RECLAMATION

Managing Water in the West

Environmental Assessment

Needles-Topock Area (River Mile A-240.5 to A-238.5) Bankline Stabilization Project

U.S. Department of the Interior
Bureau of Reclamation
Yuma Area Office
Yuma, Arizona

May 2006

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to 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.

Environmental Assessment

Needles-Topock Area (River Mile A-240.5 to A-238.5) Bankline Stabilization Project

Prepared for:

Yuma Area Office
Environmental Group

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Acronyms and Abbreviations

ACB	Articulated concrete block
ADEQ	Arizona Department of Environmental Quality
AGFD	Arizona Game and Fish Department
AMM	Avoidance and Minimization Measure
BCO	Biological and Conference Opinion
BE	Biological Evaluation
BMP(s)	Best Management Practice(s)
CAA	Clean Air Act
CDFG	California Department of Fish and Game
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic feet per second
cu yds	Cubic yards
CWA	Clean Water Act
DM	Department Manual
DOI	United States Department of the Interior
EA	Environmental Assessment
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FR	Federal Register
ft	Feet
FWCA	Federal Wildlife Coordination Act
gmp	Gallons per minute
HNWR	Havasu National Wildlife Refuge
LCR	Lower Colorado River
MSCP	Multi Species Conservation Program
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OHW	Ordinary high water
OLW	Ordinary low water
P.L.	Public Law
POLs	Petroleum, oil, or lubricants
PM_{10}	Particulate matter less than 10 microns in diameter
PWC	Personal Watercraft
Reclamation	Bureau of Reclamation
RM	River mile
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SWPPP	Storm Water Pollution Prevention Plan
USC	United States Code
USFWS	United States Fish and Wildlife Service

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1.0 Purpose of and Need for the Proposed Action

1.1 Introduction

The Bureau of Reclamation (Reclamation) has prepared this environmental assessment (EA) to evaluate potential impacts associated with the Proposed Action and alternatives, including the No Action Alternative, of the Needles Topock Bankline Stabilization Project. This EA complies with the National Environmental Policy Act (NEPA) (42 USC 43421 *et seq*.), in accordance with the Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1509), and the Department of Interior and Reclamation NEPA procedures (516 DM 14).

1.2 Location

The project is located in the Mohave Valley Maintenance Division of the Lower Colorado River (LCR), between Needles, CA and the I-40 bridge crossing near Topock, AZ. The specific section of bankline is along the Western boundary of the Havasu National Wildlife Refuge (HNWR), in Mohave County, Arizona from river mile A-240.5 to A-238.5, as depicted in Figure 1.

1.3 Background

The operation of motor boats and personal watercraft (PWC) in this section of the LCR creates a significant amount of wave action against the unprotected Arizona bankline. The California bankline in San Bernardino County is armored, stable, and is not eroding. The boat wave action of the larger tour boats traversing from Laughlin, NV to Lake Havasu City, AZ has been observed to cause much larger wave action along the shoreline. Further, PWC operating in this stretch of the river are able to travel closer to the shoreline, at higher rates of speed, which produces a wave action of greater intensity than typical boat traffic. Over the past several years, there has been an increase in development along the LCR in the Needles, CA and Laughlin, NV areas. Along with the expanded development there has been an increase in recreational use of the LCR in this area which is exacerbating erosion of the sandy, unarmored bankline in the project area.

Photo 1 – Tour Boats in the Project Area.

Figure 1 - General Location of the Project Area.

1.4 Purpose of the Proposed Action

The purpose of the Proposed Action is to stabilize and protect approximately two miles of the Arizona bankline on HNWR land, and maintain and manage a stable channel that will accommodate bank-full flows and protect the integrity of the Arizona levee.

1.5 Need for the Proposed Action

The channel banks need to be stabilized to control erosion caused by boat wave action and to prevent further widening of the river channel. Further, the project is needed to maintain an acceptable buffer between the Arizona levee and the river, thereby helping to protect the integrity of the Arizona levee in the event of flood flows. The existing buffer between the flood control levee and the bankline in the project area is fairly narrow, averaging 450 feet in width.

1.6 Scope of Analysis

The primary issues raised during scoping and stakeholder involvement were related to Aesthetics, Biological Resources, Land Use, and Water Resources. Consequently, these topical areas have received the greatest emphasis in the evaluations presented in this document. Other issues are also addressed and evaluated in this EA, but to a lesser degree than the issues identified above. For each of the other issues, the level of evaluation and depth of discussion in this document are commensurate with the relative degree of importance attributed to each issue in the scoping and decision process.

1.7 Decisions to be Made

This EA will be forwarded through Reclamation for review to determine whether a Finding of No Significant Impact (FONSI) is appropriate. This decision is based on a determination that all potential impacts are either less than significant or can be reduced to less than significant levels through the implementation of mitigation measures. If any potential impacts are considered significant and cannot be avoided or reduced to less than significant levels, then the preparation and processing of an environmental impact statement is required.

2.0 Proposed Action and Alternatives Considered

This chapter presents a discussion of the Proposed Action and alternatives considered, including the No Action alternative. The Proposed Action and alternatives were developed and evaluated against the following screening criteria:

- Stop Bankline Erosion – primary cause is boat wake action on unprotected shoreline
- Stabilize Bankline for Bank-full Flow – approximately 43,000 cubic feet per second (cfs)
- Prevent Channel from Exceeding Design Width – 400 to 450 ft
- No Adverse Effect on Levee Design Flow Capacity – approximately 70,000 cfs
- Design Feasibility – must be reasonable in terms of constructability
- Available Technology – use of proven technology
- Environmental Considerations – avoids or minimizes adverse impacts
- Non-Damaging – avoids or minimizes adverse impacts to wetlands and waters of the U.S.
- Cost – reasonably justified cost for construction and maintenance

Section 2.1 describes the Proposed Action. Section 2.2 describes other alternatives analyzed in detail in the EA, including the No Action Alternative. Brief descriptions of other alternatives considered but eliminated from further detailed analysis are provided in Section 2.3. Section 2.4 presents a summary comparison of the environmental consequences associated with the Proposed Action and those alternatives analyzed in detail.

2.1 Proposed Action (Alternative A)

The Proposed Action is to construct bankline features that will serve to prevent further erosion of the bankline and stabilize the channel width. There has been an increasing amount of bankline erosion along this two mile section of the Arizona bankline, which is not armored (see Appendix A).

2.1.1 Stabilization with Rock and Vegetation

Under the Proposed Action, Reclamation will use an excavator to modify the slope of the bankline, which is mostly vertical along the entire reach of the project. The bank will be laid back, with a slope varying from two to one and four to one, along the existing alignment. The contouring will be nearly continuous and varied so that the resulting bank configuration will be irregular and as natural as possible. The bankline will not be raised or straightened. Rock will be placed on the lower bankline, down to within two feet of the Ordinary Low Water (OLW) mark and will average seven inches in diameter. A layer of gravel, one to four inches in diameter and six inches deep, will be placed on the upper section of the bankline above the Ordinary High Water (OHW) mark, gravel maybe mixed with native river gravel and rock obtained from wash

fans[1]. Table 1 presents the amount of materials estimated to be used to complete all construction activities.

Table 1 - Materials Associated with the Proposed Action

Material	Size	Estimated Quantity	Coverage
Rock	4 to 10 in.	27, 128 cu. yds.	3.4 acres
Gravel access roads	1 in.	5,224 cu. yds.	6.4 acres
Gravel/Cobble	1 to 4 in.	5,340 cu. yds.	5.4 acres
Pole Plantings		500-800 poles	-
Mesquite/Palo verde		25-50 trees	-
			16.2 acres

Pole plantings will be obtained from nurseries located on the HNWR, and or comparable sources, and placed to mimic the natural progression and growth of species up the bankline. Pole cuttings of native trees (Coyote willow, Goddings willow, and Fremont cottonwood), will be planted in the gravel zone. Since similar vegetation currently occurs along much of the bankline, it is anticipated that with time, the entire upper bankline is expected to be covered with vegetation. Figure 2 represents a conceptual cross section of the Proposed Action.

A small area, less than 1/10 of an acre, on the upstream edge of the project area has some established growth of bulrush (see Plate 1 and 1a in Appendix A). This established vegetation appears to be functioning to minimize erosion by attenuating the boat wake action; therefore, this small section will not be sloped nor will rock or gravel be placed in the location. Reclamation will monitor this section to ensure the vegetation is sufficient to prevent future erosion from occurring behind the vegetated strip. If the established bulrush is not sufficient to prevent further erosion, Reclamation will evaluate and apply suitable bioengineering techniques (vegetated approaches) for application in this small section. This will provide valuable information for the viability of bioengineering applications for similar sites on the LCR.

2.1.2 Construction Staging and Support

Trucks will use the Arizona levee road to reach the project area and the two existing jetties (as shown on Figure 3) to gain access to the project area and the bankline area. Reclamation will grade and construct a permanent access road, approximately 24 feet wide, paralleling the bankline to provide access to the bankline for contouring and placing materials, and to support future maintenance and monitoring. Reclamation will clear vegetation parallel along the existing contour of the bankline and will lay down a gravel base six inches in depth.

Photo 2 - Existing Jetty Access Road.

[1] Removal of wash fan material from the river is a separate project previously planned and permitted (Reference # 2005-02070-MB) to correct navigation problems caused by past storm events effecting washes upstream (Piute Wash at RM 251.7) and downstream (Vidal Wash at RM 166.0) of the project area.

In addition, three to four access roads will be constructed to tie-in from the levee road and the new bankline access road. These roads will be strategically placed between the existing jetties to support the flow of equipment and truck traffic and eliminate the need to construct turn-a-rounds along the bankline road. The access roads will be left in place for use by refuge personnel and as firebreaks. The roads will be blocked using a secured cabling system similar to those already in place on exiting jetty roads.

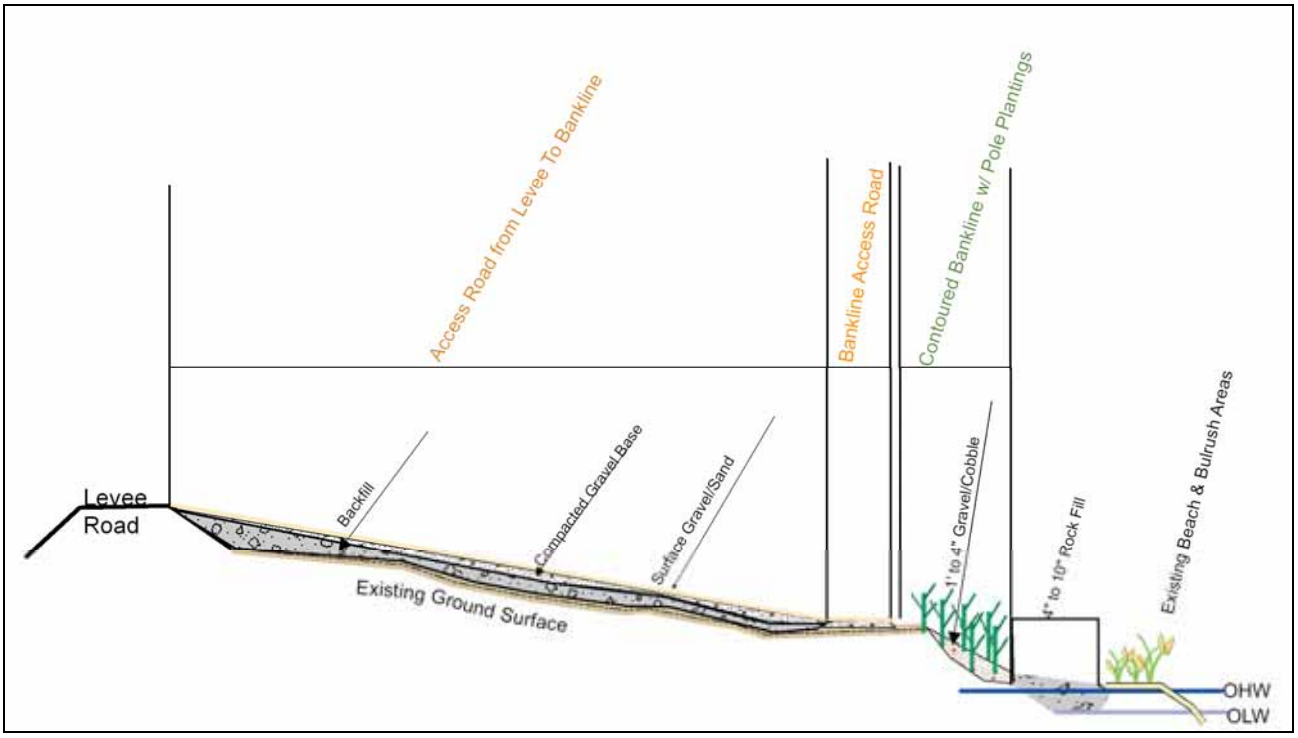

Figure 2 - Conceptual Cross Section of the Proposed Action.

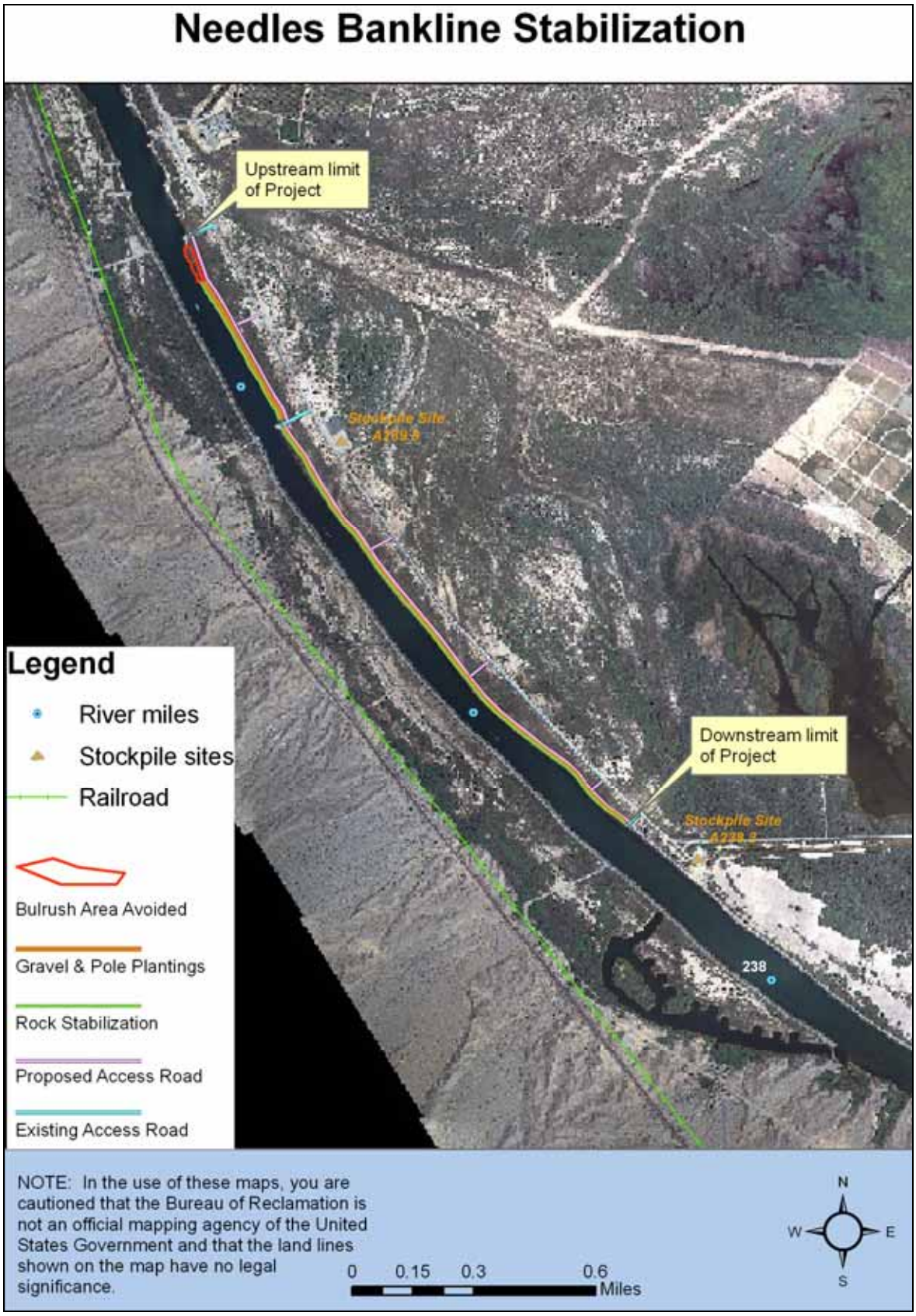

Figure 3 - General Overview and Layout of the Proposed Action.

Equipment used during site preparation and construction will include two each 20 cubic yard belly dump trucks and 14 cubic yard dump trucks, one excavator, two motor graders, two D7 crawlers, two loaders, and two 4,000-gallon water trucks. In addition, Reclamation will use the water trucks for dust suppression on the levee and access roads. Water will be applied up to 20-times per day, depending on site and weather conditions. The work week will consist of 10-hour work days, 5 days per week.

Processing the rock and gravel materials will start as early as April, with upland work (access roads stockpiling, etc...) beginning in late May and concluding in late July. Contouring below the OHW will occur from November to January, as river levels are typically lower during the fall and winter months. Pole planting will take place semi-concurrent (one week lag time) with upper bankline contouring and gravel placement. It is anticipated that the proposed planting schedule will result in a higher success rate as the timing coincides with ideal planting and growing seasons. Plantings are expected to begin budding in late February to early March.

During construction, Reclamation will use existing quarry sources located in California and or Arizona. There are two existing stockpile sites located adjacent to the project area (See Figure 3), one near the upstream portion of the project and a smaller one at the downstream end. Rock crushing to produce the gravel material will occur at the upstream stock pile. The upstream stockpile site will be temporarily expanded, on the northern end, by 300 sq ft to accommodate the placement of processing equipment. A gravel pad will be placed in the expanded area and removed at the end of the project. The expansion area will be reclaimed by planting native upland trees (Mesquite or Palo Verde). Reclamation will obtain suitable equipment and any applicable air quality permits will be obtained prior to beginning the rock crushing operations.

Only light maintenance, such as fueling will be performed at the stockpile sites and will be conducted in accordance with Best Management Practices (BMPs) as defined in an approved Storm Water Pollution Prevention Plan (SWPPP). In addition, only necessary amounts of petroleum, oil, or lubricants (POLs) will be located at the equipment site and will be stored and managed in a manner to prevent spills or leaks from occurring.

2.2 Bankline Stabilization, Jetties, and Habitat Restoration (Alternative B)

This alternative proposed bankline protection in conjunction with a habitat restoration element as a demonstration project associated with the Multi Species Conservation Program (MSCP). The primary objectives were: (1) bank stabilization of the existing Arizona bankline with riprap; (2) re-contouring behind the bankline to establish MSCP restoration areas that would be inundated more frequently; and (3) renovating two existing jetties, constructing five straight jetties and three L-jetties that reestablish the desired sediment transport characteristics in the river and prevent floods from causing the river to shift into the MSCP restoration areas. A new built up bankline road would link the jetties and provide access and protection to the restoration areas. The construction staging and phases would be similar to that described under the Proposed Action; however, the amount of material used and timeframe would be greatly increased as significantly more earthmoving would be required and more rock material would be used.

2.3 No Action Alternative

Under the No Action Alternative, Reclamation would not stabilize the Arizona bankline on this stretch of the river. The No Action Alternative would result in continued erosion and may pose a threat to the integrity of the Arizona levee. The eroding bankline would continue to contribute to sedimentation deposition in Topock Gorge and Lake Havasu.

2.4 Alternatives Considered but Eliminated from Further Detailed Analysis

The following discussion describes alternatives that Reclamation considered during the alternatives development process. Armoring techniques applied in a continuous method, intermittent flow deflection, and energy reduction methods were considered in the course of the alternatives analysis (see Appendix B). Reclamation eliminated these alternatives because they did not meet the screening criteria for the project.

2.4.1 Intermittent Bankline Protection

Flow deflection techniques provide intermittent bankline protection and are based upon the principle that by redirecting higher velocity flows away from the bank, erosion can be reduced or eliminated in the areas between structures. There are multiple configurations available, but for this alternative straight spur jetties and L-shaped jetties were considered but eliminated from further analysis as it was determined that they would not provide adequate protection for erosion caused by from boat wakes.

2.4.1.1 Straight Jetties

The straight jetty design for this alternative presented 10 straight jetties spaced at 1,000 feet. To insure the jetties will function for at least 50 years, they would need to be designed so that wave action does not erode behind the structure of the jetties. Comparison of cross sections at RM 239 indicated that the channel has widened about 60 ft in a 25 year time span. Therefore it was assumed that the jetties should extend into the existing bank about 120 feet. Straight jetties provide minimal protection from boat wave action. Since boat waves have a large lateral component, straight jetties are not effective in dissipating the boat wave energy before impacting the bank.

2.4.1.2 L-Jetties

This alternative presents a hybrid L-jetty design essentially creating thick straight jetties which would reduce the number of jetties, but increase the material required to construct the structure. The primary benefit of performing this type of design is that it could be used to reduce impacts to the shoreline in certain locations.

Jetties in general are intended to protect banks from erosion caused by river flows. Often these flows are being directed towards the bank at issue. This is not the case within the project area. Flows are relatively parallel to the banks and are not extremely erosive even at bank-full flow. In addition, the river alignment has remained relatively stable over the last 25 years. Although the channel has degraded and widened, it has not migrated and there is no evidence to indicate it will even during bank-full flows.

2.4.2 Continuous Bankline Protection

In order to protect the bankline for both boat wave action and bank-full flows, some level of protection will be required from the OLW profile up to the top of the bank. Since the greatest erosion potential is from boat waves, the more resistant bank cover will need to be placed lower on the bankline.

The type and amount of cover required to protect from erosion due to river flow, even at bank-full flow, is relatively minor. A more aggressive means of bank protection is required to prevent further erosion due to boat wave action. Large jet boats are capable of generating about boat waves two feet in height. For elevations that aren't subject to constant boat wave action, a good layer of vegetation would likely prevent erosion due to river flows. This alternative provides a number of proven armoring techniques that provide bankline protection from aggressive erosion processes.

2.4.2.1 Gabions (Rock and Wire Mattress)

Gabions are rock-filled wire baskets that are wired together to form continuous structures. By wrapping rock with fencing, lower quality and smaller size material can be used for bank protection. Gabions would provide some flexibility, but not as great as the larger rock cover. Since relatively small rock is required to stabilize the bank, rock and wire mattress are not cost effective this alternative was eliminated.

2.4.2.2 Articulated Concrete Block

Articulated concrete block (ACB) systems are formed by interlocking pre-cast concrete blocks and placing them on a geotextile fabric. This method of bank protection resists the erosive forces of bank-full flows and wave action with good success. It could be used to an elevation of 2 ft above the OHW mark. However, large vegetative growth is not encouraged within the block because of the damage to the block that it causes and the aesthetics of the concrete block is not a desired result.

2.4.2.3 Timber Crib Walls

Crib walls are constructed by interlocking boxes made from timber. The boxes are filled with crushed rock to create a free-draining structure. A disadvantage of crib walls along streams and rivers is that they deteriorate over time and would likely need to be replaced before other means of bank protection. This project would likely lose some of the advantages of crib walls because rock material would need to be used as backfill immediately behind the logs to prevent the native soil from eroding between the crib logs. In addition, substantial toe protection would still be required.

2.4.2.4 Grouted Rock

Grouted rock consists of rock having voids filled with concrete grout to form a monolithic armor. Grouted rock is rigid and will not conform to changes in the bank geometry due to settlement. Smaller rock can be used and grouted, but would still be nonflexible and subject to structural failure. The grouted rock would only be required to a level of about 2 feet above the OHW then gravel size material could be used above that elevation. This would allow vegetation to be planted on the upper portion of the banks. No vegetation would be attempted in the grouted section. Since the erosion forces are not that great, there is no benefit in grouting rock when rock alone would suffice.

2.4.2.5 Bioengineering

Vegetation can serve as an armoring material and reduce the erosion forces from boat wave action. Nevertheless, the benefits of vegetation are not immediate; therefore, an additional stabilization method needs to be employed until the vegetation becomes well established. This technique is also not a proven technology in the highly erosive soils that are characteristic of the LCR.

2.4.3 Energy Reduction Methods

New technologies have been developed to dissipate wave energy. Energy reduction methods function by reducing the ability of the river to erode bank material. The following energy reduction methods were considered but eliminated from further analysis.

2.4.3.1 Wave Attenuation

Wave attenuators could be used to break the boat wave energy before impacting the bank. These types of devices have been used in harbors, around docks, and to protect shoreline from erosion, but it is not common for river shore protection.

The intent would be to maintain the wave attenuators until the bankline stabilizes with vegetation. The bankline would be sloped back and vegetated to expedite removal of the attenuators. Although smaller rock is still used in the design, the rock is not sized to counter the wave action alone. The intent would be for vegetation and rock to accomplish erosion control in combination. This appears to be a reasonable assumption based on other banklines that have stabilized when vegetation has established in front of the bankline. This solution may not be as effective where there is no shelf in front of the bankline.

Where considerable wave action is present, the rock material typically required to protect the bank may be large enough that the cost for wave attenuation is competitive. For this project the only way the wave attenuators would be cost effective is if very few of the blocks were required. The cost of a block is in the vicinity of $75. Therefore, in order for the wave attenuators to compete, the number of blocks would need to be minimized. The number of blocks and arrangement would potentially need to be adjusted before the optimal configuration is achieved. Temporary placement of wave attenuators during periods of increased boat activity is possible but removal, storage, and repositioning are arduous and potentially cost prohibitive over the long-term. The biggest drawbacks are that they would need to be visible at night and there is a strong likelihood that they would be vandalized and stolen. Because of the experimental nature of the devices, for this application and problems related to the isolation of the site, this concept was eliminated from further evaluation.

2.4.3.2 Velocity Control

Controlling the velocity of boat traffic by means of a “No Wake Zone” could reduce bankline erosion along the project area; however establishing a No Wake Zone is outside of Reclamation’s authority. Establishing a No Wake Zone in this area would likely require the support and agreement of multiple agencies including the U.S. Fish and Wildlife Service (USFWS); U.S. Coast Guard; Riverside County and San Bernardino County, CA; Mohave County, AZ; Arizona Game and Fish Department (AGFD); and the California Department of Fish and Game (CDFG). Further, the agencies ultimately responsible for establishing and

enforcing a No Wake Zone indicated that enforcement would be problematic due to limited personnel and already strained resources available in the area.

2.5 Comparison of Environmental Consequences

Table 2 presents a comparison summary of potential environmental consequences associated with the Proposed Action and alternatives considered, including the No Action alternative. The summaries are based on the analysis presented in Chapter 3.0.

