

Appendix 2. Compliance with Biological Opinion

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The Fish and Wildlife Service (FWS) stated support for land retirement as one of several means to manage subsurface agricultural drainage as was recommended in the SJVDP 1990. Their belief was that the Land Retirement Demonstration Project could benefit the reduction of contaminated subsurface drainage water, increase available fresh water for fish and wildlife and provide large blocks of land that could potentially be restored to productive upland wildlife habitat, with potentially important endangered species benefits. The LRDP was thought likely to adversely affect SJ kit fox, Fresno kangaroo rat, blunt-nosed leopard lizard, giant garter snake, Aleutian Canada goose, delta smelt, and Sacramento splittail. A not-likely-to-adversely-affect determination was found for American peregrine falcon, bald eagle, mountain plover, California red-legged frog, vernal pool fairy shrimp, valley elderberry longhorn beetle, palmate-bracted birds-beak, San Joaquin woolly-threads, Hoover's eriastrum, and California jewelflower.

Conservation Measures

CONSERVATION MEASURES OF CVPIA LAND RETIREMENT DEMONSTRATION PROJECT

Task	Action Required	Results
Listed Species Recovery	Prioritize lands for acquisition	1997 Multi-agency LRP Guidelines used
Evaporative Pond Closure	Close pond to State Standards	Required & done prior to federal acquisition
Habitat Revegetation	Study options & implement habitat rehabilitation	In-depth study @ both sites. Mgt plans ongoing.
Enhancement Survival Program	Service to work w. LRP to develop a plan	Workload of Service personnel too great.
Monitoring Program	Tiered Contaminant Monitoring Se and GW	GW drops ave. 1-2 ft/yr. Se conc > 50ug/L See Chptr 2.
Performance Standards	Compare monitoring data to Se standards.	Met Perfcs Stds except GW quality. See Chptrs 2 & 3.
Adapt Mgt/Contingency Plan	Minimize risk of Se exposure w. adaptive mgt.	Restoration uses adaptive mgt. Contingency plans not needed.

FWS Conservation Measures were determined to be critical to the conclusion that survival and recovery of the listed species in the action area would not be reduced appreciably by the LRDP. As noted by FWS, the information gained from the LRDP would be used to guide future implementation and future land acquisitions of the CVPIA Land Retirement Program. The 1997 Multi-agency Interim Land Retirement Guidelines were employed to determine lands for acquisition for the Demonstration Project.

Evaporation pond closures for any federal acquisitions had to be done to the State Regional Water Quality Standards. The evaporation pond at Atwell Island was closed to these standards prior to the LRT acquisition of the property.

The purpose of Habitat Re-vegetation was described by FWS as the re-establishment of native vegetation to foster the return of native species, which will enhance wildflower and wildlife viewing opportunities. Some retired lands could be managed for gamebird hunting programs. The extent to which recreational activities will be promoted will depend upon the type and success of the land management treatments employed. The restoration trials and study have been conducted to determine methods to recreate San Joaquin Valley ecosystems. For several years a small section has been planted to safflower for a California Department of Fish and Game dove hunt. Wildflower viewing, as envisioned by the FWS, would be limited to the spring and dependent upon access. It has not been a major recreational activity. As noted by the FWS, separate management plans will be developed for the lands in WWD and the Atwell Island area. The management plans will address contaminant issues for listed species and utilize the results described and analyzed in this five-year report. Some level of selenium and groundwater depth monitoring will be part of these plans. They will have separate section 7 consultation.

The Enhancement for Survival Program for neighboring landowners, after several interagency meetings, was left in the development stage due to the large workload of FWS employees.

The tiered contaminant monitoring program of selenium levels in groundwater and biota was cooperatively developed with the FWS specifically for this project (FWS 1999). The monitoring of selenium and salinity in soils was not a requirement in the FWS Biological Opinion for the LRDP; however, the soil monitoring program was implemented to address concerns raised by the scientific community over potential impacts to soils that may result from land retirement.

