BUREAU OF RECLAMATION

Environmental Assessment

Unmeasured Flow Salinity Study Project

Lower Colorado River Floodplain

November 2023

U.S. Department of the Interior
November 2023

Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities. The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Draft Environmental Assessment

Unmeasured Flow Salinity Study Project

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Chapter 1 Purpose and Need for Proposed Action

Introduction

The Bureau of Reclamation (Reclamation) has prepared this environmental assessment (EA) to evaluate potential impacts associated with the proposed Unmeasured flow (UMF) Study project. This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321), the Council on Environmental Quality regulations (40 Code of Federal Regulations (CFR) 1500-1508) for implementing NEPA, and the Department of the Interior's NEPA Regulations (43 CFR Part 46), and Reclamation Manual NEPA Policy. Reclamation is the lead Federal agency pursuant to NEPA.

Location

The Project is proposed within Reclamation withdrawn lands, the Ft. Yuma Quechan Reservation (Quechan Reservation), Cocopah owned lands, and City of Yuma managed lands. The study includes installation of monitoring and stilling wells at various strategic locations along the Colorado River's Yuma Division, see Figure 1.

Background

Under the 1944 Water Treaty with Mexico, Reclamation delivers 1.5 million acre-feet of water to Mexico. Minute 242 of the 1944 Water Treaty (concluded on August 30, 1973) provided that the water (approximately 1,360,000 acre-feet) delivered to Mexico at the Northly International Boundary (NIB) have an annual average salinity of no more than 115 parts per million (ppm) plus or minus 30 ppm (salinity differential) as measured by the U.S. over the annual salinity water arriving at Imperial Dam. Meeting the salinity differential ensures Treaty compliance. The NIB is located about 1 mile above Morelos Dam. To determine compliance, the International Boundary and Water Commission (IBWC) measures salinity via cableway at the NIB and flow at Rockwood weir, located about a third of a mile upstream.

Water diverted from Imperial Dam for delivery to Mexico at NIB is conveyed to the NIB via one or a combination of the following three routes:

Water is diverted from above Imperial Dam into the All-American Canal and conveyed through the All-American Canal to the Pilot Knob Check, where the water is diverted back to the Colorado River through the Pilot Knob Power Plant and Wasteway, approximately 1 mile upstream of NIB.

Water is diverted from above Imperial Dam into the All-American Canal and conveyed through the All-American Canal to the Siphon Drop Powerplant, where it is diverted into the Yuma Main Canal. The water is conveyed approximately 3.5 miles within the Yuma Main Canal and then is diverted back to the Colorado River via the Yuma Main Canal Wasteway (also referred to as the California Wasteway). The Yuma Main Canal Wasteway discharges to the Colorado River at a point located approximately 6.7 miles upstream of the NIB.

Water is released from Imperial and Laguna dams and is conveyed to the NIB via the river channel (LCR MSCP 2004a).

Additional sources of water conveyed to the river channel also contribute to deliveries at NIB; drainage from ditch drains, pumped groundwater, other canal wasteways, and groundwater seepage directly to the river. All total these base flows normally range from 600 to 800 cubic feet per second (cfs).

Pumped drainage between Imperial and Morelos Dam is provided by several well fields that are operated to both manage groundwater levels and supplement water deliveries to Mexico. Drainage pumping in the Yuma, Gila, and Wellton areas is necessary to maintain groundwater levels that are compatible with farming and urban infrastructure including homes, businesses, streets, septic tanks, and underground utilities such as sewer and water facilities and power lines.

When Minute 242 was adopted in 1973, the salinity differential was based on probable variations in Colorado River salinity then occurring without addition of drainage return flows from the Wellton-Mohawk Bypass Canal. This salinity limit was established at a time when overall water supplies in the Colorado River were more plentiful than over the last twenty years, often resulting in significant deliveries of Colorado River water volumes more than treaty requirements. These “excess flows” generally mitigate the impact of higher salinity inflow sources occurring in the Yuma Area (Yuma Division) by dilution. Completion of Reclamation’s Brock (storage) Reservoir in 2010 provided the ability to better manage excess flows by increasing temporary storage capacity to accommodate discrepancies between water orders and actual deliveries to irrigation districts in the United States. Additionally, the salinity of water arriving at Imperial Dam in 1973 was much higher than at present; about 870 parts per million (ppm) compared to an average of about 705 ppm since 2000.

Purpose and Need

The purpose of the proposed project is to improve Reclamation's ability to manage water for delivery to Mexico by characterizing the volume, concentration, aerial distribution, and response of salinity inflow associated with groundwater seepage to the Colorado River in the Yuma Division. Sources of inflow to the Colorado River, including water diverted from Imperial Dam, are measured at various points in the system to permit monitoring of flow and salinity conditions. These data help manage salinity by permitting calculation of a monthly salinity differential and projection of the year-end differential. These calculations inform scheduling of pumped groundwater and diversions from Imperial Dam to the River. The difference between the sum of all inflows below Imperial Dam and official measurements at the NIB is referred to as unmeasured flow (UMF). The UMF is often highly variable and unpredictable and represents all the unknown sources of inflow (or outflow) to the system but also includes the net measurement uncertainty. The UMF is believed to be derived mainly from groundwater seepage directly to the river channel.

Quantifying salinity inflows associated with groundwater discharging (seepage) to the River within the Yuma Division will help Reclamation determine key strategic areas of influence, their seasonal variation, and their response to river stage or other conditions will improve Reclamation's calculations and projections of salinity conditions. This enhanced understanding of the UMF will assist salinity management approaches through better informed decision making.

Determinations to be Made

This EA will be distributed to appropriate decision-makers within Reclamation for review to determine whether a Finding of No Significant Impact is appropriate. This decision will be based on a determination that all potential impacts are either not significant or can be reduced to not significant levels through the implementation of mitigation measures. If any potential impacts are considered significant and cannot be avoided or reduced to not significant levels, the preparation and processing of an Environmental Impact Statement is required to implement the proposed project.

Chapter 2 Alternatives Considered

This chapter describes the alternatives considered for the UMF Salinity Study Project. Alternatives considered include the Proposed Action and the No Action alternatives.

No Action Alternative

NEPA guidelines require that an EA evaluate the "No Action" alternative in addition to the "Proposed Action". The no action alternative provides a basis for comparison of the environmental consequences of the Proposed Action. In this EA, the no action alternative assumes that the Project would not occur and the understanding of groundwater flow in the area would remain relatively unchanged and no new facilities would be installed.

Proposed Action

The plan is to install monitoring wells at various strategic locations along the Yuma Division. Data collected along the Yuma Division will allow estimation of groundwater flow and salinity to the river as well as response to changes in river stage. A total of nine linear transects crossing the river channel are proposed, see Figure 1. Each transect will cover areas along both sides of river and will consist of installing up to 12 groundwater monitoring wells, and placement of stilling wells in the river at the transect location, and upstream and downstream of each transect. Each stilling well will be equipped with a small piece of equipment; a pressure transducer to measure change in water levels (and stage) and/or an electrical conductance (EC) meter to estimate the salinity content of the groundwater.

Each linear Transect will include the following components:

Re-establish access roads (as needed), ranging from approximately 130 to a maximum of 2,500-feet long by 12-feet wide on each side of river).

Establish four gravel pads 50 x 50-feet (2,500 square feet) within each transect.

Up to three monitoring wells will be installed within each gravel pad
(up to 12 wells per transect).

The three monitoring wells will consist of two 2-inch and one 4-inch diameter pipes, with a maximum depth of approximately 120-feet.

A stilling well (with pressure transducer equipment) will be placed along the river's bank line or in the riverbed at each transect location, see Figures 4 and 5.

The stilling wells will consist of placing a 2-inch diameter polyvinyl chloride (PVC) pipe along the river's bank. A 12 x 20 feet (288 square foot) area on top of bank will be cleared.

Alternatively, if bank placement is not feasible a 2-inch steel pipe will be jetted into the riverbed (next to riverbank). To avoid and minimize impacts well/transducer will be placed via boat.

Additional stilling wells with associated EC meters (measuring devices) will be placed in the riverbed upstream and downstream of the transect to measure salinity flux through each defined sub-reach of the river.

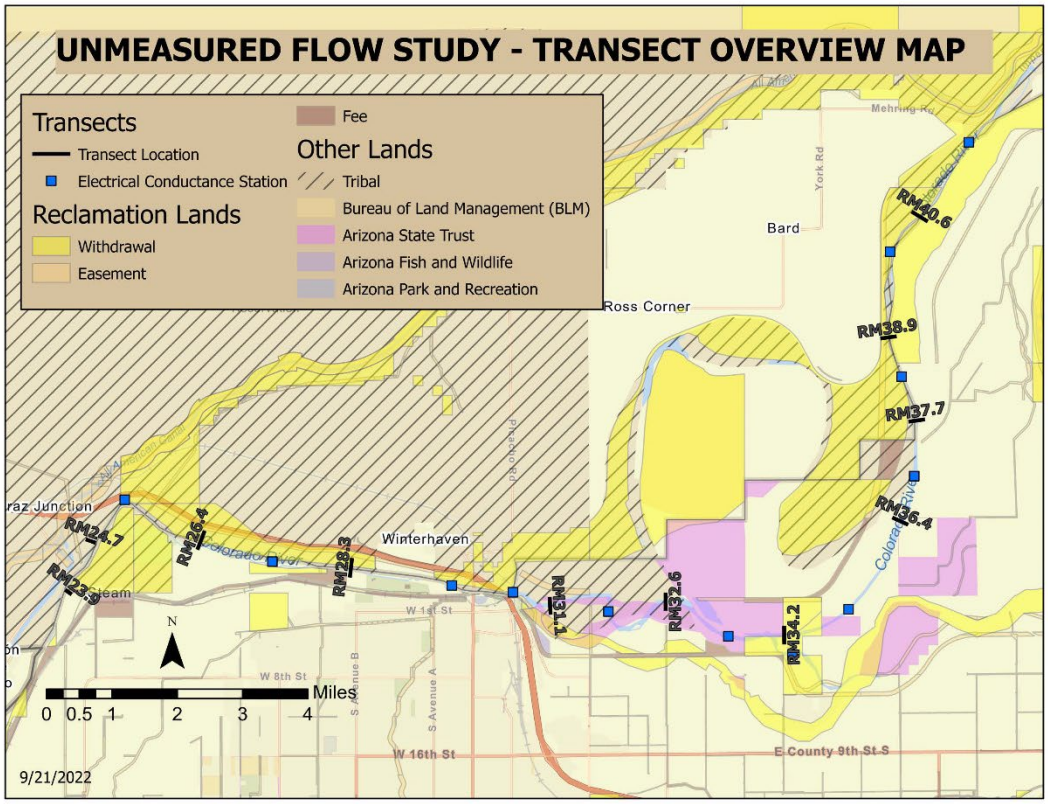
The stilling wells will also consist of placing a 2-inch diameter PVC pipe placed along bank.

Alternatively, if bank placement is not feasible a 2-inch steel pipe will be jetted into riverbed. To avoid and minimize impacts, well/EC meter will be placed via boat.

Drilling operations will consist of mobilizing heavy equipment (drill rig) to each transect location. Drill rig will be positioned over the well pads and supported by hydraulic jacks. Wells will be drilled to a maximum depth of 120-feet. Once drilling is complete at each welp ad site, wells will be cased with two two-inch diameter and one four-inch diameter casing pipes. Once the well casings are installed, each borehole will be flushed out (e.g., cleaned) to remove drill mud used in operation and any other drill cuttings. Above ground steel casing, approximately two feet above ground, will be placed over boreholes to protect wells. A receiving area will be established at each well pad location for the purposes of capturing the drill mud and cuttings via a roll-off container and hauling offsite to a designated Reclamation disposal site. In certain Transects, excess drill mud will be spread out on ground surface. Additionally, gravel material may be placed on the surface of each well pad and access roads. See Figure 3 showing configuration of a typical well pad area.