Table 2 – Comparison of Environmental Consequences

Resources	Alternative A (Proposed Action)	Alternative B	No Action
Aesthetics	Minimal impacts to landscape characteristics, rock will be visible until vegetation establishes.	Significant changes to landscape characteristics from habitat restoration and enhanced aesthetic value.	No impacts
Air Resources	Potential for minimal impacts to PM_{10} Non-Attainment Area in CA.	Potential minimal impacts to PM_{10} Non-Attainment Area in CA.	No impacts
Biological Resources	Minimal disturbance to native and non-native vegetation. Temporary displacement of wildlife during construction activities.	Inclusion of the restoration element would create higher habitat values for wildlife in the project area.	No improvement accomplished through placing pole plantings of riparian species along the upper bankline.
Special Status Species	No listed vegetation or wildlife species are likely to occur in the project area; therefore no impact is anticipated	Inclusion of the restoration element would create higher habitat values for listed species that may transient the project area.	Without the pole plantings, native riparian species are not likely to establish and provide resting areas for listed avian species.
Land Use	Temporary impacts to recreation during construction, fishing from rocked bankline may be difficult	Temporary impacts to recreation during construction, bird watching opportunities with the creation of habitat	Loss of HNWR land
Water Resources	Slight potential for groundwater impacts from spills	Potential groundwater impacts from spills, increase in surface water	Increased sediment levels, deposition downstream
Cultural	No impacts	No impacts	No impacts
Indian Trust Assets	No impacts	No impacts	No impacts
Environmental Justice	No impacts	No impacts	No impacts
Soils and Geology	Excavation along the bankline, material will be used in project area	Significant excavation from Habitat Restoration, material will be used in project area	Soil will continue to erode and deposit downstream

3.0 Affected Environment and Potential Consequences

This chapter provides a description of the affected resources determined to be applicable to the Proposed Action and alternatives, including the No Action alternative. The following resource areas are included for discussion. Other resources areas were determined to have little or no potential for impact resulting from the Proposed Action or alternatives and therefore not included for detailed discussion in this chapter.

- *Aesthetics*
- *Biological Resources*
  - *Vegetation*
  - *Wildlife*
- *Land Use*
  - *Adjacent*
  - *Recreation*
- *Cultural Resources*
- *Environmental Justice*
- *Air Quality*
- *Special Status Species*
  - *Federal and State Listed*
  - *MSCP Managed Species*
- *Water Resources*
  - *Groundwater*
  - *Surface Water*
- *Indian Trust Assets*
- *Soils and Geology*

To minimize repetition, the potential consequences, associated with the Proposed Action and alternatives considered, including the No Action Alternative, are included as a subsection under each resource along with any applicable mitigation measures.

3.1 Aesthetics

3.1.1 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.

3.1.1.1 Landscape characteristics

Landscape characteristics in the project vicinity include HNWR, which encompasses Topock Marsh and Topock Gorge. The refuge contains a cottonwood-willow forest and a series of small lakes that comprise Topock Marsh and provide habitat for residential and migratory wildlife. Topock Gorge offers scenic views within the gorge itself, but is not visible from the project area. Sandy shores along this section of the river are accessible by boat, and are used for recreational activities.

3.1.1.2 Visual sensitivity

Groups and individuals interested in wildlife and scenic opportunities frequently visit areas on the HNWR, such as Topock Marsh, and Topock Gorge areas. Tourist boats traverse the river between Laughlin, NV and Lake Havasu City, AZ to take advantage of the scenic vistas within Topock Gorge

3.1.2 Potential Consequences

3.1.2.1 Proposed Action

Landscape characteristics will be minimally altered from implementation of this alternative. Larger rock may be visible up to 2 ft above the OHW until vegetation is established that will obscure the rock from view. While tour boats frequently do traverse the river along the project bankline, they are generally traveling at rapid speeds near the project area prior to entering or after exiting Topock Gorge. While Topock Marsh is adjacent to the project area natural and existing manmade features obscure visual access to the Marsh, nor is the project visible from the Marsh. There may be short-term adverse effects to the aesthetic qualities of the project area during construction activities; however, implementation of the Proposed Action is not expected to adversely impact areas of aesthetic and visual sensitivity over the long-term.

The resulting bankline configuration will also be irregular and as natural as possible under the Proposed Action. Further, the pole plantings are anticipated to have a beneficial impact on the aesthetics' of the project area. Once the native trees are established and begin to mature, the visual quality will improve from both the river aspect and from the levee view.

3.1.2.2 Bankline Stabilization, Jetties, and Habitat Restoration

This alternative may have a minor adverse impact to the aesthetic and visual sensitivity of the project area, especially in the short term from the river aspect. However, once vegetation established along the built up bankline road and the habitat restoration portion of the alternative matures, the aesthetics' of the site would be enhanced from present conditions.

3.1.2.3 No Action

Baseline aesthetics resources would remain the same under this alternative. There is likely to be no improvement in the aesthetic or visual quality, as the site is currently dominated by non-native trees (Salt Cedar) and native vegetation is not likely to successfully establish with out the proposed pole plantings.

3.1.3 Mitigation Measures

While the pole plantings of native trees are not regulatory mitigation, they are considered an enhancement to the Proposed Action that will benefit the aesthetic quality of the site. Therefore, Reclamation will monitor the growth and success of the plantings up to 3-years after construction is completed.

3.2 Air Quality

3.2.1 Affected Environment

The project area is located in Mohave County, AZ which is currently classified as attainment for all National Ambient Air Quality Standards (NAAQS) criteria pollutants. The California side of the project area in San Bernardino County has been designated as a Non-Attainment Area for particulate matter less than 10 microns in diameter (PM_{10}).

3.2.2 Potential Consequences

3.2.2.1 Proposed Action

Potential emissions could occur from heavy equipment movement and vehicle exhaust, rock quarrying and crushing activities. The PM_{10} Non-Attainment Area could potentially be impacted should the emissions migrate across the river to California. Exhaust pollutants are quickly dispersed; therefore impacts to the area will be short-term and minimal. Conversely, placing rock and gravel over the existing loose sandy soil will help to reduce the amount of dust generated on windier days. No new permanent emission sources will be established as a result of the Proposed Action.

While, operation of equipment during construction activities may be result in short-term adverse effects to air quality, implementation of the Proposed Action is not expected to adversely impact the long-term overall quality local or regional air resources.

3.2.2.2 Bankline Stabilization, Jetties, and Habitat Restoration

Potential emissions could occur from heavy equipment movement and vehicle exhaust, rock quarrying and crushing activities. The PM_{10} Non-Attainment Area could potentially be impacted should the emissions migrate across the river to California. Exhaust pollutants are quickly dispersed; therefore impacts to the area will be minimal. Similar to the Proposed Action, covering and replacing the existing sandy bankline, would result in less airborne on windier days. No new permanent emission sources will be established as a result of this alternative.

3.2.2.3 No Action

Existing condition would continue and there would be no change to the air quality in the project area.

3.2.3 Mitigation Measures

During construction water will be applied to roads and top soil to minimize fugitive dust emissions.

3.3 Biological Resources

3.3.1 Affected Environment

The project area lies within Colorado River flood plain in the Mohave Valley. The Colorado River corridor provides important habitat for migratory birds, both upland species and waterfowl, as well as habitat for resident species. Woody riparian vegetation and wetlands provide habitat for a variety of raptors, passerines, and shorebirds. Vegetation in the project area is sparse and there are no jurisdictional wetlands.

Photo 3 - Typical vegetation between Levee road and bankline area.

3.3.1.1 Vegetation

Vegetation in the project area is predominately Salt Cedar and Arrowweed (Figure 4). Along the upper

bankline there are small inclusions of Coyote willow. The lower bankline is mostly sandy beach areas that are inundated periodical in conjunction with the release of water upstream at Davis Dam. There are also fragmented clumps of bulrush found along the sandy beach area; that range in size from less than one square foot up to 8 square feet. The patches are not contiguous and are typically separated by several hundred feet of sandy beach. There is one area on the upstream end of the project where a slightly large patch (approximately 1/10 of an acre) of bulrush has established. These characteristics are visible in the site photos and aerial images included in Appendix A.

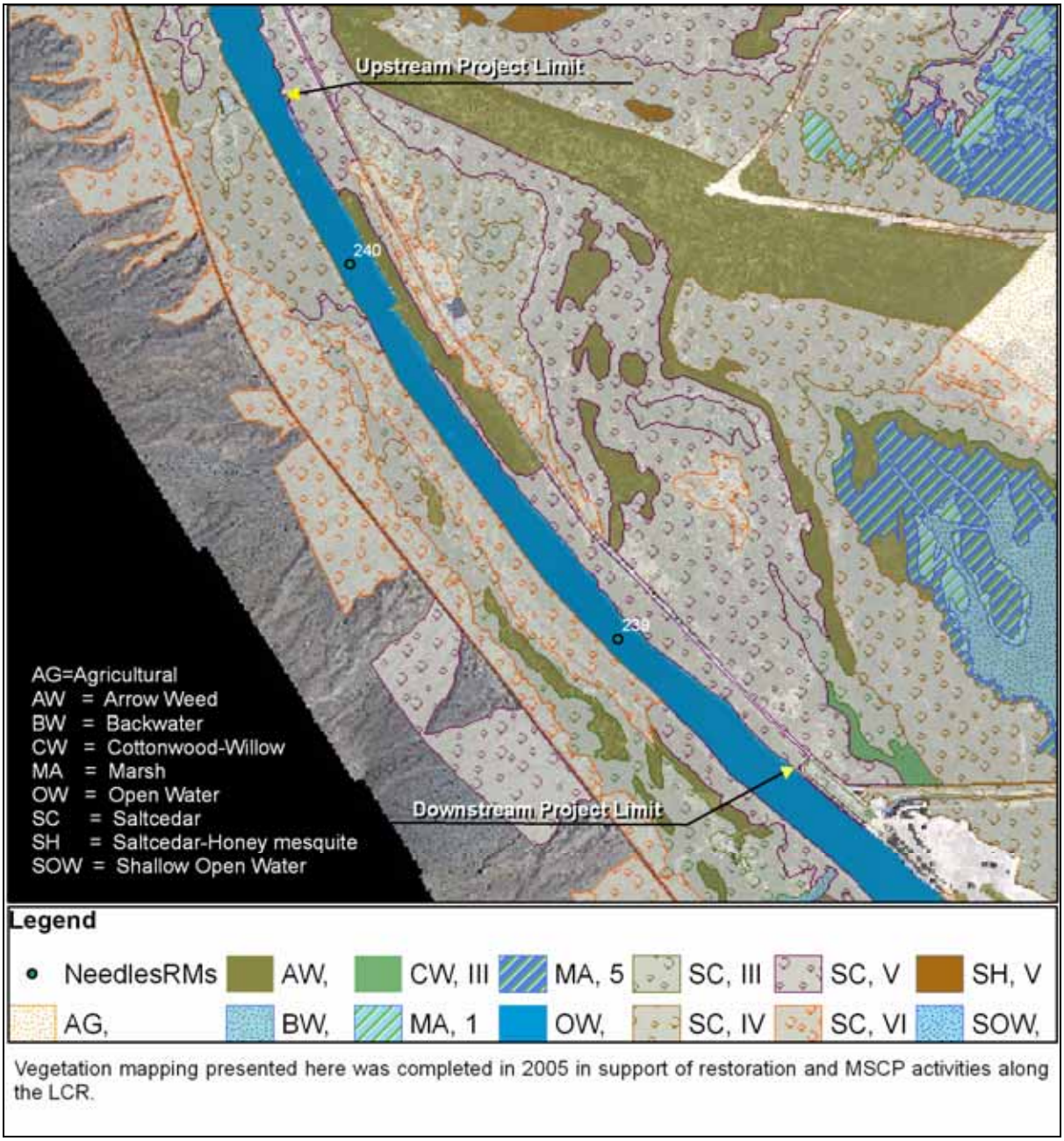

Figure 4 - Vegetation in the Project Area.

3.3.1.2 Wildlife

Common birds found in the project vicinity include egrets, herons, flycatchers, and woodpeckers. A variety of both native and non-native fish inhabit the reach of river where the proposed project is located. Game fish species such as largemouth bass, smallmouth bass, bluegill, and catfish are common along this stretch of river.

Upland areas of the proposed project site contain habitat elements for various terrestrial wildlife including mammals and reptiles. Common species of small mammals which are likely to occur in or adjacent to the project area are pocket mice, cottontail rabbit, and packrat. Large mammals like coyote and feral swine are resident to the area as well and may pass through the project area on occasion. Reptiles that would inhabit the area include whiptails, rattlesnakes, and kingsnakes.

The woody riparian vegetation and wetlands found adjacent to the project area in Topock Marsh provide habitat for a variety of raptors, passerines, and shorebirds that include sharp-shinned hawks (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus johannis*), common black hawk (*Buteogallus anthracinus*), Harris's hawk (*Parabuteo unicinctus*), bald eagle (*Haliaeetus luecocephalus*), golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), American kestrel (*Falco sparverius*), peregrine falcon (*Falco peregrinus*), and egrets, herons, flycatchers, and woodpeckers.

3.3.2 Potential Consequences

3.3.2.1 Proposed Action

Fish habitat is likely to improve where rock material is placed below the OHW. Some fragments of Bulrush may be disturbed during contouring of the lower bankline and placement of rock material. Likewise, vegetation on the upland area above the bankline will be cleared during construction of the access roads and contouring of the upper bankline area. Both native and non-native species would be temporarily displaced during construction activities. However, as similar habitat is abundant in the area, and wildlife is likely to return to the project at the conclusion of construction, significant loss of species diversity is not expected to occur as a result of the Proposed Action.

3.3.2.2 Bankline Stabilization, Jetties, and Habitat Restoration

This alternative would have impacts similar to the Proposed Action, but would temporarily disturb a larger area of vegetation and larger number of wildlife. Areas of established bulrush are likely to be lost during construction of the built up bankline road. However, the restoration element of this alternative would create improved habitat for a wide variety of terrestrial and avian species.

3.3.2.3 No Action

Bankline erosion will persist, resulting in a loss of vegetation and wildlife habitat. Existing bulrush areas could be impacted by continuous wave action.

3.3.3 Mitigation Measures

Approximately 1/10 of an acre of established Bulrush on the upstream end of the project area will be avoided and monitored for up to 2-years to evaluate if the vegetation is providing

sufficient stabilization to prevent further erosion. Reclamation will make every effort to avoid disturbing the larger fragments of bulrush that have established along the shoreline. While the pole plantings of native trees are not regulatory mitigation, they are considered an enhancement to the Proposed Action that will benefit the aesthetic quality of the site. Therefore, Reclamation will monitor the growth and success of the plantings up to 3-years after construction is completed.

3.4 Special Status Species

3.4.1 Affected Environment

3.4.1.1 Federal and State Listed

Based on consultation and coordination with the USFWS and the AGFD, the species included in Table 3 represent species that are classified as Threatened or Endangered by the USFWS and or Wildlife of Special Concern by the AGFD that have potential to occur in or transit the project area.

Table 3 - Special Status Species

Species	Status
Razorback sucker (*Xyrauchen texanus*)	Federal: Endangered, with critical habitat State: AZ - Wildlife of Special Concern
Bonytail chub (*Gila elegans*)	Federal: Endangered, no critical habitat in project area State: AZ - Wildlife of Special Concern
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Federal: Endangered State: AZ - Wildlife of Special Concern
Yuma clapper rail (*Rallus longirostris yumanensis*)	Federal: Endangered State: AZ - Wildlife of Special Concern
Brown pelican (*Pelecanus occidentalis*)	Federal: Endangered State: AZ - None
Bald eagle (*Haliaeetus leucocephalus*)	Federal: Threatened State: AZ - Wildlife of Special Concern
Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)	Federal: Candidate State: AZ - Wildlife of Special Concern
American Peregrine falcon (*Falco perigrinus anatum*)	Federal: Species of Concern State: AZ - Wildlife of Special Concern
Clark's grebe (*Aechmophorus clarkii*)	Federal: None State: AZ - Wildlife of Special Concern
Sonoran Desert Tortoise (*Gopherus agassizii*)	Federal: Threatened (Mohave population) State: AZ – Wildlife of Special Concern (Sonoran Population)
California leaf-nosed bat (*Macrotus californicus*)	Federal: Species of Concern State: AZ - Wildlife of Special Concern
Flannelmouth sucker (*Catostomus latipinnis*)	Federal: Species of Concern State: AZ – None
Cave myotis (*Myotis velifer*)	Federal: Species of Concern State: AZ – None

Sources: (1) Arizona Game and Fish Department correspondence (December 28, 2005) (2) U.S. Fish and Wildlife Service (http://endangered.fws.gov/wildlife.html#Species).

3.4.1.2 Multi Species Conservation Program

The USFWS issued a biological and conference opinion (BCO) for the Lower Colorado River Multi Species Conservation Program (MSCP) in March of 2005. The BCO addressed the effects of incidental take for 27 species (USFWS 2005). MSCP covered species which may inhabit or transit the project area include Arizona Bell's vireo (*Vireo bellii arizonae*), Colorado River cotton rat (*Sigmodon arizonae plenus*), elf owl (*Micrathene whitneyi*), Gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes chysoides*), Sonoran yellow warbler (*Dendroica petechia sonorana*), summer tanager (*Piranga rubra*), and vermillion flycatcher (*Pyrocephalus rubinus*) (LCR-MSCP 2004a, b, c).

3.4.2 Potential Consequences

3.4.2.1 Proposed Action

Construction activities will temporarily disturb habitat that maybe transited by the special status species listed above; however, the disturbance would be short-term and is not likely to jeopardize the continued existence or cause a decline in population of a Federal or state listed species. The proposed enhancement feature of planting native trees (pole planting) will increase resting habitat commonly used by some of the avian species listed above.

3.4.2.2 Bankline Stabilization, Jetties, and Habitat Restoration

Impacts of this alternative would be similar to those of the Proposed Action; however, disturbance would be longer and over a slightly larger area. While the area disturbed would be larger and includes more intensive construction activities, the restoration element of this alternative would create habitat characteristics preferred by several of the listed species listed above and would likely result in an increase of occurrence of these species in the project area.

3.4.2.3 No Action

The No Action alternative would result in continued erosion of bankline and could cause sedimentation to adversely effect fish habitat along the project shoreline and in downstream areas. Further, there would be no enhancement or improvement in riparian vegetation that could attract both terrestrial and avian species.

3.4.3 Mitigation Measures

The USFWS BCO addressed impacts of the Needles Bankline Stabilization project as a covered Federal action under the MSCP and includes incidental take statements for species likely to occur in the project area. In accordance with the MSCP-BCO, Avoidance and Minimization Measures (AMM) 1, 3, and 6 will eliminate or minimize potential impact to species managed under the MSCP (USFWS 2005).

<u>AMM 1</u>: To the extent practicable, avoid and minimize impacts of implementing the LCR MSCP (Conservation Plan) on existing covered species habitats.
<u>AMM 3</u>: To the extent practicable, avoid and minimize disturbance of covered bird species during the breeding season.
<u>AMM 6</u>: Avoid or minimize impacts on covered species habitats during dredging, bank stabilization activities, and other river-management actions.

Work performed below the OHW will be conducted during the low water season (November to January). This will avoid or minimize adverse effect to listed fish species. This schedule will further result in less disruption of recreational use of the beach areas as use during this time period is limited. While the pole plantings of native trees are not regulatory mitigation, they are considered an enhancement to the Proposed Action that will benefit the aesthetic quality of the site. Therefore, Reclamation will monitor the growth and success of the plantings up to 3-years after construction is completed.

3.5 Land Use

3.5.1 Affected Environment

3.5.1.1 Adjacent Areas

Land uses along this section of the LCR are under the jurisdiction of several agencies including San Bernardino County, CA; Mohave County, Arizona; and HNWR managed by the USFWS. The nearest incorporated city is Needles, CA to the north of the project area. The Fort Mohave Indian Reservation is approximately 1.5 miles north of the project area.

3.5.1.2 Recreation

The project area is located on public land managed by the USFWS for wildlife and recreational uses. Likewise the project area is primarily bounded by other public lands managed for similar uses. Typical land based uses in the project area include hiking, picnicking, camping, hunting, and shoreline fishing, while water based activities are focused on recreational boating and fishing. Sightseeing tour boats also traverse the project area while traveling between Laughlin, NV and Lake Havasu City, AZ.

3.5.2 Potential Consequences

3.5.2.1 Proposed Action

Construction would temporarily preclude fishing and other recreational activities along the shoreline. However, abundant recreational areas are available to the public for use during construction activities. Direct access to the bankline for fishing may be impacted due to placement of rocks; which can be harder to navigate than the sandy bankline. Under the Proposed action, the existing beach areas will not be covered by rock or gravel materials and may still be used by boaters as rest or picnicking areas, especially during lower flows.

3.5.2.2 Bankline Stabilization, Jetties, and Habitat Restoration

Construction would temporarily preclude fishing and other recreational activities in the project area. The large size and quality of rock along the bankline would inhibit bankline fishing. Under this alternative the existing beach areas would be lost, eliminating recreational uses for boaters.

3.5.2.3 No Action

Bankline erosion will persist, resulting in the loss of HNWR land. Recreational activities downstream could possibly be impacted by sediment deposition from continued erosion.

3.5.3 Mitigation Measures

No significant impacts to river and/or land use are anticipated, mitigation measures are not required.

3.6 Water Resources

3.6.1 Affected Environment

The river and the underlying and adjacent river aquifer form a hydraulically connected system. River water extends from the flood plain for a considerable distance beneath the alluvial slopes (Wilson 1994).

3.6.1.1 Groundwater

Groundwater in the Colorado River alluvium occurs under water-table conditions. Sources of recharge to the groundwater reservoir are the Colorado River, unused irrigation water, runoff from precipitation, and underflow from bordering areas. Groundwater is discharged from the aquifer by wells and evapotranspiration. Depth to groundwater ranges from 5 to 12 feet. A nearby well belonging to the Havasu National Wildlife Refuge has a depth to water of approximately 7 ft with 1800 gpm discharge (Metzger 1973).

3.6.1.2 Surface Water

Topock Marsh is located adjacent to the project area and the water flow into the marsh and lake areas is controlled via inlet and outlet structures. Annual mean stream flow of the Colorado River near Topock, AZ is approximately 12,000 cfs.

3.6.1.3 Water Quality

A plume of the chemical chromium-6 in groundwater near Needles, CA thought to be related to Pacific Gas and Electric (PG & E) operations in the area has been observed moving toward the Colorado River. However, the project site is located further upstream from the PG & E site and no direct or indirect effects from the chromium-6 are known to occur in the vicinity of the bankline stabilization project.

3.6.2 Potential Consequences

3.6.2.1 Proposed Action

The Proposed Action would not affect normal river operations or availability of water. Water turbidity could increase slightly from during the contouring and stabilizing of the upland and lower bankline but the effects would quickly disperse in the rapid current adjacent to the project area and would be temporary and short-term. The channel width will be stabilized to be consistent with upstream and downstream channel widths. There is slight potential for impacts to groundwater in quarry, staging and stockpile areas from releases of POL products and fuels.

3.6.2.2 Bankline Stabilization, Jetties, and Habitat Restoration

This alternative would not affect normal river operations or availability of water. During construction this alternative may increase turbidity of the water but affects would be temporary and short-term. There is slight potential for impacts to groundwater in quarry, staging, and stockpile areas from releases of POL products and fuels.

3.6.2.3 No Action

Potential impacts to water from the No Action Alternative would occur from continued erosion of the bankline. Erosion will contribute to sediment levels, potential impacts due to sediment deposition may occur downstream of the project area. In extreme cases of sediment deposition, flooding can occur to upstream areas, as water becomes backed up and spreads out behind sediment build up.

3.6.3 Mitigation Measures

Reclamation applied for a Section 404, Dredge and Fill, and a Section 401, Water Quality Certification, permits under the CWA. The Corps of Engineers has issued authorization under Nationwide Permit #13 (see Appendix D). Prior to construction Reclamation will prepare and have a SWPPP on site to prevent and/or minimize spill or storm event impacts in the project vicinity.

3.7 Cultural Resources

3.7.1 Affected Environment

A Phase I cultural resource survey of approximately 75 acres was conducted in May 2004. One prehistoric ceramic shard was discovered and documented as an isolated find. No cultural resources that qualify as sites were discovered during the survey (Finney 2004). Reclamation has requested and received a finding of No Historic Properties Affected from the Arizona State Historic Preservation Office (SHPO) (See Appendix C).

3.7.2 Potential Consequences

No impacts to cultural resources will occur through implementation of the Proposed Action, the Bankline Stabilization, Jetties, and Habitat Restoration Alternative or the No Action Alternative.

3.7.3 Mitigation Measures

In the event of a discovery of cultural resources at the project location, all work shall cease and the site supervisor shall contact Reclamation. Reclamation in conjunction with the Arizona SHPO will establish measures to avoid or mitigate any impacts.

3.8 Indian Trust Assets

3.8.1 Affected Environment

Indian trust assets are "…legal interests in assets held in trust by the Federal government for federally recognized Indian tribes…" There are no Indian Trust Assets located in the project area.

3.8.2 Potential Consequences

Since there are no Indian Trust Assets located in the project area, none will be affected by the Proposed Action, the Bankline Stabilization, Jetties, and Habitat Restoration Alternative, or the No Action Alternative.

3.8.3 Mitigation Measures

No mitigation measures are required or proposed for this resource area.

3.9 Environmental Justice

Executive Order 12898 requires that proposed Federal actions address environmental justice on minority and low-income populations by identifying disproportionately high and adverse human health and environmental impacts.

3.9.1 Affected Environment

A majority of the population in the project vicinity is White Non-Hispanic (U.S. Census Bureau 2006a). Census data states the Fort Mohave Indian Reservation population is 773 (U.S. Census Bureau 2006b).

3.9.2 Potential Consequences

Implementation of the Proposed Action, Bankline Stabilization, Jetties, and Habitat Restoration Alternative, or the No Action Alternative would not create disproportionate impacts to minority and low-income populations in the communities of Needles, CA or the Fort Mohave Indian Reservation.

3.9.3 Mitigation Measures

No mitigation measures are required or proposed for this resource area.

3.10 Soils and Geology

3.10.1 Affected Environment

The project area is in the Sonoran Desert section of the Basin and Range physiographic province and is located within the flood plain of the Colorado River. The Colorado River flood plain in Mohave Valley has a maximum width of 5 miles. A younger alluvium of unconsolidated gravel, sand, silt, and clay characterize the area (Metzger 1973). Gravel yields copious supplies and sand yields moderate supplies of water to wells.

3.10.2 Potential Consequences

3.10.2.1 Proposed Action

The Proposed Action will excavate a portion of the bankline and lay in the rock in accordance with the design (see Appendix B). The bank will be sloped and follow the natural configuration of the existing shoreline. The excavated material will remain on site and be used to contour the sloped bankline. The Proposed Action would prevent further loss of soil and maintain the existing geological delineation.

3.10.2.2 Bankline Stabilization, Jetties, and Habitat Restoration

This alternative would require significant excavation efforts to create the habitat restoration portion. However, the excavated material will remain on site and be contoured for use in creating new landforms for the habitat restoration element.

