

Full Prospectus

**Colusa Basin Mitigation Bank,  
Colusa County, California**

**October 9, 2012**

***Bank Proponent:***

Westervelt Ecological Services  
600 North Market Blvd, Suite 3  
Sacramento, CA 95834  
(916) 646-3644

Contact: Robert Capriola, *Conservation Planner*



## **1.0 Bank Name: Colusa Basin Mitigation Bank**

## **2.0 Bank Contacts**

Westervelt Ecological Services (WES) is the land owner and Bank Sponsor for the Colusa Basin Mitigation Bank. Contact information for WES is as follows:

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## **3.0 General Location Map and Address of the Bank Property**

The location map (**Figure 1** and all figures are found in the first tabbed section after the Prospectus text) depicts the 215-acre Property location in the Sacramento Valley of California. Due to its rural character, with no dwelling on the Property, there is no street address. The Colusa County Assessor's parcel numbers are: 017-110-045 for the northern parcel; 019-010-016 for the southerly parcel. The center of the Property is at approximately 39 deg. 6 min. and 16 sec. north latitude and -122 deg. 1 min. and 12 sec. south longitude.

## **4.0 USGS Map (Figure 2)**

## **5.0 Compatibility of Bank with Surrounding Properties, Aerial Photograph (Figure 3)**

The Bank Property, a 160-acre subset of the 215-acre Property, will be bounded on three sides by wetlands managed for wildlife habitat. The 33.5-acre Maxwell Public Utility District Treated Effluent Re-Use Project Mitigation Site will border the Bank Property on its southwest side. Two USDA Wetland Reserve Program properties lie along the western border of the Bank Property, and the Colusa National Wildlife Refuge lies north of the Bank Property. The Reclamation District 2047 (RD 2047) canal lies on the eastern edge of the property, and rice fields lie beyond the Department of Water Resources levee east of the canal. Development of a mitigation bank for wetlands and wetland-dependent species on the site is highly compatible with the surrounding properties and adds significantly to the large continuous block of habitat developed in the Colusa Basin. The Bank Property and surrounding parcels are all currently zoned E-A (Agriculture, Exclusive). The Bank Property zoning will be changed to O-S (Open Space) through a General Plan Amendment and Re-Zone process already undertaken with the County of Colusa. It is expected that the adjoining land uses will remain as they currently exist, in either agricultural production or in open space uses. If agricultural lands are converted to another use, their soils, remoteness from urban areas, and location within the 100-

year floodplain, would dictate that they would likely be converted to open space and wildlife habitat uses and not urban or other uses incompatible with the proposed Bank.

## **6.0 Bank Establishment and Operation**

The Property was purchased in fee-title by WES in December of 2011. In 2013, a 33.5-acre portion of the Property will be restored as a stand-alone mitigation site for the Maxwell Public Utility District Treated Wastewater Re-Use Project. This mitigation site will have a separate easement, endowment, and management plan from the Bank, but these documents are based on the approved IRT templates for use by Banks.

Bank Entitlement is anticipated to be completed in 2013, but construction cannot begin until the current farm lease expires after the 2014 growing season. Construction of the Bank portion of the property will be entirely funded by WES and will be completed within a single dry season (summer of 2015). After construction, interim management will be conducted by WES and will continue through the establishment period until performance standards are achieved. Interim management measures will include site monitoring, water and vegetation management, maintenance of access roads, establishment of signage to deter trespass, and removal of any garbage or trash. WES will be the long-term manager of the Bank Property. Long-term management will be funded by a non-wasting endowment and will be guided by an approved long-term management plan approved with the Bank Enabling Instrument for the Bank.

## **7.0 Bank Sponsor Qualifications**

WES is a private firm providing mitigation solutions and is headquartered in Sacramento, California. Our staff has over six decades of combined local mitigation planning and mitigation/conservation banking experience. Our parent organization, the Westervelt Company, has been in operation for over 120 years and is committed to land stewardship and managing its land and water resources for future generations. The Westervelt Company currently manages over one million acres of land nationwide through the sustainable forestry initiative, wildlife management programs, and mitigation banking. In the past five years, WES has established four conservation banks and two mitigation banks in the State of California, two mitigation banks in Alabama, two mitigation banks in Florida, and one conservation bank in Mississippi, and has 5 additional banks in various stages of entitlement in California and Florida. Westervelt Ecological Services Banks include: Mariner Conservation Bank, Big Gun Conservation Bank, Burke Ranch Conservation Bank, Sutter Basin Conservation Bank (GGS), Van Vleck Ranch Mitigation Bank, and Cosumnes Floodplain Mitigation Bank in California, and Chickasawhay, Big Sandy, Yellowleaf, St. Marks, and Pensacola Banks in the Southeastern region. Four of these Banks have been entitled under the “New Rule” standards; the two California mitigation banks were also established using the templates adopted by the multi-agency team in 2008.

Descriptions of the capabilities and qualifications of key personnel for this Bank are presented in **Appendix A**.

## **8.0 Wetland Delineation Map**

The preliminary wetland delineation report and map for the Bank can be found in **Appendix B**. The report and mapping were completed by Westervelt Ecological Services staff, and were submitted to the Corps on August 6, 2012 for verification. A total of 5.738 acres of wetland features were mapped within the study area consisting of agricultural seasonal wetlands (Palustrine Emergent Marsh Persistent Seasonally Flooded PEM1C). Areas mapped as wetlands represent locations of poor drainage that were observed to retain natural precipitation in the absence of supplemental irrigation water.

## **9.0 Preliminary Biological Resources Survey**

### **9. a Bank Location and Features**

The Bank Property is located approximately 5.5 miles south of the City of Colusa California in a rural portion of Colusa County. The Bank Property is currently in rice production, and the features consist of leveled paddies with 3 foot high “checks” separating the fields. The fields are accessed by unimproved farm roads on the perimeter of the property. Drainage ditches and water supply canals surround the property. **Figure 4** includes photographs of the Bank Property and its features.