To the extent practicable, to avoid and minimize impacts to environmental resources in the area, gravel pads will be located within areas accessible by existing roads and areas previously disturbed and/or impacted by past ground disturbing actions (e.g., agricultural and wildfires). Drill mud will not be discharged in waters of the U.S./wetlands and/or impact native riparian vegetation.

Figure 1 – Transect Overview Map.



Notes: 1. RM40.6 is the Pilot Transect (in progress).
2. RM 24.7 and RM 23.9 is one Transect, it does not align (straight line) due to site conditions.

Transects Site Diagrams

River Mile (RM) 23.9 Transect layout.

RM 24.7 Transect layout.

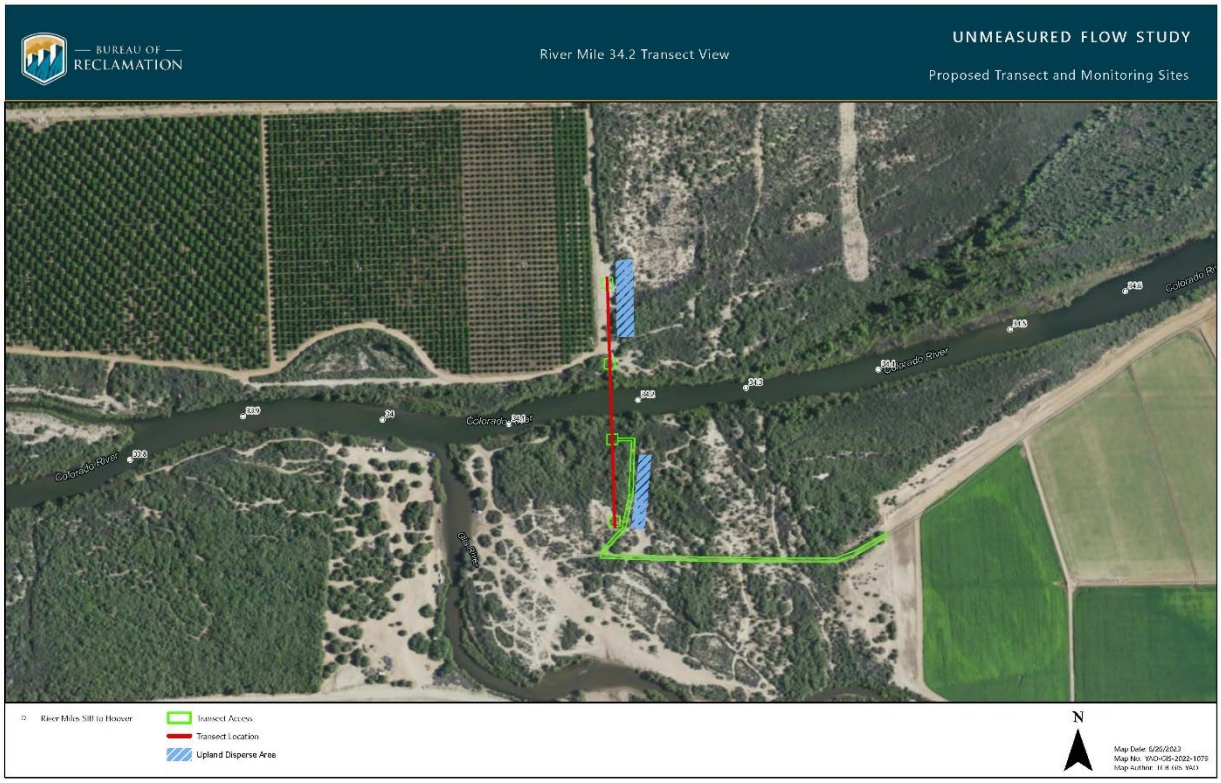
RM 26.4 Transect layout.

Rm 28.3 Transect layout.

RM 31.1 Transect layout.

RM 32.6 Transect layout.

RM 34.2 Transect layout.



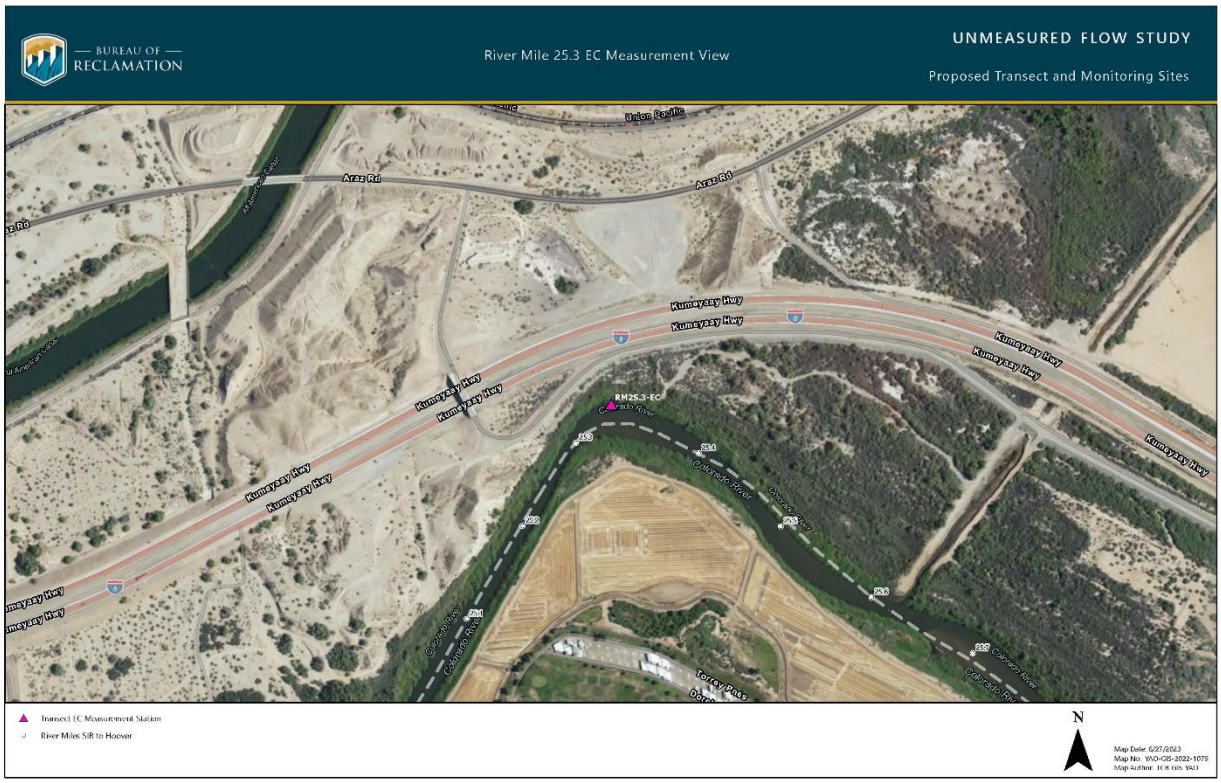
RM 36.4 Transect layout.

RM 37.7 Transect layout.

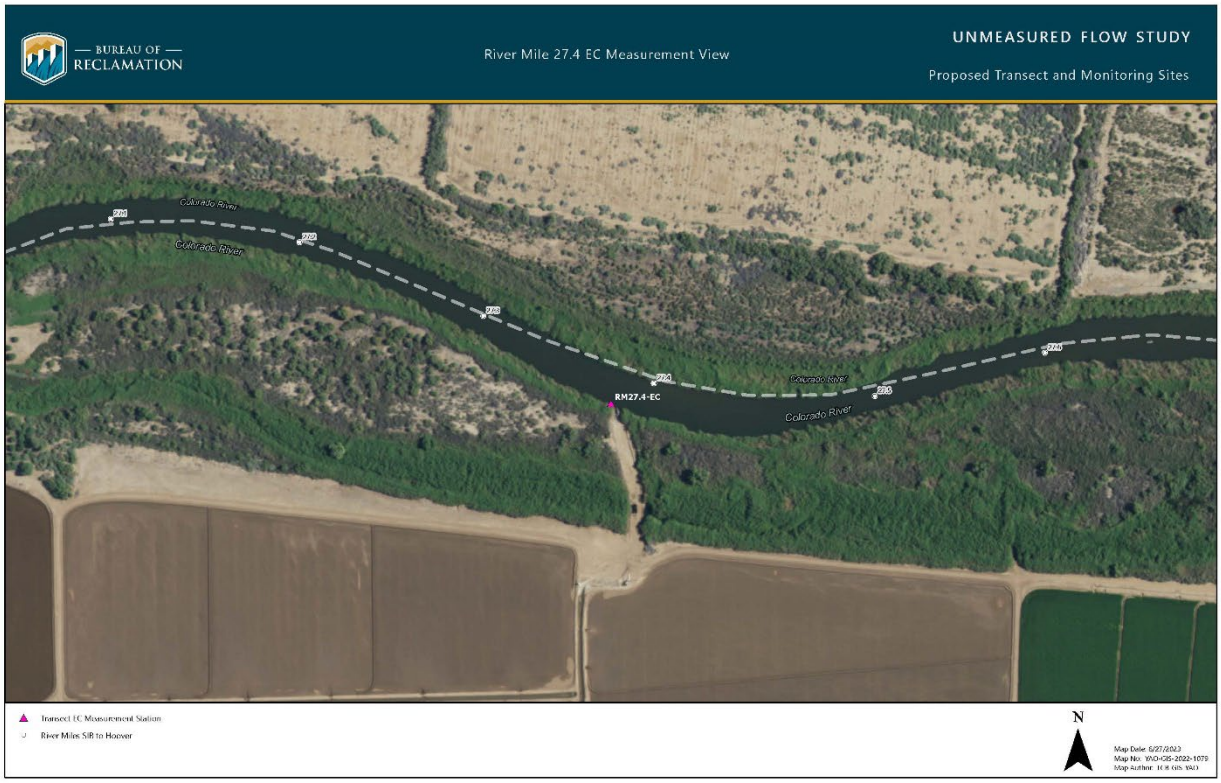
RM 38.9 Transect layout.

EC Meter Location Diagrams

RM 25.3 EC meter location.