3.10.2.3 No Action

If no action is taken soil will continue to erode and contribute to the sediment load and deposition downstream.

3.10.3 Mitigation Measures

Prior to construction Reclamation will prepare and have a SWPPP on site to prevent and/or minimize spill or storm event impacts in the project vicinity.

4.0 Cumulative Impacts

The CEQ guidance for implementing procedural provisions of NEPA (40 CFR Part 1500-1508) define "cumulative impact" as 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" (§1508.7).

The guidance stipulates that an EA should address cumulative impacts when they are significant. The discussion of cumulative impacts should reflect the severity of the impacts and their likelihood of occurrence, but it need not provide the same level of detail as the discussion of the environmental effects attributable to the project alone. Cumulative impacts should be addressed using standards of practicality and reasonableness.

The HNWR has prepared a *Lower Colorado River Refuges Master Plan* and a *Water Management Plan* for the HNWR. No uncontrolled activities such as mining, rock/artifact collecting, and off-road vehicle use are allowed on the HNWR. These factors, combined with the generally non-intrusive nature of recreational use, have resulted in a more controlled environment. In many respects, the overall impact of the USFWS use of HNWR has been, and will continue to be, positive since its use as a recreational area has protected resources against development.

Section 4.1 lists relevant projects while Section 4.2 discusses any cumulative environmental effects associated with the Proposed Action and the projects discussed in Section 4.1.

4.1 Ongoing and Reasonably Foreseeable Actions

Coordination with the FWS, Reclamation, and HNWR staff assisted in identifying past, present, and reasonably foreseeable actions on HNWR or the LCR. HNWR or LCR projects that could directly or indirectly interact with the Proposed Action are listed below and define the cumulative impacts area of the Proposed Action.

- PG&E Chromium-6 Investigation
- Reclamation Parker-Davis Project
- HNWR No name Lake
- HNWR North Refuge Revegetation
- HNWR Beal Lake
- HNWR Sacramento Wash Athel Forest Rehabilitation
- San Bernardino County Bankline Stabilization

These actions, which are all on HNWR or the LCR, are neither dependent on the Proposed Action addressed in this EA nor are they part of the proposed action. Other projects on the HNWR or the LCR that do not have the potential to interact cumulatively with the Proposed Action are not addressed in this EA. Where applicable, environmental analyses of the other

actions addressed in this section have been, or would be, conducted separately, with the results of those analyses incorporated into documents prepared specifically for those actions.

4.2 Environmental Analysis of Cumulative Effects

NEPA requires only a discussion of those cumulative impacts with the potential for significance. Implementation of these projects would not conflict with implementation of the Proposed Action in terms of construction and operation. Potential impacts associated with these projects would be, or have been, addressed on a project-specific basis via the preparation of NEPA documentation. These effects would not contribute to significant cumulative impacts associated with other planned projects in the vicinity of the Proposed Action.

5.0 Other NEPA Considerations

5.1 Irreversible or Irretrievable Commitment of Resources

NEPA requires an analysis of significant irreversible effects. Resources that are irreversibly or irretrievably committed to a Proposed Action are those that are utilized on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, and other natural or cultural resources. These resources are considered irretrievable in that they would be used for a Proposed Action when they could have been conserved or used for other purposes. Another impact that falls under the category of irreversible and irretrievable commitment of resources is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The construction of the Proposed Action would result in an irretrievable commitment rock and gravel and fuel for construction vehicles and equipment. In addition, the Proposed Action would commit workforce time for construction, engineering, environmental review, and compliance.

5.2 The Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

CEQ requires that the relationship between short-term uses of the environment and the impact that such uses may have on the maintenance and enhancement of the long-term productivity of the environment be included in the NEPA analysis. Of particular concern are impacts that would narrow the range of beneficial uses of the environment. This refers to the possibility that choosing one development option would reduce future flexibility in pursuing other options or that committing a parcel of land or other resource to a certain use would eliminate the possibility of other uses being performed at that site.

The Proposed Action would be constructed and operated on the HNWR. The HNWR is a federally designated recreational area within the State of Arizona along the Arizona/California border on the LCR. The short-term effects of the construction and operation of the Proposed Action would include impacts to plants and animals. These impacts would not affect the long-term productivity of these resources at a regional level.

5.3 Possible Conflicts with Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

There are several local land use plans, policies, and controls that address and guide land use for and in the vicinity of the project location, the HNWR as a whole, and surrounding areas. These documents include the *Lower Colorado River National Wildlife Refuges Comprehensive Management Plan 1994-2014* (UFSWS 1994*), San Bernardino County General Plan* (County of

San Bernardino 2002), Mohave County General Plan (County of Mohave, AZ 2000), and the *City of Needles General Plan* (City of Needles 1986).

No potential conflicts are anticipated between the Proposed Action and any of the HNWR land use plans, policies, and controls that address and guide uses within the Proposed Action area. Since the site will continue to remain under federal ownership, it is not subject to the City of Needles nor the counties of San Bernardino or Mohave plans mentioned above. No land uses off HNWR would be affected by implementation of the Proposed Action.

6.0 Coordination and Consultation

As part of the NEPA process, Reclamation, coordinated and consulted with government agencies to ensure that all applicable laws, rules, regulations, and policies have been identified and the Proposed Action has been duly considered in light of these considerations. This EA has been prepared pursuant to applicable laws and regulations. The sections below provide summary information regarding some permits and regulations specific to the proposed project.

6.1 Clean Water Act

The Colorado River is classified as a water of the U.S and therefore any projects involving dredge and or fill activities are subject to review and or permitting under section 404 and 401 of the Clean Water Act (CWA). Reclamation has coordinated with the U.S. Army Corp of Engineers and the Arizona Department of Environmental Quality (ADEQ) regarding permitting requirements and the project is authorized under Nation Wide Permit # 13, Bankline Stabilization. All work below the Ordinary High Water (OHW) mark will be in accordance with permit requirements (Appendix D).

6.2 Clean Air Act

The Clean Air Act and Amendments (42 U.S.C. 7401) includes provisions that require Reclamation to comply with applicable standards and requirements. States are responsible for prevention of pollution and were required to submit State Implementation Plans (SIP) to the Environmental Protection Agency (EPA). Arizona has an approved SIP and the regulatory body in Arizona with authority to issue air permits and enforce requirements of the CAA and Arizona's SIP is ADEQ. Therefore, Reclamation will coordinate with ADEQ regarding any permitting requirements associated with the Proposed Action related to material processing and equipment operation. No activities will be implemented without the appropriate permits or authorizations from ADEQ.

6.3 Endangered Species Act

Consultation with the U.S. Fish and Wildlife Service is required under section 7 of the Endangered Species Act (ESA) of 1973 (P.L. 93-205) if the Proposed Action would occur at locations known to be inhabited by threatened or endangered plant and animal species. Consultation for this project is included in the MSCP, as the project is an action covered under that program. During the stakeholder meeting, the USFWS Ecological Services Branch indicated their concurrence that this project was a covered action under the Biological and Conference Opinion on the LCR-MSCP, AZ, CA, and NV, dated March 4, 2005 and a letter documenting this concurrence (02-21-04-F-0161) was received March 9, 2006 (Appendix C).

6.4 Fish and Wildlife Coordination Act

Section 1 and 2 of the Fish and Wildlife Coordination Act (FWCA) of 1958 (P.L. 85-624), mandates that fish and wildlife receive equal consideration with water resources development

programs. Reclamation is required to consult and coordinate with the USFWS and state fish and game agencies whenever it proposes a project that may alter or modify a stream, river or other water body (Reclamation NEPA Handbook). In accordance with this mandate, Reclamation corresponded with applicable fish and wildlife agencies to inform them of the proposed project and to identify potential issues and concerns related to wildlife conservation (See Appendix C). To further elicit input from resources agencies, Reclamation held a stakeholders meeting in March of 2005. Based on feedback provided during this meeting, Reclamation refined the project design and a follow-up meeting was held in December of 2005.

6.5 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (P.L. 89-665), as amended (P.L. 95-515) requires federal agencies to consider the preservation of historic and prehistoric resources. Under the NHPA, the Secretary of the Interior is authorized to expand and maintain an National Registry of Historic Places (NRHP). Section 106 of the NHPA mandates that all federal agencies take into account the effects of their undertakings (actions) on historic/prehistoric resources and to afford the Advisory Council on Historic Preservation a reasonable opportunity to review and comment on any action that may affect properties that are listed, or are eligible for listing, in the NRHP. Under Section 101 of the NHPA, a State Historic Preservation Officer was established in each state and designated the responsibility of reviewing and commenting on any action affecting NRHP properties, or properties eligible for listing in the NRHP. In accordance with these requirements, Reclamation coordinated with the Arizona SHPO (See Appendix C).

7.0 List of Preparers

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Cecilia Meyer-Lovell, Ecologist
James Prine, Restoration Ecologist

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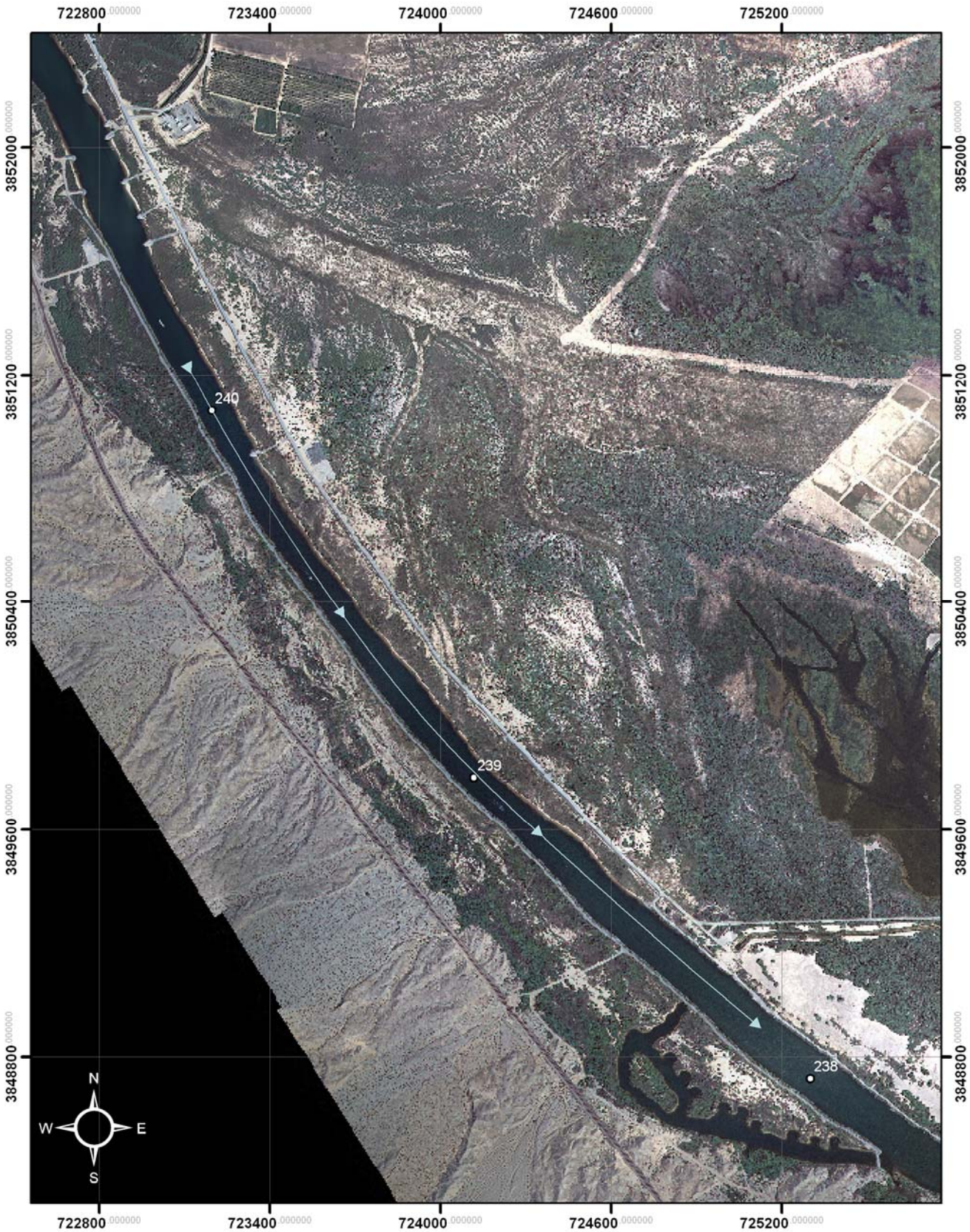
Appendices

A. *Aerial Photos of the Project Area*
B. *Bankline Stabilization Design Plan and Screening of Alternatives*
C. *Correspondence Related to Regulatory Consultation and Public Involvement*
D. *CWA Section 404 Permit (Dredge and Fill) Authorization and CWA Section 401 Water Quality Certification*

APPENDIX A
Aerial Photos of the Project Area

Appendix A

Project Area - Overview



Project Area - Plate 1 (Upstream Limit)

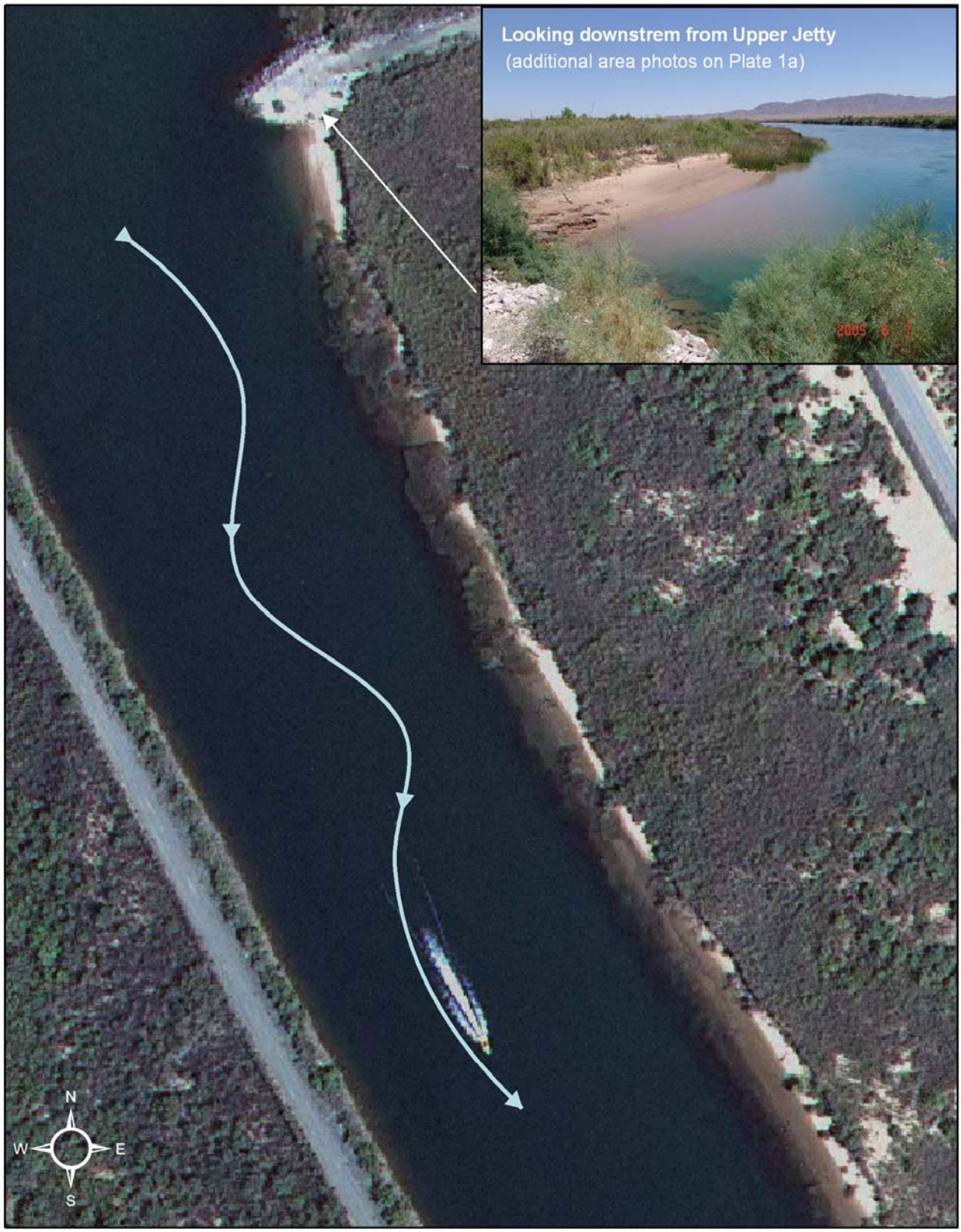
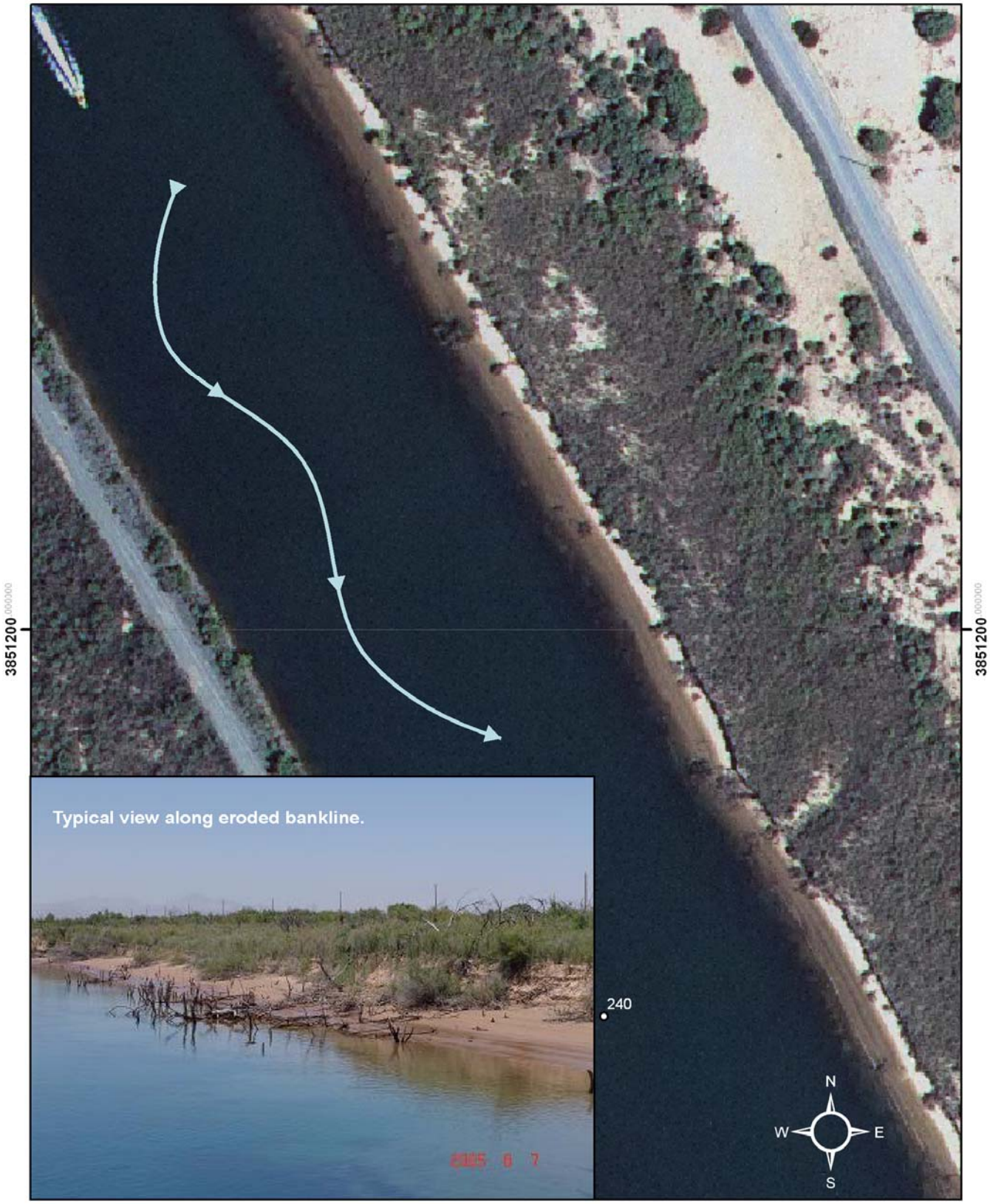
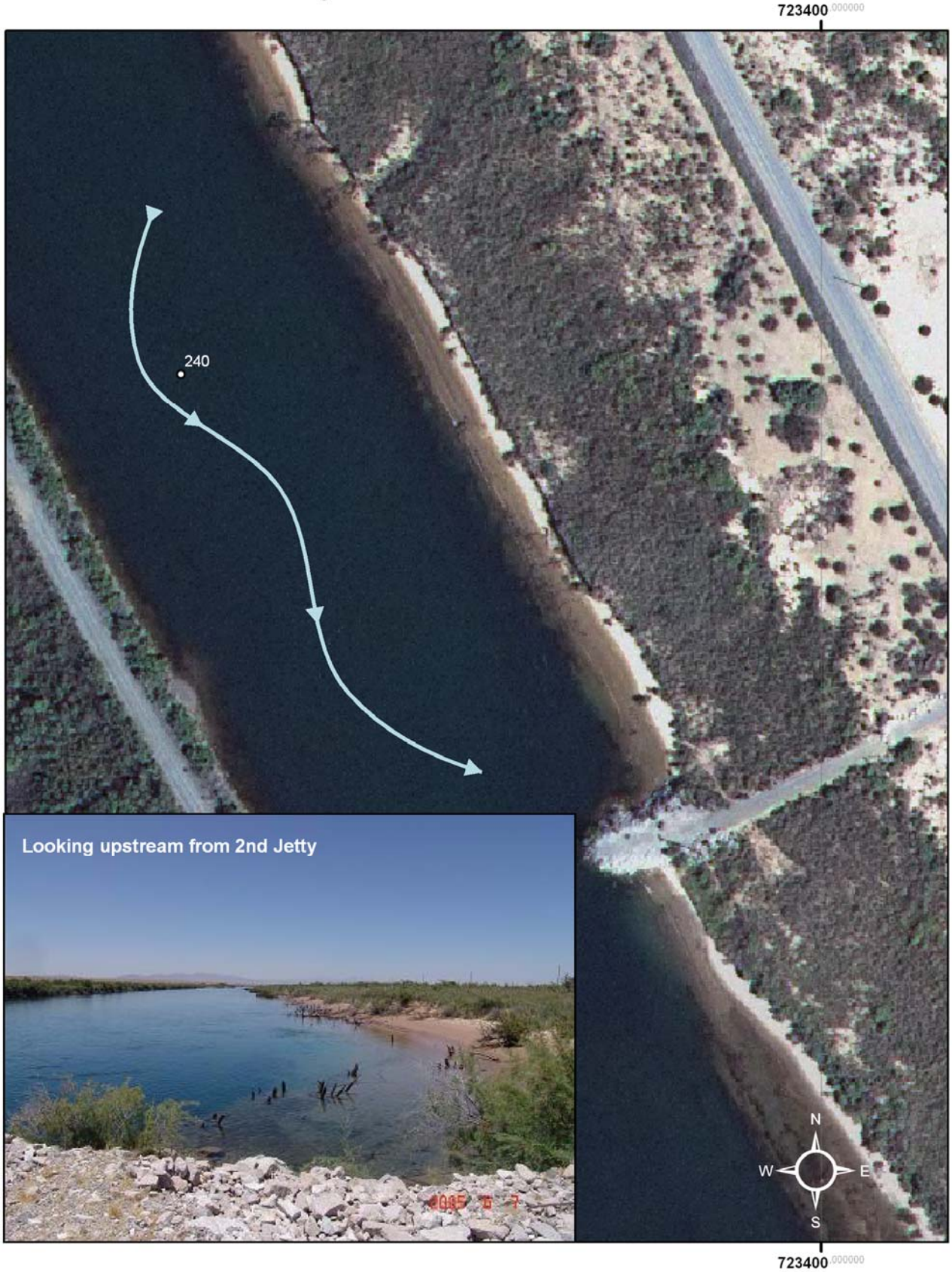