The Bank is adjacent to the Colusa National Wildlife Refuge, which supports a well-documented population center for GGS. Areas west of the Bank have recorded habitat conservation easements. Protection of habitat in the Colusa Basin where numerous giant garter snakes have been documented is a priority one recovery task under the US Fish and Wildlife Service Recovery Plan for GGS. The California Department of Fish and Game (DFG) and Colusa Refuge, through the Wildlife Conservation Board, Ducks Unlimited, and other private and non-profit entities, have a number of marsh habitat and endangered species conservation projects in the immediate area of the Bank.

The Bank is immediately to the west of, and adjacent to, the RD 2047 drain. The drain provides good connectivity to the conservation efforts to the north and west, as well as conserved floodplain and habitats along the drain to the south of the Bank. The RD 2047 drain itself may also provide suitable GGS habitat. The east side of the RD 2047 drain contains a high levee, the top of which remains above flood level during high rainfall events. Over-wintering GGS from bypasses such as the Sutter Bypass appear to rely on the levees as refuge during periods of inundation, and subsequently disburse to adjacent habitats as they become suitable in the spring. Accordingly, GGS occupying the

west side of the RD 2047 drain or dispersing along the levee may colonize the adjacent habitat within the Bank. The RD 2047 drain and associated habitats provide a suitable aquatic movement corridor between the conserved habitat areas around the Colusa Refuge population of GGS, the Bank, and existing GGS populations downstream.

The surrounding lands provide functional habitat value and connectivity between the Bank and nearby conserved lands. Most of the adjacent land use is either in rice production or managed as wetlands for migratory and resident species. The rice fields provide suitable habitat features for foraging GGS and expand the potential migration corridor between the Bank and habitats beyond the constraints of the channelized waterways. There are numerous species associated with the type of upland and wetland habitat features existing and planned on the Bank. Bird species include white-faced ibis (*Plegadis chibi*), great egret (*Casmerodius albus*), great blue heron (*Ardea herodias*), marsh wren (*Cistothorus palustris*), red-winged blackbird (*Agelaius phoeniceus*), tricolored blackbird (*Agelaius tricolor*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), ring-necked pheasant (*Phasianus colchicus*), mallard (*Anas platyrhynchos*), cinnamon teal (*Anas cyanoptera*), ruddy duck (*Oxyura jamaicensis*), Canada goose (*Branta canadensis*), snow goose (*Chen caerulescens*), Ross's goose (*Chen rossii*), and other waterfowl, wading birds, and migratory shorebirds. Mammal species include ground squirrels, coyote (*Canis latrans*), raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), black-tail deer (*Odocoileus hemionus*), and various small rodent species.

## Topography

The Bank Property is leveled into rice paddies with two to three inches in elevation difference between the paddies. The surrounding farm roads range in height from a foot to three or more feet above the farm field elevations. **Figure 5** depicts the elevation changes of the rice paddies. This information was instrumental in shaping the proposed habitat restoration plans.

## Hydrology

The Bank is located within the Colusa Basin, an historic floodplain that drains the western portion of the northern Sacramento Valley. The RD 2047 drain borders the Bank on its eastern edge and was designed to provide drainage and conveyance for summer agricultural tail water. The RD 2047 drain does not provide flood protection for the surrounding landscape, and the Bank may be flooded periodically during heavy winter and spring rainfall events. Once floodwaters recede, waters within the Bank currently flow into the RD 2047 drain via risers and culverts. Drains that serve adjoining lands border the Bank on its north, west, and southern boundaries.

In the absence of irrigation water added to the site in the summer for rice agriculture all site hydrology is driven by natural precipitation. Water is not added to the site for rice straw decomposition in the winter. Surface runoff from the Bank drains off site for approximately 37 miles through the Colusa Trough and then the Ridge Cut drain to the Fremont Weir at the head of the Yolo Bypass. The Ridge Cut drain also connects via control gate on the Sacramento River at Knights Landing in Yolo County. Therefore, depending on flow conditions in the Sacramento River, waters contained in the Colusa Trough either enters the Sacramento River at Knights Landing or at the bottom of the Yolo Bypass near Lisbon. A hydrologic analysis and FEMA flood map are included in **Appendix C**.

## **Soils**

The Colusa County USDA Soil Survey lists Willows silty clay, frequently flooded (map unit 104) as the dominant soil type of the Bank. Willows series soils are deep, poorly drained soils that formed in alluvium deposited in basin landforms associated with the Sacramento River and Coast Range drainages. The characteristic profile of Willows silty clay contains silty clay to a depth of 59 inches or more. These soils are poorly drained and poorly suited to crops other than rice, but are ideal for wetland restoration. The soils report for the Bank Property is included in **Appendix D**.

## **Vegetation**

The study area is predominantly in rice (*Oryza sativa*) cultivation; however, field edges and operational areas support several common ruderal non-native plant species such as Johnson grass (*Sorghum halepense*), Italian ryegrass (*Lolium perenne*), Bermuda grass (*Cynodon dactylon*) and mustards (*Brassica spp.*).

## **9. b Current Functions and Services of Aquatic Resources**

A total of 5,738 acres of agricultural seasonal wetlands (Palustrine Emergent Marsh Persistent Seasonally Flooded– PEM1C) are currently present within the Bank. These areas correspond to portions of the rice checks that are imperfectly drained due to incomplete land leveling or other impediments to drainage such as blockage of rice check drainage structures or culverts. The location and extent of these agricultural seasonal wetlands may vary from year to year depending on cropping patterns or other agricultural practices.