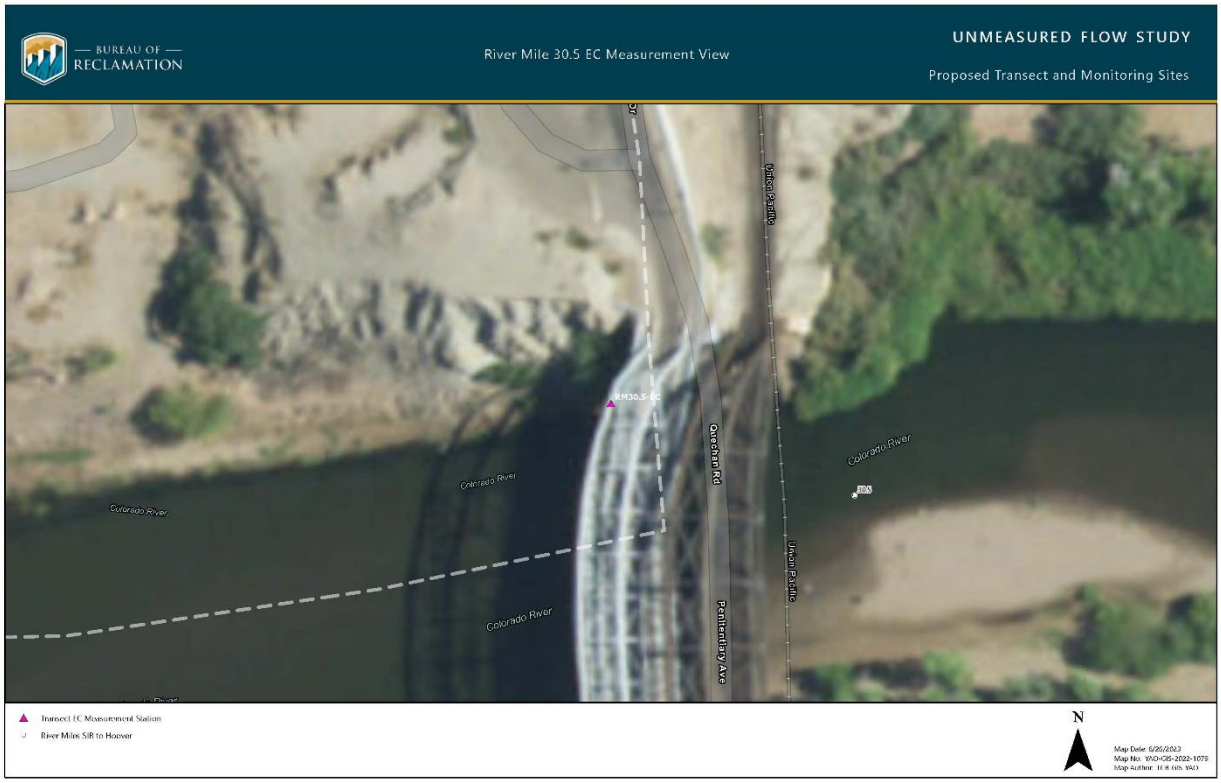


RM 27.4 EC meter location.

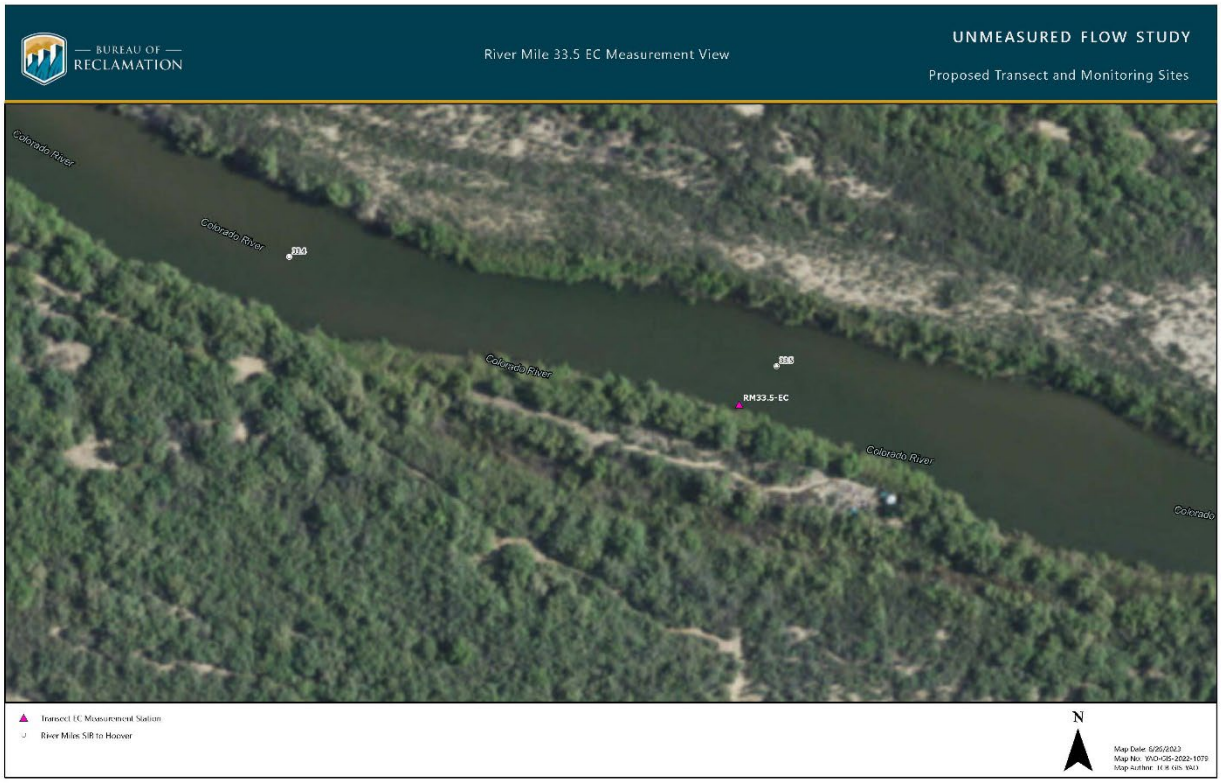


RM 29.7 EC meter location.

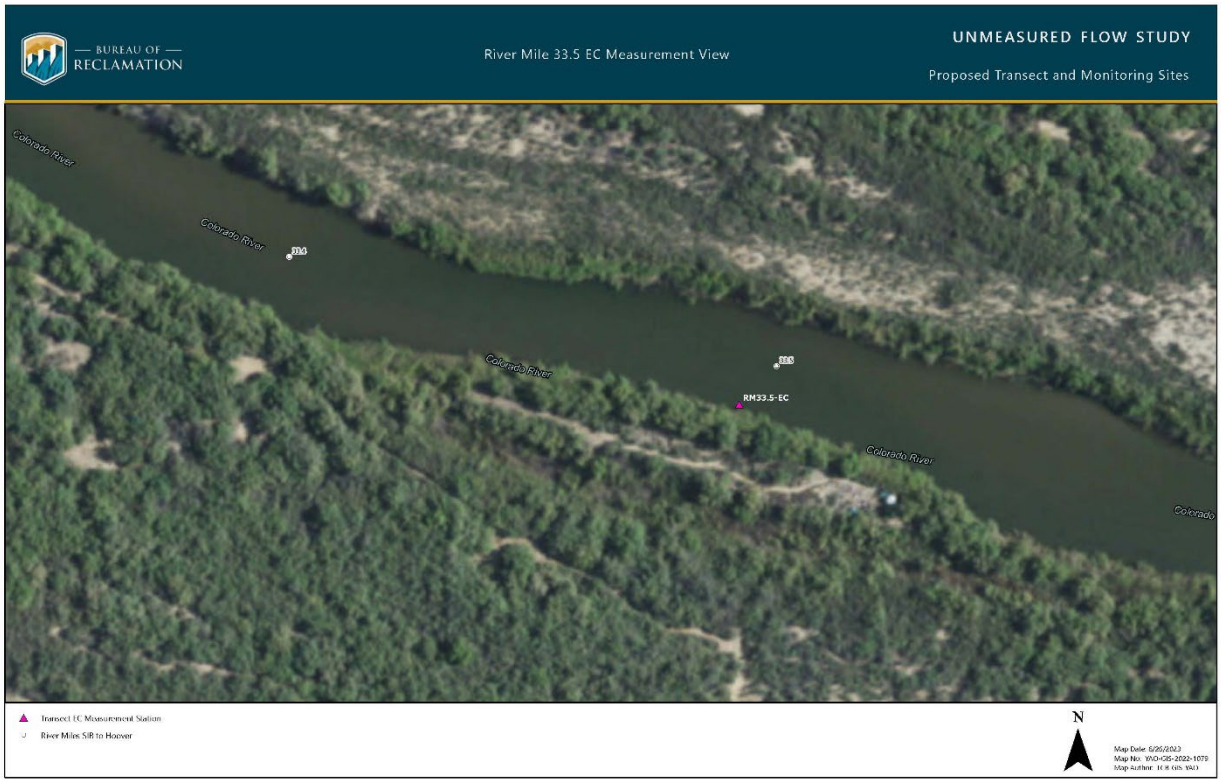
RM 30.5 EC meter location.