Plate 1a - Bulrush Patch

Project Area - Plate 2



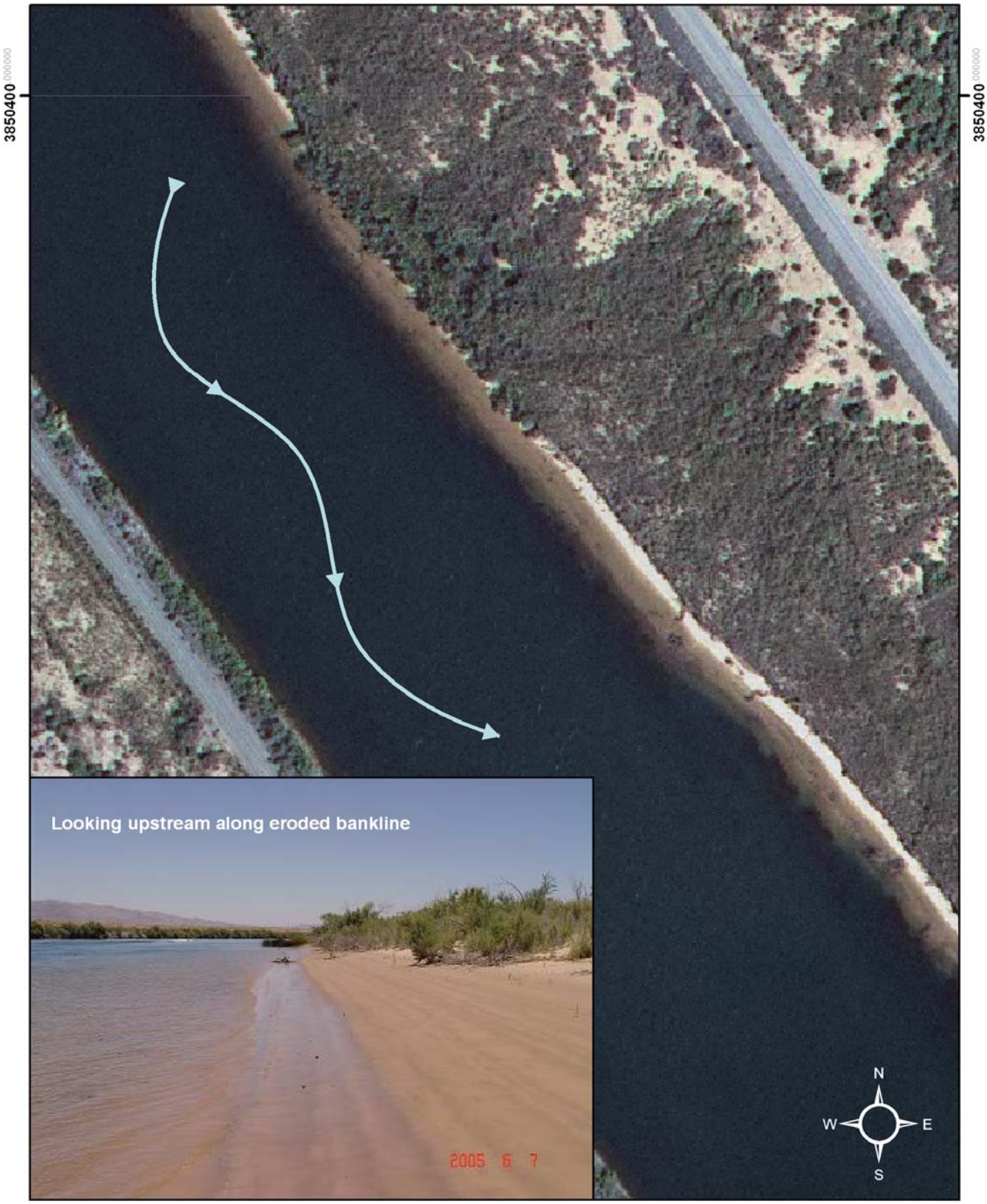
Project Area - Plate 3



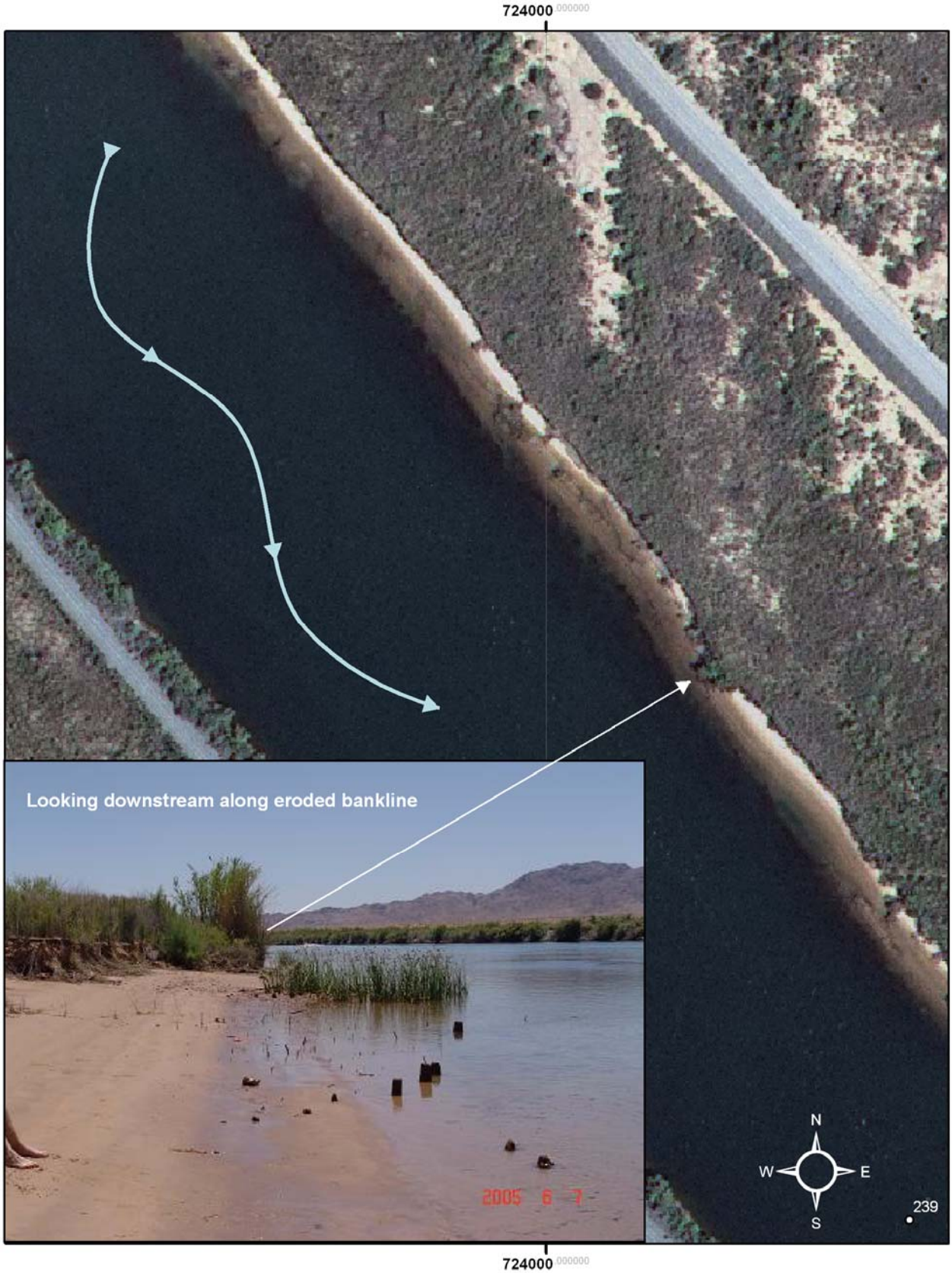
Project Area - Plate 4

Project Area - Plate 5

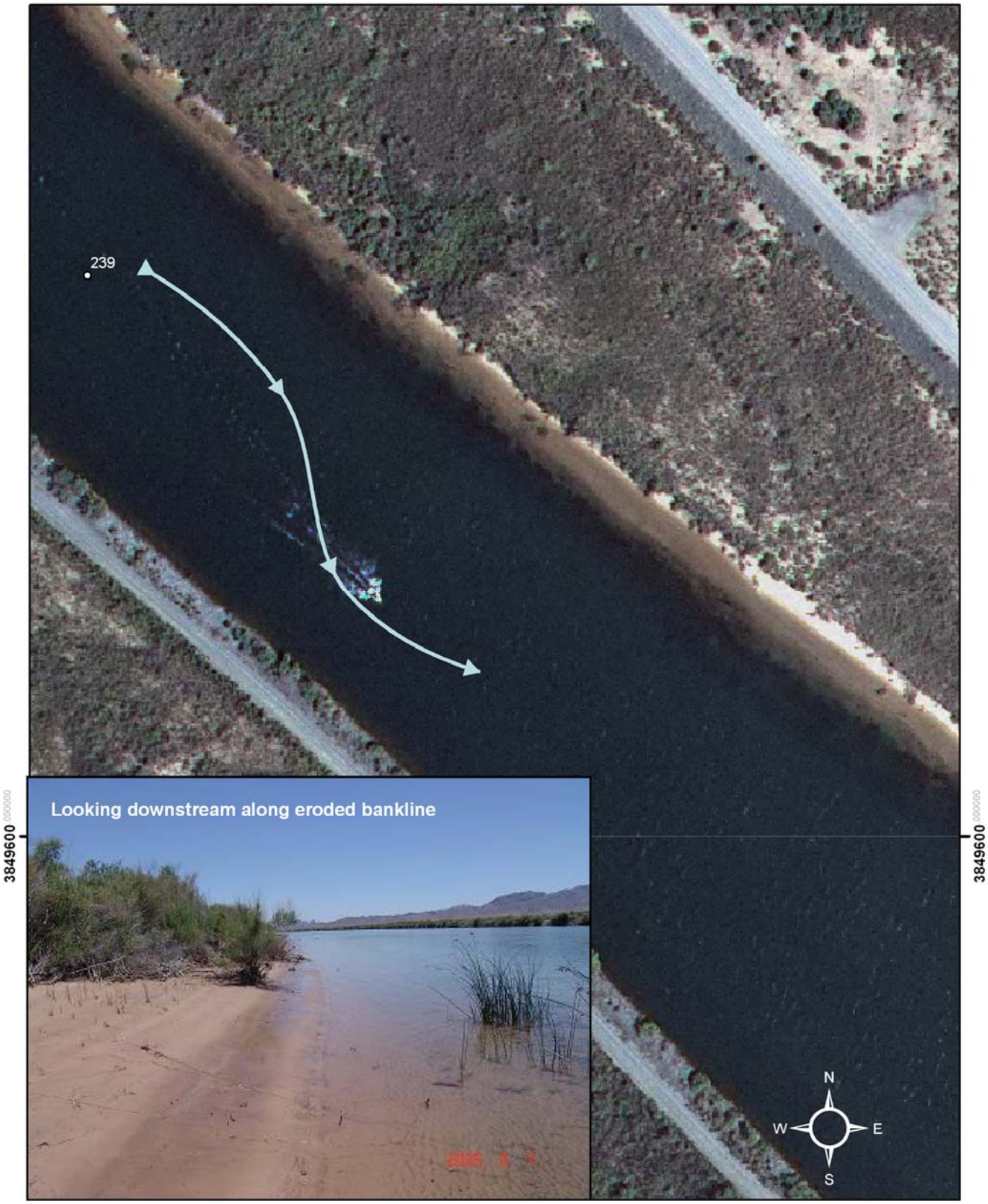
Project Area - Plate 6



Project Area - Plate 7



Project Area - Plate 8



Project Area - Plate 9

Project Area - Plate 10

APPENDIX B
Bankline Stabilization Design Plan and Screening of Alternatives

Appendix B

29 November 2005

MEMORANDUM

Needles-Topock Erosion Protection, Screening of Alternatives

This memorandum is intended to overview possible bank protection alternatives that could be utilized along the Needles-Topock bankline. The information included in this document will supplement a more complete discussion of this reach of river and the proposed project impacts included in the Environmental Assessment. It compares alternatives that provide the most beneficial and practicable solution. The project area is along the Arizona bankline between River Mile 238.5 and 240.5.

STUDY AREA HISTORY

The project lies in what is considered the Mohave Valley Maintenance Division of the Reclamation's Lower Colorado River Region. In this area, the river flows through an alluvial valley from 2 to 5 miles wide.

All available data indicates that the channel bottom elevation in this reach of the river had been gradually increasing (aggrading) prior to the construction of Boulder and Parker Dams. After completion of Boulder and Parker Dams in the late 1930's, aggradation increased appreciably. The rapid increase in aggradation and change in flow characteristics caused the river to loose its historic character or regimen.

Perhaps the area impacted greatest was the reach between the Topock Gorge and Needles. Because of the increase in sediment delivery and the downstream water surface control or backwater caused by Parker Dam, the river became extremely braded and followed no single course creating a swamp covering the entire southern end of the valley in the 1940's. As a result, heavy vegetation started growing throughout this part of the valley creating an even greater constriction to flow. Sediment deposition propagated upstream reducing channel capacity and increasing the watersurface elevation. This rise in watersurface elevation increased the flood risk to the city of Needles, the surrounding agriculture, and other forms of infrastructure like the Rail line.

To reverse the impacts caused by the rise in watersurface elevation, Reclamation developed a channel rectification plan for much of the lower Colorado River. The first segment of river channelized was the reach between Topock Gorge and Needles.

The river channel was originally dredged to be about 200 to 300 feet wide with the expectation the river would widen to a width of 400 to 450 feet wide for a flow of 15,000 cfs. The channel has reached the original design width and the channel banks need to be stabilized.

BANKLINE EROSION

There are two primary factors causing erosion along this reach of river. They are erosion caused by the force of the river flow and erosion caused by boat wave action. Boat wave

action is currently causing the majority of the erosion observed, but bank stabilization for boat wave action could be compromised by higher flows if the design is not tied into the top of bank.

The original design for this segment of the river was intended to reach a channel width of 400 to 450 ft with a slope of about 1.25 ft per mile of river. Significant differences in channel configuration cause discontinuity in channel stability. That is, if the channel geometry or slope changes enough, sediment transport capacity changes. With a change, more or less sediment could leave a reach than enters it. To maintain the original channel design intent, the effective channel width must be kept between 400 to 450 feet.

Another reason for maintaining this channel width is that it is consistent with the width of the existing channel immediately upstream of the project area. As shown in Figure 1, the channel width at the existing jetties is about 400 to 450 ft. Cross sections between the jetties are wider in some locations upstream of the project, but the width at the jetties is consistent with the original design channel width.

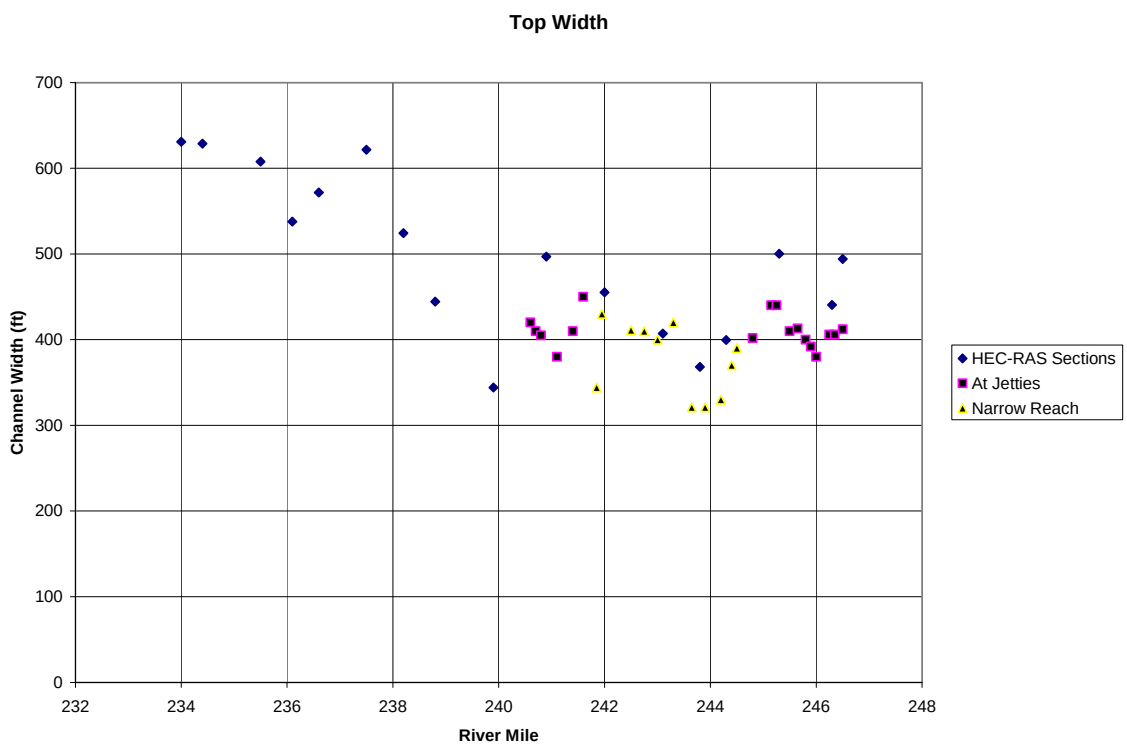


Figure 1. Channel Width in Vicinity of Project (R.M. 238.5 to 240.5)

BANKLINE STABILIZATION OBJECTIVES

1. <u>Stop Boat Wave Erosion</u>

The erosion along the banklines in this reach is primarily being caused by boat wave action which is evident from aerial photography. This aerial photography along with surveys demonstrates that a shelf has developed along the Arizona bankline as shown

with the arrow in Figure 2 and Figure 3. River flow velocity is not sufficient to cause significant bank erosion and the river would likely stabilize if it were the only factor.

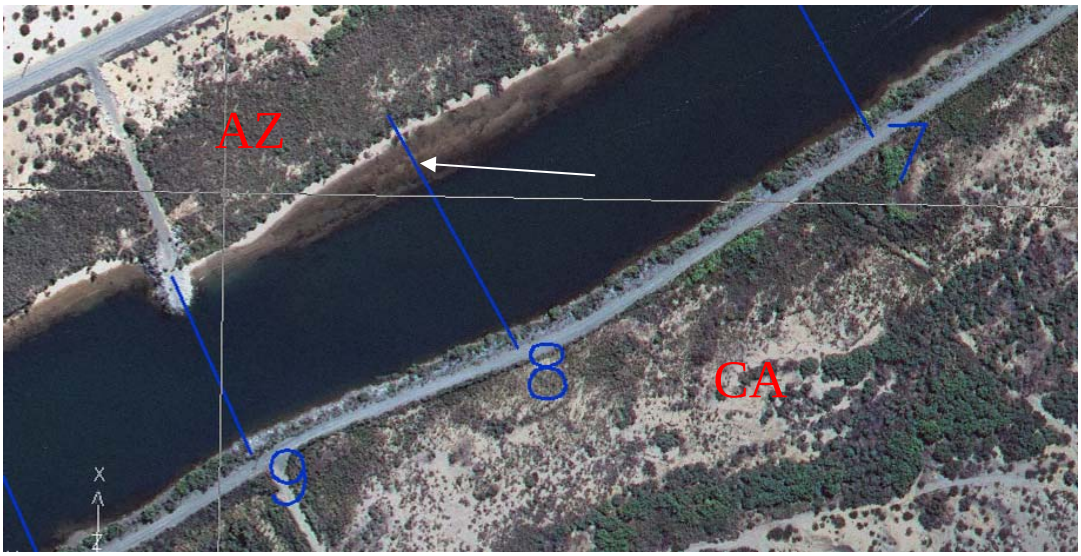


Figure 1. Shelf on Arizona Bankline

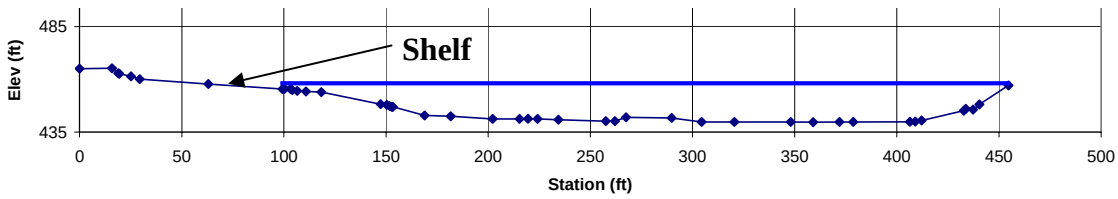


Figure 2. Cross Section 8

There is a significant amount of boat traffic on the river. Boats range in size and can run the river at relatively high speeds. Through the study reach there is no speed limit and high speed boats run this section of river. One of the more significant causes of boat wave action is tour boats running from Laughlin to Lake Havasu. These boats exceed 30 ft in length and can travel at speeds in excess of 40 mph. Using an equation from research performed by Champaign Water Resources Center[1], the boat wave height from this type of boat could approach 2 ft. The erosion potential caused by these size waves exceeds that for any other river action. Therefore boat wave action will be the major factor in deciding the appropriate bank protection measure.

2. <u>Stabilize Bankline for Bank-full Flow.</u>

The channel through the study reach is capable of conveying the predicted 100-year flood flow of about 43,000 cfs. To insure significant erosion does not occur during bank full flow events stabilization will be required up to the top of the existing banks.

[1] "University of Illinois at Urbana-Champaign Water Resources Center Report Number 107, Development of Criteria for Shore Protection Against Wind-Generated Waves for Lakes and Ponds in Illinois", Nani G. Bhowmik, 1976. Equation 18.

3. <u>Do Not Adversely Effect Levee Design Flow.</u>
The design capacity of the channel and levees was originally 70,000 cfs. Any actions performed as part of this project should not adversely affect flood flows which exceed the bank full channel capacity.

4. <u>Design Feasibility.</u>
The design must be constructible. Alternatives may or may not require different levels of difficulty to construct. Feasibility of construction will be an objective of the selected project.

5. <u>Available Technology.</u>
The selected alternative should use proven technology whenever possible. Typically, emerging technology is not considered for maintenance efforts. One was considered during this analysis because there was potential for the concept technically.

6. <u>Non-Damaging.</u>
Each alternative was evaluated for impacts on existing wetland habitat and water of the U.S. In most of the study reach, very little wetland habitat exists. Where there were some wetland vegetation, steps will be taken to avoid and minimize impacts where practicable.

7. <u>Cost.</u>
The desire will be to select an alternative that satisfies, to the degree possible, all objectives for the least cost.

8. <u>Environmental Enhancement.</u>
As stated previously, there is not significant wetland habitat in much of the reach. Although the Lower Colorado River Multi-Species Conservation Program (MSCP) should cover any impacts this project may have on the wetland habitat, an objective of the project would be to improve the fish and wildlife habitat along the river when possible.

SELECTION OF ALTERNATIVE

Each alternative considered here is rated on a 1 to 5 scale at increments of 1 for each of the 8 categories. The final score for each alternative was the sum of the ratings on each of the objectives. The total possible score was 40 points. In this particular case, one alternative had a score that was considerably higher than any other and achieved the purpose and need of this project as well as any other. Therefore it was considered most appropriate for this particular location.

The score for each category provides an assessment of an alternatives performance for the category. The following is the relationship that was used between the numerical score and the performance level for every category except cost:

1- Poor
2- Fair
3- Good

4- Very Good
5- Excellent

The score for cost was based on relative expense of each alternative. The lowest cost alternatives were assigned the highest score of 5 and the highest cost alternatives were assigned the lowest score of 1. Those alternatives with intermediate costs were assigned a score between 2 and 4 depending on the relative expense of the alterative when compared to the least cost alternative.

ALTERNATIVES CONSIDERED

1. <u>Intermittent Bankline Protection (Flow Deflection).</u>

Flow deflection is a means of redirecting high velocity flow away from erodible areas. The primary form of flow deflection that has been used with success on the Lower Colorado River has been straight jetties and L-jetties. Because of the success of this means of bank protection and the fact that they are used both at the upstream and downstream end of the project reach, L-jetties and straight jetties were considered most appropriate for this reach of river if flow deflection were chosen.

A. Straight Jetties.

A number of straight jetty configurations were considered. The primary characteristic of the jetties that were varied was the number and spacing of the jetties. The straight jetty design that was studied most had 10 jetties spaced at 1,000 feet (Figure 4).

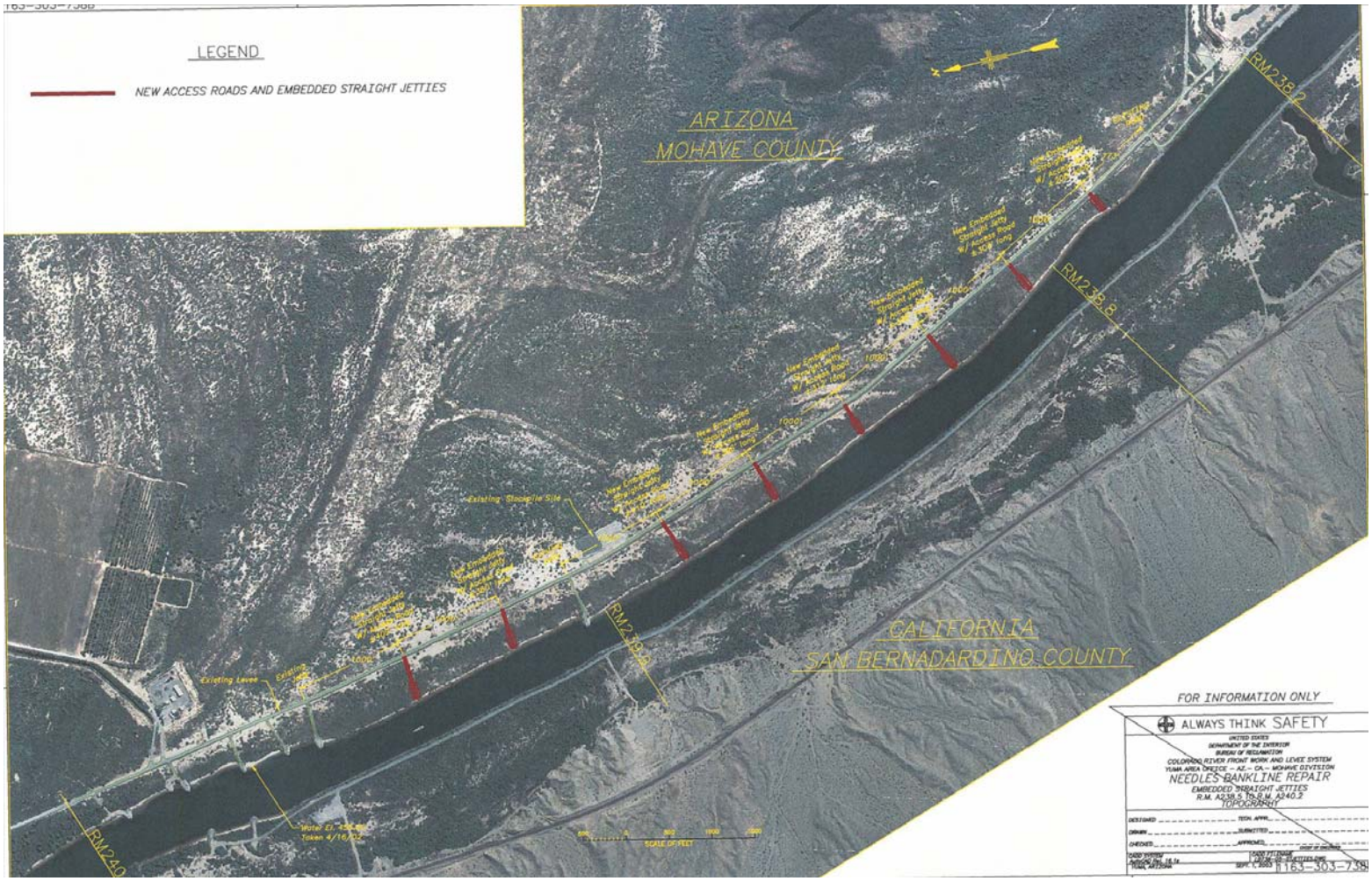


Figure 4. Straight Jetty Concept

To insure the jetties will function for at least 50 years, they will need to be designed so that wave action does not erode behind the structure of the jetties. From comparing the cross section at R.M. 239 it appears that the channel has widened about 60 ft in a 25 year time span. Therefore it will be assumed that the jetties should extend into the existing bank about 120 feet. The cross section for the jetty is shown in Figure 5.

Jetties in general are intended to protect banks from erosion caused by river flows. Often these flows are being directed towards the banks at issue. This is not the case within the project area. Flows are relatively parallel to the banks and are not extremely erosive even at bank full flow.

In addition the river alignment has remained relatively stable over the last 25 years. Although the channel has degraded and widened, it has not migrated and there is no evidence to indicate it will unless subjected to a flow greater than bank full.

Straight jetties provide minimal protection from boat wave action. Since boat waves have a large lateral component, jetties are not effective in dissipating the boat wave energy before impacting the bank.

The estimated cost to implement this project was estimated to be about 5% less than the proposed project. The total cost for this effort is estimated to be about $1,112,000. However, this alternative rated relatively low at 29 out of 40 points or about 73% of the total points possible.