The hydrologic techniques, results and discussion are thoroughly described in Chapter 2. Groundwater level data from the demonstration site support the conceptual model of a declining shallow groundwater table in response to land retirement. All of the wells monitored at the Tranquillity site have shown a declining water level trend over the five year period of record. The hydrographs for the drain sumps and wells are representative of the declining groundwater

level trend observed at the site during the five years of monitoring. Water levels measured in three drain sumps during the time period from July 1998 to July 2000 similarly show an overall declining trend in groundwater levels for the period of record. All sumps being monitored were completely dry starting in October 2000. The drain sumps have remained dry as of October 2004.

As discussed in Chapter 2, the slopes of the hydrographs for groundwater show a flattening trend over time. Examination of individual wells suggests that the extinction depth for groundwater evaporative discharge may be about 10 feet. The volume and flow of upflux is so small between a depth of 7 and 10 feet that evaporative discharge in the soil cracking system at the 2-4 foot depth may be sufficient to maintain a very small amount of unsaturated upward flow. Once the water table receded below 10 feet, all discharge is believed to be vertical deep percolation through the first barrier layer. The average annual rate of decline was about 1.2 feet per year. This rate is expected to decrease as less head is available to push water through the barrier layer.

The shallow, perched groundwater is extremely saline in nature. Salinity in the shallow groundwater and drain sump samples, expressed as EC, ranged from 11,500 to 76,980 $\mu\text{S}/\text{cm}$, with a median value of 43,925 $\mu\text{S}/\text{cm}$. The groundwater samples obtained from the underlying semi-confined aquifer are much less saline. Salinity in the groundwater samples obtained from the deep wells (> 50 ft deep), expressed as EC ranged from 5,630 to 18,580 $\mu\text{S}/\text{cm}$, with a median value of 7,675 $\mu\text{S}/\text{cm}$. The groundwater found in the perched zone and in the underlying semi-confined aquifer is best described as a sodium- sulfate type of water. Selenium concentrations measured in the shallow groundwater system (wells < 50 feet deep) during the first year of monitoring were high, ranging from 5 to 5,390 $\mu\text{g}/\text{l}$ (0.005 to 5.390 mg/l), with a median concentration of 1,280 $\mu\text{g}/\text{l}$ (1.280 mg/l).

Due to drought conditions, the FWS performance standards for selenium and mercury concentrations in surface water that persisted for more than 30 days were not observed at the project site. Precipitation at the site was monitored by viewing the CIMIS website during the rainy season. The site was also visited during the wet season to document any standing water that persisted for more than 30 days in duration.

In Chapter 3 the methods and results of Se monitoring in biota are discussed. The FWS Performance Standards required that Se contaminant levels be monitored in biota when high physical parameters results were obtained. The potential for adverse effects to sensitive species was measured each year in a number of non-listed species collected and analyzed. Not all Performance Standards were strictly utilized, as small sample sizes would have precluded adequate measurement and analysis. Samples of items at the base of the food chain were collected and analyzed for selenium but not birds or canids.

The mean selenium concentration in plants varied from 0.31 to 0.51 mg/kg at the Tranquillity site and from 0.21 to 0.26 mg/kg at the Atwell Island site. The mean selenium concentrations in plants at both sites were below the performance standards set for the project by the U.S. Fish and Wildlife Service (2.0 mg/kg) and were approximately an order of magnitude less than the selenium concentration in plants collected from Kesterson NWR. The mean selenium concentrations for all biota measured were higher at the Tranquillity site than at the Atwell Island site. At the Tranquillity site the mean concentration of selenium in invertebrates remained below the performance standard, except for spiders in 1999 and isopods. Mean selenium concentrations generally remained within the range for terrestrial invertebrates occurring on non-seleniferous soils in the western United States (2.5 mg/kg, USDI 1998). At the Atwell Island site the mean concentration of selenium in all invertebrate groups remained below the performance standard of 2.0 mg/kg established for project lands. The selenium levels in all invertebrate groups (crickets, beetles, spiders, and isopods) collected from the Tranquillity and Atwell Island sites are approximately an order of magnitude less than corresponding invertebrate groups collected between 1988 and 1992 in grassland habitat at Kesterson NWR.