Currently these depression seasonal wetlands fill by natural precipitation during the winter months; however, early in the drawdown and vegetation growing phase these wetlands are routinely disturbed by disking and other tillage operations to prepare the site for rice cultivation. Following this disturbance the wetlands are then flooded as part of the routine rice growing operation. Overall, the functional capacities of the agricultural seasonal wetlands are greatly

reduced by repeated cultivation and application of water when the wetlands would naturally be dry. Under the current management practices the agricultural seasonal wetlands may provide limited habitat support functions for dependent wildlife (i.e., shorebirds, waterfowl) and may also provide limited ability to maintain characteristic biogeochemical processes. The current agricultural management regime severely limits the ability of these seasonal wetlands to maintain their characteristic plant and faunal communities.

## 9 .c Inventory of all Biological Resources

### Vegetation Communities

The Bank Property consists of only two vegetation communities. The cultivated area is dominated by rice, with ruderal non-native species dominating the checks used to control water within the Bank Property and along the perimeter access roads to the Property.

### Plant Species List

A complete list of plant species observed within the Bank Property is presented in **Appendix E**.

### Special Status Species and their Habitats

Several endangered, threatened, and rare species are known to occur in the vicinity of the Bank but only GGS have been documented as occurring near the Bank. A map and table of all special-status species known to occur in the vicinity of the Bank Property are presented in **Appendix F**. Protocol-level surveys have detected GGS in irrigation ditches and canals adjacent to the site. GGS were documented in the canal north of the Bank during the summer of 2010. Other special-status wildlife species that may occur on the Bank and be reported by the CNDDDB include the Aleutian cackling Canada goose (*Branta hutchinsii leucoparia*), white-faced ibis (*Plegadis chihi*), tri-colored blackbird (*Agelaius tricolor*), hoary bat (*Lasiurus cinereus*), Swainson's hawk (*Buteo swainsoni*), western red bat (*Lasiurus blossovillii*), and the Yuma myotis (*Myotis yumanensis*). All of these species may utilize the site for foraging but none have been determined to breed in habitat present on the site.

None of the special-status plants reported by the CNDDDB have habitat suitable for occupation within the Bank.

The habitat requirements for GGS are described below. The information in this section is summarized from in the Draft Giant Garter Snake Recovery Plan and the USFWS Giant Garter Snake Species Account.

LIFE HISTORY AND ECOLOGY: Habitat requirements consist of (1) adequate water during the GGS's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the GGS's dormant season in the winter.

GGS inhabits small mammal burrows and other soil crevices above prevailing flood elevations throughout its winter dormancy period. GGS typically select burrows with sunny exposure along south and west facing slopes.

### **Non-Native Species**

There are no known occurrences of invasive non-native species within the Bank Property.

## **9. d Past and Present Land Uses**

The Bank Property is currently in rice production. **Figures 6 to 9** show that the Bank Property has been in continuous rice production since 1968. The soil is tilled in the spring as soon as seasonal rains subside, often by April 1 in a dry year. Rice is usually planted in May and June and grown in standing water through mid-September. Harvest usually occurs in October, and the rice stubble is mowed and tilled again prior to winter rains. The fields are flooded once again from November through January for waterfowl hunting, then are drained to begin preparation for the next year's tilling and crop.

## **10.0 Bank Service Area Maps**

### **10. a Giant Garter Snake Service Area Map (Figure 10)**

Covered Species Creation Credits (GGS) from the Bank will be eligible to offset impacts regulated by the U.S. Fish and Wildlife Service and DFG. The GGS service area consists of the Colusa Basin portion of the Northern Sacramento Valley Recovery Unit (US Fish and Wildlife Service Draft Revised Recovery Plan). The GGS service area contains large tracts of GGS habitat including rice fields and wetlands that could be impacted by projects. The service area is bisected by a major interstate highway (I-5), several power transmission lines, and contains numerous oil and gas facilities with attendant pipelines and support facilities. Though the GGS service area lacks significant urban areas, there is a high likelihood that GGS impacts may arise from projects being permitted within the service area, and use of a pre-approved mitigation bank will provide the surest compensation with the greatest level of advanced planning, implementation and assurances.

## 10.b Wetland and Waters of the US Service Area Map (Figure 11)

Wetlands and Waters of the U.S. Creation Credits (404) from the Bank will be eligible to offset impacts to jurisdictional wetlands within the Wetlands and Waters of the U.S. Service Area of the Bank. The proposed Wetlands and Waters Service Area includes the 8-digit HUC watershed plus the extent of the EPA level III ecoregion (California Central Valley) that lies within the 6-digit HUC containing the Bank. The wetland types represented by this credit (Palustrine Emergent) are widespread and ecologically equivalent across the Central Valley floor. **Table 1** shows the credit type and classifications of wetlands proposed for creation at the Bank and the types of impacts that would be compensated for with Bank Credits.

Most of the naturally functioning wetlands found within the service area have been lost or degraded and many of the wetland impacts that occur across the service area are in ditches, drains, and agricultural fields that are dependent on artificial, or irrigation water for their hydrology. It makes sense to compensate for these impacts at a location that is an historic wetland and in an area of compatible land uses. Additionally, the Bank Property is located within the 100-year floodplain, and is an ideal place to re-establish the floodplain character of the habitat. A service area larger than an eight or ten-digit HUC is justified by the largely rural character of the portion of watershed in which the Property is located. The lack of large cities in the immediate watershed of the Property and corresponding low rate of demand for wetland mitigation necessitates the proposed service area for economic reasons (i.e. financial viability of the bank).

We utilized Corps records of wetland impacts from 2007 through mid-2012 for the ten-digit HUC that contains the Bank Property (Colusa Trough #18020104); there were no records of Palustrine Emergent or similar wetland impacts documented as having occurred during the last five and a half years. The Bank will need to sell approximately 6 credits a year for the first 7 years of its existence in order to make investment in the Bank viable. Therefore, a service area larger than the ten-digit HUC will be required.