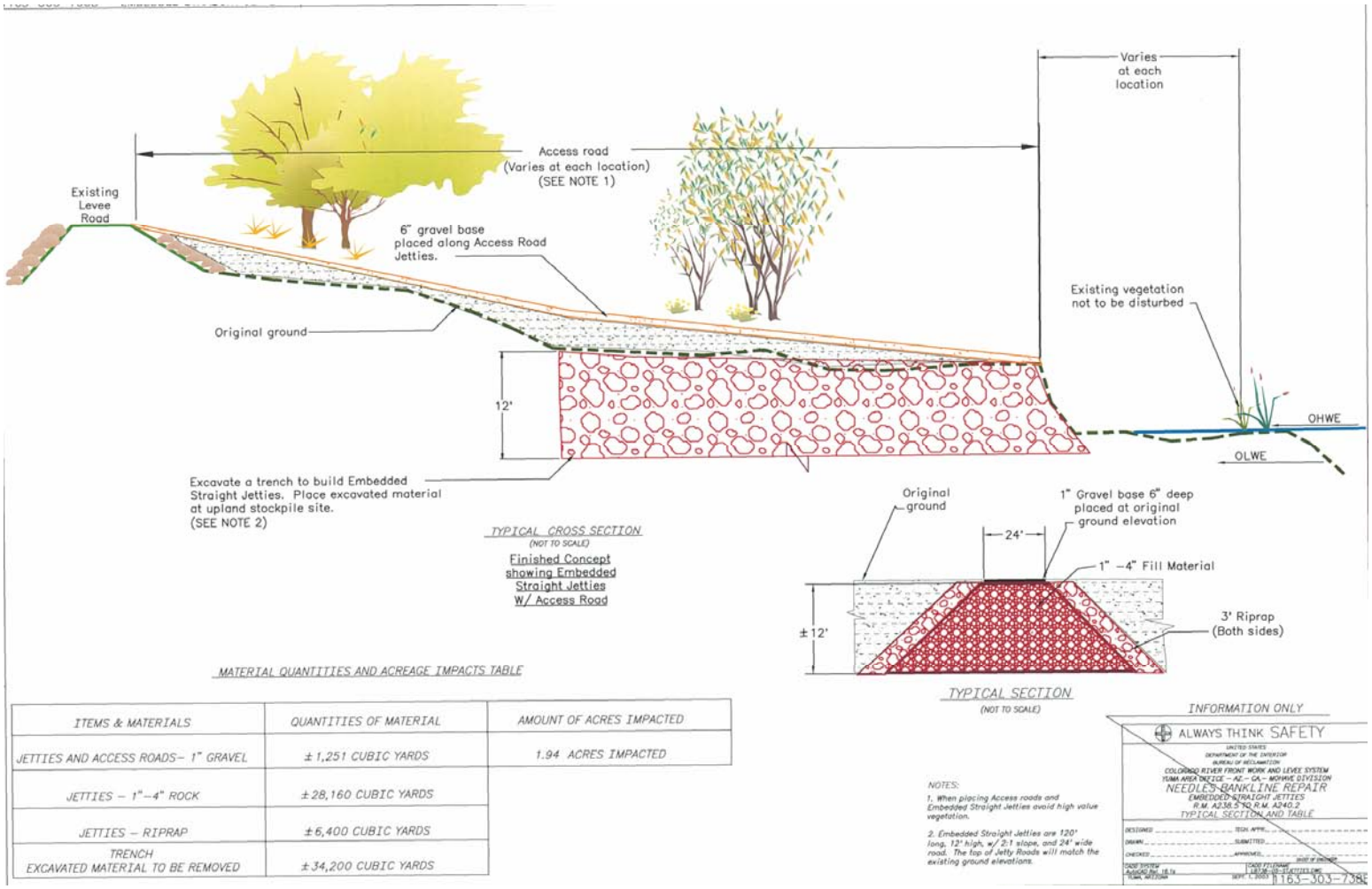
Objectives Assessment Summary – Straight Jetties

1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
1	3	5	5	5	4	5	1	29	No

B. L-Jetties

Since the channel does not need to be narrowed in most of the reach, L jetties would serve little purpose. It would be possible to design a hybrid L jetty essentially creating thick straight jetties which would reduce the number of jetties, but increase the material required to construct the structure. The primary benefit of performing this type of design is that it could be used to reduce impacts to the shoreline in certain locations. Figures 6 and 7 demonstrate the use of the hybrid jetties.

The estimated cost to implement this project was estimated to be about 85% more than the proposed project. The total cost for this effort is estimated to be about $2,150,000. In addition this alternative rated relatively low again at 29 or about 73% of the total score possible of 40.



MATERIAL QUANTITIES AND ACREAGE IMPACTS TABLE

ITEMS & MATERIALS	QUANTITIES OF MATERIAL	AMOUNT OF ACRES IMPACTED
JETTIES AND ACCESS ROADS– 1" GRAVEL	± 1,251 CUBIC YARDS	1.94 ACRES IMPACTED
JETTIES – 1"–4" ROCK	± 28,160 CUBIC YARDS	
JETTIES – RIPRAP	± 6,400 CUBIC YARDS	
TRENCH EXCAVATED MATERIAL TO BE REMOVED	± 34,200 CUBIC YARDS	

Figure 5. Jetty Design

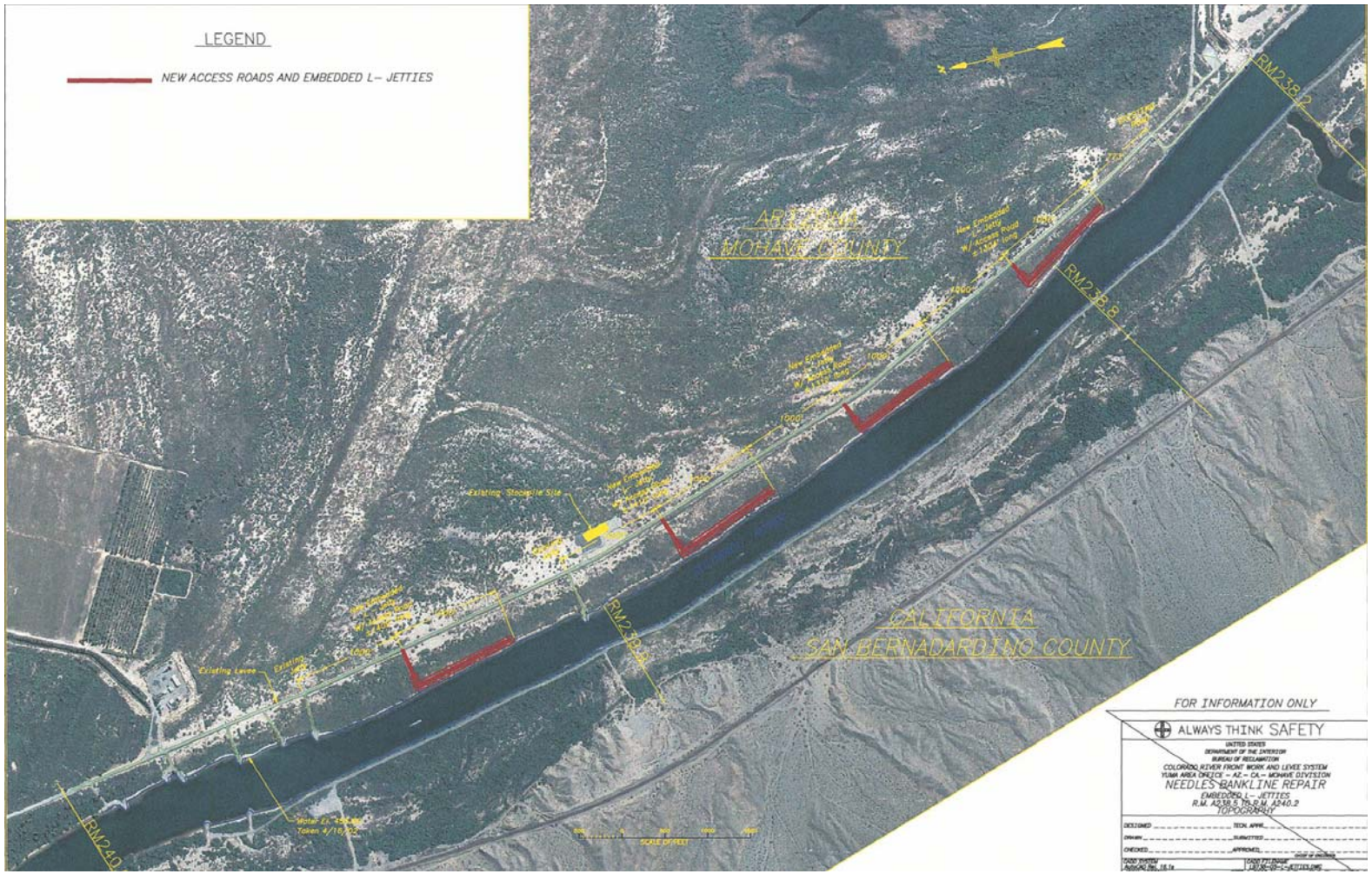
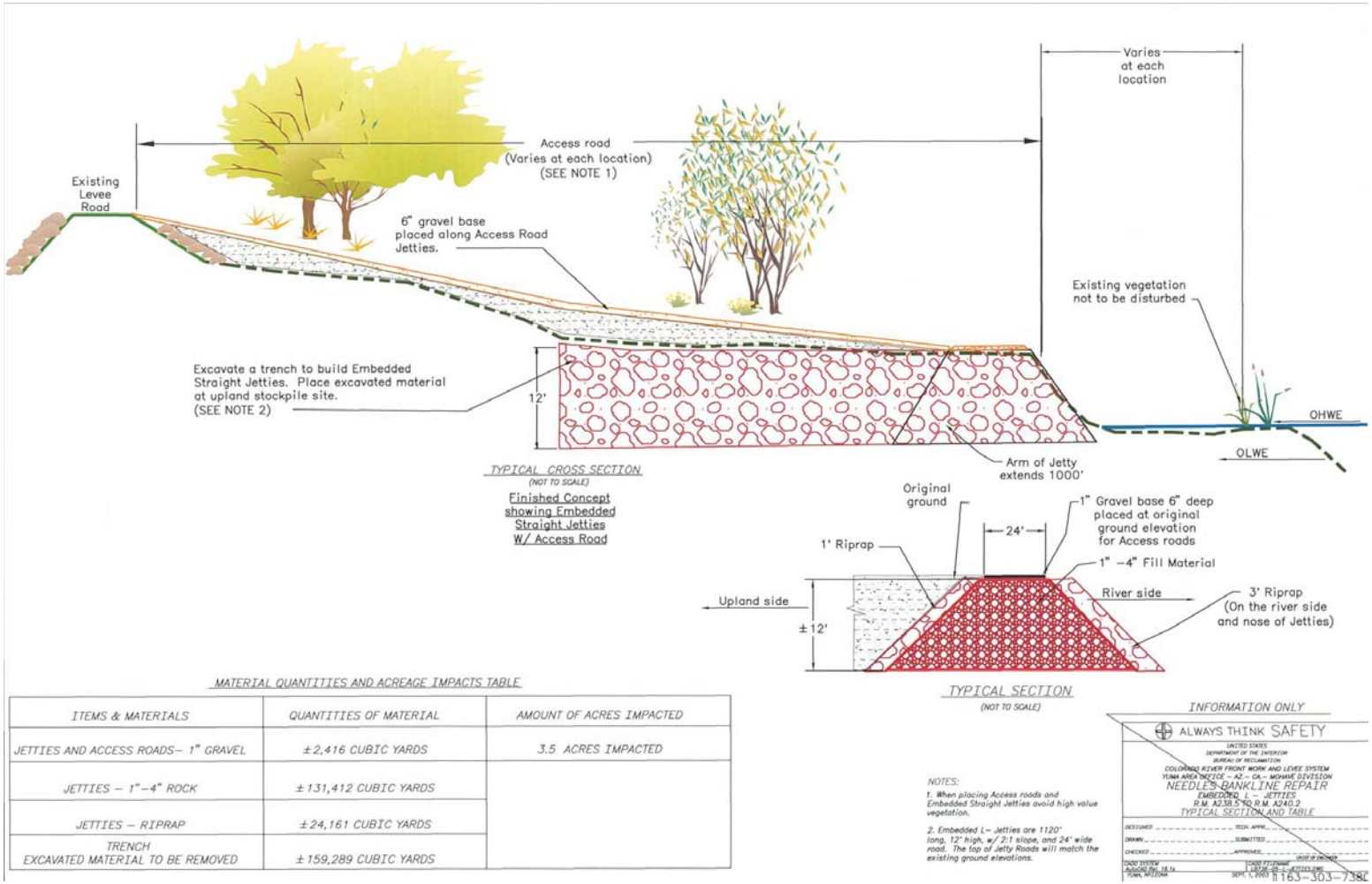


Figure 6. L-Jetty Concept



MATERIAL QUANTITIES AND ACREAGE IMPACTS TABLE

ITEMS & MATERIALS	QUANTITIES OF MATERIAL	AMOUNT OF ACRES IMPACTED
JETTIES AND ACCESS ROADS– 1" GRAVEL	±2,416 CUBIC YARDS	3.5 ACRES IMPACTED
JETTIES – 1"–4" ROCK	±131,412 CUBIC YARDS	
JETTIES – RIPRAP	±24,161 CUBIC YARDS	
TRENCH EXCAVATED MATERIAL TO BE REMOVED	±159,289 CUBIC YARDS	

Figure 7. L-Jetty Design

Objectives Assessment Summary – L-Jetties

1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
3	4	5	5	5	3	3	1	29	No

2. Continuous Bankline Protection

In order to protect the bankline for both boat wave action and bank full flows, some level of protection will be required from the Ordinary Low Watersurface (OLW) profile up to the top of bank. Since the greatest erosion potential is from boat waves, the more resistant bank cover will need to be placed lower on the bankline.

The type and amount of cover required to protect from erosion due to river flow, even at bank full, is relatively minor. For elevations that aren't subject to constant boat wave action, a good layer of vegetation would likely prevent erosion due to river flows. To insure success, a 6 inch layer of 1 to 2 inch D50 gravel with pole plantings through the gravel is recommended.

More aggressive means of bank protection would be required to prevent further erosion due to boat wave action. As stated previously, the larger jetboats are capable of generating about 2 ft waves. A number of proven techniques have been utilized to provide bankline protection from aggressive erosion processes whether they be by boat wave, flow impingement, or by other means. A few of the accepted bank protection practices are shown in Figures 8 to 12:

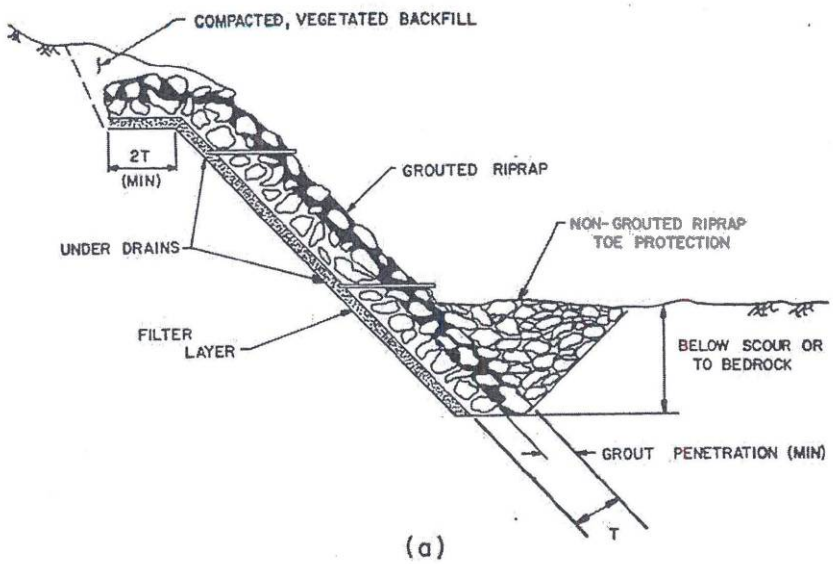


Figure 8. Grouted Riprap

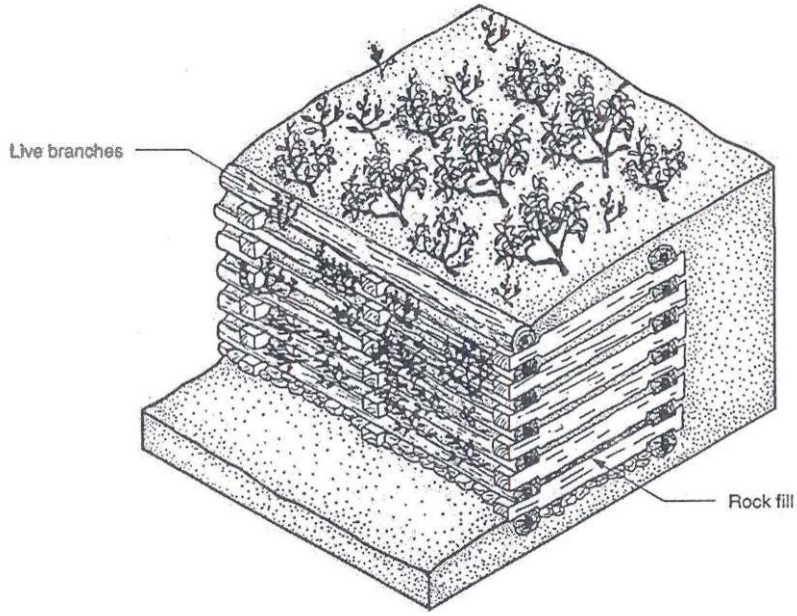


Figure 9. Crib Wall

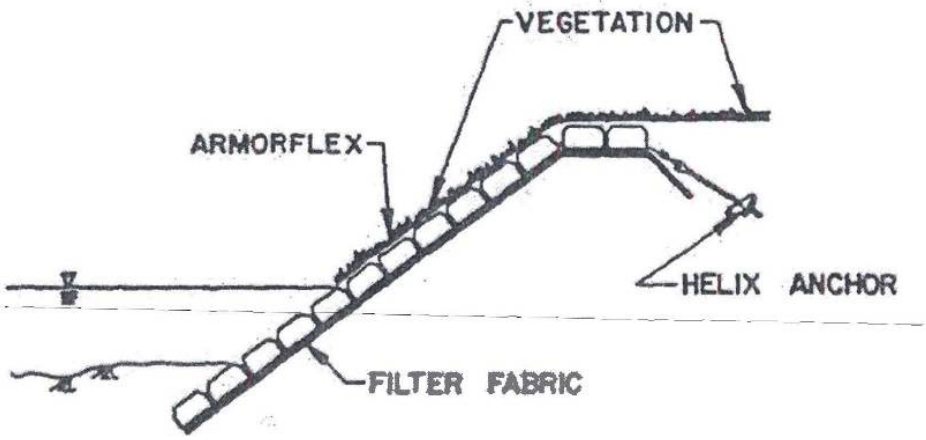


Figure 10. Articulated Concrete Block (Closed or Open Cell)

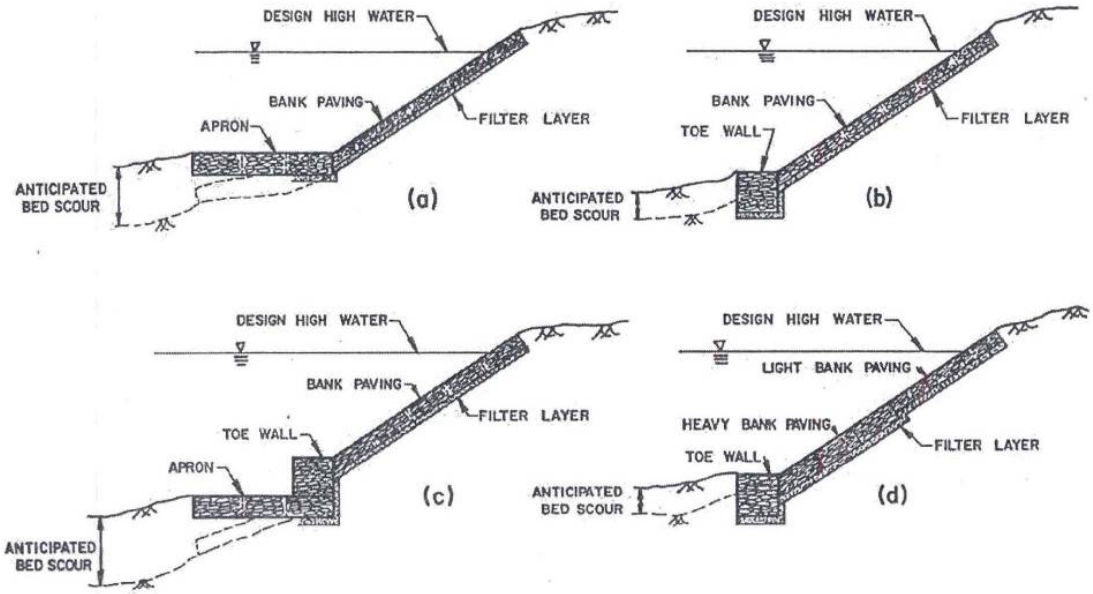


Figure 11. Rock and Wire Mattress (Gabions)

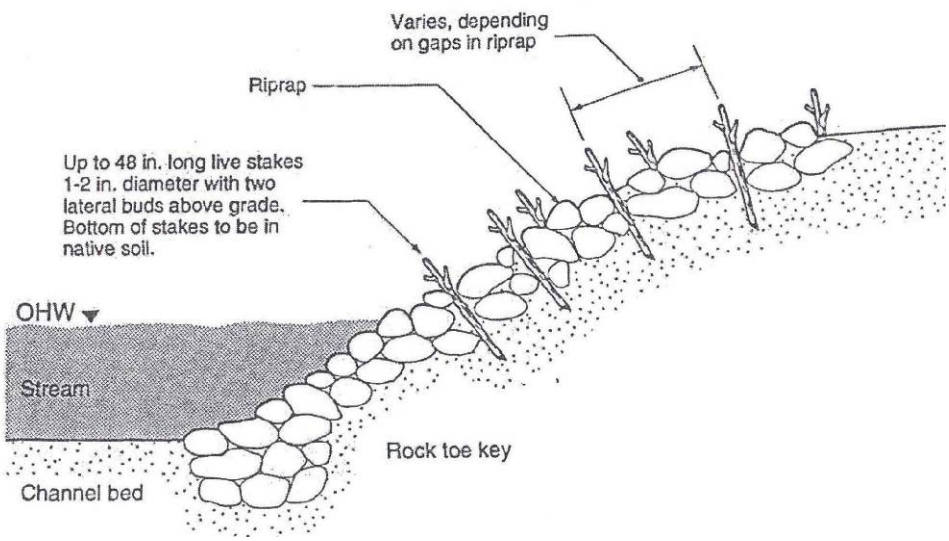


Figure 12. Rock and Vegetation

The examples of bank protection methods included are not all inclusive, but represent the majority of established methods. All methods shown could be conducted at this location and would have similar environmental impacts. All the methods shown can be constructed on the site and use existing technology.

The total cost for each bankline alternative was not developed. Preliminary screening was performed by comparing the cost of materials per lineal ft of each of the different methods considered. As a result the total cost was only computed for the method considered to have the best potential within the group of continuous bank protection methods.

The primary factor that differentiates the methods is cost of implementation, impact to the existing environment, and potential for environmental enhancement. The rock and vegetation method was selected as the most appropriate method for the following reasons:

- Grouted Rock. Smaller rock could be used and grouted, but grouted rock is not flexible and therefore would have a greater chance of failure. The grouted rock would only be required to a level of about 2 feet above the OHW then gravel size material could be used above that elevation. This would allow vegetation to be planted on the upper portion of the banks. No vegetation would be attempted in the grouted section. Since the erosional forces are not that great, there is no benefit in grouting rock when rock alone would suffice. The method was considered inappropriate for this site. Cost per lineal foot is estimated to be approximately $120.

Objectives Assessment Summary – Grouted Rock

1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
5	5	5	5	5	1	3	1	30	No

- Timber Crib Walls (Figure 13). A disadvantage of crib walls along streams and rivers is that they deteriorate over time and would likely need to be replaced before other means of bank protection. This project would likely lose some of the advantages of crib walls because rock material would need to be used as backfill immediately behind the logs to prevent the native soil from eroding between the crib logs. In addition, substantial toe protection would still be required. Cost per linear foot for materials is estimated to be approximately $140 over 25 years and $210 over 50 years assuming some of the structure would need to be replaced. Due to a variety of considerations which included cost, this method was considered inappropriate for the site.

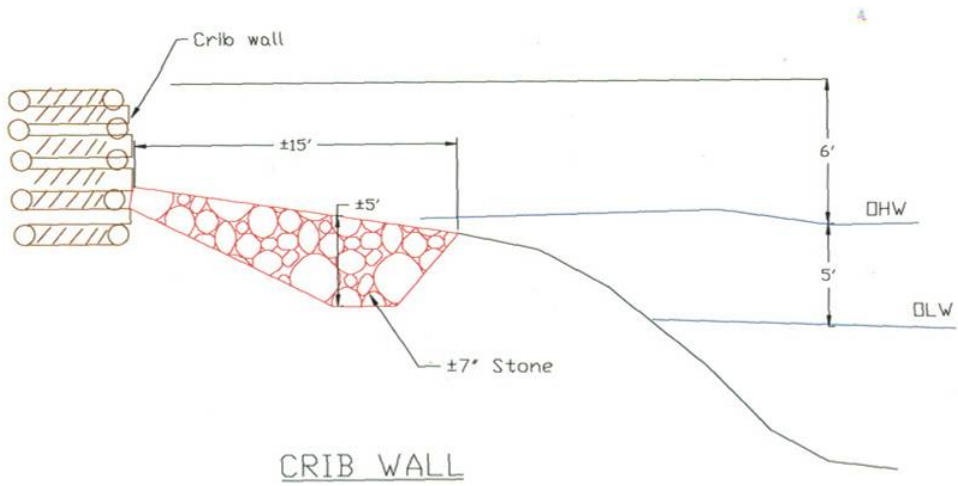


Figure13. Live Crib Wall Concept

Objectives Assessment Summary – Live Crib Wall

1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
5	5	5	5	3	3	1	3	32	No

- Articulated Concrete Block (Figure 14). This method of bank protection has been used with good success. It, like the grouted rock alternative, could be used to an elevation of 2 ft above the OHW mark. Large vegetative growth is not encouraged within the block because of the damage to the block that it causes. Cost per linear foot for materials is estimated to be approximately $230. Due to a variety of considerations which included cost, this method was considered inappropriate for the site.