All biotic samples were analyzed to determine selenium concentrations by Laboratory and Environmental Testing (L.E.T.), Inc., Columbia, MO. Data provided include selenium concentration by dry weight, selenium concentration by wet weight, sample dry weight, sample percent moisture, and sample detection limit. The laboratory also provided reports on duplicates, spikes, and reference samples for quality control. Selenium concentration by dry weight was used for analysis.

An adaptive management approach has been the one used by the LRT for the project. Measurements of the various monitoring of physical and biotic parameters had to be made before management techniques to minimize the risk of wildlife exposure to contaminants were exercised. As the LRDP proceeded, the results that were reviewed indicated that contingency plans, as outlined in the Biological Opinion, would not be necessary. Continued vigilance of especially the groundwater depths and selenium levels in biota will be exercised and reported so that changes can be made if needed. To establish upland vegetation quickly and efficiently, a variety of re-vegetation techniques will continue to be tested and monitored and future efforts will be adapted accordingly.

Incidental Take Statement

The effect of anticipated take for the Land Retirement Demonstration Project was not likely to result in jeopardy to listed species or destruction or adverse modification of critical habitat of Fresno k-rat and delta smelt. The rest of the species have no designated critical habitat, so no critical habitat for these species could be destroyed or modified.

INCIDENTAL TAKE STATEMENT FOR THE CVPIA LAND RETIREMENT
DEMONSTRATION PROJECT

Task	Action Required	Results
Reasonable & Prudent Measures	Protect/conserv species w. monitoring & toxic remediation	Monitored species not need toxic remediation.
	Future acquisitions will not result in take.	Data indicated measure met by LRDP.
	No converting of existing native species habitat.	DOI-WWD Agreement ensured water not go to convert habitat. Sent Hill Valley & AI info.
Terms & Conditions	Fund 5 years of tiered monitoring.	LRP funded ESRP contract and BLM biota monitoring & USBR for physical monitoring.
	Implement FWS remediation measures for bio-available toxic levels of Se.	No remediation bec. GW levels declined even w. bad quality. Se biota levels generally below Performance Standards.
	Close evap pond at Atwell Is per CRWQ Standards	Seller required to do prior to federal ownership.
Reporting Requirements	Provide annual reports to EC & ES Divisions of data collected from tiered monitoring.	Annual reports provided 2000, 2001, 2002 & 2004. 5-yr report available Aug. 2005.
	Notify SFWO w/in 3 work days of dead listed wildlife species.	April 26, 2002 ESRP captured 5 shrews (BVL). Notice sent to SFWO. Roadkill kit fox reported by BLM.
	Provide info of recent drainage mgt on acquired lands	1 piece of acquired land had drains, but no longer intact or functional.
	Notify SFWO of species take not authorized.	None taken so none reported.
	Report dead or sick listed wildlife species in/adjacent pesticide-treated areas.	None found during restoration activities.

The Reasonable and Prudent Measures necessary and appropriate to minimize the impact of the LRDP to listed species were each complied with. The LRDP's requirement to protect and conserve listed species on lands acquired under the project by monitoring and remediation of toxic conditions was done and results demonstrated that no remediation of toxic conditions was required. Data collected indicated that land retirement would insure that future acquisitions for the LRDP

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would not result in increased or unauthorized take of listed species. The Agreement with WWD ensured the Land Retirement Team that water would not be used to convert existing native species habitat.

The Land Retirement Demonstration Project met the nondiscretionary Terms and Conditions described in the 1999 Biological Opinion (BO). Funding of the tiered monitoring program was provided for at least 5 years. CVPIA funding for the LRP Demonstration Project met the project costs for the monitoring and restoration on the retired agricultural lands. Having a Fish and Wildlife Service Land Retirement Team Representative (co-lead) ensured that funds for proper monitoring and reporting occurred each year. The FWS Representative prepared and helped finalize all annual work plans and their implementation.

