

TECHNICAL MEMORANDUM

DATE: March 7, 2024 Project No.: 941-80-23-17
SENT VIA: EMAIL
TO: Prado Basin Habitat Sustainability Committee
FROM: Chino Basin Watermaster Engineer
SUBJECT: Recommended Scope and Budget of the Prado Basin Habitat Sustainability Program for Fiscal Year 2024/25

BACKGROUND AND PURPOSE

Pursuant to the Mitigation Measure 4.4-3 of the Peace II Subsequent Environmental Impact Report (SEIR), the Chino Basin Watermaster (Watermaster) and the Inland Empire Utilities Agency (IEUA) implement an Adaptive Management Plan (AMP) as a contingency measure to ensure that the riparian habitat in the Prado Basin will not incur significant adverse impacts associated with implementation of the Peace II Agreement. The AMP is implemented under the guidance and supervision of the Prado Basin Habitat Sustainability Committee (PBHSC), which is composed of representatives from all interested Prado Basin stakeholders.

The AMP calls for the implementation of a monitoring and reporting program called the Prado Basin Habitat Sustainability Program (PBHSP). The PBHSP is an effort to monitor the extent and quality of the riparian habitat, and all of the factors that could affect the riparian habitat which include but are not limited to: changes in groundwater levels, changes in surface-water discharge, weather events, climatic changes, pests, and wildfire. The most likely factor that may be associated with the implementation of the Peace II Agreement is the lowering of groundwater levels.

The AMP calls for annual data analysis and reporting. The annual report describes the results and interpretations of the monitoring data and makes recommendations for adjustments to the monitoring program for the following fiscal year (FY), if appropriate.

This memorandum describes the recommended activities for the PBHSP for FY 2024/25 in the form of a proposed scope-of-work and budget. Members of the PBHSC are being asked to:

1. Review this memorandum by March 21, 2024.
2. Attend meeting of the PBHSC at 10:00 am on March 21, 2024 to discuss the proposed scope-of-work and budget for FY 2024/25.
3. Submit comments and suggested revisions on the scope-of-work and budget for FY 2024/25 by April 4, 2024.

The final scope-of-work and budget recommended by the PBHSC will go through the IEUA and Watermaster budgeting processes for approval. The final scope-of-work, budget, and schedule for FY 2024/25 will be included in the *Annual Report for Prado Basin Habitat Sustainability Committee for Water Year 2023* that will be finalized in June 2024.

RECOMMENDED SCOPE OF WORK AND BUDGET – FY 2024/25

The proposed scope-of-work and budget is shown in Table 1 as a line-item cost estimate for Tasks 1 through 6. The costs of the PBHSP are shared between Watermaster and IEUA per a 2016 Agreement.¹ Watermaster is responsible for the costs associated with Tasks 1 and 2; IEUA and Watermaster split costs equally for Tasks 3 through 6. The Orange County Water District (OCWD) also is a cost-sharing partner for sub-task 4.1.

Thus far the monitoring and analysis of the riparian habitat, groundwater levels, precipitation, temperature, and surface-water discharge has been successful in identifying: (i) changes in the health and extent of the riparian habitat (ii) changes in groundwater levels in the Prado Basin, and (iii) relationships between the riparian habitat and the factors that influence it besides groundwater. The monitoring of the riparian habitat and changes in groundwater levels remain as the most critical components of the PBHSP. Since monitoring began in 2015, groundwater levels have declined to historical lows below the model-predicted levels for the Peace II that are assumed to not impact the habitat in the northern portions of Mill Creek and the Santa Ana River; groundwater levels have declined 8 feet near the riparian habitat in the northern portion of Mill Creek, and two feet near the riparian habitat in the northern portion of the Santa Ana River. Most of the observed decline in groundwater levels occurred since 2019. Thus far, the monitoring of riparian habitat using remote sensing data and air photos does not indicate a notable decrease in the vegetation greenness since 2019 in these areas where groundwater levels have declined and the changes are within the range of historical variability and “not considered significant”. The continuation of the monitoring and analyses as done in previous fiscal years is necessary to continue to identify potential changes in the riparian habitat and groundwater levels, and the specific causes of those changes during the implementation of the Peace II Agreement. If mitigation measures are ever determined to be necessary, the PBHSP results will assist in their development. The proposed budget for FY 2024/25 continues to incorporate cost savings due to efficiencies in conducting this monitoring and reporting program developed over the years.