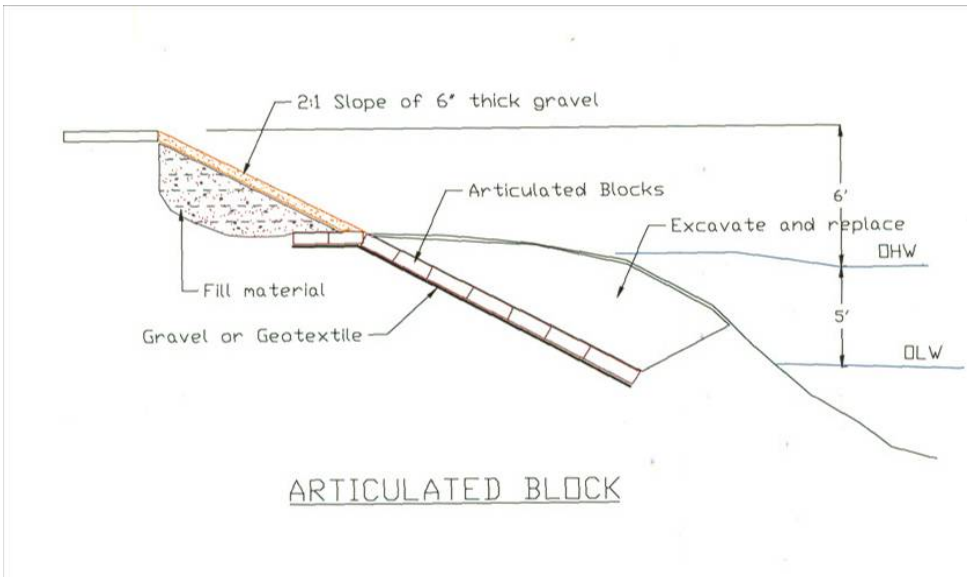


Figure 14. Articulated Concrete Block Concept

Objectives Assessment Summary – Articulated Concrete Block

1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
5	5	5	5	5	2	1	1	29	No

- Rock and Wire Mattress – Gabion (Figure 15). By wrapping rock with fencing, smaller size material can be used for bank protection. Rock and wire mattress would provide some flexibility, but not as great as the larger rock cover. Since relatively small rock is required to stabilize the bank, rock and wire mattress are not cost effective. Cost per linear foot for materials is estimated to be approximately $140. This method of stabilization was screened also from further consideration.

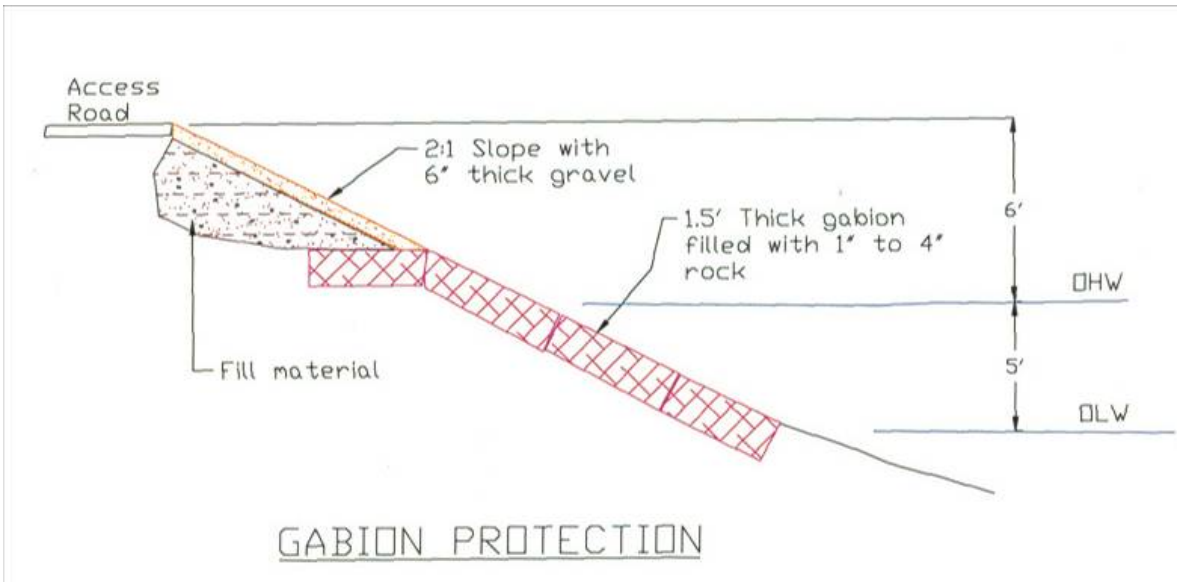


Figure 15. Rock and Wire Mattress Concept

Objectives Assessment Summary – Wire Mattress Concept (Gabion)

1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
5	5	5	5	5	2	3	1	31	No

- Rock with Vegetation (Figure 16). Erosion is being caused primarily by boat waves. The size of rock required to protect the shoreline from 2 ft waves has a D50 of 6 inches[2]. Rock will provide a flexible protective layer that vegetation can be planted through above the ordinary high water. Cost per linear foot for the cost of the rock and vegetation planting is estimated to be approximately $70.

[2] U.S. Army Corps of Engineers EM 1110-2-1614 "Design of Coastal Revetments, Seawalls, and Bulkheads"

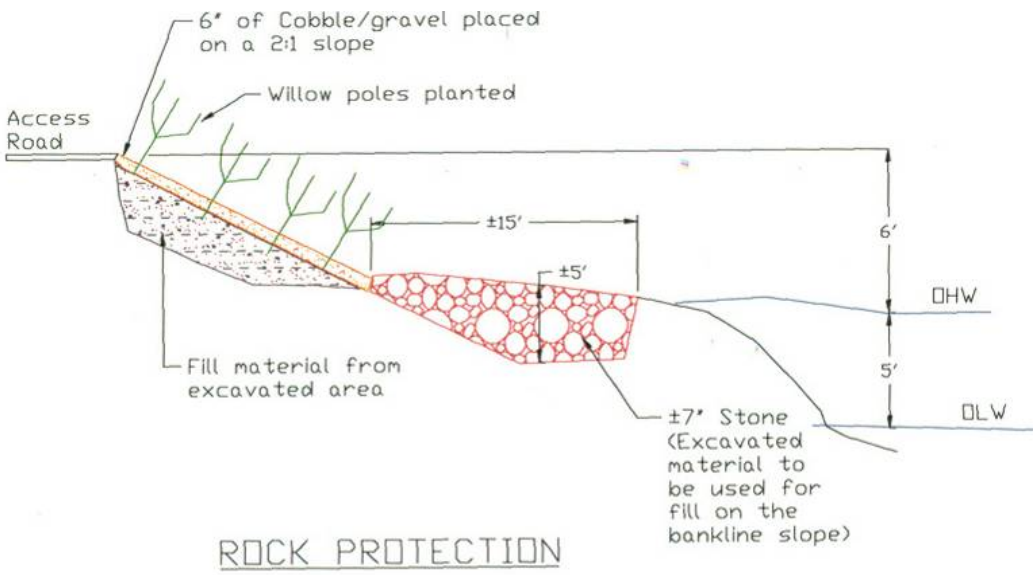


Figure 16. Rock Bank Protection Concept

Because the upper bank is lightly covered with small rock, there is opportunity to plant through the protective rock layer. Since willows and cottonwood appear to grow along the top of the vertical bank in some locations, they should grow well lower on a stable bankline. With time, the entire upper bankline is expected to be covered with vegetation.

Objectives Assessment Summary – Rock and Vegetation

1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
5	5	5	5	5	3	5	4	37	Yes

3. <u>New Technology-Wave Attenuation.</u>

Wave attenuators could be used to break the boat wave energy before impacting the bank. These type of devices have been used in harbors, around docks, and to protect shoreline from erosion. This concept has been used for years in harbors and docks, but is not common for shore protection.

Block shapes have been developed to dissipate wave energy. A couple different types are shown below in Figure 17. The configuration used is dependent on its purpose and location and is, to some degree, based on experience. Therefore, the arrangement may need to be adjusted once in place. This can be performed relatively easily.

Figure 17. Wave Attenuators

The intent would be to remove the wave attenuators once the bankline stabilizes with vegetation. So that the attenuators could be removed as soon as possible, the bankline should be sloped back and vegetated as shown in Figure 18. Although smaller rock is still used in the design, the rock is not sized to counter the wave action alone. The intent would be for vegetation and rock to accomplish erosion control in combination. This appears to be a reasonable assumption based on other banklines that have stabilized when vegetation has established in front of the bankline. This solution may not be as effective where there is no shelf in front of the bankline.

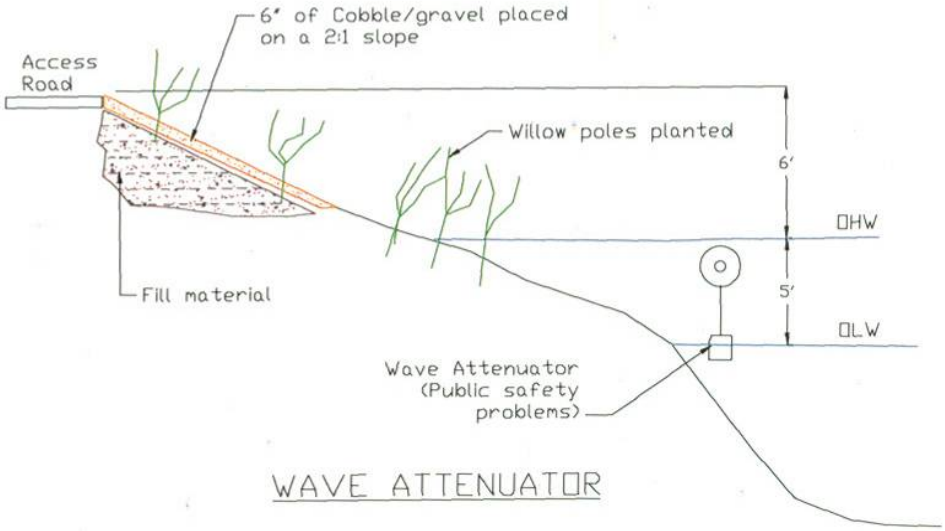


Figure 18. Wave Attenuator Concept

Wave attenuation for control of bank erosion has been used in some areas, but has primarily been used in marinas. The primary drawback in situations of bank protection is cost. Where considerable wave action is present, the rock material typically required to protect the bank may be large enough that the cost for wave attenuation is competitive. For this project the only way the wave attenuators would be cost effective is if very few of the blocks were required. The cost of a block is in the vicinity of $75. Therefore, in order for the wave attenuators to compete, the number of blocks would need to be

minimized. The number of blocks and arrangement would potentially need to be adjusted before the optimal configuration would be determined. One drawback is that the attenuators would need to be visible at night and there is a strong likelihood that they would be vandalized and stolen. Because of the experimental nature of the devices and problems related to the isolation of the site, this concept was screened out as well. The estimated material cost per lineal ft for this alternative is estimated to be approximately $100.

Objectives Assessment Summary – Wave Attenuation with Stabilization

1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
4	5	5	2	2	4	4	4	30	No

COMPARISON OF ALTERNATIVES

Table 1 summarizes the alternatives considered.

Table 1. Comparison Of Alternatives

Alts.	Objectives									
	1. Control Boat Wave Erosion/ Prevent Channel Widening	2. Protect Channel at Bank Full Flow	3. Does Not Adv. Effect Levee Design Flow	4. Design Feas.	5. Avail. Tech.	6. Non-Dam.	7. Cost	8. Enhance Env.	Total	Survive Screening?
St. Jetties	1	3	5	5	5	4	5	1	29	No
L-Jetties	3	4	5	5	5	3	3	1	29	No
**Grouted Rock	5	5	5	5	5	1	3	1	30	No
**Live Crib Wall	5	5	5	5	3	3	1	3	32	No
**Articulated Con. Block	5	5	5	5	5	2	1	3	29	No
**Gabion	5	5	5	5	5	2	3	3	31	No
Rock and Veg.	5	5	5	5	5	3	5	4	37	Yes
**Wave Att.	4	5	5	2	2	4	4	4	30	No

**Screened prior to computing total costs.

RELATIONSHIP OF ALTERNATIVES TO PROPOSALS FROM VALUE PLANNING STUDY

A Value Planning study was performed in September of 2003 by Reclamation staff to evaluate the alternative selected at that time. The results of that study are documented in their final report dated October 23, 2003[3]. The alternative that was reviewed in 2003 was more structural than the one that is currently proposed. It consisted of a bankline road with a number of straight jetties. All structures were to be lined with riprap. The value planning study was primarily intended to provide proposals which reduced the cost of the project. Because all the proposals which modified the design, proposals 2 through 4,

[3] Value Planning Final Report, Needles/Topock Bankline Stabilization and Restoration Project

were much more structural than the alternatives described in this document, they all would cause considerably more impact than the one proposed here. The only proposal that will be implemented as part of the selected project is Proposal 1. The following is a summary of the proposals provided by Reclamation staff.

From the value planning phase of the study, variations of alternatives discussed in this document were suggested. The following summarizes those proposals:

Proposal 1. Contract for Work to be Done During Winter
This proposal would make construction easier to accomplish, but cost savings were not quantified. YAO will attempt to construct the project during low water to simplify construction.

Proposal 2. Build Armored Bankline Road (No Jetties)
The bankline road was to be built slightly higher than the existing bankline, the levee toe was to extend slightly into the river, and be covered with the typical riprap bank protection which consists of rock with a D50 of about 1.5 feet. This proposal would meet all the design criteria, but the size of rock used is larger than necessary and the design channel slope is homogenous. In addition, planting through the riprap layer would not be practical. Therefore the concept as proposed was considered more structural than necessary.

Proposal 3. Build Armored Bankline Road with 3 L-Jetties
Again this proposal met all the objectives, but was even more structural. The advantage of the L-Jetties was that they created a backwater environment that could be utilized for restoration. The problem with the jetties was that they pinched the river to a width that was inconsistent with work done just upstream of the current project. Therefore the concept as proposed was rejected.

Proposal 4. Build Armored Bankline Road and the Center L-Jetty
This variation of the originally alternative is very similar to that chosen. The rock protection and bankline were proposed to be the same as described in the first proposal, but this proposal included an L-Jetty. This alternative was adopted with some additional modifications.

FINAL RECOMMENDED PROJECT CONFIGURATION

The selected alternative is a refinement of Proposal 4. As shown in Figure 19, bankline protection is proposed along the Arizona side of the project reach. However, the method used to protect the bank is the Rock with Vegetation concept described in section 2 where smaller rock is used and only extends down to the Ordinary Low Water elevation as shown in Figure 20. In addition, the bankline is not raised and the access road along the bankline follows the existing bank elevation. The bankline will not be straightened. Instead the bank will be laid back along the existing alignment so that the resulting bank alignment will be irregular and as natural as possible.

Another difference between Proposal 4 from the planning study and the selected alternative is avoidance of two areas with bulrush growth along the banks. The first is near the upstream end of the project and covers about 100 feet of bankline and the second is near the center of the project and covers an area 200 to 330 ft in length. In both cases,

the bank protection will be placed between the bulrush and existing vertical bank. Effort will be made to minimize the impact to the bulrush growth along the bank to the extent possible.

The cost of this project is one of the lowest at a total of about $1,170,000. In addition this alternative rated the highest given the 8 screening criteria for this evaluation. Out of 40 points this alternative was rated at 37 or about 93% of the total points possible. For these reasons it was considered best suited for this particular location.

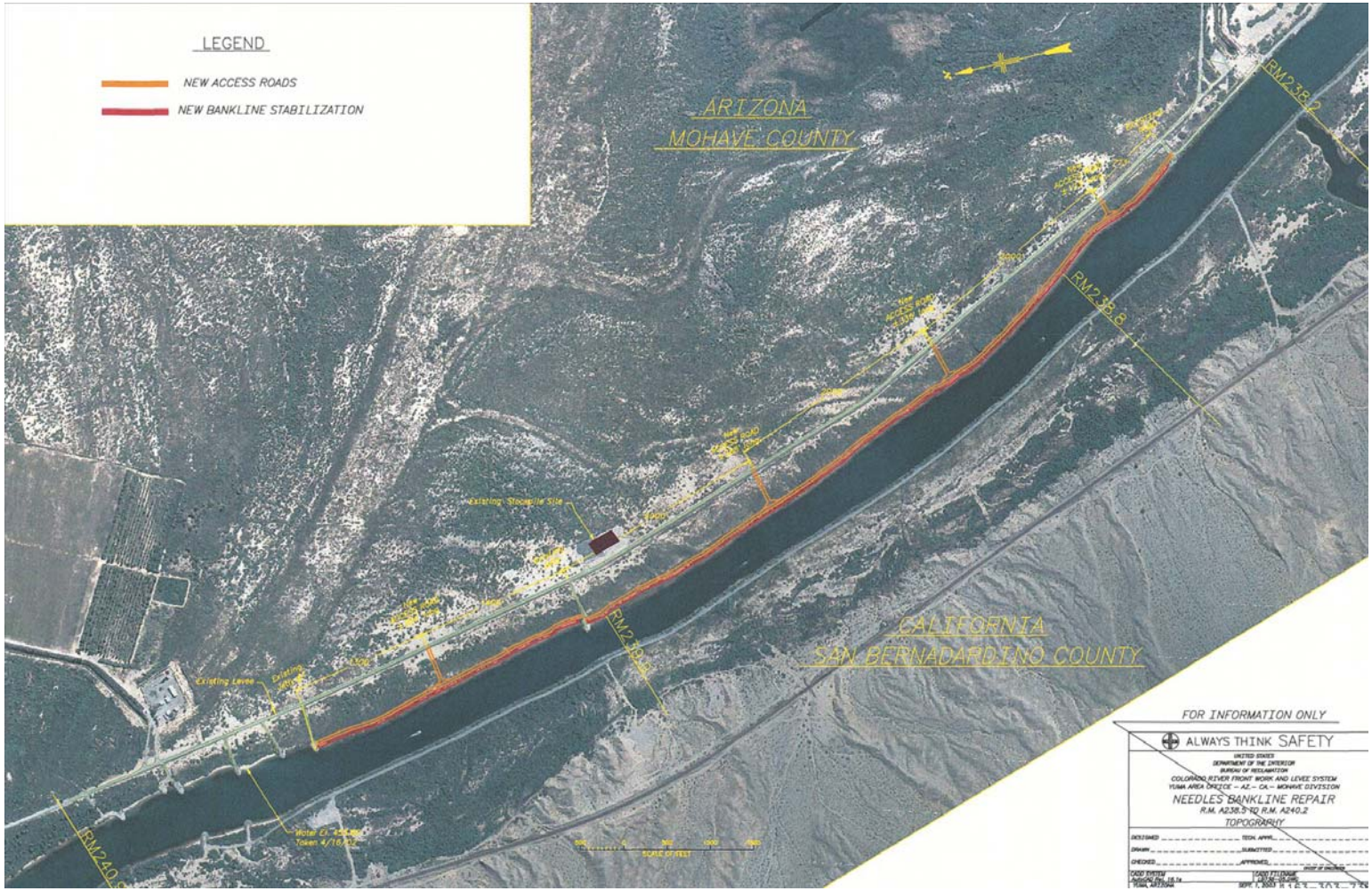
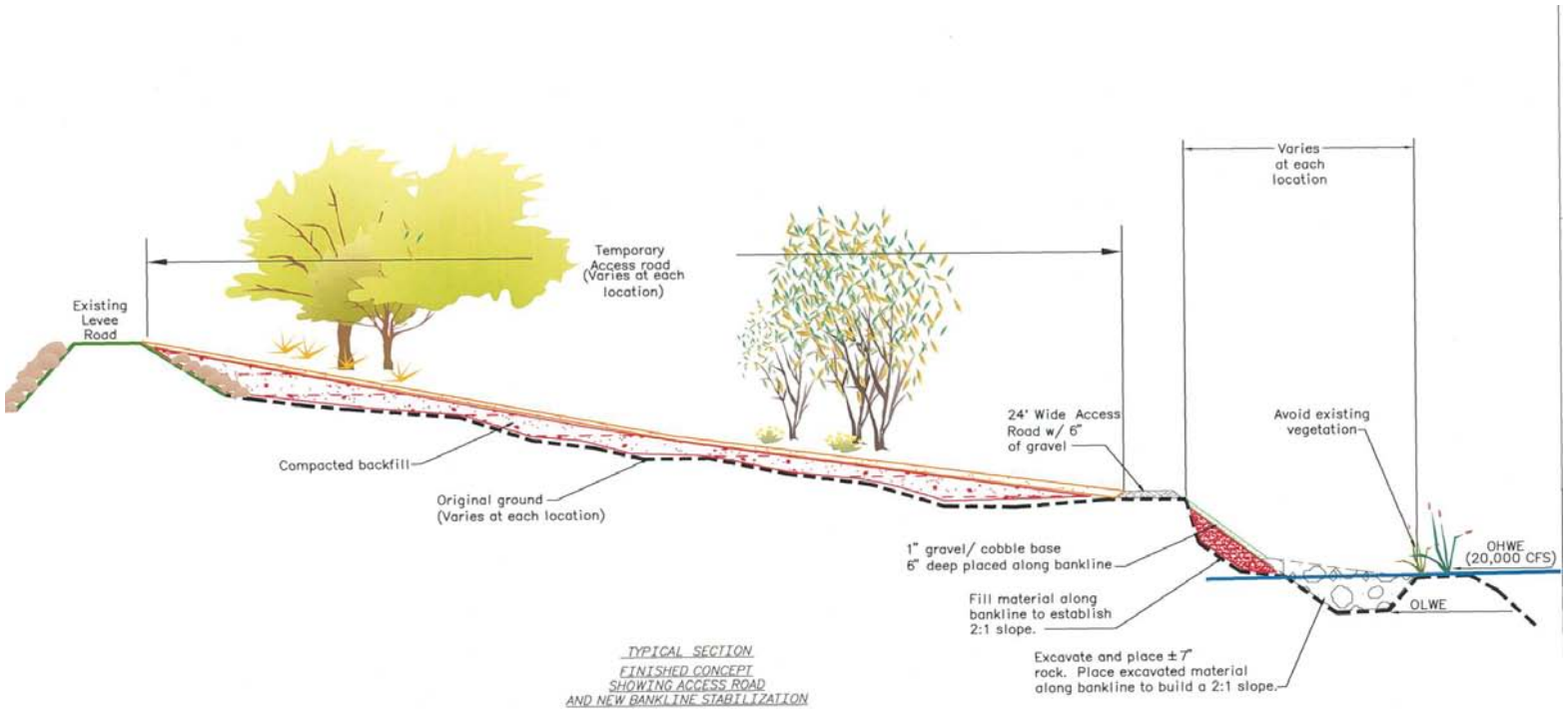


Figure 19. Bankline Protection Concept



MATERIAL QUANTITIES AND ACREAGE IMPACTS TABLE

ITEMS & MATERIALS	QUANITIES OF MATERIAL	AMOUNT OF ACRES IMPACTED
ACCESS ROADS– 1" GRAVEL, 6" DEEP	±5,224 CUBIC YARDS	6.4 ACRES IMPACTED
BANKLINE STABILIZATION – 1" GRAVEL/ COBBLE, 6" DEEP	±4,340 CUBIC YARDS	5.4 ACRES IMPACTED
BANKLINE STABILIZATION – 7" – STONE	±27,128 CUBIC YARDS	3.4 ACRES IMPACTED
FILL MATERIAL FOR ACCESS ROADS	±3,290 CUBIC YARDS	

NOTES:

1. When placing Access roads avoid high value vegetation.
2. Access roads will fallow existing bankline, and existing grade.

FOR INFORMATION ONLY

ALWAYS THINK SAFETY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLORADO RIVER FRONT WORK AND LEVEE SYSTEM
YUMA AREA OFFICE – AZ.– CA.– MOHAVE DIVISION

NEEDLES BANKLINE REPAIR
R.M. A238.5 TO R.M. A240.2
TYPICAL SECTION AND TABLE

DESIGNED G.J. SANDERSON C.E.T. TECH. APPR.
DRAWN G.J. SANDERSON C.E.T. SUBMITTED
CHECKED APPROVED DATE OF ENGINEER
CADD SYSTEM AutoCAD Rev. 14 for YUMA, ARIZONA
CADD FILENAME LISTING OF BELOWBANK.DWG 11-14-05 B163-303-7384

Figure 20. Bankline Protection Design

APPENDIX C
Regulatory Consultation and Coordination

Appendix C

ENV-7.00

United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

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Project					
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In Reply Refer to:

AESO/SE
02-21-04-F-0161

March 9, 2006

Memorandum

To: Director, Resource Management Office, Yuma Area Office, Bureau of Reclamation, Yuma, Arizona

From: Field Supervisor

Subject: Documentation of Coverage under the Lower Colorado River Multi-Species Conservation Program for the Needles-Topock Bank Stabilization Project, Mohave County, Arizona

This is in response to your March 1, 2006, correspondence requesting review and concurrence by the Fish and Wildlife Service (FWS) that the subject project is an action covered under the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) biological opinion for purposes of section 7 compliance under the Endangered Species Act (ESA). We have reviewed the list of covered actions in the biological assessment for the LCR MSCP and the description of the proposed project in making our determination.

The proposed project is the stabilization of two miles (RM A-240.5-238.5) of the eastern bank of the Colorado River on the Havasu National Wildlife Refuge in Mohave County, Arizona. This bankline is currently natural with no past stabilization. The proposed action would use rock rip-rap to stabilize the bank after contouring is completed. Implementation of the proposed action would include adherence to Avoidance and Minimization Measures 1, 3, and 6 from the Conservation Plan. The covered actions for Bureau of Reclamation under the LCR MSCP provide for up to 13.0 miles of new bank stabilization. The proposed action was identified in the LCR MSCP biological assessment as a three mile (RM A-241.5-238.5) project. The proposed action is for a shorter project in the same area. Completion of this project, as proposed, will use 2.0 miles of the 13.9 miles of new stabilization covered under the LCR MSCP.

The section 7 consultation for this proposed action has been completed through the LCR MSCP and the implementation of appropriate avoidance and minimization measures. No additional section 7 consultation is necessary for this proposed action. This concurrence applies only to section 7 consultation for the proposed action, and does not address Reclamation's responsibilities under other environmental law such as the National Environmental Policy Act.

Thank you for the opportunity to review this proposed action. If there are questions regarding this concurrence, please contact me (x244) or Lesley Fitzpatrick (x236).

for Steven L. Spangle

cc: Program Manager, LCR MSCP, Lower Colorado Region, Bureau of Reclamation, Boulder City, NV (LC-8000)

W:\Lesley Fitzpatrick\04-0161 BR2.doc:cgg

ENV- 1.00

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
2221 WEST GREENWAY ROAD, PHOENIX, AZ 85023-4399
(602) 942-3000 • AZGFD.GOV

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Folder I.D. 1937
Keyword

December 28, 2005

Mr. Julian DeSantiago
BOR Yuma Area Office
7301 Calle Agua Salada
Yuma, AZ 85366

Re: Special Status Species Information for **Needles to Interstate 40 along the Colorado River; Proposed Bankline Stabilization Project.**

Dear Mr. DeSantiago:

The Arizona Game and Fish Department (Department) has reassessed your request, dated March 22, 2005, regarding special status species information associated with the above-referenced project area. Due to discrepancies between river miles, the incorrect area was assessed. The Department's Heritage Data Management System (HDMS) has been reaccessed and current records show that the special status species listed on the attachment have been documented as occurring in the project vicinity (3-mile buffer). In the future, please include Township, Range, and Section for your projects to ensure an accurate assessment. In addition, this project does not occur in the vicinity of any Proposed or Designated Critical Habitats.

The Department's HDMS data are not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity.

Making available this information does not substitute for the Department's review of project proposals, and should not decrease our opportunities to review and evaluate new project proposals and sites. The Department is also concerned about other resource values, such as other wildlife, including game species, and wildlife-related recreation. The Department would appreciate the opportunity to provide an evaluation of impacts to wildlife or wildlife habitats associated with project activities occurring in the subject area, when specific details become available.