RM 31.8 EC meter location

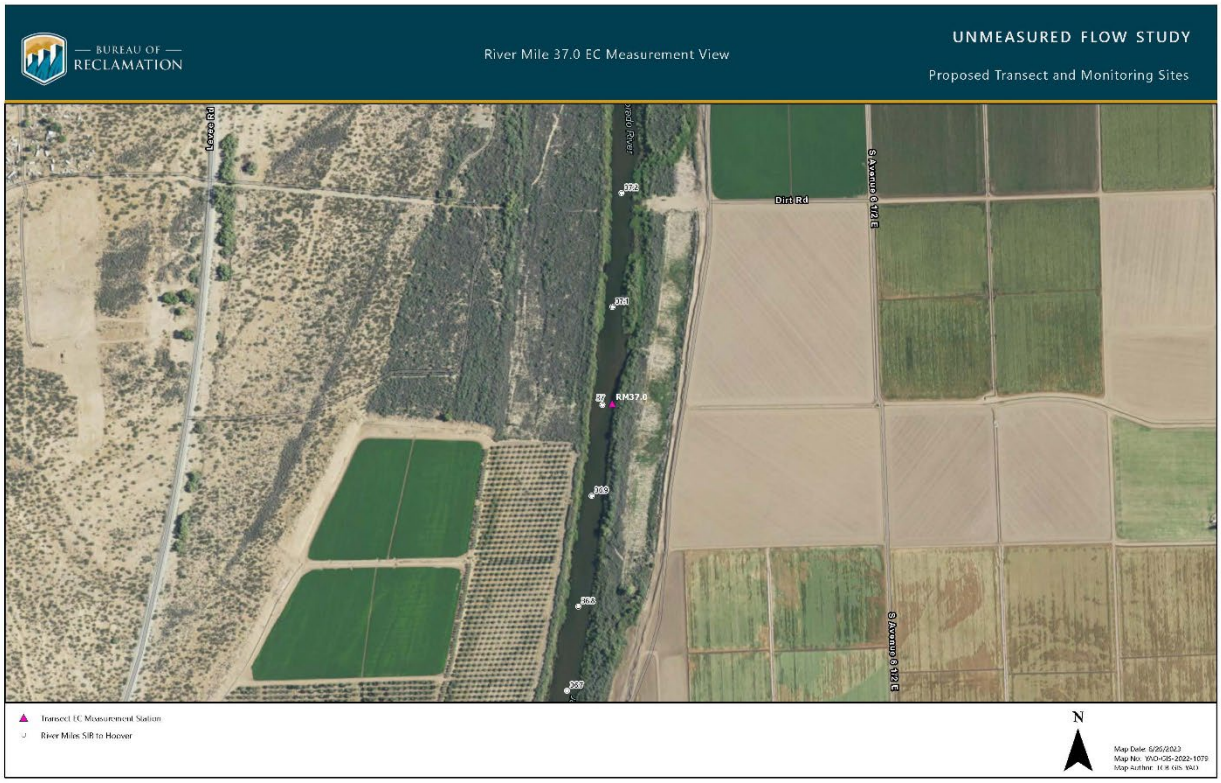


RM 33.5 EC meter location



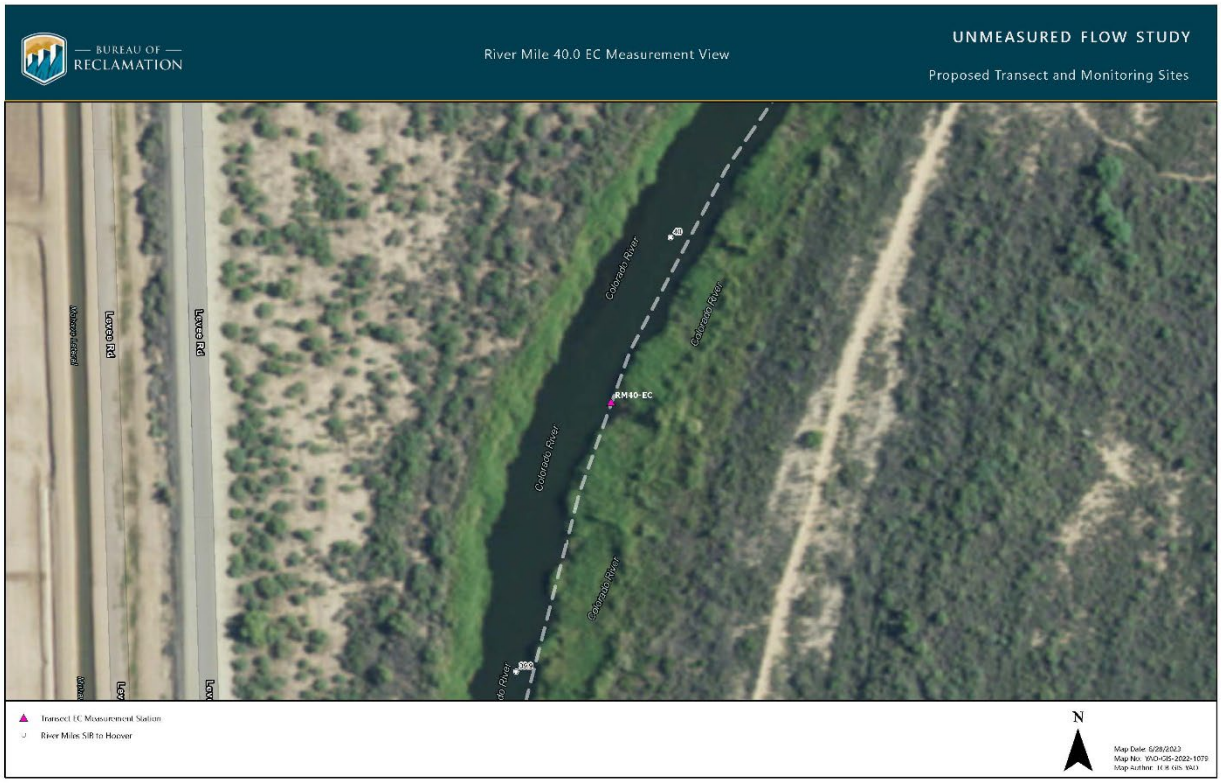
RM 35.0 EC meter location

RM 37.0 EC meter location.

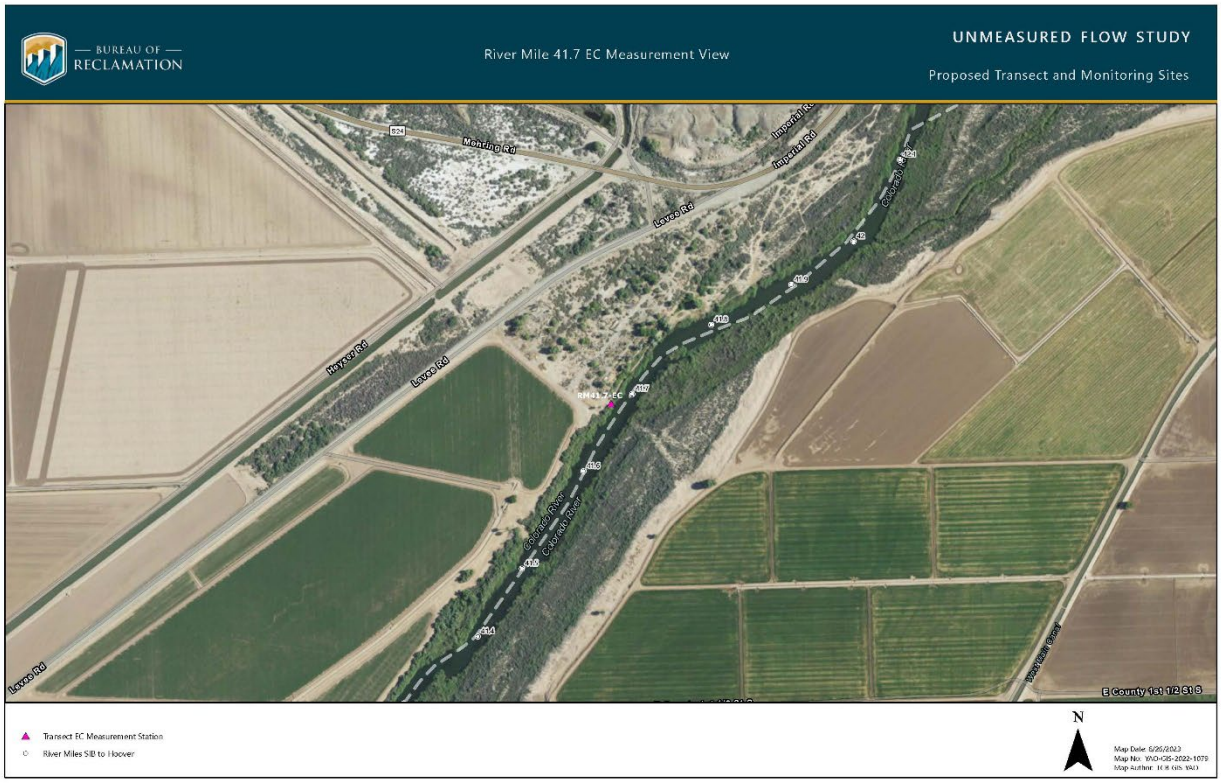


RM 38.3 EC meter location.

RM 40.0 EC meter location.



RM 41.7 EC meter location.



Construction activities – Proposed Action would be implemented over a three-to-four-year period. Two to four transects would be constructed per year. Heavy equipment used at each construction site will consist of a drill rig, flat bed haul truck, water truck, and small backhoe. Construction activities (per transect) would take approximately six to eight weeks to complete. Future activities will consist of accessing site (vehicle) and obtaining transducer data from wells on a monthly and quarterly basis. Existing access roads will be used to the extent possible to access proposed well pad locations. Improvements to certain access roads will consist of trimming brush lining of roadway, grading and graveling of road surface, and watering road surface to minimize dust in air.

Maintenance Activities – Once construction activities are completed, Reclamation will perform periodic operation and maintenance activities such as maintaining access roads, weed control around the wells, and redrilling or redevelopment of wells, if necessary.

Figure 2 – Typical Transect section view.

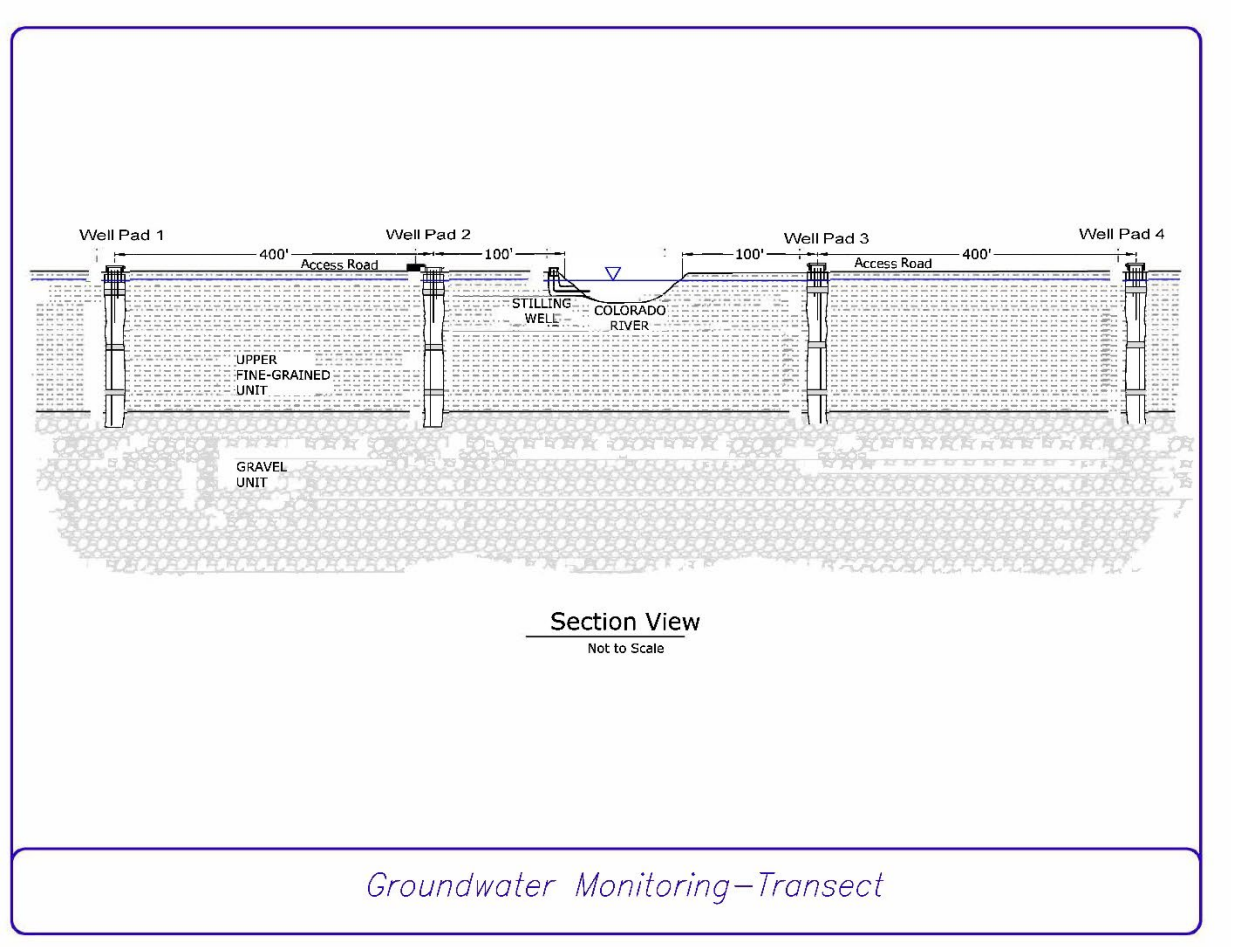
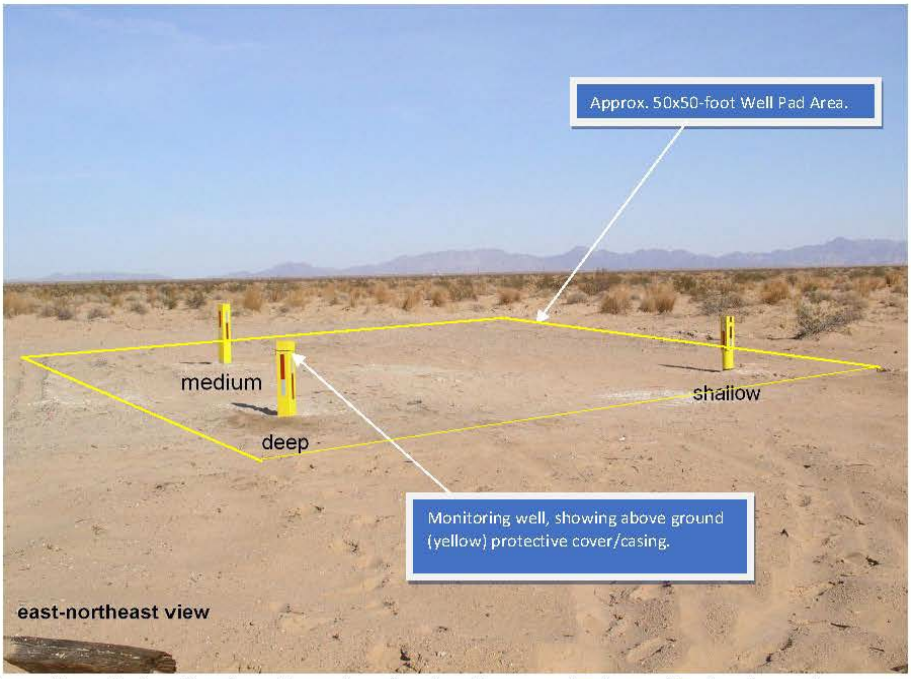


Figure 3 – Well pad layout.