The monitoring and analysis proposed for FY 2024/25 for the PBHSP is generally the same scope as the previous year, except it includes the addition of: i) processing, checking, and uploading to the database the high-frequency electric conductivity (EC) data collected at some of the PBHSP monitoring wells in Task 1; and ii) the collection of field temperature and EC measurements at four surface water sites in Task 2. Both additions were recommendations from a pilot monitoring program to evaluate groundwater/surface water interactions and have replaced the larger scope pilot monitoring program that was performed from FY 2018/19 to FY 2022/23 (see Task 2 for description).

The proposed scope of work is described below by task.

Task 1. Groundwater Monitoring Program

The monitoring of groundwater levels in the Prado Basin is a key component of the PBHSP because declining groundwater levels could be a factor related to Peace II implementation that adversely impacts riparian vegetation. Sixteen monitoring wells were installed specifically for the PBHSP in 2015. These wells, plus monitoring wells HCMP-5/1 and RP2-MW3, are monitored for groundwater levels. Figure 1

¹ Agreement Between Chino Basin Watermaster and Inland Empire Utilities Agency Regarding Reimbursement of the Peace II Subsequent Environmental Impact Report Mitigation Measure 4.4.5 (Prado Basin Habitat Sustainability Program). Signed September 2016.

shows these 18 PBHSP monitoring wells located at nine sites in the Prado Basin along the fringes of the riparian habitat. The 18 monitoring wells are equipped with integrated pressure-transducers/data-loggers (hereafter referred to as transducers) that measure and record water-level measurements and temperature readings every 15 minutes. This task includes quarterly field visits to all 18 PBHSP monitoring wells to download the data from the transducers, and the processing, checking, and uploading of the water level, temperature, and EC data to the PBHSP database. The scope of this task is slightly larger than the previous fiscal year as it includes processing, checking, and uploading of EC data collected by the transducers installed at 10 of the 18 wells, in addition to the water level and temperature data. The inclusion of the high-frequency temperature and EC data is a recommendation resulting from the evaluation of and replacing the pilot monitoring program as discussed in Task 2 below.

Task 2. Surface-Water Monitoring Program

Surface-water data from the Santa Ana River and the tributaries that cross Prado Basin are used to evaluate groundwater/surface-water interactions and their importance to the impact on groundwater levels and riparian habitat, and to characterize the influence of surface-water discharge on the riparian habitat.

From FY 2018/19 to FY 2022/23, a pilot monitoring program was conducted to determine if the high-frequency data enhances and better reveals the interpretation of groundwater/surface-water interactions previously studied for the PBHSP. The pilot monitoring program included the installation of transducers that record EC, temperature, and water levels at 15-minute intervals at two locations in Chino Creek and the same high-frequency monitoring at four nearby monitoring wells (PB-7 and PB-8 clusters). Additionally, during the first two years of the pilot monitoring program, surface water and groundwater-quality samples were collected to support the high-frequency data. During the pilot monitoring program, there were monitoring challenges with the surface water monitoring component; periodically, the transducers within the creek were lost during large storm events, and the transducers consistently experienced the accumulation of mud, which compromised the accuracy of the data.