AN EQUAL OPPORTUNITY REASONABLE ACCOMMODATIONS AGENCY

If you have any questions regarding this letter, please contact me at (602) 789-3606. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

Sincerely,

Ginger Ritter

Ginger L. Ritter
Project Evaluation Program Specialist

SSS:glr

Attachment

cc: Rebecca Davidson, Project Evaluation Program Supervisor
Kevin Morgan, Habitat Program Manager, Region III

AGFD # 03-16-05(11)

Special Status Species within 3 Miles of Needles to I-40 along the Colorado River

NAME	COMMON NAME	ESA	USFS	BLM	STATE
Aechmophorus clarkii	Clark's Grebe				WSC
Bat Colony					
Catostomus latipinnis	Flannelmouth Sucker	SC	S		
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	C	S		WSC
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE	S		WSC
Falco peregrinus anatum	American Peregrine Falcon	SC	S		WSC
Gopherus agassizii (Sonoran Population)	Sonoran Desert Tortoise	SC			WSC
Haliaeetus leucocephalus	Bald Eagle	LT,PD	S		WSC
Macrotus californicus	California Leaf-nosed Bat	SC		S	WSC
Myotis velifer	Cave Myotis	SC		S	
Rallus longirostris yumanensis	Yuma Clapper Rail	LE			WSC
Xyrauchen texanus	Razorback Sucker	LE	S		WSC

No Critical Habitats in project area. AGFD # 03-16-05(11). Proposed Bankline Stabilization Project.

Arizona Game and Fish Department, Heritage Data Management System, December 28, 2005.
Project Evaluation Program.

STATUS DEFINITIONS

ARIZONA GAME AND FISH DEPARTMENT (AGFD)
HERITAGE DATA MANAGEMENT SYSTEM (HDMS)

FEDERAL US STATUS

ESA **Endangered Species Act** (1973 as amended)
US Department of Interior, Fish and Wildlife Service (http://arizonaes.fws.gov)

Listed

- **LE** Listed Endangered: imminent jeopardy of extinction.
- **LT** Listed Threatened: imminent jeopardy of becoming Endangered.
- **XN** Experimental Nonessential population.

Proposed for Listing

- **PE** Proposed Endangered.
- **PT** Proposed Threatened.

Candidate (Notice of Review: 1999)

- **C** Candidate. Species for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened under ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.
- **SC** Species of Concern. The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the US Fish and Wildlife Service, but neither term has official status (currently all former C2 species).

Critical Habitat (check with state or regional USFWS office for location details)

- **Y** Yes: Critical Habitat has been designated.
- **P** Proposed: Critical Habitat has been proposed.

[\NNo Status: certain populations of this taxon do not have designated status (check with state or regional USFWS office for details about which populations have designated status)].

USFS **US Forest Service** (1999 Animals, 1999 Plants: corrected 2000)
US Department of Agriculture, Forest Service, Region 3 (http://www.fs.fed.us/r3/)

- **S** Sensitive: those taxa occurring on National Forests in Arizona which are considered sensitive by the Regional Forester.

BLM **US Bureau of Land Management** (2000 Animals, 2000 Plants)
US Department of Interior, Bureau of Land Management, Arizona State Office (http://azwww.az.blm.gov)

- **S** Sensitive: those taxa occurring on BLM Field Office Lands in Arizona which are considered sensitive by the Arizona State Office.
- **P** Population: only those populations of Banded Gila monster (*Heloderma suspectum cinctum*) that occur north and west of the Colorado River, are considered sensitive by the Arizona State Office.

TRIBAL STATUS

NESL Navajo Endangered Species List (2000)
Navajo Nation, Navajo Fish and Wildlife Department
(http://www.heritage.tnc.org/nhp/us/navajo/esl.html)

The Navajo Endangered Species List contains taxa with status from the entire Navajo Nation which includes parts of Arizona, Utah, and New Mexico. In this notebook we provide NESL status for only those taxa whose distribution includes part or all of the Arizona portion of the Navajo Nation.

Groups

- **1** Those species or subspecies that no longer occur on the Navajo Nation.
- **2** Any species or subspecies which is in danger of being eliminated from all or a significant portion of its range on the Navajo Nation.
- **3** Any species or subspecies which is likely to become an endangered species, within the foreseeable future, throughout all or a significant portion of its range on the Navajo Nation.
- **4** Any species or subspecies for which the Navajo Fish and Wildlife Department (NF&WD) does not currently have sufficient information to support their being listed in Group 2 or Group 3 but has reason to consider them. The NF&WD will actively seek information on these species to determine if they warrant inclusion in a different group or removal from the list.

MEXICAN STATUS

MEX Mexican Federal Endangered Species List (October 16, 2000)
Proyecto de Norma Oficial Mexicana PROY-NOM-059-ECOL-2000

The Mexican Federal Endangered Species List contains taxa with status from the entire Mexican Republic and waters under its jurisdiction. In this notebook we provide MEX designations for only those taxa occurring in Arizona and also in Mexico.

- **P** En Peligro de Extinción (Determined Endangered in Mexico): in danger of extinction.
- **A** Amenazada (Determined Threatened in Mexico): could become endangered if factors causing habitat deterioration or population decline continue.
- **Pr** Sujeta a Protección Especial (Determined Subject to Special Protection in Mexico): utilization limited due to reduced populations, restricted distribution, or to favor recovery and conservation of the taxon or associated taxa.
- **E** Probablemente extinta en el medio silvestre (Probably extinct in the wild of Mexico): A native species whose individuals in the wild have disappeared, based on pertinent documentation and studies that prove it. The only existing individuals of the species are in captivity or outside the Mexican territory.

[|= One or more subspecies of this species has status in Mexico, but the HDMS does not track it at the subspecies level (most of these subspecies are endemic to Mexico). Please consult the NORMA Oficial Mexicana PROY-NOM-059-ECOL-2000 for details.]

STATE STATUS

STATE:

Plants - NPL **Arizona Native Plant Law** (1999)
Arizona Department of Agriculture (http://agriculture.state.az.us/PSD/nativeplants.htm)

- **HS** Highly Safeguarded: no collection allowed.
- **SR** Salvage Restricted: collection only with permit.
- **ER** Export Restricted: transport out of State prohibited.
- **SA** Salvage Assessed: permits required to remove live trees.
- **HR** Harvest Restricted: permits required to remove plant by-products.

Wildlife - WSCA **Wildlife of Special Concern in Arizona** (in prep)
Arizona Game and Fish Department (http://www.azgfd.com)

- **WSC** Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Arizona Game and Fish Department's listing of Wildlife of Special Concern in Arizona (WSCA, in prep). Species indicated on printouts as WSC are currently the same as those in **Threatened Native Wildlife in Arizona** (1988).

Revised 8/24/04, AGFD HDMS
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S.H.P.O.- 2005 - 2390 (26135)

United States Department of the Interior

BUREAU OF RECLAMATION
Yuma Area Office
7301 Calle Agua Salada
Yuma, Arizona 85364

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Mr. James Garrison
State Historic Preservation Officer
Arizona State Parks
1300 West Washington
Phoenix, AZ 85007

Subject: Submittal of Negative Report; Request for Concurrence on Finding of No Historic Properties Affected - Needles Topock Bank Stabilization Project

Dear Mr. Garrison:

Enclosed is a report entitled "Archaeological Survey Report of the Needles/Topock Bank Stabilization Project on the Colorado River, Yuma County, Arizona" for your review. Due to heavy erosion, Reclamation plans to stabilize the east bank of the Colorado River near Havasu, Arizona. Reclamation hired RECON to perform a cultural resources inventory of 75 acres of riverfront in 2004. No cultural resources, other than a single isolate, were identified in this disturbed and heavily vegetated area.

Based on the negative findings, we request your concurrence on a finding of No Historic Properties Affected. No further work is recommended for this undertaking. If you have any questions, feel free to contact Archeologist, Ms. Renee Kolvet, at 702-293-8443 or via email at rkolvet@lc.usbr.gov, or Environmental Protection Specialist, Mr. Julian DeSantiago, at 928-343-8259 or via email at jdesantiago@lc.usbr.gov.

Concur

Sincerely,

for Cynthia Hoeft, Director
Resource Management Office

No Historic Properties Affected
for Arizona State Historic Preservation Officer
Arizona State Parks Board
Nov. 28, 2005

Enclosure

ENV- 7.00

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
2221 WEST GREENWAY ROAD, PHOENIX, AZ 85023-4399
(602) 942-3000 • AZGFD.GOV

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1937

March 22, 2005

Mr. Julian DeSantiago
BOR, Yuma Area Office
7301 Calle Agua Salada
Yuma, AZ 85366

Re: Special Status Species Information for **Colorado River Mile 240.0 to River Mile 238.0; Proposed Bankline Stabilization Project.**

Dear Mr. DeSantiago:

The Arizona Game and Fish Department (Department) has reviewed your request, dated March 1, 2005, regarding special status species information associated with the above-referenced project area. The Department's Heritage Data Management System (HDMS) has been accessed and current records show that the special status species listed on the attachment have been documented as occurring in the project vicinity (3-mile buffer). In addition this project occurs in the vicinity of Designated Critical Habitat for razorback sucker (*Xyrauchen texanus*).

The Department's HDMS data are not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity.

Making available this information does not substitute for the Department's review of project proposals, and should not decrease our opportunities to review and evaluate new project proposals and sites. The Department is also concerned about other resource values, such as other wildlife, including game species, and wildlife-related recreation. The Department would appreciate the opportunity to provide an evaluation of impacts to wildlife or wildlife habitats associated with project activities occurring in the subject area, when specific details become available.

If you have any questions regarding this letter, please contact me at (602) 789-3619. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

Sincerely,

Ginger Ritter

Ginger L. Ritter
Heritage Data Management System, Data Specialist

SSS:glr

Attachment

cc: Rebecca Davidson, Project Evaluation Program Supervisor
Kevin Morgan, Habitat Program Manager, Region III

AGFD #03-16-05 (11)

Special Status Species within 3 Miles of Colorado River, RM 240.0 to 238.0

NAME	COMMON NAME	ESA	BLM	USFS	STATE
Camissonia specuicola ssp. hesperia	Grand Canyon Evening-primrose	SC			
Euderma maculatum	Spotted Bat	SC		S	WSC
Yucca whipplei	Our Lords Candle				SR

Within Critical Habitat for razorback sucker. AGFD # 03-16-05(11). Proposed Bankline Stabilization Project.

Arizona Game and Fish Department, Heritage Data Management System, February 18, 2005.

ENV-7.00

United States Department of the Interior

U.S. Fish and Wildlife Service

2321 West Royal Palm Road, Suite 103

Phoenix, Arizona 85021-4951

Telephone: (602) 242-0210 FAX: (602) 242-2513

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RECEIVED JAN 26 2005

ACTION CODE

REPLY DATE

DATE ACTION

DATE	INITIALS	CODE
1/27	JB	7200
1/27	RW	7210

Classification

Project

Control No.

Folder I.D. 500184

Keyword

1937

In Reply Refer to:

AESO/SE
02-21-05-I-0179

RW
JD
km

January 25, 2005

Memorandum

To: Director, Resource Management Office, Yuma Area Office, Bureau of Reclamation, Yuma, Arizona

From: Field Supervisor

Subject: Concurrence with Species List for Bankline Stabilization and Restoration Project at River Mile A-240.0 to A-238.0, Mohave County, Arizona

5000157

PRJ-03.00-Channelization

This responds to your memorandum of January 14, 2005, requesting concurrence by the Fish and Wildlife Service (FWS) for the list of listed or proposed threatened or endangered species and species that are candidates for listing or are of special concern attached to your memorandum. We have reviewed your list and have the following comments.

The least Bell's vireo (*Vireo bellii pusillus*) is not found along the lower Colorado River and need not be considered in your evaluation of effects. We also note that the desert tortoise (*Gopherus agassizii*) is not listed under the Endangered Species Act in Arizona in the vicinity of the proposed action. We do suggest that this species be evaluated due to its status in Arizona. All species covered under the Lower Colorado River Multi-Species Conservation Program that occur in this reach of the river are included on the list.

We appreciate your ongoing coordination on this consultation. We have assigned consultation number 02-21-05-I-0179 to this consultation. Please reference that number in future communications for this project. We look forward to meeting with you and the Corps of Engineers to discuss this project on February 8, 2005. If you have any questions or concerns about this consultation, or the consultation process in general, please contact Jeff Whitney (x204) or Lesley Fitzpatrick (x236).

For Steven L. Spangle

cc: Marjorie Blaine, Regulatory Branch, U.S. Army Corps of Engineers, Tucson, AZ
Regional Director, Bureau of Reclamation, Boulder City, NV (LC-2400)

W:\Lesley Fitzpatrick\05-0179 Havasu Bankline.doc:cgg

Sensitive Species for the
Needles Topock Bankline Stabilization and Restoration

Species	Status[1]
Threatened, Endangered, and Proposed Threatened or Endangered Species	
Bonytail chub (*Gila elegans*)	Federal: Endangered, no critical habitat in project area State: AZ - Wildlife of Special Concern Other: MSCP Covered Species
Razorback sucker (*Xyrauchen texanus*)	Federal: Endangered, with critical habitat State: AZ - Wildlife of Special Concern Other: MSCP Covered Species
Brown pelican (*Pelecanus occidentalis*)	Federal: Endangered State: AZ - None
Least Bell's vireo (*Vireo bellii pusillus*)	Federal: Endangered State: AZ - None
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Federal: Endangered, with proposed critical habitat in project area State: AZ - Wildlife of Special Concern Other: MSCP Covered Species
Yuma clapper rail (*Rallus longirostris yumanensis*)	Federal: Endangered State: AZ - Wildlife of Special Concern Other: MSCP Covered Species
Desert tortoise (*Gopherus agassizii*)	Federal: Threatened (Mohave population) State: AZ – Wildlife of Special Concern Other: MSCP Covered Species
Bald eagle (*Haliaeetus leucocephalus*)	Federal: Threatened, proposed for delisting State: AZ - Wildlife of Special Concern
Candidate Species, Sensitive Species, and Species of Concern	
Yellow-billed cuckoo (*Coccyzus americanus*)	Federal: Candidate State: AZ - Wildlife of Special Concern Other: MSCP Covered Species
Flannelmouth sucker (*Catostomus latipinnis*)	Federal: None State: AZ - Wildlife of Special Concern Other: MSCP Covered Species
MacNeill's sootywing skipper (*Pholisora gracielae*)	Federal: Species of Concern State: AZ - None Other: MSCP Covered Species
Arizona Bell's vireo (V*ireo bellii arizonae*)	Federal: None State: AZ – None Other: MSCP Covered Species
California black rail (*Laterallus jamaicensis coturniculus*)	Federal: Species of Concern State: AZ - Wildlife of Special Concern Other: MSCP Covered Species
Elf owl (*Micrathene whitneyi*)	Federal: none State: AZ - none Other: MSCP Covered Species
Gila woodpecker (*Melanerpes uropygialis*)	Federal: None State: AZ – None Other: MSCP Covered Species
Gilded flicker (*Colaptes chysoides*)	Federal: None State: AZ – None Other: MSCP Covered Species

Species	Status[1]
Sonoran yellow warbler (*Dendroica petechia sonorana*)	Federal: None State: AZ – none Other: MSCP Covered Species
Summer tanager (*Piranga rubra*)	Federal: None State: AZ – none Other: MSCP Covered Species
Vermillion flycatcher (*Pyrocephalus rubinus*)	Federal: None State: AZ – None Other: MSCP Covered Species
Western least bittern (*Ixobrychus exilis hesperis*)	Federal: Species of Concern State: AZ – Wildlife of Special Concern Other: MSCP Covered Species
Colorado River cotton rat (*Sigmodon arizonae plenus*)	Federal: Species of Concern State: AZ – none Other: MSCP Covered Species
Western red bat (*Lasiurus blossevillii*)	Federal: None State: AZ – Wildlife of Special Concern Other: MSCP Covered Species
Western yellow bat (*Lasiurus xanthinus*)	Federal: None State: AZ – Wildlife of Special Concern Other: MSCP Covered Species

[1]**Sources of Status:** Online information services, includes (1) U.S. Fish and Wildlife Service (http://endangered.fws.gov/wildlife.html#Species), (2) Arizona Game and Fish Department (http://www.gf.state.az.us/w_c/edits/hdms_abstracts.html), and (3) Draft Lower Colorado River Multiple Species Conservation Program (http://www.lcrmscp.org).

APPENDIX D
CWA Section 404 Permit (Dredge and Fill) Authorization
and
CWA Section 401 Water Quality Certification

Appendix D

ENV-8.00-Corps of Engineer Permits to BOR

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
ARIZONA-NEVADA AREA OFFICE
3636 NORTH CENTRAL AVENUE, SUITE 900
PHOENIX, ARIZONA 85012-1939

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RECEIVED MAY - 1 2006
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REPLY DATE
DATE ACTION TAKEN

DATE	INITIALS	CODE
		7210
		7200
		7000

Classification
Project 6000744
Control No.
Folder I.D. 2376

REPLY TO
ATTENTION OF:

April 25, 2006

Office of the Chief
Regulatory Branch

Ms. Cynthia Hoeft
Director, Resource Management Office
Bureau of Reclamation Yuma Area Office
7301 South Calle Agua Salada
Yuma, Arizona 85364-9763

File Number: 2005-00733-MB

Dear Ms. Hoeft:

6000531

This is in reply to your March 7, 2006 letter concerning your proposal to stabilize approximately two river miles (RM 240.5 to 238.5) of unprotected bankline with 4 to 10-inch rock involving the discharge of approximately 27,128 cubic yards of fill material below the ordinary high water mark in the Colorado River on the AZ bankline of the Havasu National Wildlife Refuge (Sections 22, 23, and 26, T16N, R21W), Mohave County, Arizona, as shown on the attached 3 figures.

The Corps of Engineers has determined, under Section 10 of the River and Harbor Act of March 3, 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344), that your proposed activity complies with the terms of Nationwide Permit No. 13, "Bank Stabilization." You must comply with all terms and applicable conditions (regional, general, and 401 conditions) described in Enclosure 1 and complete the compliance statement (Enclosure 2).

Furthermore, you must comply with the following **Special Condition(s)**:

a. The permittee shall comply with all requirements and conditions of Section 401 state water quality certification as shown on Enclosure 1.

b. Should cultural resources or archeological remains be encountered during construction/excavation, work shall immediately cease in the area of discovery. The permittee shall promptly notify the State Historic Preservation Office at (602)542-7137 and the Corps at (520) 584-1684.

c. The permittee shall not disturb shoreline or native vegetation.

d. The permittee shall not stockpile material below the ordinary high water mark of the Colorado River.

e. This permit does not authorize dredging in the Colorado River; however, excavation prior to placement of rock, if necessary, is authorized.

PRJ-23.00-Channelization

f. The permittee shall perform work during low water conditions when the area is naturally dewatered and shall suspend all operations when there is water within the project area. The permittee shall not discharge fill or construction debris into the waters of the Colorado River.

g. The permittee shall immediately remove all excavated material to an upland disposal site.

h. The permittee shall not divert flows outside of the ordinary high water mark of the Colorado River. Cofferdams are not authorized by this permit.

i. The permittee shall not use mechanized equipment below the ordinary high water mark. Mechanized equipment, including backhoes, shall be operated from the bank above the ordinary high water mark.

j. The permittee shall not excavate, fill, or grade in the watercourse outside of the boundaries permitted.

k. The permittee shall not use areas below the ordinary high water mark as a fill source.

l. The permittee shall remove all excess fill and/or construction debris/equipment from the site immediately upon completion of construction.

m. Prior to onset of construction/excavation, the permittee shall provide the contractor(s) with a copy of this permit. The contractor shall read and agree to comply with all conditions herein. A copy of this permit shall be posted on site at all times during construction.

This verification is valid until the nationwide permit(s) referenced above is modified, reissued, or revoked. All of the nationwide permits are scheduled to be modified, reissued, or revoked prior to March 18, 2007. It is incumbent upon you to remain informed of changes to the nationwide permits. We will issue a public notice when the nationwide permits are reissued. Furthermore, if you commence or are under construct to commence the authorized activity before the date that the relevant nationwide permit(s) is modified, reissued or revoked you will have twelve (12) months from the date of the modification, reissuance, or revocation of the nationwide permits to complete the activity under the present terms and conditions of the nationwide permits.

A nationwide permit does not grant any property rights or exclusive privileges. Also, it does not authorize any injury to the property or rights of others or authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, state, or local authorizations required by law.

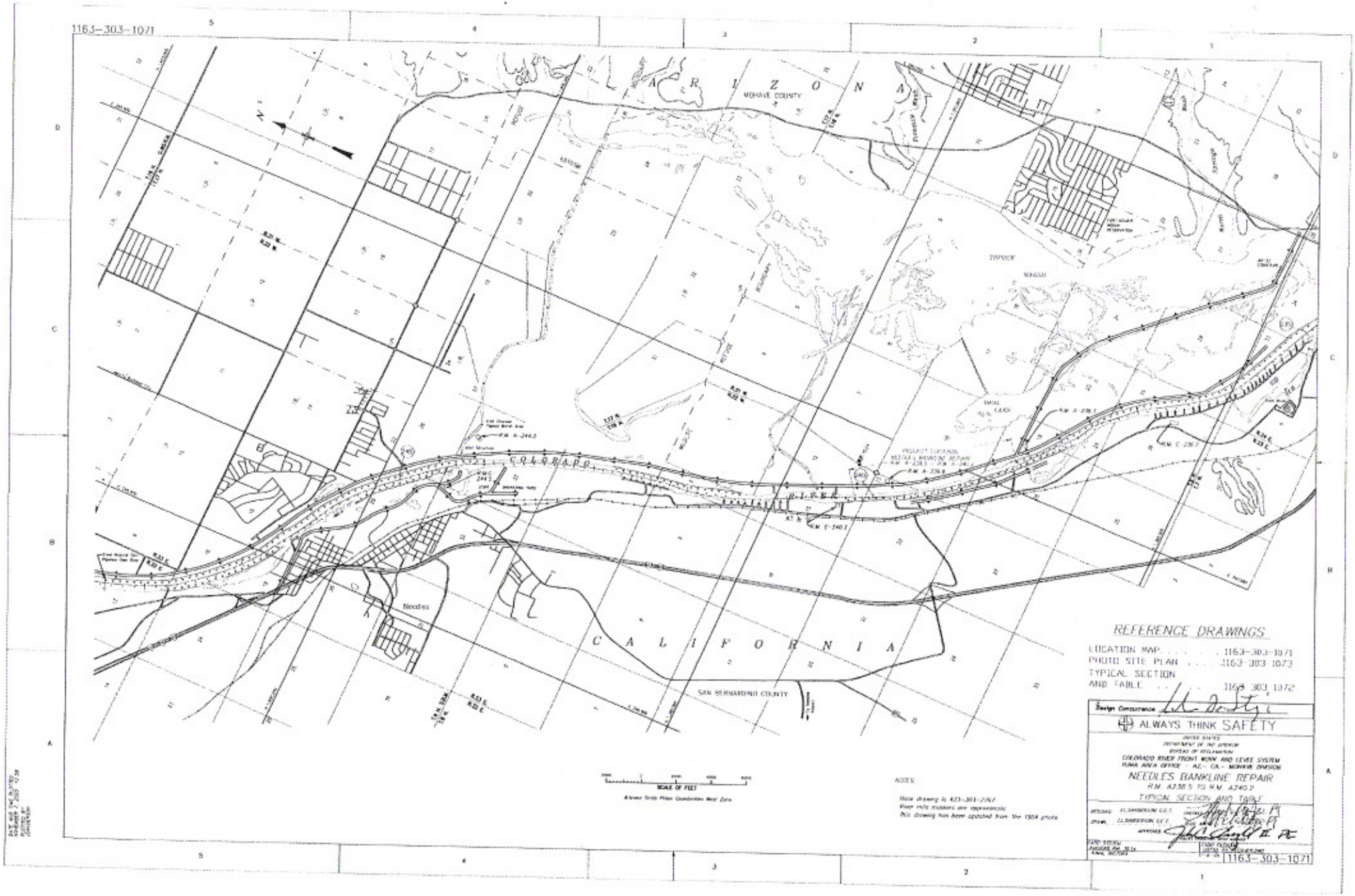
Thank you for participating in our regulatory program. If you have questions, please contact Marjorie E. Blaine at (520) 584-1684.