No remediation measures were necessary due to bio-available toxic levels of selenium. The groundwater levels showed a declining shallow watertable. This is an important aspect of land retirement due to the high salinity and selenium concentrations in the shallow groundwater. The high concentrations in the shallow groundwater found in the coast range deposits at the site are a result of leaching under irrigated conditions and evaporation from the shallow water. The access to this contaminated groundwater is very limited because of the increased depth after irrigation is removed and the selenium levels in biota tended to be within the range typically found in biota occurring on non-seleniferous soils in the western United States. Additionally, the mean selenium levels in biota were generally below the population-level performance standards set in the BO.

The evaporation pond in the Atwell Island Water District had to be closed in accordance with State of California standards. Adherence to these standards had to occur before federal ownership could be obtained of the lands containing the evaporation pond. The landowner had to close the evaporation pond to meet the California Regional Water Quality (CRWQ) Control Board, Central Valley Region Orders and Resolutions. The 16 March 2001 letter from Gary M. Carlton, Executive Officer California Regional Water Quality Control Board Central Valley Region certified that the discharge to the basin had ceased and that basin sediments remaining in the basin were at or near background levels of soils in the area. The evaporation pond was closed in accordance with CRWQ requirements. Vegetation cover is slowly taking hold and the pond continues to be monitored.

Reporting Requirements were all met. The first report was of the transactions between Atwell Island Water District (AIWD) and Hill Valley Irrigation District for the AIWD CVP allotment. These transactions occurred prior to the project dealings with AIWD. What historic information was available was forwarded to SWFO within 30 days of receipt of the BO in 1999. The lands acquired by the LRDP came with associated CVP contract allocations, except for those lands in Fresno County. The land purchase agreement with WWD was executed when the lands were purchased in the district and followed the language the FWS recommended for incorporation in the Agreement. Cover letter and Agreement

language were agreed upon by the FWS prior to inclusion in the Environmental Assessment and the FONSI. Water was not used to convert habitat or where it would adversely affect listed species or their habitats and remained within the permitted place of use. The Agreement was an Appendix in the CVPIA Land Retirement Demonstration Project Environmental Assessment.

Reporting Requirements for the Biological Opinion centered primarily on an annual report that was to be provided to the various divisions for their review of the data collected from the Tiered Monitoring Program. These annual reports were provided beginning in May 2000 for 1999 data. Subsequent years' reports were produced in July 2001, September 2002, and January 2004 and copies sent to each of the interested departments/parties within the Sacramento Fish and Wildlife Office (SFWO). The Five Year Report will be available in September 2005.

Notification of the SFWO within 3 working days of the finding of any dead listed wildlife species occurred only when five Buena Vista Lake shrew (BVLS) were captured on April 26, 2002 at Atwell Island. A notice was sent to the SFWO about the captures. Since BVLS had just been listed the previous months, the FWS had not yet issued recovery permits to anybody. ESRP applied for and received a recovery permit later in 2002, with a take authorization of 20 animals as they had requested. Baseline trapping with pitfall traps in 2000, and more extensive trapping with Sherman live traps, did not result in the capture of any more shrews. The two living shrews were released after taking tail tissue samples. The three dead shrews were preserved for genetic analyses. From historical map information and air photos, the land where these shrews were captured appears to have been in row crops for many years until the restoration project in 2001. The LRDP lands were all planted in barley in the winter of 2000/2001. The nearest water way is a canal about 0.5 miles to the east of the plots where it was trapped. The plots are about 11 miles northeast from the center of the Kern NWR.

Information regarding the recent drainage management of the lands acquired in WWD was involved only one piece of land where drains were installed as part of a WWD experiment. No parcels had subterranean drainage infrastructure. The drains which had been installed were no longer intact or functional. This information was supplied to the SFWO early in the project.