Key conclusions from the analysis of the pilot monitoring program data in the Annual Report for 2022 were that the pilot program could be discontinued and, in its place: use the high-frequency monitoring of EC, temperature, and water level for each pair of PBHSP monitoring wells (Task 1), most of which was already being collected, and collect quarterly field measurements for EC and temperature of the surface water flowing in the streams adjacent to the monitoring wells (Task 2.1). Not all of the transducers in the wells measure EC data in addition to the temperature and water level, and the plan is to replace them at the end of their useful lives with transducers that also collect EC measurements. During this last fiscal year, some transducers were replaced and currently there are 10 wells that measure EC in addition to the temperature and water level. As described above, Task 1 includes the processing, checking, and upload to the database of the high-frequency temperature, EC, and water level data collected at all the PBHSP monitoring wells.

Task 2.1 is to collect field measurements of temperature and EC at four surface water sites in Chino and Mill Creeks near the PB-1, PB-2, PB-7, and PB-8 wells (see Figure 1) and to process and upload the data to the database. The addition of the manual surface water measurements is new for this fiscal year to implement the recommendations to the monitoring program in the Annual Report for 2022 in place of the pilot monitoring program. The effort to collect, process, and upload the manual measurements is minimal since it can be done during the quarterly field visits to the monitoring wells to download the transducer data.

Task 2.2 includes the annual collection of the surface water data from four publicly-available data sets which include: the United States Geological Survey (USGS) daily discharge measurements at six sites along the Santa Ana River and its tributaries; daily discharge and water-quality data from Publicly-Owned Treatment Works (POTWs) that are tributary to Prado Basin; US Army Corps of Engineers (ACOE) daily measurements of reservoir elevation and releases from the reservoir at Prado Dam; and Watermaster’s quarterly surface-water-quality monitoring at two sites along the Santa Ana River. The locations of these surface-water monitoring sites are shown on Figure 1. The USGS, POTW, and ACOE data for water year 2024 will be collected, processed, checked, and uploaded to the PBHSP database. This sub task does not include the processing, checking, and uploading of the Watermaster-collected quarterly water quality data on the Santa Ana River data, which is performed under a Watermaster task for the Maximum Benefit Monitoring Program. The scope of this sub task is consistent with the work performed for the previous fiscal year.

Task 3. Climate Monitoring Program

Climatic data are evaluated in the vicinity of the Prado Basin to characterize trends, and to determine if these trends contribute to impacts on the riparian habitat. The climate monitoring program utilizes two types of publicly available, spatially-gridded datasets. Task 3 includes the annual collection of the spatially-gridded datasets for water year 2024 (October 2023 – September 2024), and the checking and uploading of the data to the PBHSP database. The scope of this task is consistent with the work performed for the previous fiscal year.

Task 4. Riparian Habitat Monitoring Program

Monitoring the extent and quality of the riparian habitat in the Prado Basin is a fundamental component of the PBHSP to characterize how the riparian habitat changes over time. To characterize the impacts of Peace II implementation on the riparian habitat (if any) it is necessary to understand the long-term historical trends of its extent and quality and the factors that have affected it. The current riparian habitat monitoring program consists of both regional and site-specific components. The proposed riparian habitat monitoring program for FY 2024/25 is described in the subsections below.

Regional Monitoring

The regional monitoring of riparian habitat is performed via two independent methods that complement each other: mapping and analysis of the riparian habitat using (i) air photos and (ii) the normalized distribution vegetation index (NDVI) derived from the Landsat remote-sensing program. Tasks 5.1, 5.2, and 5.3 are for the collection and compilation of the regional monitoring data, including:

- Perform a custom flight (via outside professional services) to acquire a high-resolution air photo (three-inch pixel) of the Prado Basin during summer 2024. The cost for the air photo is shared with OCWD.
- Catalog and review in ArcGIS the extent of the riparian vegetation in the 2024 high-resolution air photo in of the Prado Basin
- Collect, review, and upload the Landsat NDVI data for water year 2024.