View of a typical well pad configuration showing three monitoring wells. An alternative configuration, dependent on site conditions, is grouping all three wells inside one well casing instead of three separate well casings as shown in photo.

Figure 4 – Typical stilling well section view.

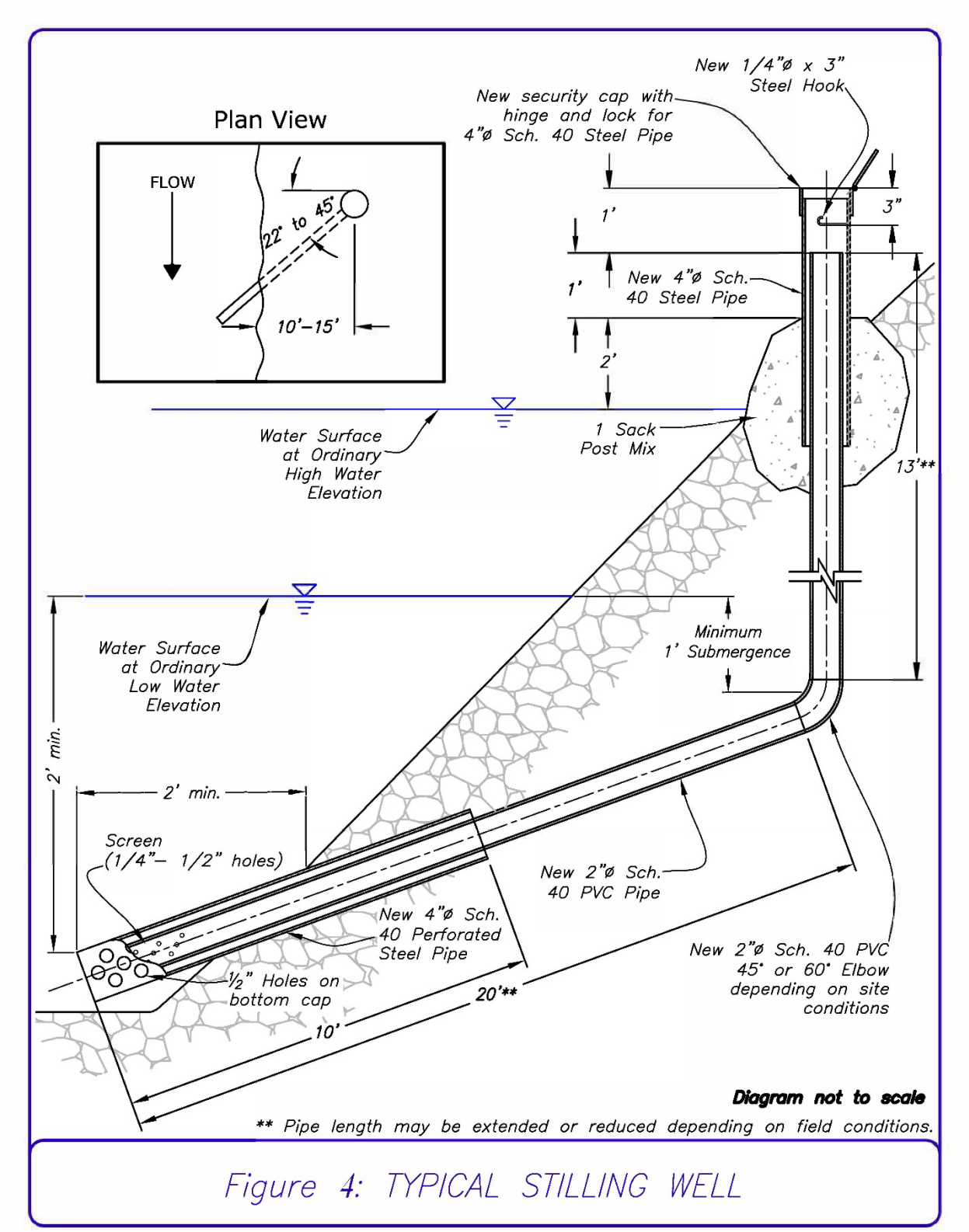
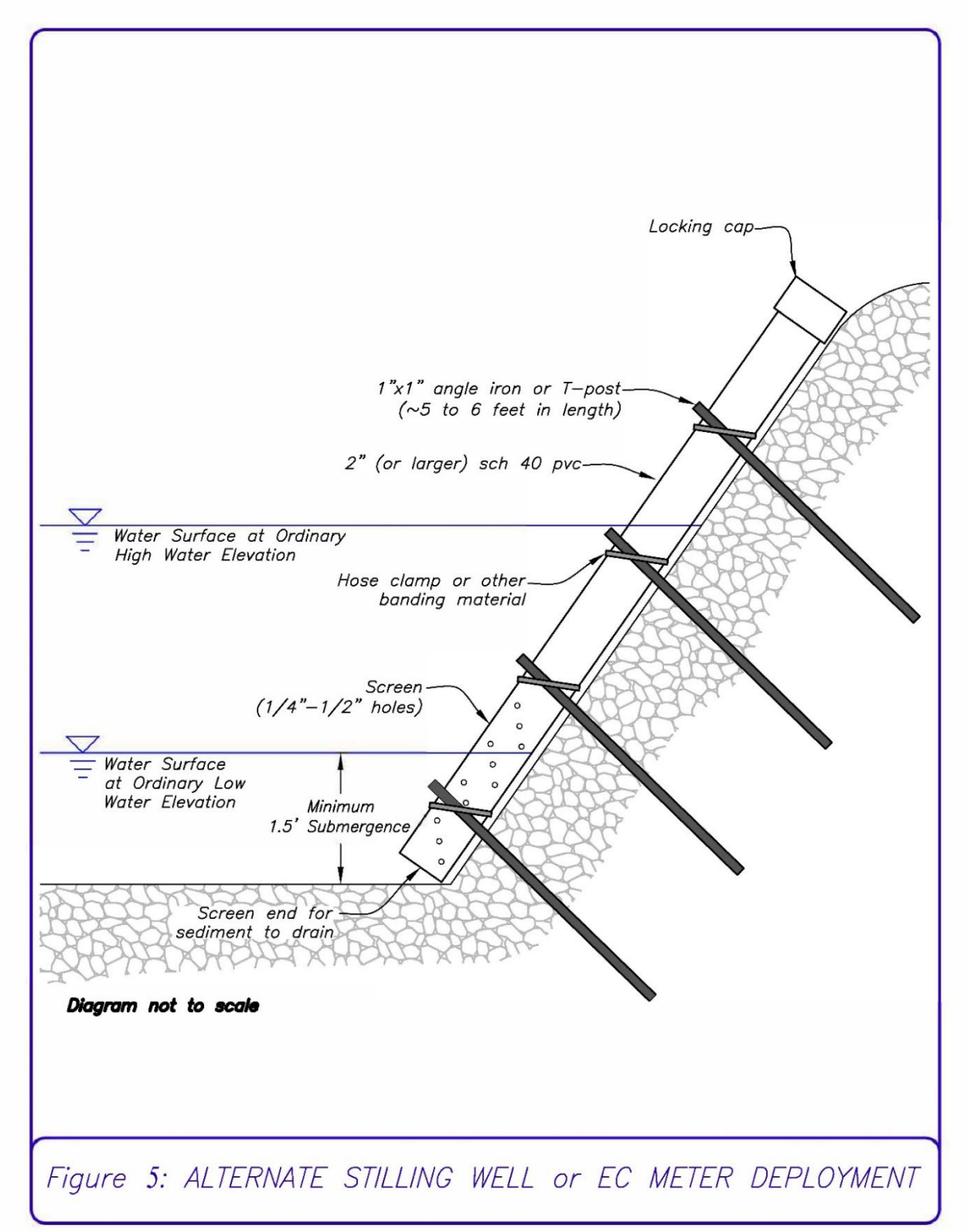


Figure 4: TYPICAL STILLING WELL

Figure 5 – Typical EC meter deployment section view.



Alternatives Considered but Eliminated from Further Review

Use of existing monitoring wells south of Laguna Dam/Yuma Division – This action does not meet the purpose and need, because the existing wells are either not located in the defined location for each linear transect, they are completed too shallow, or they are old and non-responsive or are filled with sediment.

Installation of additional gaging stations along the river – This action does not meet the purpose and need, because additional gaging stations can only determine surface flow and salinity conditions at a point in the system and would not be uniquely indicative of groundwater inflow.

Chapter 3 Affected Environment and Environmental Consequences

This section describes the existing environmental resources in the project area that may be affected by the Proposed Action and the No Action alternative, if implemented. It also serves as the baseline for the comparisons of alternatives. The following critical elements of the human environment are not present or would not be affected by the alternatives; therefore, they will not be addressed in this EA: Energy Policy, Fire Management, Public Health and Safety, and Travel Management

Land Use

Affected Environment

The Proposed Action will be implemented within Reclamation lands withdrawn for project purposes, the Ft. Yuma Quechan Reservation (Quechan Reservation), Cocopah owned lands, private land, and City of Yuma managed lands.

Environmental Consequences

No Action – Under this alternative, use and status of the land would not change.

Proposed Action – There would be no change in land use or status. Additionally, management and use of adjacent lands would not be impacted. Activities proposed will be planned to avoid and minimizing existing ongoing activities, such restoration work.

Management and Mitigation Measures

Reclamation will coordinate with landowners prior to construction to ensure notifications and/or appropriate access agreements are in place.

Air Quality

Affected Environment

The proposed project is located within Yuma County and Imperial County and within the ozone and PM_{10} non-attainment areas in the Yuma, AZ area and Imperial County. PM_{10} is defined as particulate matter that is 10 micrometers in diameter or smaller.

The Clean Air Act, as amended in 1990, requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for wide-spread pollutants from numerous and diverse sources considered harmful to public health and the environment. Imperial County is designated by the EPA as a Moderate Nonattainment Area for the 1997 8-Hour Ozone (O_3) NAAQS. The portion of Imperial County within which the project area resides, is designated as a Serious Nonattainment Area for the PM_{10} NAAQS. The portion of Yuma County, within which the project area resides, is designated as a Moderate Nonattainment

Area for the PM_{10} NAAQS. A portion of the project area also falls within the ozone non-attainment zone in the Yuma, AZ area. The project areas are designated as being in attainment for all other NAAQS.

Environmental Consequences

No Action – Under the No Action Alternative, air quality in the area would not change from its present readings.

Proposed Action – Construction activities associated with the Proposed Action have the potential to release small amounts of ozone precursors such as nitrogen oxides or volatile organic compounds from vehicle and machine exhaust. Ground disturbance associated with the movement of dirt and other dry material has the potential to generate dust, resulting in an increase in PM_{10} emissions.

Management and Mitigation Measures

Best Management Practices (BMPs) would be followed to limit dust and PM_{10} emissions, including at a minimum:

Vehicle and equipment traffic will be limited to paved or graveled roads as much as possible.

Where equipment traffic, excavation, or demolition is required outside of paved or graveled roads, water or soil binders will be applied to exposed surfaces.

Equipment will be properly maintained to minimize exhaust emissions, and equipment idling would be limited.