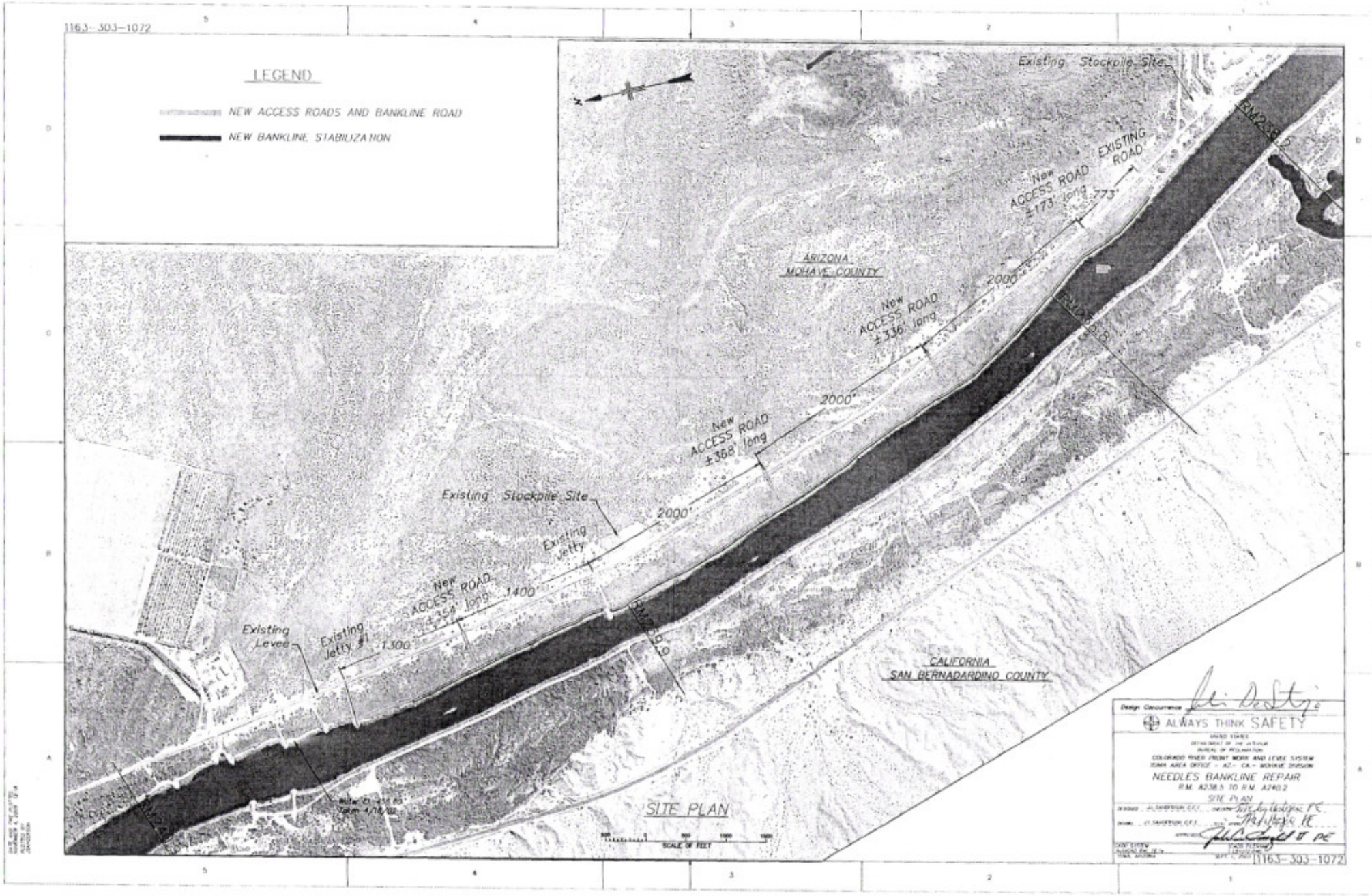
Sincerely,

Marjorie E. Blaine

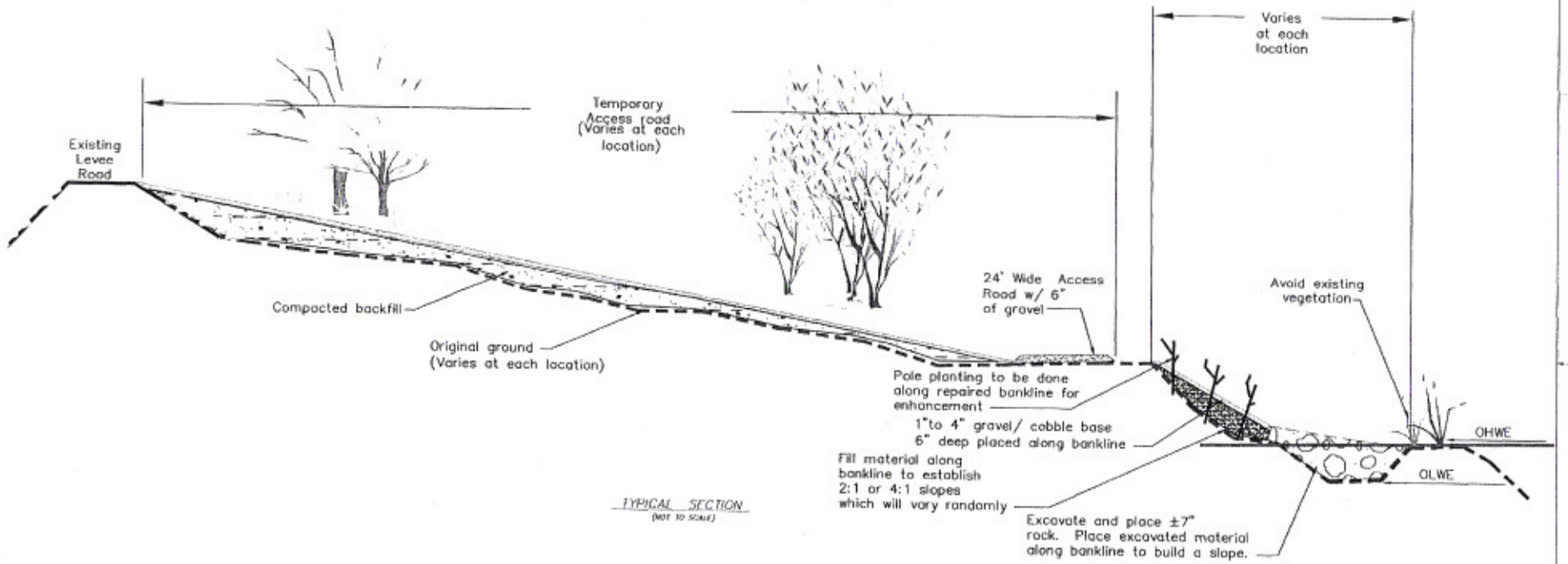
for Cindy Lester P.E.
Chief, Arizona Section
Regulatory Branch

Enclosures


1163-303-1071
ARIZONA
MOHAVE COUNTY
COLORADO
RIVER
Needles
CALIFORNIA
SAN BERNARDINO COUNTY
REFERENCE DRAWINGS
LOCATION MAP 1163-303-1071
PHOTO SITE PLAN 1163-303-1073
TYPICAL SECTION
AND TABLE 1163-303-1072
Design Concurrence
ALWAYS THINK SAFETY
COLORADO RIVER FRONT WORK AND LEVEE SYSTEM
YUMA AREA OFFICE - AZ.-CA.- MOHAVE DIVISION
NEEDLES BANKLINE REPAIR
R.M. A2385 TO R.M. A2467
TYPICAL SECTION AND TABLE
1163-303-1071


1163-303-1072
LEGEND
NEW ACCESS ROADS AND BANKLINE ROAD
NEW BANKLINE STABILIZATION
Existing Stockpile Site
EXISTING ROAD
New ACCESS ROAD ±173' long
773'
ARIZONA
MOHAVE COUNTY
2000'
New ACCESS ROAD ±336' long
2000'
New ACCESS ROAD ±368' long
2000'
Existing Stockpile Site
Existing Jetty
New ACCESS ROAD ±358' long
1400'
Existing Levee
Existing Jetty #1
1300'
CALIFORNIA
SAN BERNADARDINO COUNTY
SITE PLAN
SCALE OF FEET
ALWAYS THINK SAFETY
COLORADO RIVER FRONT WORK AND LEVEE SYSTEM
NEEDLES BANKLINE REPAIR
R.M. A238.5 TO R.M. A240.2
SITE PLAN
1163-303-1072

1163-303-1073



TYPICAL SECTION
(NOT TO SCALE)

MATERIAL QUANTITIES AND ACREAGE IMPACTS TABLE

ITEMS & MATERIALS	QUANTITIES OF MATERIAL	AMOUNT OF ACRES IMPACTED
ACCESS ROADS- 1" GRAVEL, 6" DEEP	±5,224 CUBIC YARDS	6.4 ACRES IMPACTED
BANKLINE STABILIZATION - 1" to 4" GRAVEL / COBBLE, 6" DEEP	±5,340 CUBIC YARDS	5.4 ACRES IMPACTED
BANKLINE STABILIZATION - 7" - STONE	±27,128 CUBIC YARDS	3.4 ACRES IMPACTED
FILL MATERIAL FOR ACCESS ROADS	±3,290 CUBIC YARDS	

NOTES:

1. Ordinary high water elevation at the begining location of the project is 457.1 and at the end at the end location it is 455.23, ordinary low water elevation at the begining location of project is 451.31 and at the end location is 450.69.

2. When placing Access roads avoid high value vegetation.

3. Access roads will follow existing bankline, and existing grade.

Design Concurrence

ALWAYS THINK SAFETY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLORADO RIVER FRONT WORK AND LEVEE SYSTEM
YUMA AREA OFFICE - AZ - CA - MOHAVE DIVISION

NEEDLES BANKLINE REPAIR
R.M. A238.5 TO R.M. A240.2

TYPICAL SECTION AND TABLE

DESIGNED - J.C. SANDERSON C.E.T. DATE
DRAWN - J.C. SANDERSON C.E.T. SUP. APR
APPROVED

1163-303-1073

NATIONWIDE PERMIT NUMBER 13

"BANK STABILIZATION"

US Army Corps of Engineers
Los Angeles District

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) the U.S. Army Corps of Engineers published the "Final Notice of Issuance of Nationwide Permits" in the Federal Register (67 FR 2020) on January 15, 2002, and Corrections on February 13, 2002 (67 FR 6692) and February 25, 2002 (67 FR 8579). This Nationwide Permit is effective from March 18, 2002 to March 18, 2007 unless modified, reissued or revoked before that time. It is incumbent upon the permittee to remain informed of changes to the nationwide permits.

13. Bank Stabilization: Bank stabilization activities necessary for erosion prevention provided the activity meets all of the following criteria:

a. No material is placed in excess of the minimum needed for erosion protection;

b. The bank stabilization activity is less than 500 feet in length;

c. The activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high water mark or the high tide line;

d. No material is placed in any special aquatic site, including wetlands;

e. No material is of the type, or is placed in any location, or in any manner, to impair surface water flow into or out of any wetland area;

f. No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas); and,

g. The activity is part of a single and complete project.

Bank stabilization activities in excess of 500 feet in length or greater than an average of one cubic yard per running foot may be authorized if the permittee notifies the District Engineer in accordance with the "Notification" General Condition 13 and the District Engineer determines the activity complies with the other terms and conditions of the NWP and the adverse environmental effects are minimal both individually and cumulatively. This NWP may not be used for the channelization of waters of the US. (Sections 10 and 404)

401 Certification

Tribal waters	Certified - Fort Apache Reservation
	Individual Certification required. (All other Reservations)
Unique waters	Individual Certification required.
Other waters	Conditional Certification.

401 Conditions

1. The Permittee shall provide a copy of these State CWA 401 Conditions and permit specific conditions to all appropriate contractors and subcontractors. The applicant shall also post a copy of these conditions in a water resistant location at the construction site where it may be seen by the workers. If there are any substantive changes in the proposed project that may affect water quality, the applicant shall notify ADEQ. Failure to do so may result in the revocation of this Certification.
2. The Permittee is responsible for obtaining all other permits, certifications and licenses that may be required by federal, state or local authorities. Activities which may require other approvals include: construction activities disturbing greater than five acres of land [NPDES Stormwater Permit], use of reclaimed wastewater for dust control or irrigation [Reclaimed Water Permit], or dewatering of construction sites to a surface waterbody [NPDES Process Wastewater Permit].
3. Erosion control and/or bank protection features (e.g., silt fences, straw bales, rip-rap, or mulching) shall be used, where appropriate, to minimize channel or bank erosion and soil loss. These features shall be maintained, as necessary, during pre-construction and construction periods. Denuded areas shall be revegetated as soon as possible with native plants and seed.
4. Earthen fill placed in locations subject to scour shall contain not more than ten percent (10%) of particles finer than 0.25 mm diameter (passing a No. 60 sieve, on a dry weight basis).
5. Upon completion of construction, the work area shall be restored to maintain the stability of upstream and downstream segments of waters of the U.S. (WUS) with respect to erosion and sedimentation.

6. The Permittee is responsible for ensuring construction material and/or fill, placed within the ordinary high water mark (OHWM), is free from substances (including fines that may be associated with rip-rap material) that can cause or contribute to pollution of a surface water.
7. Debris (such as soil, silt, sand, rubbish, cement, asphalt, oil or petroleum products, organic materials, tires or batteries) derived from construction activities shall not be deposited at any site where it may be washed into W.U.S and shall be properly disposed of after completion of the work.
8. The Permittee shall have a spill containment plan to ensure that pollutants are contained, removed and properly disposed of. In addition, equipment maintenance shall be preformed at an upland site away from W.U.S.
9. Runoff and seepage from roadways, embankments, golf courses and other alterations of the natural environment into W.U.S. shall not cause a violation of Water Quality Standards.
10. Activities shall be conducted and monitored to ensure that pollution from concrete formation and equipment washing does not drain into waters of the U.S.
11. Erosion control and pollution prevention measures shall be performed at the earliest practicable time consistent with good construction practices. No work will be conducted below the ordinary high water mark unless, no construction material enters into the waters of the U.S., or at a minimum, a silt filter fabric barrier is installed between the work areas and waters of the U.S.
12. Operations that generate oily or greasy substances shall be confined to areas outside Waters of the U.S. The permittee shall have a contingency plan to inspect and collect fluids derived from mechanical operations/failures resulting in errant leaks that can accumulate on site.
13. Excavated material must be immediately removed from the project area to an upland site for storage and/or disposal.

Tribal waters: all waters of the United States occurring on tribal lands.

Unique Water: a surface water that has been classified as an outstanding state resource water by the Director of ADEQ under R18-11-112(E). Please note that unique water designations are subject to change by rule. Current rules should be consulted at the time of application for an NWP. The following are classified as unique waters on non-tribal lands:

1. The West Fork of the Little Colorado River, above Government Springs;
2. Oak Creek, including the West Fork of Oak Creek;
3. Peoples Canyon Creek, tributary to the Santa Maria River;
4. Burro Creek, above its confluence with Boulder Creek;
5. Francis Creek, in Mohave and Yavapai counties;
6. Bonita Creek, tributary to the upper Gila River;
7. Cienega Creek, from confluence with Gardner Canyon and Spring Water Canyon at R18E T17S to USGS gaging station at 32°02'09" / 110°40'34", in Pima County;
8. Aravaipa Creek, from its confluence with Stowe Gulch to the downstream boundary of Aravaipa Canyon Wilderness Area;
9. Cave Creek and the South Fork of Cave Creek (Chiricahua Mountains), from the headwaters to the Coronado National Forest boundary;
10. Buchman Canyon Creek, from its headwaters (Lat. 32°24'55.5" N, Long. 110°39'43.5"W) to approximately 9.8 miles downstream (Lat. 32°24'31.5" N, Long. 10°32'08" W);
11. Lee Valley Creek, from its headwaters to Lee Valley Reservoir;
12. Bear Wallow Creek, from its headwaters to the boundary of the San Carlos Indian Reservation;
13. North Fork of Bear Wallow Creek, from its headwaters to Bear Wallow Creek;
14. South Fork of Bear Wallow Creek, from its headwaters to Bear Wallow Creek;
15. Snake Creek, from its headwaters to its confluence with Black River;
17. Hay Creek, from its headwaters to its confluence with the West Fork of the Black River;
18. Stinky Creek, from the Fort Apache Indian Reservation boundary to its confluence with the West Fork of the Black River; and
19. KP Creek, from its headwaters to its confluence with the Blue River.

Other waters: all waters of the United States on non-tribal lands for which 401 Certification has not been specifically denied.

Nationwide Permit Regional Conditions

Of the nine regional conditions effective within the Los Angeles District of the Corps of Engineers, only three apply to projects within Arizona (2, 3, and 4). The remaining conditions apply to specific geographic areas, specific resources (vernal pools) or specific species (steelhead) in California.

The following regional conditions must be followed in order for any authorization by an NWP to be valid in the State of Arizona:

2. For the State of Arizona and the Mojave and Sonoran (Colorado) desert regions of California in Los Angeles District (generally north and east of the San Gabriel, San Bernardino, San Jacinto, and Santa Rosa mountain ranges, and south of Little Lake, Inyo County), no nationwide permit, except Nationwide Permits 1 (Aids to Navigation), 2 (Structures in Artificial Canals), 3 (Maintenance), 4 (Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities), 5 (Scientific Measurement Devices), 6 (Survey Activities), 9 (Structures in Fleeting and Anchorage Areas), 10 (Mooring Buoys), 11 (Temporary Recreational Structures), 20 (Oil Spill Cleanup), 22 (Removal of Vessels), 27 (Stream and Wetland Restoration Activities), 30 (Moist Soil Management for Wildlife), 31 (Maintenance of Existing Flood Control Projects), 32 (Completed Enforcement Actions), 35 (Maintenance Dredging of Existing Basins), 37 (Emergency Watershed Protection and Rehabilitation), and 38 (Cleanup of Hazardous and Toxic Waste), or other nationwide or regional general permits that specifically authorize maintenance of previously authorized structures or fill, can be used to authorize the discharge of dredged or fill material into a jurisdictional special aquatic site as defined at 40 CFR Part 230.40-45 (sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle-and-pool complexes).

3. For all projects proposed for authorization by nationwide or regional general permits where prior notification to the District Engineer is required, applicants must provide color photographs or color photocopies of the project area taken from representative points documented on a site map. Pre-project photographs and the site map would be provided with the permit application. Photographs should represent conditions typical or indicative of the resources before impacts.

4. Notification pursuant to general condition 13 shall be required for projects in all special aquatic sites as defined at 40 CFR Part 230.40-45 (sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle-and-pool complexes), and in all perennial watercourses or waterbodies in the State of Arizona and the Mojave and Sonoran (Colorado) desert regions of California in Los Angeles District (generally north and east of the San Gabriel, San Bernardino, San Jacinto, and Santa Rosa mountain ranges, and south of Little Lake, Inyo County), excluding the Colorado River from Davis Dam downstream to the north end of Topock and downstream of Imperial Dam.

Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by an NWP to be valid:

1. Navigation. No activity may cause more than a minimal adverse effect on navigation.
2. Proper Maintenance. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.
3. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.
4. Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.
5. Equipment. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.
6. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.
7. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).
8. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
9. Water Quality. (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).
(b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs).
This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.
10. Coastal Zone Management. In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).
11. Endangered Species. (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.
(b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfms.gov/prot_res/overview/es.html respectively.
12. Historic Properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR Part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.
13. Notification.
(a) Timing; where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does

not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:
(1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or
(2) If notified in writing by the District or Division Engineer that an Individual Permit is required; or
(3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).
(b) Contents of Notification: The notification must be in writing and include the following information:
(1) Name, address and telephone numbers of the prospective permittee;
(2) Location of the proposed project;
(3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP (Sketches usually clarify the project and when provided result in a quicker decision.);
(4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));
(5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed;
(6) For NWP 14 (Linear Transportation Projects), The PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable;
(7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing;
(8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee;
(9) For NWP 29 (Single-Family Housing), the PCN must also include:
(i) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;
(ii) A statement that the single-family housing activity is for a personal residence of the permittee;
(iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring ¼-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than ¼-acre in size, formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));
(iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;
(10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:
(i) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;
(ii) A delineation of any affected special aquatic sites, including wetlands; and,
(iii) Location of the dredged material disposal site;
(11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources;
(12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;
(13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;
(14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;
(15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;
(16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of

the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities);
(17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work; and
(18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.
(c) Form of Notification: The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(18) of General Condition 13. A letter containing the requisite information may also be used.
(d) District Engineer's Decision: In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary. The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.
If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then the District Engineer will notify the applicant either: (1) that the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an Individual Permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the US will occur until the District Engineer has approved a specific mitigation plan.
(e) Agency Coordination: The District Engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.
For activities requiring notification to the District Engineer that result in the loss of greater than ½-acre of waters of the US, the District Engineer will provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to NMFS within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.
(f) Wetland Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps (For NWP 29 see paragraph (b)(9)(iii) for parcels less than ¼-acre in size). The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

14. Compliance Certification. Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include: (a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;
(b) A statement that any required mitigation was completed in accordance with the permit conditions; and (c) The signature of the permittee certifying the completion of the work and mitigation.

15. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g. if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre).

16. Water Supply Intakes. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

17. Shellfish Beds. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

18. Suitable Material. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the CWA).

19. Mitigation. The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

(a) The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland impacts requiring a PCN, unless the District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands as compensatory mitigation, with preservation used only in exceptional circumstances.

(d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, ¼-acre of wetlands cannot be created to change a ¾-acre loss of wetlands to a ½-acre loss associated with NWP 39 verification. However, ½-acre of created wetlands can be used to reduce the impacts of a ½-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

(e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

(g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

(h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

20. Spawning Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

21. Management of Water Flows. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

22. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

23. Waterfowl Breeding Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

24. Removal of Temporary Fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

25. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters

or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.
(a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.
(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.
26. Fills Within 100-Year Floodplains. For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.
(a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.
(b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.
(c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.
27. Construction Period. For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project). For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps. For projects that have been verified by the Corps, an extension of a Corps approved completion date may requested. This request must be submitted at least one month before the previously approved completion date.

Section 10 Condition (Colorado River only). The permitee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

Definitions

Best Management Practices (BMPs): BMPs are policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural. A BMP policy may affect the limits on a development.
Compensatory Mitigation: For purposes of Section 10/404, compensatory mitigation is the restoration, creation, enhancement, or in exceptional circumstances, preservation of wetlands and/or other aquatic resources for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.
Creation: The establishment of a wetland or other aquatic resource where one did not formerly exist.
Enhancement: Activities conducted in existing wetlands or other aquatic resources that increase one or more aquatic functions.
Ephemeral Stream: An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.
Farm Tract: A unit of contiguous land under one ownership that is operated as a farm or part of a farm.
Flood Fringe: That portion of the 100-year floodplain outside of the floodway (often referred to as "floodway fringe").
Floodway: The area regulated by Federal, state, or local requirements to provide for the discharge of the base flood so the cumulative increase in water surface elevation is no more than a designated amount (not to exceed one foot as set by the National Flood Insurance Program) within the 100-year floodplain.
Independent Utility: A test to determine what constitutes a single and complete project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.
Intermittent Stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.
Loss of Waters of the US: Waters of the US that include the filled area and other waters that are permanently adversely affected by flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent above-grade, at-grade, or below-grade

fills that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the US is the threshold measurement of the impact to existing waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and values. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Impacts to ephemeral streams are not included in the linear foot measurement of loss of stream bed for the purpose of determining compliance with the linear foot limits of NWPs 39, 40, 42, and 43. Waters of the US temporarily filled, flooded, excavated, or drained, but restored to preconstruction contours and elevations after construction, are not included in the measurement of loss of waters of the US.

Non-tidal Wetland: A non-tidal wetland is a wetland (i.e., a water of the US) that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open Water: An area that, during a year with normal patterns of precipitation, has standing or flowing water for sufficient duration to establish an ordinary high water mark. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. The term "open water" includes rivers, streams, lakes, and ponds. For the purposes of the NWPs, this term does not include ephemeral waters.

Perennial Stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Permanent Above-grade Fill: A discharge of dredged or fill material into waters of the US, including wetlands, that results in a substantial increase in ground elevation and permanently converts part or all of the waterbody to dry land. Structural fills authorized by NWPs 3, 25, 36, etc. are not included.

Preservation: The protection of ecologically important wetlands or other aquatic resources in perpetuity through the implementation of appropriate legal and physical mechanisms. Preservation may include protection of upland areas adjacent to wetlands as necessary to ensure protection and/or enhancement of the overall aquatic ecosystem.

Restoration: Re-establishment of wetland and/or other aquatic resource characteristics and function(s) at a site where they have ceased to exist, or exist in a substantially degraded state.

Riffle and Pool Complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Single and Complete Project: The term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers (see definition of independent utility). For linear projects, the "single and complete project" (i.e., a single and complete crossing) will apply to each crossing of a separate water of the US (i.e., a single waterbody) at that location. An exception is for linear projects crossing a single waterbody several times at separate and distant locations: each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies.

Stormwater Management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater Management Facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and BMPs, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream Bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream Channelization: The manipulation of a stream channel to increase the rate of water flow through the stream channel. Manipulation may include deepening, widening, straightening, armoring, or other activities that change the stream cross-section or other aspects of stream channel geometry to increase the rate of water flow through the stream channel. A channelized stream remains a water of the US, despite the modifications to increase the rate of water flow.

Tidal Wetland: A tidal wetland is a wetland (i.e., water of the US) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line (i.e., spring high tide line) and are inundated by tidal waters two times per lunar month, during spring high tides.

Vegetated Buffer: A vegetated upland or wetland area next to rivers, streams, lakes, or other open waters which separates the open water from developed areas, including agricultural land. Vegetated buffers provide a variety of aquatic habitat functions and values (e.g., aquatic habitat for fish and other aquatic organisms, moderation of water temperature changes, and detritus for aquatic food webs) and help improve or maintain local water quality. A vegetated buffer can be established by maintaining an existing vegetated area or planting native trees, shrubs, and herbaceous plants on land next to open-waters. Mowed lawns are not considered vegetated buffers because they provide little or no aquatic habitat functions and values. The establishment and maintenance of vegetated buffers is a method of compensatory mitigation that can be used in conjunction with the restoration, creation, enhancement, or preservation of aquatic habitats to ensure that activities authorized by NWPs result in minimal adverse effects to the aquatic environment. (See General Condition 19.)

Vegetated Shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: A waterbody is any area that in a normal year has water flowing or standing above ground to the extent that evidence of an ordinary high water mark is established. Wetlands contiguous to the waterbody are considered part of the waterbody.

U.S. ARMY CORPS OF ENGINEERS

CERTIFICATION OF COMPLIANCE WITH

Permit Number: 2005-00733-MB

Date of Issuance: April 25, 2006

Name of Permittee:

Ms. Cynthia Hoeft
Director, Resource Management Office
Bureau of Reclamation Yuma Area Office
7301 South Calle Agua Salada
Yuma, Arizona 85364-9763

Upon completion of the activity authorized by this permit, sign this certification and return it with an original signature to the following address:

U.S. Army Corps of Engineers
ATTENTION: Regulatory Branch (2005-00733-MB)
3636 North Central Avenue Suite 900
Phoenix, Arizona 85012-1939

Please note that your permitted activity is subject to a compliance inspection by a Corps of Engineers' representative. If you fail to comply with this Nationwide permit you may be subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced Nationwide permit has been completed in accordance with the terms and conditions of said permit.

_____ _____

Signature of Permittee Date

Enclosure 2

ENV-8.00

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Janet Napolitano
Governor

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Director

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DATE	INITIALS	CODE
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		7200
		7000

Classification
Project
Control No. 6000729
Project I.D. 3566

April 20, 2006

Applicant: Bureau of Reclamation, Yuma Area Office
Cynthia Hoeft, Director of Resource Management
7301 Calle Agua Salada
Yuma, Arizona 85364-9763

Subject: Individual 401 Water Quality Certification Not Required
Needles-Topock Bank Stabilization Project
(T8N, R23E, Sections 15, 22, 23 & 26), Mohave County, Arizona
U.S. ACOE Nationwide Permit 13; ADEQ LTF: 39596; ADEQ WQDB: 18394

Dear Ms. Hoeft:

The Arizona Department of Environmental Quality (ADEQ), Water Quality Division has reviewed your Needles-Topock Bank Stabilization Project and the communication (email - 04/10/06) from Mr. Julian DeSantiago of your office and we agree that if you follow the 401 conditions that are part of the Army Corps of Engineers Nationwide Permit (NWP) 13, there is no need for you to have an individual 401 certification for this project.

Be aware that all of the existing NWPs are scheduled to be modified, reissued or revoked prior to March 18, 2007. It is incumbent upon the applicant to remain informed of changes to the NWPs. If substantive changes are made in the proposed project or if construction has not been started by the time the NWP 13 is modified, reissued or revoked, the applicant shall immediately notify ADEQ in writing.

Thank you for your cooperation and efforts to protect Arizona's finite and precious water resources.

Sincerely,

Robert J. Scalamera
Hydrologist/401 Certification Specialist

cc: U.S. Army Corps of Engineers, Regulatory Branch – Attn.: Marjorie Blaine
USEPA, Wetlands Regulatory Office – Attn.: Tim Vendlinski (WTR-8)
Bureau of Reclamation; Julian DeSantiago; 7301 Calle Agua Salada; Yuma, Arizona 85364-9763

RS306:016

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