Site-Specific Monitoring

The site-specific monitoring of the riparian habitat consists of periodic field surveys of the riparian vegetation at selected locations. These surveys provide an independent measurement of vegetation quality that can be used to “ground truth” the regional monitoring of the riparian habitat, as well as the occurrence of the Polyphagous Shot-Hole Borer, a pest that increases tree mortality. The United States Bureau of Reclamation (USBR) along with the OCWD² has conducted field surveys once every three years at approximately 36 sites. The most recent triennial field survey was conducted in the summer of 2022, and it included two new sites along the northern portion of Mill Creek to increase monitoring at this location where there is potential for impacts to the riparian habitat from the observed decline in groundwater levels. The next field survey is scheduled for the summer of 2025. There is no scope or budget proposed for site-specific monitoring for FY 2024/25.

Task 5. Prepare Annual Report of the PBHSC

This task involves the analysis of the all data sets collected by the PBHSP through water year 2024, including the data collected in Tasks 1 through 4 and for other as-needed factors that can impact the riparian habitat. The results and interpretations generated from the data analysis will be documented in the *Annual Report for Prado Basin Habitat Sustainability Committee for Water Year 2024*. This task includes the effort to prepare an administrative draft report for Watermaster and IEUA staff review, a draft report for the review by the PBHSC, and a final report including comments and responses. A PBHSC meeting will be conducted in May 2025 to review the draft report and facilitate comments on the report. The scope of this task is consistent with the work performed for the previous fiscal year.

Task 6. Project Management and Administration

This task includes the effort to prepare the PBHSP scope, schedule, and budget for the subsequent fiscal year. A draft *Technical Memorandum Recommended Scope and Budget of the Prado Basin Habitat Sustainability Program for FY 2025/26* will be submitted to the PBHSC in February/March 2025. A PBHSC meeting will be conducted in March 2025 to review the draft recommended scope and budget and facilitate comments. Also included in this task is project administration, including management of staffing and monthly financial reporting. The scope of this task is consistent with the work performed for the previous fiscal year.

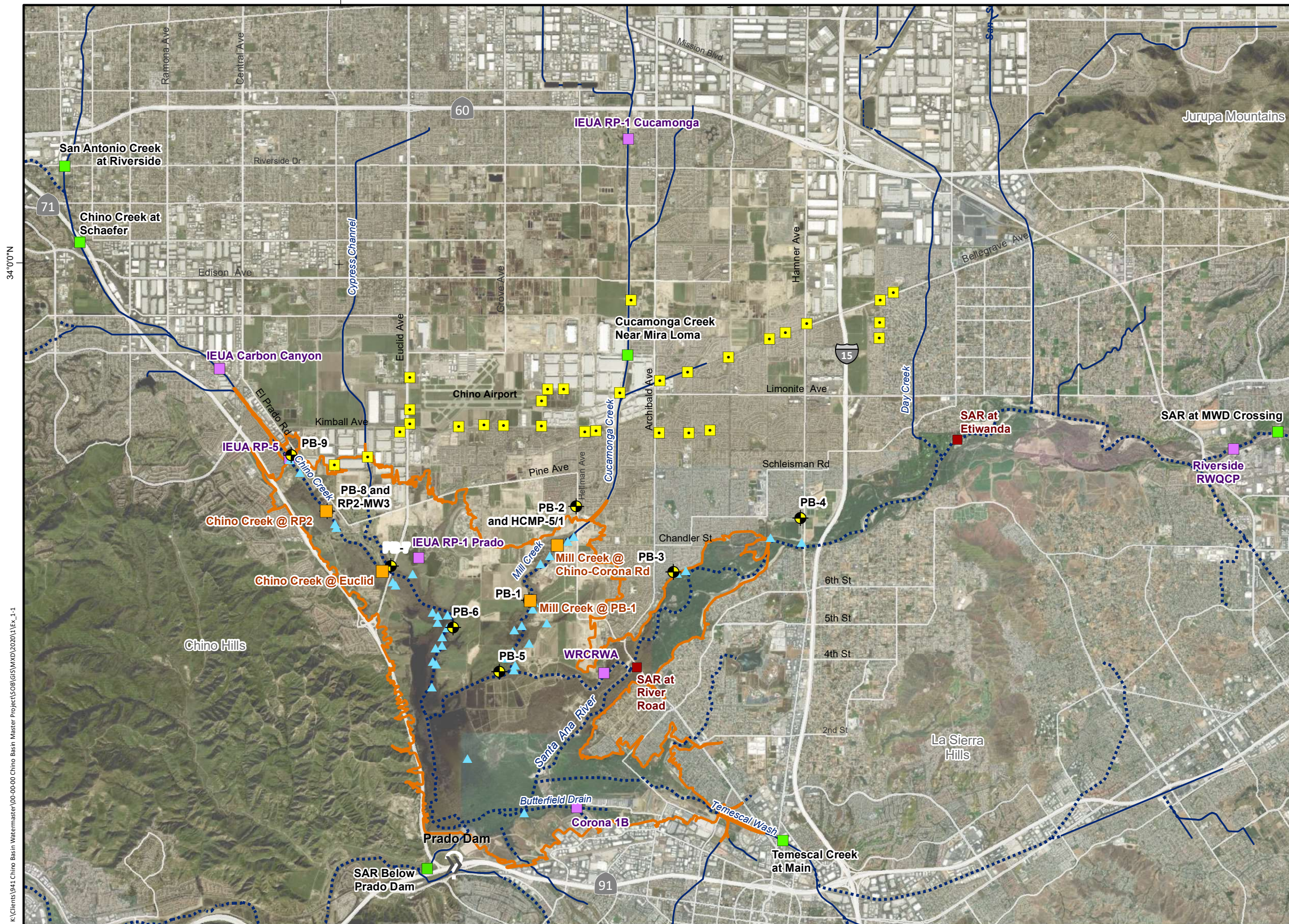
- Attachments: A Table 1. Work Breakdown Structure and Cost Estimate – Prado Basin Habitat Sustainability Program – Fiscal Year 2024/25
B Figure 1. Prado Basin Habitat Sustainability Program Monitoring Sites – Fiscal Year 2024/25