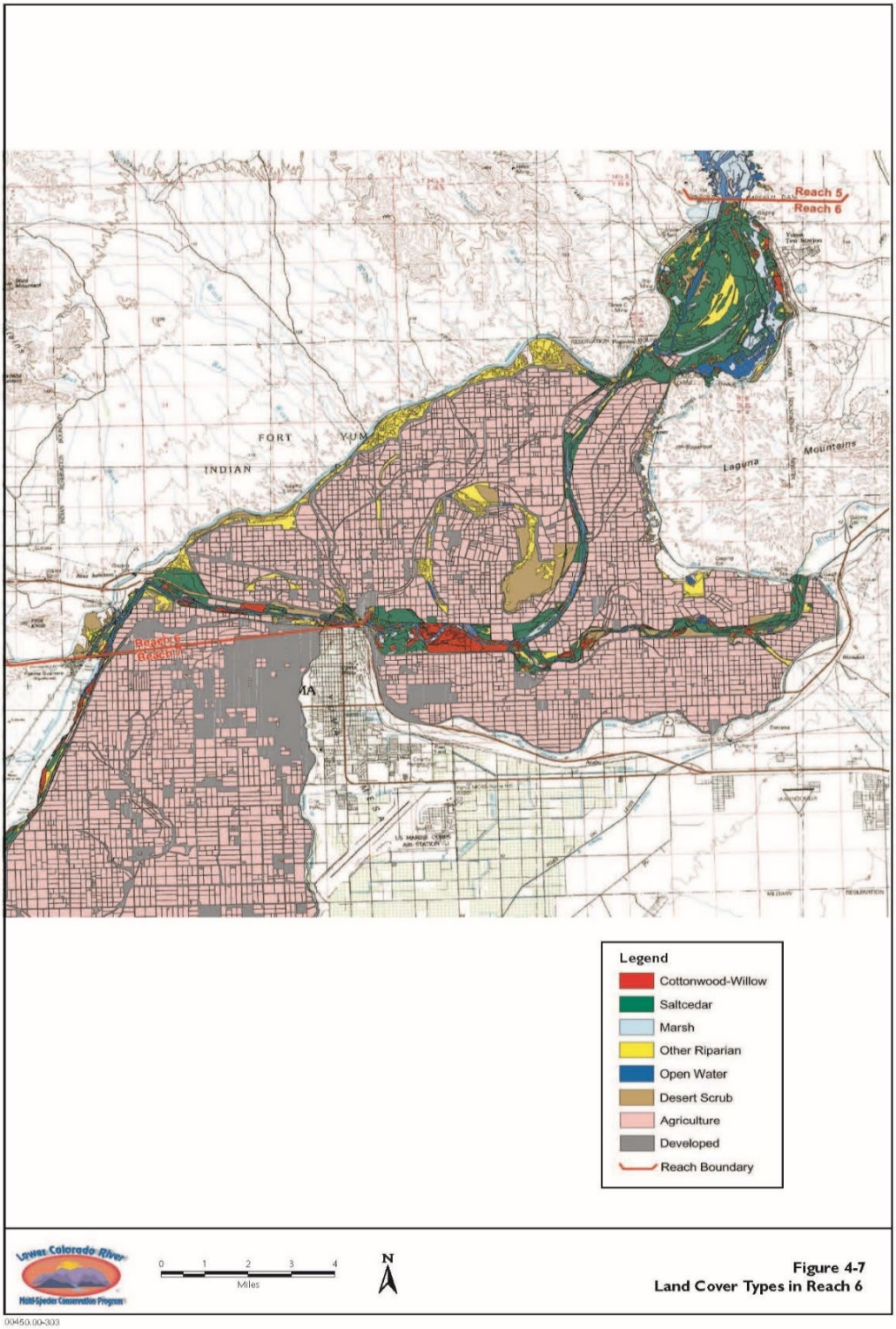
Ground disturbing activities will cease temporarily when wind speeds at the site exceed 20 miles per hour.

Biological Resources

Affected Environment

The project sites are located within Reach Six as described in the Lower Colorado River (LCR) Multispecies Conservation Program (MSCP) (LCR MSCP, 2004b). Reach 6 extends from Imperial Dam to the NIB and includes Laguna Dam, Mittry Lake, and the confluence with the Gila River. Flows in Reach 6 are minimal since mainstem water is diverted for irrigating agricultural lands. Woody riparian vegetation, consisting mostly of salt cedar (*Tamarix chinensi*), is the prominent vegetation type within the project sites (see Photos 1 through 3). Some aquatic, marsh, desert scrub, and agriculture cover types surround the project sites however the vast majority is woody riparian (see Figure 6). Very few native riparian trees exist in the project areas, although a few exist along the banks of the Colorado River, particularly within the Yuma East Wetlands and other native vegetation restoration sites. These include cottonwood (*Populus fremontii*) and willow (*Salix gooddingii and exigua*). Upland vegetation common to all areas are palo verde (*Cercidium floridum*), salt cedar, arrowweed (*Pluchea sericea*), quailbush (*Atriplex lentiformis*) and some scattered mesquite (*Prosopis pubescens*) and creosote bush (*Larrea tridentata*) in the upland areas.

Figure 6 – Land cover types.



Woody riparian vegetation and uplands provide habitat for common mammals such as coyote (*Canis latrans*), bobcat (*Felis rufus*), desert cottontail (*Sylvilagus audubonii*), several species of rodents and bats, striped skunk (*Mephitis mephitis*), and raccoon (*Procyon lotor*) (Anderson and Ohmart 1984). The Colorado River corridor provides important habitat for migratory birds, both upland species and waterfowl, as well as habitat for resident species. Common birds include various egrets, herons, and owls, Gambel's quail (*Callipepla gambelii*), white-winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), flycatchers, and woodpeckers. Reptiles and amphibians are represented by several species of lizards, snakes, toads, and frogs, many of which are native to the area. Other species known to occur in the adjacent areas are great egret (*Ardea alba*), least bittern *(Ixobrychus exilis)*, and the western burrowing owl (*Athene cunicalaria hypugaea*).

Federally listed threatened or endangered wildlife species potentially occurring near the project area were identified using information from the United States Fish and Wildlife Service (USFWS) endangered species lists by county for Yuma County, Arizona and Imperial County, California.

There are three federally listed species which may occur near the project areas:

1) Southwestern willow flycatcher (*Empidonax traillii extimus*) – Throughout its range, the southwestern willow flycatcher is a riparian obligate, insectivore that breeds in spring and summer along rivers, streams, and other wetlands where dense willow, cottonwood, salt cedar, or other similarly structured riparian vegetation occurs (USFWS 2002). No habitat exists for nesting southwestern willow flycatcher within the project area although the birds do pass through the area during migration. No Critical Habitat exists along the LCR for this species due to the LCR MSCP.

2) Yuma Ridgway's rail – In the US, the Ridgway's rail (formerly Yuma clapper rail) is associated primarily with freshwater marshes, with the highest densities of this subspecies occurring in mature stands of dense to moderately dense cattails and bulrushes. In the Lower Colorado River (LCR) Multispecies Conservation Program (MSCP) planning area, Ridgway's rail populations are considered regionally significant. Population centers for this subspecies include Imperial Division, Imperial National Wildlife Refuge, Cibola NWR, Mittry Lake, West Pond, Bill Williams River Delta, Topock Gorge, and Topock Marsh (LCR MSCP, 2004b). Minimal habitat exists for Ridgway's rail within the project area.

3) Western yellow-billed cuckoo (*Coccyzus americanus*) – The western yellow-billed cuckoo is listed as threatened under the Endangered Species Act (ESA) and is listed as endangered under California ESA. Western yellow-billed cuckoos require structurally complex riparian habitats with tall trees and a dense woody vegetative understory (Halterman 1991, Hughes 1999). Very little yellow-billed cuckoo habitat exists in Reach 6 and none is found in the sites proposed for this project. No Critical Habitat for yellow-billed cuckoo exists within the project sites.

Photo 1- View of RM28.3 Transect (AZ side) showing proposed well pad location.

Photo 2 – View of RM 34.2 (AZ side) vegetation (scattered arrowweed and salt cedar).

Photo 3 – East view of RM38.9 Transect (CA side).

Environmental Consequences

No Action – Under the No Action Alternative, no wells would be installed, and ground disturbance would not occur. There would be no direct impacts to biological resources.

Proposed Action – The proposed project would have minimal impact to vegetation and wildlife in the project areas. The project areas have been previously impacted by lower flows, agriculture, road and levee construction, invasive species, and other ongoing rural activities. No nesting habitat exists at the sites for southwestern willow flycatcher or western yellow-billed cuckoo. Ground dwelling small mammals, birds and reptiles may be temporarily impacted by vehicle use and the moving of materials during construction of wells and access roads. These impacts are temporary and localized and will be inconsequential once construction of the facilities is completed. Mature native riparian trees will be avoided. Some wetland and upland habitat may be impacted; however, wetland vegetation, trees and shrubs will be avoided to the extent practical. Sites were selected to avoid creating additional ground disturbance to the extent practical.

Minimal marsh habitat exists within the project area and less than a tenth of an acre of cattail/bulrush marsh habitat used by Yuma Ridgway's rails will be temporarily impacted during installation of the monitoring wells. Additionally, the access roads to sites could serve as a short-term fire break, while the vegetation reestablishes along the project area possibly preventing short term habitat loss in the unlikely event of a wildfire in the project area. This project will be disturbing very little marsh habitat and construction will be outside the breeding season when rails are most susceptible to disturbance. If rails are present and disturbed during this action, they will be able to move to areas outside the project area containing habitat, therefore any potential direct or indirect effects will be discountable.

Regarding riparian habitat used by southwestern willow flycatchers and yellow-billed cuckoos, the project area has been highly disturbed, resulting in little to no breeding habitat, and most likely only migrant birds moving through the area transiently. Habitat for these birds is sparse through the area however if any are present and disturbed during this action, they will be able to move to areas outside of the project area to other areas containing habitat. Therefore, any potential direct or indirect effects will be discountable. Proposed activities will not occur in any areas with any potential to occur during the breeding season of any listed species, therefore no impacts to breeding are anticipated.

To the extent practicable, to avoid and minimize impacts to environmental resources in the area, gravel pads will be located within areas accessible by existing roads and areas previously disturbed and/or impacted by past ground disturbing actions

(e.g., agricultural and wildfires). Drill mud will not be discharged in waters of the U.S./wetlands and/or impact native riparian vegetation.

Reclamation has determined that the project activities are adequately covered by the LCR MSCP and the CRFWLS Biological Opinions. Reclamation has coordinated with the USFWS regarding the acknowledgment that existing Section 7 and 10 compliance is adequate.

Management and Mitigation Measures

Project construction activities will avoid and minimize impacts to vegetation and wildlife to the extent practical. By largely avoiding and minimizing direct impacts to wetland, riparian, and riverine habitats, impacts to listed species will be beneficial, insignificant, or discountable. Direct effects to riparian vegetation will be minimized by carrying out project activities within the YEW during the months of October through February, which is outside the migratory and breeding seasons for listed bird species. Access to Transect location will utilize existing roads. Some access roads will require upgrades consisting of trimming back vegetation to reestablish full access. Additionally drill mud dispersed on site will target areas devoid of vegetation and/or areas with salt cedar vegetation. As a BMP, Reclamation will wash construction vehicles before working at the site to prevent the spread of invasive species. Trash and food materials will be properly contained within vehicles or closed refuse bins while on site and will be regularly removed from the construction site for proper disposal. Vegetation, particularly woody riparian species, will be avoided to the extent practical.

Cultural Resources

Affected Environment

The National Historic Preservation Act (NHPA) establishes national policy for protecting significant cultural resources that are defined as "historic properties" under 36 CFR 60.4. NHPA Section 106 (36 CFR §800) requires that Federal agencies consider and evaluate the effect that Federal projects may have on historic properties under their jurisdiction. The Area of Potential Effect (APE) for this undertaking includes the location noted in Section 2.2 (above).

