vicinity. This is due mainly because of increasing land subsidence and dewatering activities at the Mendota Dam. As a result, a water supply conveyance study was contracted and is currently being performed by an engineering design consultant. A final study report is expected Jan. 2019 and will identify potential conveyance options to provide a reliable and long-term supply of full Level 4 water (L2 and IL4) to Mendota WA. The water supply study is expected to:

1. Develop potential water supply and conveyance alternatives (for agency consideration).
2. Compare and prioritize the most promising alternatives
3. Develop conceptual designs
4. Prepare 'planning level' construction cost estimates
5. Identify possible operational concerns associated with priority alternatives.

Based on the study outcomes Reclamation will issue an A/E design contract to begin design work on the selected conveyance alternative(s). The timeline for measurable benefits of this project being observed depends on the alternatives identified and selected for design, design activities, environmental compliance and permitting activities, and implementation funding.

Data Management

Data collection and management will be maintained in Reclamation's Resources Management Division, specifically within the Program Management Branch (MP-410)

Risks

Risk	Likelihood	Impact
Completion of A/E design contract deliverables	1	1

Cost Estimate

Year	Fund	Total	BOR	FWS
2019	CVPRF	\$500,000	\$500,000	\$0
2020	CVPRF	\$100,000	\$100,000	\$0
2021	CVPRF	\$50,000	\$50,000	\$0

Total Cost: \$650,000

Internal Agency Resources Table

2019

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Design</i>								
Agreement	A/E Contract for design of conveyance alternative(s)	\$500,000	1.00	0.00	\$500,000	BOR	CVPRF	Contract with design consultant to design selected conveyance alternative(s) for delivery of full L4 to the Mendota WA.

2020

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Design</i>								
Agreement	A/E Contract for design of conveyance alternative(s)	\$100,000	1.00	0.00	\$100,000	BOR	CVPRF	Contract with design consultant to design selected conveyance alternative(s) for delivery of full L4 to the Mendota WA.

2021

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Design</i>								
Agreement	A/E Contract for design of conveyance alternative(s)	\$50,000	1.00	0.00	\$50,000	BOR	CVPRF	Contract with design consultant to design selected conveyance alternative(s) for delivery of full L4 to the Mendota WA.

Refuge Construction - Sutter NWR Lift Station Project

Sutter NWR Lift Station Construction Support Services

DCN: RWSP2106

Classification: Improvement, Refuge Facility

Location: Sutter Flood Control Bypass, North of Delta Refuges and Wildlife Areas

Funding Years: 2019 - 2020

Benefits Start Year: 2020

Priority: High

Partners: Ducks Unlimited, FWS, CDFW, CDWR

Related Programs: CVPIA b2

Authority

Provision	Percentage	Comment
(d)(5)-(1) Refuge Facility L2	78.0%	Facilities Construction for Level 2 benefits (Reimbursable by water and power users)
(d)(5)-(2) Refuge Facility IL4	22.0%	Facilities Construction for Level 4 benefits (Non-reimbursable and subject to State Cost Share)

Metrics

Name	Value	Units	Comment
Full Level 4 water delivery capacity.	30000	acre-feet	Amount of water required for optimum management of wetlands, subject to water supply availability.

Deliverables

Date	Title
Oct. 2018	FY19 Service Agreement (MP410 and MPCO)
Oct. 2019	FY20 Service Agreement (MP410 and MPCO)
May. 2020	Construction Completion

Narrative

The Sutter NWR Lift Station Project is identified as part of the preferred alternative in the Sutter NWR Conveyance Study (Study), which was completed January 2015. The Lift Station is being designed with the capacity to provide the Refuge's full Level 4 water supply (30,000 AF) and will be a key component for long-term conveyance solutions identified in the Study. Project design, environmental compliance, and permitting are expected to be completed in late fall 2018. The Lift Station will be equipped with state-of-the-art cylindrical fish screens. Project construction is expected to start in summer 2019, however, actual start date is subject to environmental compliance and permitting activities being

complete. Ducks Unlimited, a RWSP NGO partner, was awarded a grant from the California Natural Resources Agency (CNRA) to implement the construction Project. The total CNRA (state) contribution to this project is \$5,927,167.

Reclamation has committed to providing construction contract and management services to Ducks Unlimited for project implementation. These services will be provided by Reclamation's Mid-Pacific Construction Office (MPCO) in Willows, CA. MP-410 will enter into annual service agreements with MPCO for these support services.

Reclamation has also committed to providing continued engineering design support during bidding and construction of the project. These services will be provided by Reclamation's Mid-Pacific design division (MP-200) as Engineer of Record. MP-410 will enter into annual service agreements with MP-200 for these support services.

Finally, Reclamation has committed to reimbursing Ducks Unlimited for Project implementation expenses not reimbursable under the CNRA grant. This will be reimbursed under a Federal Financial Assistance agreement between Reclamation and Ducks Unlimited (funds for this agreement are expected to be obligated in FY18).

Data Management

Project information will be maintained within Reclamation's Resources Management Division, Program Management Branch (MP-410).

Risks

Risk	Likelihood	Impact
Lack of Construction Office resources/expertise	1	2
Cost estimate and budget	1	2

Cost Estimate

Year	Fund	Total	BOR	FWS
2019	CVPRF	\$450,000	\$450,000	\$0
2020	CVPRF	\$150,000	\$150,000	\$0

Total Cost: \$600,000

Internal Agency Resources Table

2019

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Construction</i>								
Agreement	Service Agreement	\$300,000	1.00	0.00	\$300,000	BOR	CVPRF	Service agreement with Reclamation's Construction Office in Willows, CA for contract management and construction management services in FY19. State cost share for construction under CNRA grant is \$5,927,167.
Agreement	Service Agreement	\$150,000	1.00	0.00	\$150,000	BOR	CVPRF	Service agreement with Reclamation's MP-200 for engineering and design support services in FY19.

2020

Type	Name	Rate	Frac.	MU	Total	Agency	Fund	Description
<i>Construction</i>								
Agreement	Service Agreement	\$150,000	1.00	0.00	\$150,000	BOR	CVPRF	Service agreement with Reclamation's Construction Office in Willows, CA for contract management and construction management services in FY20.