Next we widened our search for impacts occurring within the eight-digit HUC that contains the Bank Property; there was only one record (0.05 ac) of Palustrine Emergent or similar wetland impacts documented through the Corps records as having occurred during the last five and a half years. The Bank will need to sell approximately 6 credits a year for the first 7 years of its existence in order to make investment in the Bank viable. Therefore, a service area larger than the eight-digit HUC will be required.

Next we widened our search for impacts occurring within the eight-digit HUC plus portion of the six-digit HUC that contains the ecoregion of the Bank Property; approximately 41 acres of Palustrine Emergent or similar wetland

impacts were documented through the Corps records as having occurred during the last five and a half years years (approximately 7 acres per year). The Bank will need to sell approximately 6 credits a year for the first 7 years of its existence in order to make investment in the Bank viable. Therefore, a service area of this size will be required to make the Bank viable.

**Table 1 Table of Wetland Classifications in Seasonal Wetlands Credits**

Credit Type	Wetland and/or Habitat Classification System			
	Cowardin et.al. (1979)	Sawyer et. al. (2009)	Mayer and Laudenslayer (1988)	Holland (1986)
Seasonal Wetland	Palustrine Emergent Wetland, temporarily, intermittently or seasonally flooded	<p>Lolium perenne semi-natural stands</p> <p>Lolium perenne-Hordeum marinum Alliance</p> <p>Lolium perenne-Leymus triticoides Alliance</p> <p>Lolium perenne-Centaurium muhlenbergii Alliance</p> <p>Leymus triticoides-Lolium perenne Alliance</p> <p>Persicaria lapathifolia-Xanthium strumarium Provisional Alliance</p> <p>Cressa truxillensis-Distichilis spicata Alliance</p> <p>Northern vernal pool (in part)</p> <p>Northern claypan vernal pool (in part)</p> <p>Eleocharis macrostachya Association</p> <p>Schoenoplectus acutus - Xanthium strumarium Alliance</p> <p>Schoenoplectus acutus - Typha latifolia Alliance</p> <p>Typha latifolia Association</p> <p>Juncus effusus Association</p>	Fresh Emergent Wetland	<p>Vernal marsh</p> <p>Non-Native grassland (wetland inclusions)</p> <p>Northern claypan vernal pool (highly disturbed/degraded/ no listed species)</p> <p>Coast and Valley freshwater marsh (seasonally flooded)</p>

## 11.0 Map Depicting Conserved Lands in the Vicinity of the Bank (Figure 12)

## 12.0 Bank Objectives and Conceptual Plan

### 12.a Ecological Suitability of the Bank Property

The Bank Property has been specifically chosen for development as a mitigation and conservation bank because of several key factors necessary for its success. The restoration of wetlands requires deep clay soils with low permeability and low slopes. This site has clay loam and clay soils which are largely impermeable to a depth of at least five feet. The slopes are 1% or less which is ideal for construction of wetland basins with topographical diversity. The Bank Property is located adjacent to other protected lands that are managed for wildlife and wetland purposes and is also adjacent to rice fields which provide GGS foraging habitat during the active period of the year.

### 12.b Bank Objectives

The goal of the habitat development activities is to restore a complex of wetlands and uplands in place of the existing rice field (Figure 13). In addition to creating natural and managed wetlands, this plan provides all of the necessary habitat requirements for GGS including: (1) adequate water during the GGS's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking sites to thermo-regulate; and (4) higher elevation uplands for cover and refuge from flood waters during the GGS's dormant season in the winter.

### 12.c Conceptual Plan

Habitat types developed at the Bank include open water, perennial marsh, semi-permanent marsh, uplands, and seasonal wetlands (Figure 14). To create the proposed habitat features, portions of the existing rice field will be de-leveled to create the habitat complex. Channels in the managed-marsh will be cut and the fill will be used to create berms and mounds. Berms are planned to be no greater than 3-feet above existing field elevations. Upland refugia mounds will be up to 6 feet high and are all located outside of the designated floodway. Existing and new water control structures will be used to adjust the water level in the managed marsh GGS habitat. A total of 118 acres of GGS habitat will be developed in a matrix consisting of approximately 17 acres of open water, 40

acres of perennial marsh, 51 acres of semi-permanent marsh, and 10 acres of uplands.

Approximately 42 acres of seasonal wetlands (Palustrine Emergent Marsh Persistent Seasonally Flooded– PEM1C ) that rely on precipitation for their hydrology will be created in the lowest-lying areas of the Bank lying closest to the Colusa drain. These wetlands will contain an array of grass-like plants such as cattails (*Typha spp.*), bulrushes (*Scirpus spp.*), sedges, (*Carex spp.*), true grasses such as swamp timothy (*Crispis schoenoides*), rabbitsfoot grass (*Polypogon monspeliensis*), creeping wild rye (*Leymus triticoides*), and broadleaf emergent such as dock (*Rumex spp.*), smartweed (*Polygonum spp.*), fat hen (*Atriplex triangularis*), and brass buttons (*Cotula coronopifolia*).

## 12.d Performance Standards and Monitoring Methods

### GGs Performance Standards

#### Hydrology Performance Standard

Year 1: Approximately 17 acres of open water and channels will be present in the zones designed for this habitat, as shown on as-built construction drawings of the project. Approximately 40 acres of flooded habitat will be measured in the as-built perennial marsh habitat zones. Approximately 50 acres of flooded habitat will be measured in the as-built semi-permanent marsh habitat zones. In subsequent years a prevalence of hydrophytic marsh vegetation will be used to infer adequate hydrology.

#### Vegetation Performance Standard:

Years 1-5:

- Less than 50% absolute vegetative cover of either emergent or floating plants within the open water habitat.