Reclamation conducted a Class I survey (file and record search) and there are no known cultural resource sites in the APE. Furthermore, the expectation for the discovery of new cultural resources in the project area is very low. The APE is in the historic floodplain of the Colorado River which, prior to Reclamation's Colorado River channelization project, was subject to severe seasonal flooding. Because of the low expectation for the

discovery of new cultural resources and the high amount of previous ground disturbance in the APE, a Class III survey was not conducted. A Reclamation archaeologist visited the transect locations (Figure 1) to observe the conditions on the ground. Formal consultation under Section 106 of the NHPA will occur prior to project implementation.

Environmental Consequences

In accordance with 36 CFR Part 800.5 Reclamation has applied the criteria of adverse effect to historic properties subject to the No Action and Proposed Action Alternative to determine if they would directly or indirectly alter any of the characteristics of historic properties that qualify them for inclusion in the National Register of Historic Places (NRHP).

No Action – Under the No Action Alternative, no pipelines would be installed.

Proposed Action – No historic properties are in the APE. The APE is in the historic floodplain of the Colorado River which, prior to Reclamation's Colorado River channelization project in the area, was subject to severe seasonal flooding. Therefore, Reclamation has made a finding of No Historic Properties Affected for the undertaking. If during any activities associated with this undertaking, any districts, sites, buildings, structures, or objects are discovered, activities will cease in the vicinity of the resource. Reclamation shall ensure that the stipulations of 36 CFR Part 800.13 are satisfied before activities in the vicinity of the previously unidentified property resume.

Management and Mitigation Measures

In accordance with 36 CFR part 800.5 Reclamation has applied the criteria of adverse effect to historic properties to determine if the Proposed Action would directly or indirectly alter any of the characteristics of historic properties that qualify them for inclusion in the NRHP. Based on our finding of No Historic Properties Affected, no mitigation measures are proposed.

If during any activities associated with the implementation of the Proposed Action any sites, buildings, structures, or objects not addressed in this assessment are discovered, activities will cease in the vicinity of the resource. Reclamation's Environmental Group Manager and project archaeologist will be notified immediately. Reclamation shall ensure that the stipulations of 36 CFR Part 800.11 are satisfied before activities near the previously unidentified property resume.

Indian Trust Assets

Affected Environment

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Indian tribes or individuals, or property in which the US is charged by law to protect for Indian tribes or individuals. In accordance with the Indian Trusts Fund Management Reform Act of 1994, as amended, all Department of Interior agencies, including Reclamation, are responsible for protecting ITAs from adverse impacts resulting from their programs and activities. In cooperation with tribes, Federal agencies must inventory and evaluate assets, and mitigate or compensate for adverse impacts to the asset. While most ITAs are located on reservation lands, they may also be located off-reservation. Examples of ITAs include, but are not limited to, land, minerals, rights to hunt, fish, and gather, and water rights.

Environmental Consequences

Reclamation departmental policy requires the agency to address potential impacts to ITAs even if impacts are found to be non-significant. The proposed project does involve construction activities on Tribal lands.

Trust Lands

Portions of the Proposed Action are located on ITA lands. There are tribal interests (agricultural lands, recreational use opportunities, and habitat restoration sites) within the project area.

Water Rights

Tribes inhabit the immediate area where a water right may be impacted.

Hunting, Fishing, and Gathering Rights

The Colorado River and its tributaries provide habitat for sensitive fish and wildlife species, especially in the riparian woodlands and marshes. Some members of the tribe still collect a variety of plants, which are eaten as well as used for medicinal and ceremonial purposes, and in traditional craft production (LCR MSCP 2004c).

No Action Alternative

Under the No Action Alternative, construction of Transects would not take place. Therefore, no change to Federal actions will occur that could result in an adverse effect to identified ITAs.

Proposed Action

Trust Lands

The Proposed Action will not interfere with any Trust Land interest. The project will not prevent the use or continued management of any tribal or Trust Lands.

Water Rights

The Proposed Action will not result in a change to any tribal water right, or to the diversion or delivery of tribal water entitlements.

Hunting, Fishing, and Gathering Rights

The Proposed Action will not interfere with any hunting, fishing, or gathering rights which could be exercised by any tribe. Improvements and the establishment of new access roads will provide new opportunities to access the river at various locations for fishing.

Management and Mitigation Measures

Reclamation will coordinate with Tribes prior to project implementation to ensure awareness of project activities and to avoid impacting any ongoing Tribal restoration activities occurring within and/or adjacent to proposed Transect areas.

Environmental Justice and Socio-Economic Conditions

Affected Environment

Executive Order (EO) 12898 requires Federal agencies to identify and address, as appropriate, disproportionately high, and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the US.

Minority populations include all persons identified by the Census of Population and Housing to be of Hispanic or Latino Origin, as well as, non-Hispanic persons who are African American, American Indian, and Alaska Native, Native Hawaiian or other Pacific Islander. Yuma Az, Winterhaven CA, and Bard CA are communities with above average minority population.

Low-income populations are those that fall within the annual statistical poverty thresholds from the Bureau of the Census for the 2020 Census. The definition of

poverty is dependent on the size of the family. For example, the poverty threshold for a family of three is $20,591; whereas, $26,496 is the threshold for a family of four (U.S. Census Bureau 2020). If the total income of a person's family is less than the threshold appropriate for that family, then the person is considered as being below the poverty level.

Environmental Consequences

No Action – Under the No Action Alternative, the project will not take place. Therefore, no Federal actions will occur that could result in a disproportionately high and adverse effect on the health or environment of minority or low-income populations.

Proposed Action – Implementation of the Proposed Action Alternatives would not disproportionately affect the minority and impoverished population in the area.

Based on the analysis for air quality, water resources, and hazardous materials in this EA, changes resulting from implementing the project will not result in proportionately high and adverse impacts to the environment or to the health of low-income and minority populations.

Management and Mitigation Measures

No mitigation measures are proposed for the environmental justice and socio-economic conditions section.

Hazardous Materials or Solid Waste (*need input from Green*)

Affected Environment

No hazardous materials are currently used or stored anywhere at the proposed transect location sites.

Environmental Consequences

No Action – Under this alternative, no ground disturbing activities that may affect hazardous materials in the area or produce waste from construction activities. Therefore, there would be no change to existing conditions.

Proposed Action – Under this alternative, waste petroleum, oils, and lubricants would be generated that would require disposal. Any of the waste materials associated with the drilling activities (drill mud and development water) will be disposed of properly as to not pose a further hazard.

Management and Mitigation Measures

Mitigation actions designed to limit the potential impact of hazardous materials or solid waste would be implemented according to State and Federal regulations. Other hazardous materials anticipated to be used during construction of the project are small volumes of petroleum hydrocarbons and their derivatives (for example, fuels, oils, lubricants, and solvents) required to operate the equipment used in the construction activities. These materials are those routinely associated with the operation and maintenance of heavy equipment or other support vehicles, including gasoline, diesel fuels, and hydraulic fluids.

A site-specific contingency spill plan will be developed and implemented. The plan should consist of reporting guidelines in the event of a spill, good housekeeping techniques, and employee training in the use of required equipment and proper handling of potentially hazardous materials.

Hazardous materials used for this project will be contained within vessels engineered for safe storage.

Areas for refueling of equipment will be chosen to prevent any accidental fuel leakage from contaminating surface water, groundwater, or soils.

Drill mud and other drill cuttings will not be dispersed on Tribal lands.

Noise

Affected Environment

Noise that currently exists in the area generally comes from river recreation (motorboats), farming operations, farming equipment, and vehicle travel along the levee roads.

Environmental Consequences

No Action – In the No Action Alternative, current noise levels including noise from river recreation, highway, and farming operations would continue at the present levels.

Proposed Action – The use of equipment during the implementation of the project will increase noise disturbance temporarily in the vicinity where work is occurring. This could affect adjacent areas; however, the project sites are in open areas away from any public sensitive receptors.

Management and Mitigation Measures

No mitigation measures are necessary because noise levels would continue to be consistent with current ongoing operations and adjacent recreational activities.

Water Resources

Affected Environment

The Colorado River is the nearest source of surface water in the area. The U.S. Army Corps of Engineers (USACE), under Section 404 of the Clean Water Act, regulates the discharge of dredged, excavated, or fill material in wetlands, streams, rivers, and other US waters. The Colorado River is a USACE jurisdictional water identified within the project area.

Environmental Consequences

No Action – Implementation of the No Action Alternative would not entail any construction activity; therefore, no impacts to surface water, or jurisdictional waters would occur due to construction.

Proposed Action – The Proposed Action Alternative's impacts on water resources are anticipated to be minimal, with no changes to water delivery operations, and/or reduction in surface water areas or flow.

Although highly unlikely, spills from construction activities could migrate into surface water conduits or infiltrate the groundwater, contaminating the source. If a spill were to occur, the impacts to water resources could be minimized with immediate response and clean-up procedures.

No construction components of the Proposed Action Alternatives would affect waters of the US, as no fill material will be discharged into the Colorado River.

Management and Mitigation Measures

During construction, no refueling equipment should be permitted within 100 feet of the Colorado River, or any other surface water conveyance system. Required Clean Water Act Section 404 and 401 permits will be obtained for the placement of stilling well PVC pipe along the banks of the river prior to project commencing. Construction General Permits for stormwater, if necessary due to acreage disturbance, will be obtained prior to project commencing.

Geology and Soils

Affected Environment

The LCR area of Arizona and California is in the lower portion of the Basin and Range geomorphic province, within the western Sonoran Desert. This area is characterized by numerous mountain ranges that rise abruptly from broad, plain-like valleys or basins. The basins are composed of silt-filled channels and alluvial fans, fan terraces, and floodplains, consisting of Quaternary sand, gravel, and conglomerate. Limited soil horizon development indicates young unstable alluvial and floodplain surfaces of late Holocene age, subject to periodic flooding, sedimentation, and dynamic alteration. The LCR generally consists of narrow stretches confined by resistant bedrock cliffs and bluffs and broad areas lined by low-lying alluvial floodplains. The active floodplain is bounded by steep, active slopes (escarpments), active sand dunes, and washes (arroyos). The floodplain has low relief and includes the stream channel and associated features such as point bars and abandoned channels or meanders. Sand splays, point bars, and meander scrolls are typically underlain by coarse-grained alluvium, whereas broad shallow channels and backswamps are more clay-rich (Parsons et al. 1986). The project sites are located on the Colorado River floodplain. The geology is characterized by very thick (>1,000 feet) deposits of unconsolidated sand, gravel, and silt/clay.

The soils on the Colorado River floodplain are saline. The salinity is the result of salts leached from alluvial deposits and deposited during subsequent evaporation of soil moisture. The rainfall is not sufficient to leach these salts below the plant root zone; therefore, a continuing accumulation of salts occurs. These salts are primarily calcium, sodium, magnesium, chloride, and sulfate. An excessive amount of toxic salts in the soil can delay or prevent seed germination, decrease available water capacity, interfere with plant growth, and impede the movement of air and water through the soil.

Environmental Consequences

No Action – Under this alternative, there would be no changes to soils. Disturbances would continue as they are currently.

Proposed Action – Implementation of the Proposed Action alternatives would disturb soils during construction activities; however, impacts would be limited to areas that have mostly been previously impacted by agricultural and/or going ground disturbing activities.

Management and Mitigation Measures

No mitigation measures proposed.

Visual Resources

Affected Environment

Visual resources consist of natural and manmade features that give a particular environment its aesthetic qualities. Landscape character is evaluated to assess whether the project will appear compatible with the existing features or would contrast noticeably with the setting and appear out of place. Visual sensitivity includes public values, goals, awareness, and concern regarding visual quality.