² OCWD staff provides assistance to the USBR in the field as in-kind services.

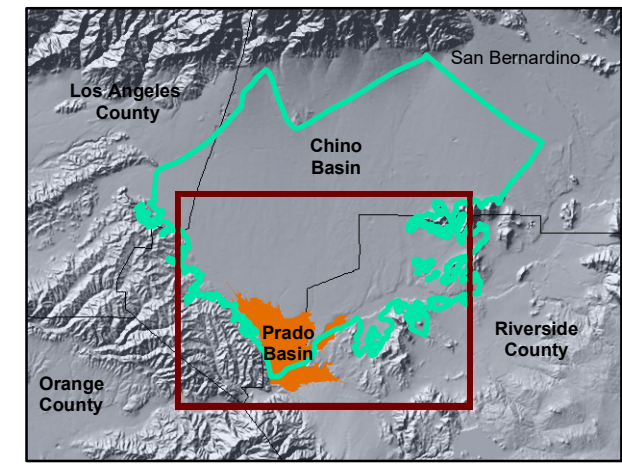
**Table 1. Work Breakdown Structure and Cost Estimate
Prado Basin Habitat Sustainability Program - Fiscal Year 2024/25**

Task Description	Notes	Labor Total			Other Costs, dollars				Notes	Totals, dollars			
		No. of sites	Person Days	Total, dollars	Travel	Equipment Rental	Outside Pro	Total		Recommended Budget 2024/25	Budget Prior FY 2023/24	IEUA Share 2024/25	CBWM Share 2024/25
Task 1. Groundwater Monitoring Program			20.8	31,214				950		32,164	28,514	-	32,164
1.1	Download Transducer Data from PBHSP Wells (Quarterly)	18	11.0	15,809	750	200		950		16,759	14,818		
1.2	Process, Check and Upload Water Level, Temperature, and EC Transducer Data from PBHSP Wells (Quarterly)	18	9.8	15,405				0		15,405	13,696		
Task 2. Surface Water Monitoring Program			2	7,844				200		8,044	7,045	-	8,044
2.1	Collect, Process, and Upload Field Measurements of Temperature and EC at Four Surface Water Sites (Quarterly)	4	3.0	4,676		200		200		4,876	4,107		
2.2	Collect, Check, and Upload Surface Water Discharge and Quality Data from POTWs, USGS; and Dam Level Data from the ACOE (Annual)		2.0	3,168				0		3,168	2,938		
Task 3. Climate Monitoring Program			1.3	2,596				250		2,846	2,606	1,423	1,423
3.1	Collect, Check, and Upload Climatic Data (Annual)		1.3	2,596			250	250		2,846	2,606		
Task 4. Riparian Habitat Monitoring Program			13.0	27,648				13,000		40,648	39,408	20,324	20,324
4.1	Perform a Custom Flight to Acquire a High-Resolution 2024 Air Photo of the Prado Basin		1.3	3,060			13,000	13,000	(a)	16,060	15,776		
4.2	Catalog, and Review the Extent of the Riparian Vegetation in the 2024 Air Photo of the Prado Basin		2.5	5,432				0		5,432	5,912		
4.3	Collect, Check, and Upload 2024 Landsat NDVI Data to the PBHSP Database		9.3	19,156				0		19,156	17,720		
Task 5. Prepare Annual Report of the PBHSC			50.3	93,954				100		94,054	87,814	47,027	47,027
5.1	Analyze Data and Prepare Admin Draft Report for CBWM/IEUA		37.8	68,762				0		68,762	64,182		
5.2	Incorporate CBWM/IEUA Comments and Prepare Draft Report: Submit Draft Report to PBHSC		4.8	8,720				0		8,720	7,808		
5.3	Meet with PBHSC to Review Draft Report		4.8	10,380	100			100		10,480	9,292		
5.4	Incorporate PBHSC Comments and Finalize Report		3.0	6,092				0		6,092	6,532		
Task 6. Project Management and Administration			9.8	21,962				100		22,062	21,414	11,031	11,031
6.1	Prepare Scope and Budget for FY 2025/26		3.5	7,502				0		7,502	7,506		
6.2	Meet with PBHSC to Review Scope and Budget for FY 2025/26		3.3	7,212	100			100		7,312	7,332		
6.3	Project Administration and Financial Reporting		3.0	7,248				0		7,248	6,576		
Totals			97	\$ 185,218	\$ 950	\$ 400	\$ 13,250	\$ 14,600		\$ 199,818	\$ 186,801	\$ 79,805	\$ 120,013

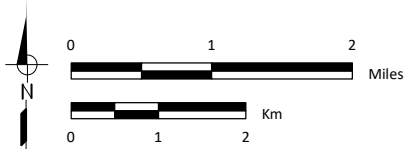
(a) This is half of the cost for the outside professional. OCWD will pay the other half.



- Groundwater and Surface Water Monitoring Sites**
- PBHSP Well Site (High-Frequency Groundwater Levels and Temperature)
 - POTW Discharge Outfall (Discharge and Surface Water Quality)
 - USGS Stream Gage Station (Discharge)
 - Watermaster Santa Ana River Sites - Maximum Benefit Monitoring (Surface Water Quality)
 - PBHSP Surface Water Site on Chino Creek and Mill Creek (Field Parameters of Temperature, EC)
- Vegetation Field Survey Sites**
- Active Survey Location Last Monitored in 2022
- Other Features**
- Prado Basin Management Zone (Prado Basin)
 - Chino Basin Desalter Authority Well
 - Concrete-Lined Channels
 - Unlined Rivers and Streams



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Prado Basin Habitat Sustainability Committee
Fiscal Year 2024/25 Scope and Budget



**Prado Basin Habitat Sustainability Program
Monitoring Sites - Fiscal Year 2024/25**

Figure 1