Year 1:

- Absolute vegetation cover in the perennial marsh and semi-permanent marsh zones (as shown on as-built construction drawings) is expected to be less than 10% due to the short period of time elapsed since initial flood up.
- By the end of the first year of monitoring, upland areas shall contain 50% or greater absolute cover of grasses and forbs.

Year 3:

- Absolute vegetation cover in the perennial marsh and semi-permanent marsh zones (as shown on as-built construction drawings) is expected to be between 25% -30%.
- By the end of the third year of monitoring, upland areas shall contain at least 70% absolute cover of grasses and forbs.

Year 5:

- Absolute vegetation cover in the perennial marsh and semi-permanent marsh zones (as shown on as-built construction drawings) is expected to be 75%.
- By the end of the fifth year of monitoring, upland areas shall contain at least 80% absolute cover of grasses and forbs.

Monitoring Method:

Low altitude aerial photography will be flown during the summer of years 1, 3, and 5. Aerial photograph interpretation and GIS will be used to quantify the extent of the respective habitats as compared to as-built construction drawings for habitat complex. The extent of floating and/or emergent vegetation within designed open water areas will also be mapped and quantified. For perennial and semi-permanent marsh habitats, vegetative cover will be estimated from the aerial photograph, and species composition will be measured in the field using relevé plots each monitoring year. Vegetative cover establishment in the upland areas will be compared to habitat zones indicated on as-built construction drawings. Upland areas will be visually monitored to ensure that the desired vegetative cover of grasses and forbs is establishing, erosion is not occurring, and weeds are not becoming an established nuisance.

GGS Utilization Performance Standard: GGS will be observed utilizing the restored habitats at least once during the habitat establishment period (Years 1-5).

Monitoring Method:

GGS monitoring will occur in years 2 and 4. GGS monitoring will occur during the spring and summer. The monitoring will include visual and trapping surveys aimed at providing an index of relative abundance. Surveys will be conducted in restored habitats and adjoining irrigation ditches to determine the presence and relative abundance of GGS in each of the habitats. The results of the monitoring will be used to assess

the effectiveness and success of the habitat development and management activities and to identify adjustments that may need to be made to habitat management practices.

## **Seasonal Wetlands Performance Standards**

### Hydrology Performance Standard:

Seasonal wetlands will have continuous inundation or saturation within the upper six inches of the soil profile for a minimum of 23 days during the growing season.

It is anticipated that this performance standard will be met in the first year following construction. In subsequent years the persistence of a prevalence of hydrophytic vegetation can be used to infer that the wetland hydrology performance standard has been met.

### Monitoring Method:

Seasonal wetland hydrology will be monitored using Solinst Levellogger Edge dataloggers at three locations within the seasonal wetland. Locations will be stratified and represent the upper, mid, and low portions of the seasonal wetland complex. Water depth will be logged on a daily basis through winter and spring.

### Vegetation Performance Standard:

Interim performance standards (Years 2 through 4) for seasonal wetlands are as follows:

#### Year 2:

- Seasonal wetlands will have predominance of hydrophytic vegetation as defined in the final performance standard, will have less than 20% relative cover by any invasive plant species with an “A” impact rating as rated by the California Invasive Plant Council (CalIPC), and will have 30% or greater absolute vegetative cover.

#### Year 3:

- Seasonal wetlands will have predominance of hydrophytic vegetation as defined in the final performance standard, will have less than 15% relative cover by any invasive plant species with an “A” impact rating as rated by the California Invasive Plant Council (CalIPC), and will have 40% or greater absolute vegetative cover.

Year 5:

- The final performance standard for seasonal wetland vegetation is as follows: Seasonal wetlands will support a predominance of hydrophytic vegetation as defined in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and further clarified in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (U.S. Army Corps of Engineers 2008). Restored seasonal wetlands will also have a minimum absolute vegetative cover of 50%.
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- Seasonal wetlands will have less than 10% relative cover by any invasive plant species with an “A” impact rating as rated by the California Invasive Plant Council (CalIPC).

Monitoring Method:

Seasonal wetland vegetation monitoring will be conducted in Years 2, 3, 4, and 5. Vegetation cover will be measured using the relevé method (Mueller-Dombois and Ellenberg 1974) within each vegetation alliance present within the seasonal wetland.

The Corps jurisdictional acreage within the restored seasonal wetland will be delineated following the methods outlined in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and further clarified in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (U.S. Army Corps of Engineers 2008). Jurisdictional acreage will be mapped in Year 3 and Year 5.

## 12.e Mitigation/Conservation Bank Proposal

WES is proposing to restore a matrix of seasonal wetlands, aquatic habitats, and uplands on a 160-acre portion of the Property adjacent to the 33.5-acre Maxwell PUD Mitigation Site. The Bank is being proposed as a combination Conservation and Mitigation Bank and will utilize the Bank Enabling Instrument (“BEI”) templates developed for California by the signatory agencies. Two separate credit types will be developed; 1) *Waters of The U.S. Creation Credits* would offset impacts regulated by the Federal Clean Water Act and 2) *Covered Species Creation Credits (giant garter snake and its habitat)* to offset impacts regulated only by the Federal and State ESA (see **Table 2**). Hydrology for the Waters of the US credit area is derived from precipitation and occasional floodwater, while hydrology for the GGS habitat credit areas is derived primarily from applied water supplemented by precipitation and occasional floodwater. **Figure 15** depicts the habitat types and credits on a map of the Bank Property.