Visual resources within the project area generally include open space, agricultural areas, RV parks, degraded wetland areas, and desert upland habitats located in and near the Colorado River floodplain. Prominent vegetation includes patches of desert scrub, salt cedar, common reed, and cattail. Other visible structures in the area consist of river control structures (levee) and bank line access road(s).

Environmental Consequences

No Action – Under the No Action Alternative, no changes would occur to the sites' characteristics.

Proposed Action – Implementation of the proposed project alternatives will not significantly impact the visual characteristics of the area.

Management and Mitigation Measures

No mitigation measures proposed.

Floodplain

Affected Environment

The Colorado River Floodway Protection Act, Public Law 99-450, was signed into law on October 8, 1986. The Act calls for the establishment of a federally declared floodway from Davis Dam to the Southerly International Boundary between the United States and Mexico. In accordance with Section 5 (a) of the public law, Reclamation developed maps that show the floodplain for the Lower Colorado River. In addition, EO 11988, Floodplain Management, May 24, 1977, requires avoiding or minimizing harm associated with the occupancy or modification of a floodplain. The base floodplain is an area expected to be inundated by floodwaters on the average of once in 100 years.

The Colorado River in the Upper Basin is subject to flooding throughout the winter and spring season from rapid snowmelt in the upper Colorado River Watershed. The major flood control structures on the lower Colorado River are the Glen Canyon and Hoover Dams. The two major water storage levels in these reservoirs are regulated in association with the small reservoirs to provide flood protection, year-round water use, and hydro-electric power. In combination with these storage facilities, Reclamation has developed extensive levee systems along many parts of the river to mitigate damage to areas adjacent to the river during periods of high flow.

Environmental Consequences

No Action – The no-action alternative would not impact the integrity of the Lower Colorado River floodplain.

Proposed Action – Implementation of the Proposed Action alternatives would not impact the integrity of the Lower Colorado River floodplain's flow regime.

Management and Mitigation Measures

No mitigation measures proposed.

Recreation

Affected Environment

Recreation exists in the vicinity of the project area. The Yuma East and West Wetland areas, Cocopah Bend RV and Golf Resort, and other RV resort parks are located near the proposed project. Recreational opportunities that currently exist in the area include boating, beach access, year-round camping, fishing, hunting, paddle-sports, nature-watching, hiking, and picnicking.

Environmental Consequences

No Action – The no-action alternative would not impact recreational activity along the lower Colorado River.

Proposed Action – Implementation of the proposed alternatives would allow the establishment of new river access points, thus potential for increased recreational opportunities in the project area. There could be a beneficial affect for water related activities, especially swimming and fishing.

Management and Mitigation Measures

Reclamation is committed to working with the YCNHA and Tribes to ensure public use areas are not impacted during construction.

Cumulative Effects of the Proposed Action

Cumulative effect is the impact on the environment that results from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or nonfederal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). Several former, current, and planned projects either located within or in the vicinity of the planning area and having the potential to impact common resources will be addressed in this section.

Yuma East Wetlands – The Yuma Crossing National Heritage Area in partnership with the Quechan Tribe, and Reclamation's MSCP operate and maintain the YEW. The YEW is located along the Colorado River, area between the Ocean-to-Ocean bridge and the Colorado and Gila River confluence. Ongoing activities consist of habitat and wetland restoration activities, improving low-impact public use areas, and improvements to backwater channels,

River Mile (RM) 33 Backwater – Reclamation's operation, maintenance, and responsibility program along the historical floodplain includes the maintenance of backwater areas created by various features associated with river management (LCR MSCP 2004a). The RM 33 backwater is located along the Colorado River, just east of the Yuma East Wetlands. Reclamation maintains the RM 31 backwater's inlet and outlet areas. Enhancement of the backwater is proposed by Reclamation in the next two to three years. Potential activities may consist of conducting maintenance dredging, reconstruction of the inlet structure, and boat ramp improvements.

River Mile 31 Backwater – The RM 31 backwater is located along the Colorado River, just west of RM 33. Reclamation maintains the RM 31 backwater's inlet and outlet areas to ensure flow through the backwater. In 2019, the outlet and inlet areas were cleaned out to improve water circulation within the backwater. Future activities would consist of monitoring the inlet and outlet structures and performing any additional maintenance if necessary.

Quechan Tribe Restoration\Revegetation Activities – The Quechan tribe is in the process of conducting native riparian restoration activities along the Colorado River, area west of the River's Edge RV resort, north side of river between the river and the levee.

BLM Paradise Cove East rehabilitating and restoration activities – BLM created native riparian wildlife habitat and a public use area within an approximate 20-acre site.

Paradise Cove east restoration is located between the River's Edge trailer park community and the Paradise Cove West restoration project.

BLM Paradise Cove West mitigation activities – The Paradise Cove West mitigation site consists of approximately 51 acres located within BLM administered lands. Project area is located approximately two miles west of downtown Yuma (west of the Paradise Cove east site), along the Colorado River (AZ side of river). Project addresses a mitigation requirement identified in the 2008 U.S. Fish and Wildlife Service Biological Opinion to minimize impacts resulting from vegetation treatment in the Limitrophe Division.

City of Yuma (COY) Conveyance Project – COY proposes to extend their water treatment plant's discharge line to the Colorado River. Discharge line will help the COY comply with Arizona Department of Environmental Quality's end of pipe discharge permit requirements. Project area is located adjacent to BLM's paradise Cove west mitigation site.

Cocopah Tribe Border 2025 Riparian Restoration project – The Cocopah tribe is in the process of developing a plan to conduct riparian restoration activities along the Colorado River. Area between BLM's Paradise Cove West project site and the Cocopah Bend RV and Golf Resort, south side of river.

Cocopah Tribe Final Keepers Trail and Restoration Project – The Cocopah tribe is in the process of completing project activities along the river bankline, located within the Cocopah bend area. Establishing a walking trial and planting native vegetation.

U.S. Customs and Border Protection Border Wall – Border wall has been constructed in the lower section of the Yuma Division, area immediately above Morelos Dam. Ongoing activities will consist of filling in gaps in the wall, area near Morelos Dam.

Impacts by Resource

Land Use

The Proposed Action Alternative would not change any land uses in the area and/or disrupt any established land configurations, wildlife, or recreational areas. Implementation of the Proposed Action Alternative, in conjunction with the other actions is not anticipated to have negative cumulative impacts to land use.

Air Quality

Implementation of the Proposed Action and other actions described in section 3.14 may result in increased area emissions associated with construction activities. Due to the

mobile nature and short duration of most emission sources, project emissions in combination with future emission sources would not be expected to contribute to an exceedance of an ambient air quality standard. As a result, the Proposed Action, in combination with other foreseeable projects and mitigation requirements, would not produce significant cumulative impacts to air quality and climate conditions.

Biological Resources

The Proposed Action Alterative and the above-mentioned projects in section 3.14 have the potential for biological impacts due to short-term habitat loss for sensitive and common wildlife species. However, the majority of the projects are restoration and enhancement projects that are designed to benefit targeted species and other wildlife that utilize the proposed project site, resulting in a net positive impact over the duration of the proposed project implementation. With incorporation of avoidance, minimization, and mitigation measures, the Proposed Action Alternative, in conjunction with the other actions, is not anticipated to have negative cumulative impacts to biological resources.

Cultural Resources

Reclamation has made a finding of No Historic Properties Affected for the activities associated with the implementation of the Proposed Action. During the implementation phase of projects identified in section 3.14, there is potential for unforeseen cultural resources to be discovered or damaged. Reclamation has established "stop work" procedures that shall be implemented should and unanticipated discovery situation arise. Therefore, the Proposed Action, in conjunction with other projects listed in section 3.14, would not result in significant cumulative impacts on cultural resources.

Indian Trust Assets

Tribal lands and interests are located with the proposed project area. However, the Proposed Action's limited use area, in combination with other proposed or on-going projects, would not cause disproportionate cumulative effects on ITAs.

Environmental Justice and Socioeconomic

The Proposed Action would have negligible effects on population, housing, and other socioeconomic issues. The Proposed Action would not displace persons or housing, nor would it induce substantial population growth in the area, either directly or indirectly. The types of potential effects identified (e.g., increased noise, and fugitive dust) for the Proposed Action and the other projects would be localized and short-term. The Proposed Action, in combination with other foreseeable projects described in section

3.14, is not expected to have a cumulatively significant impact on socioeconomics and minority or low-income populations.

Hazardous Materials

The project site is not located in close proximity to any known or suspected hazardous waste or petroleum waste sites. However, incidental spills of petroleum products could occur during construction activities, and such spills could result in significant impacts to water quality. With the implementation of mitigation measures, the risks of incidental spills would be reduced to less than significant. Other projects described in section 3.14 may have hazards/hazardous materials related impacts due to construction activities. However, with anticipated mitigation measures, these risks would be cumulatively less than significant as these impacts are localized and temporary.

Noise

The Proposed Action Alternative would require some use of heavy equipment to assist in the placement of the pipelines. However, the project will be short term. Other projects described in section 3.14 would have similar temporary construction noise. The Proposed Action, in conjunction with the other actions, is not anticipated to have long term negative cumulative impacts in the vicinity of the proposed project area.

Water Resources

The Proposed Action will involve placement of PVC pipe along the banks of the river. However, due to its limited use area, the Proposed Action, in conjunction with other proposed or on-going projects described in section 3.14, would not result in cumulatively significant impacts to water resources.

Chapter 4 Consultation, Scoping, and List of Preparers

An electronic copy of this EA has been posted for public viewing on Reclamation's Yuma Area Office web site at http://www.usbr.gov/lc/yuma/. Paper copies of the Notice of Availability memorandum and EA were distributed to the following entities:

US Fish and Wildlife Service	Bureau of Land Management
California Department of Fish and Wildlife	AZ Game and Fish Department
Quechan Indian Tribe	Cocopah Indian Tribe
Yuma Audubon Society	AZ State Parks SHPO
Bureau of Indian Affairs	Yuma Crossing National Heritage Area
U.S. Army Corps of Engineers	AZ State Lands

Consultation with the Arizona State Historic Preservation Office was completed under Section 106 of the NHPA (36 Part 800) for the undertaking involving federal facilities. Consultation with the USFWS for compliance under the Fish and Wildlife Coordination Act and Section 7 of the Endangered Species Act was completed with staff from Ecological Services in Phoenix, AZ.

Scoping Letter

Reclamation prepared and sent a scoping letter to the agencies consulted in Section 4.1 soliciting information regarding the proposed action to assist with the identification of relevant issues. Copies of the letter are available upon request.

List of Preparers

Bureau of Reclamation

Nicholas Heatwole	Environmental Protection Specialist
Julian DeSantiago	Group Manager, Environmental Planning and Compliance
Andrea Kayser	Archaeologist
Andrew Scott	Hydrologist

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Chapter 6 Acronyms and Abbreviations

Acronym or Abbreviation	Description
APE	Area of Potential Effect
BMPs	Best Management Practices
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CFS	Cubic feet per second
COY	City of Yuma
EA	Environmental Assessment
ESA	Endangered Species Act
EC	Electrical Conductance
EO	Executive Order
EPA	Environmental Protection Agency
IBWC	International Boundary and Water Commissions
ITAs	Indian Trust Assets
LCR	Lower Colorado Region
MSCP	Multispecies Conservation Program
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NEPA	National Environmental Policy Act
NIB	Northly International Boundary
NRHP	National Register of Historic Places
PM_{10}	Particulate matter that is 10 micrometers in diameter or smaller
PPM	Parts Per Million
PVC	Polyvinyl Chloride
Reclamation	Bureau of Reclamation
RV	Recreational Vehicle
RM	River Mile

UMF	Unmeasured Flow
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
YEW	Yuma East Wetlands