The Reporting Requirement to provide the FWS with annual reports describing the progress of implementation of all commitments in the Conservation Measures were included in detail in the Annual Reports noted above. No take of any listed wildlife species not authorized in this opinion occurred. See the note above related to the BVLS. Additionally a road kill kit fox was found at the Atwell Island site. BLM reported this road kill at the time of its discovery. No dead or sick listed wildlife species found in or adjacent to pesticide-treated areas were found.

Conservation Recommendations

Implementation of any conservation recommendations or applications of the data have been included in the Annual Reports. Special presentations to the FWS at various times over the past six years have also served to inform them of results from the monitoring of land retirement impacts. Each Conservation Recommendation is described below with the compliance action.

CONSERVATION RECOMMENDATIONS OF CVPIA LAND RETIREMENT DEMONSTRATION PROJECT

Task	Action Required	Results
Future Acquisitions	Future acquisitions should contribute to listed species water supply	CVPIA not likely to have large-scale LRP in Fresno Co. due to WWD's 70,000 retired acres
Implementation of Recovery actions	LRT should assist FWS in implementation of various recovery plans	All plans w. SJV upland habitats benefit from CVPIA data & monitoring in Annual Reports
SJVDP Recommended Plan	LRT should assist FWS in implementation of this plan	SJVDP provided basis of CVPIA authorized LRP, but differences exist. LR currently considered in SLDFR EIS.
Educated Reclamation staff	Provide education to USBR staff at all levels on ESA & 7 (a)(1) responsibilities.	USBR staff training done by Sacto & Area Offices.
Outreach	Provide outreach to public & schools on protecting listed species	Tours, presentations, panel discussions, student projects & AmeriCorps integral part of LRP from its inception.
Fund USGS studies	Fund GW & contaminant levels studies thru USGS.	Physical monitoring done by USBR specialists under LRT Hydrologist. USGS specialists consulted as well.
Ecosystem protection components	Follow ecosystem protection components for Central Valley & Bay Delta of the FWS's Ecoregion Program.	The LRT Restoration Trials & Habitat Restoration Study provides background data for implementing protection measures on remnant populations or their habitat. Required & done prior to federal acquisition.

1. The CVPIA Land Retirement Program is not likely to embark on a large scale effort to retire more lands in Fresno County beyond those purchased under the current project. This is due to the initiation of WWD's own land retirement program which has now retired, either through lawsuit settlements or district purchase, approximately 70,000 acres.
2. All those recovery plans that involve San Joaquin Valley upland habitats can benefit from review of the Five Year Report or previous Annual Reports. The information from these has also been available on the Endangered Species Recovery Program website or the Bureau of Reclamation website. Data on physical parameters in retired drainage-impaired agricultural lands and on biota presence and habitat restoration techniques could be helpful to those agencies and entities responsible for management of the existing listed species habitat remnants. Specific funding to implement these recommendations will have to come through other means than the CVPIA Land Retirement Program.
3. The SJVDP provided a basis for the CVPIA. Some differences exist in the objectives of each, although many are similar, but the CVPIA Land Retirement Program is authorized by the CVPIA, which is not required to implement the SJVDP. Land retirement is currently being considered in the San Luis Drainage Re-Evaluation EIS.
4. The education of the ESA and 7(a) (1) responsibilities of Reclamation staff at all levels are handled by the appropriate division in Sacramento and the Area Offices.
5. Outreach in the form of tours, presentations, panel discussions, student projects and professional organization presentations have been an integral part of the CVPIA Land Retirement Program since its inception.
6. The FWS suggested that CVPIA fund studies of groundwater percolation and contaminant levels through USGS. Data collection for LRP groundwater monitoring and contaminants was accomplished by Bureau of Reclamation specialists and their contractors and USGS specialists consulted as well.
7. The last item recommended that the LRT follow ecosystem protection components for the Central Valley and Bay Delta of the FWS's Ecoregion Program. Restoration Trials and the Habitat Restoration Study can provide these entities background data for implementing protection measures on remnant populations or their habitat.