**Table 2.** Colusa Basin Mitigation Bank Credit Table

<b>Restored Habitat Type</b>	<b>Credit Type</b>	<b>Acres</b>	<b>Credit Ratio</b>	<b>Credits</b>
Seasonal Wetlands	Waters of the U.S. Creation	42	1:1	41
Open Water, Perennial Marsh, Semi-Permanent Marsh, Upland Berms and Refugia	Covered Species and Covered Species Habitat Creation for GGS	118	1:1	119
	TOTALS	160	1:1	160

### 13.0 Connectivity and Ecosystem Function

The Bank is located adjacent to the RD 2047 drain, which provides drainage and connection to the entire Colusa Basin, which stretches from Knight’s Landing (Yolo County) in the south, to Willows in Glenn County in the north. The Bank is also located adjacent to the Colusa National Wildlife Refuge is bordered by two additional parcels protected through the Wetland Reserve Program. Giant garter snakes have been thoroughly documented on the Colusa NWR units near the Bank as well within the drainage canal immediately adjacent to the Bank property (**Appendix G**). The Bank will provide additional high-quality year-round habitat for GGS and will also provide shallow floodplain wetland functions from seasonal inundation by precipitation and temporary flooding from the RD 2047 drain (**Figure 16**).

### 14.0 Real Estate Records and Assurances

#### 14.a Preliminary Title Report and Assessment

The complete Preliminary Title Report dated July 30, 2012 for the property is presented in **Appendix H**. A summary of each exception to the title report is provided below.

*From: Schedule B Exceptions to Title*

- 1-6 General and special taxes and assessments. (no effect on Bank operations or habitat values)
7. Reclamation District 2047 Easement for use of a canal and banks. The extreme easterly portion of the Property lies within the Reclamation District 2047 (District) canal (**Figure 17**) The District retains the right to utilize the bank for maintenance of the canal. This area will specifically

be excluded from the Conservation Easement and Bank. There is no record of maintenance activity on the canal adjacent to the Bank Property (no effect on Bank operations or habitat values).

8. PG&E Easement. An easement for Public Utilities and incidental purposes. The legal description for this easement for a line of poles and utility lines falls in sections that are several miles from the Bank Property. This exception has been included in the title report accidentally, and the title company has agreed to revise the title report to reflect this error. A revised title report will be submitted with the Draft Bank Enabling Instrument to reflect this change. (no effect on Bank operations or habitat values).
9. Williamson Act. The property was enrolled in the Williamson Act in 2001. This contract requires that agricultural use continue on the property. WES will utilize prescribed grazing (either goats or sheep) as a cover management tool after habitat establishment and in compliance with the Long-Term Management Plan. This activity will ensure that the Bank Property remains in compliance with the terms of the Williamson Act contract (no effect on Bank operations or habitat values).
10. Sycamore Mutual Water Company Articles of Incorporation. This document includes the Bank Property in the legal description of the lands that are served by the water company. This is the legal document that secures the Bank's water rights (this exception benefits Bank operations and habitat values).
11. Reservation of access Easement. This document provides the Bank Property with legal access from Abel Rd. to the northern boundary of the Bank Property (this exception benefits the Bank operations and habitat values).
12. Declaration of Restrictions. This agreement with the Colusa County Air Pollution Control District eliminates the right of the property owner to conduct biomass burning (field burning). WES will exclude burning of vegetation from the management plan of the Bank. Cover management will be conducted by mowing, grazing, and other methods approved in the management plan. (no effect on Bank operations or habitat values).
13. Road Access Agreement. The Bank Property has deeded access from Abel Rd. along the western bank of the 2047 canal which coincidentally runs adjacent to the Colusa National Wildlife Refuge. The owners of the Bank Property in 2009 (Sycamore Family Trust) entered into a "Road Access Agreement" to seek an alternative access to the current, deeded access. To date, no alternative access route that provides equal or better access has been legally secured for the Bank Property. The current access route from Abel Rd. will remain in use until an alternative access

route can be agreed upon and recorded (no effect on Bank operations or habitat values).

## **14.b Water Rights**

Deeded water rights were included in the fee title purchase of the Bank Property. The Bank Property was formerly part of the historic Davis Ranch, which extends east continuously from the Bank Property to the Sacramento River. The Davis Ranch established its diversion of Sacramento River water prior to 1914, which includes the water right in a class (“pre-1914 water rights”) established as the most senior water rights in the State of California. As a member of the Sacramento River Settlement Contractors (Settlement Contractors) the Davis Ranch has water rights that pre-existed or were perfected independent of the Central Valley Project (CVP). When the CVP was developed by the Bureau of Reclamation in 1935 the prior water rights of the Settlement Contractors were recognized as priority rights.

In 2007, the Sycamore Mutual Water Company was incorporated for the benefit of all landowners that own lands within the historic limits of the Davis Ranch, and was formed to divert and deliver water to its member parcels. As a member of the Sycamore Mutual Water Company, the parcels that make up the Bank and Mitigation Site are entitled to water delivered through its canals, pumps, and diversions. Landowner members pay water fees that cover both the maintenance of Water Company facilities in addition to cost to deliver water used for agriculture or habitat maintenance. WES has no need or requirements to install or maintain any separate pumps or infrastructure in order to see water delivered to the Bank Property.

Water is currently delivered onto the Bank Property for rice production by the Sycamore Mutual Water Company diversions and lift pumps. The Water Company maintains a lift pump in the ditch immediately north of the Bank Property and diverts water into a delivery ditch that runs the length of the western boundary of the Bank Property. From this ditch, water is run through a series of delivery gates onto the Bank Property. This same system of water delivery will be used for the wetlands managed for GGS. Water costs have risen only \$10 per acre over five years (approximately 2.5% per year) and are expected to remain stable and only increase within the range of inflation each year.

## **14.c Mineral Rights**

The subsurface minerals rights below 500 feet were severed from the Bank Property in 2008, and were not offered with the sale of the property to WES in 2011. Subsurface mineral rights are owned by Sycamore Minerals Management LLC (SMM) but their right to access the subsurface oil or gas resources is now limited to a designated 1 ½ acre pad and access roads as per legal agreement

signed by representatives of SMM and WES (**Figure 17**). A copy of the SMM-WES agreement is included in **Appendix I** and will be recorded on the title to the Bank Property prior to signature of the BEI. Under this agreement, SMM retains a right to establish one drill and wellsite for the extraction of oil, gas, and other hydrocarbon resources only from 500 feet below the surface and deeper. The access route may be utilized for the purpose of accessing the drill and wellsite and for installing underground pipelines for transportation of oil or gas along the route. Any future activity associated with drilling or production will necessarily require the full suite of environmental permits from federal, state and county agencies.

Under a 2006 lease agreement that has since expired, a directional well was drilled under the Bank Property from an adjoining property that is protected from flooding. This well was drilled under the northern portion of the Bank Property to a depth of 8,000 feet, then was abandoned when no gas or hydrocarbons were found. Two additional test wells were drilled just east of the property boundary, and were abandoned as dry holes. Based on this evidence, it is highly unlikely that future minerals drilling would occur in the vicinity of the Bank.

#### **14. d Access**

Access to the site is provided via a deeded easement from Abel Road along the west bank of the RD 2047 drain, then across a bridge that spans the Glenn-Colusa Irrigation District canal on the north border of the Bank Property (title exception #11 on the July 30, 2012 preliminary title report).

#### **14.e Conservation Easement**

The approved California mitigation banking template for conservation easements will be used for the Bank. The conservation easement area (approximately 160 acres) will exclude the existing RD 2047 easement over the eastern boundary of the Property and the minerals pad and access road as well as the management outparcel contained within the pad in the northwest corner of the Property (**Figure 17**). WES is working with California Waterfowl Association (CWA) as the grantee for the easement. CWA has been previously approved by DFG for holding easements for mitigation banks.

#### **14.f Qualification of Bank Property for Mitigation Bank Purposes**

WES assures that the proposed Bank Property has NOT been:

- Used as mitigation for a previous project(s);
- Already designated or dedicated for passive park or open space use, where that use is generally compatible with sustaining biological values;
- Designated for purposes which are inconsistent with habitat

- preservation (i.e., lands purchased for roads, landfills, etc.); and
- Acquired by a public entity (e.g., with State Bond Act funds) or provided to a jurisdiction for park or natural open space purposes.

#### **14.g Other Restrictions on the Proposed Bank Property**

No other restrictions exist on the proposed Bank Property.

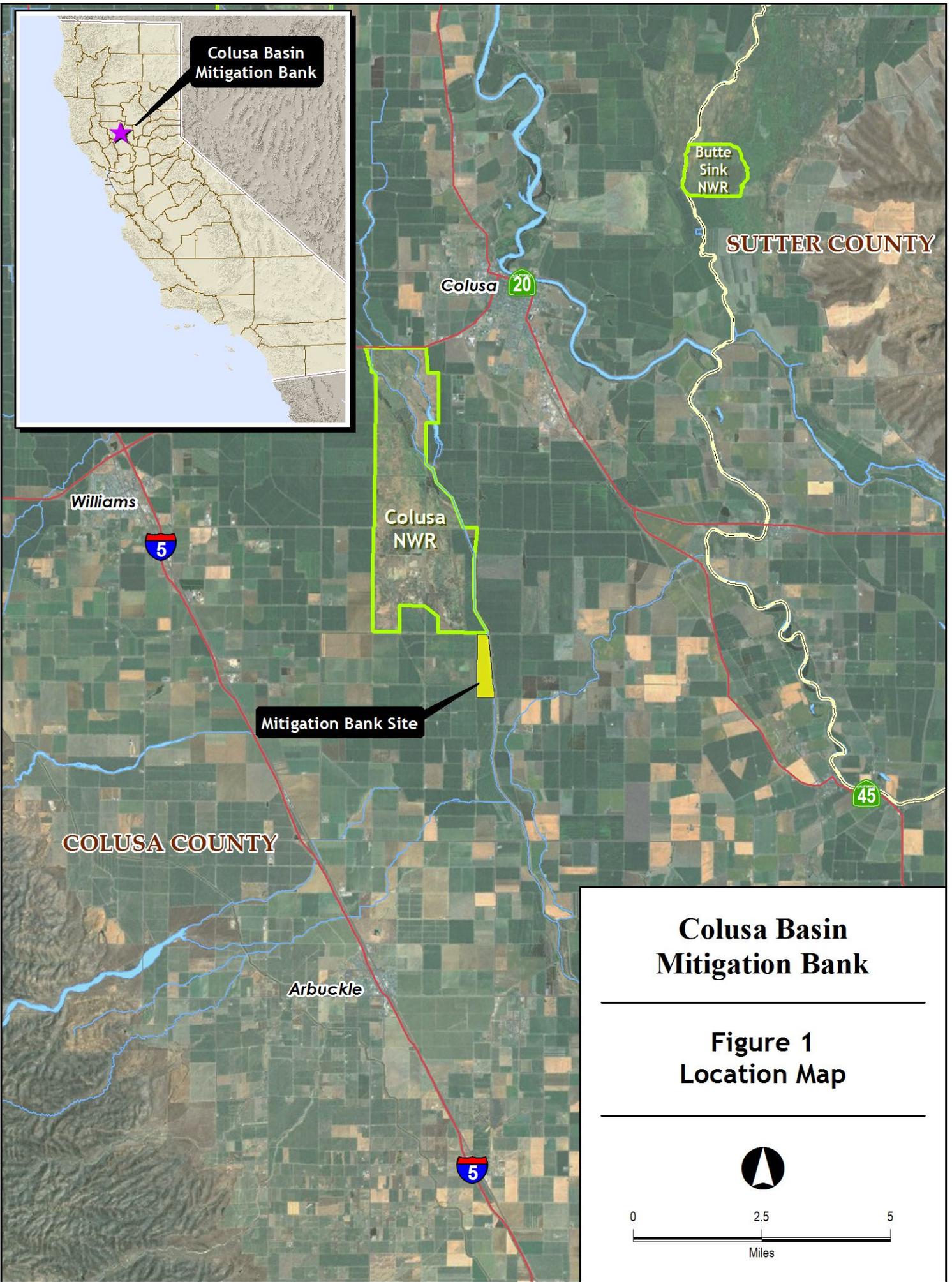
#### **15.0 Public Funding Received**

No public funding for this project has been received. The acquisition has been entirely funded by WES, and development of this Bank will be entirely funded by WES with private capital.

#### **16.0 Permitting**

The following permits for construction of the Bank have been submitted:

1. US Army Corps of Engineers Nationwide Permit 27
2. Regional Water Quality Control Board 401 Certification
3. County of Colusa General Plan Amendment and Re-Zone (CEQA lead)
4. County of Colusa Grading Permit
5. California Department of Fish and Game Lake and Streambed Alteration Agreement
6. Central Valley Flood Protection Board Permit



Colusa Basin Mitigation Bank

Butte Sink NWR

SUTTER COUNTY

Colusa 20

Colusa NWR

Williams

5

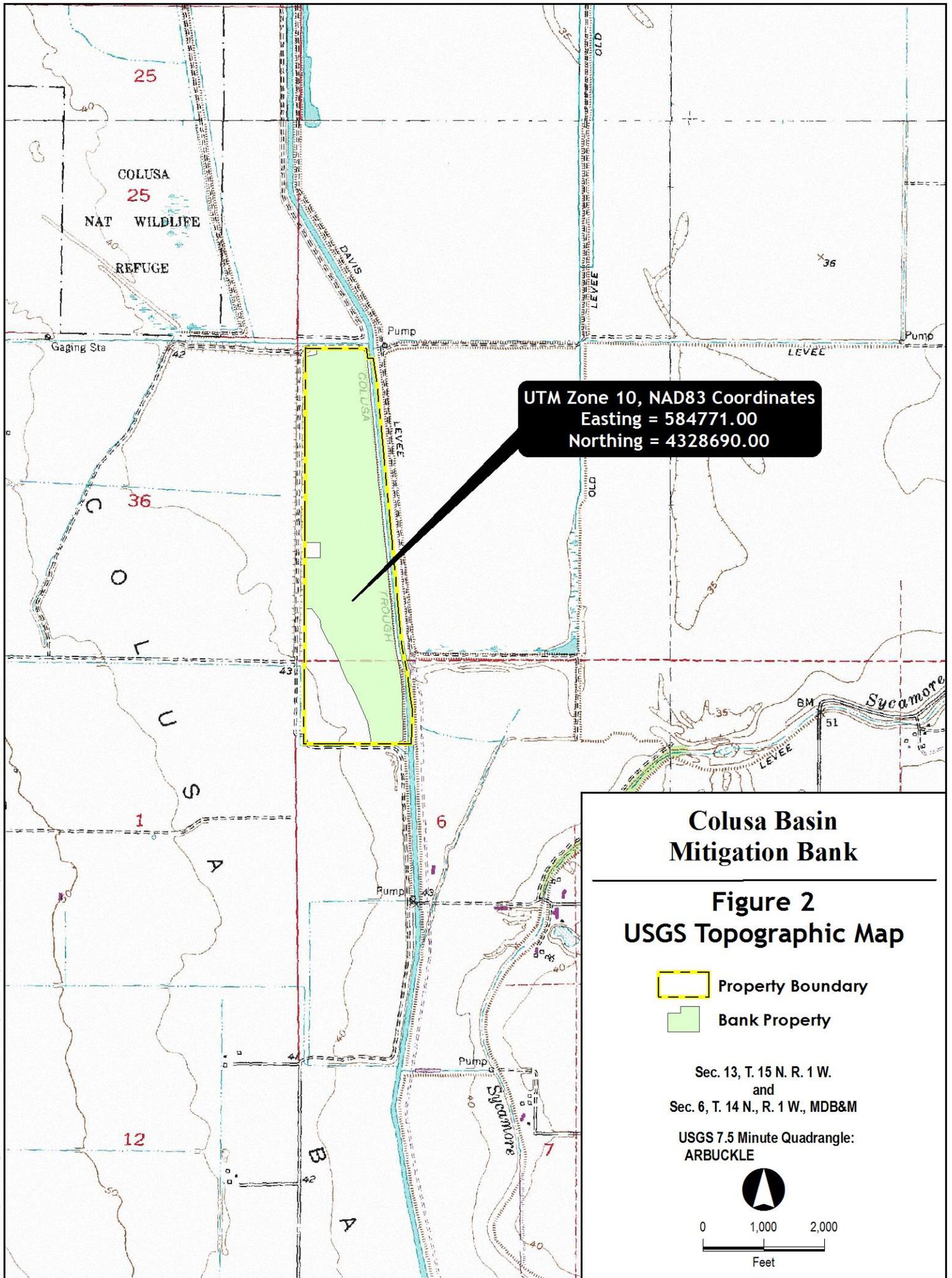
Mitigation Bank Site

COLUSA COUNTY

45

Arbuckle

5



UTM Zone 10, NAD83 Coordinates  
Easting = 584771.00  
Northing = 4328690.00

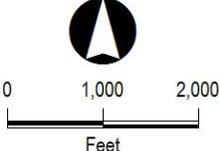
### Colusa Basin Mitigation Bank

### Figure 2 USGS Topographic Map

-  Property Boundary
-  Bank Property

Sec. 13, T. 15 N. R. 1 W.  
and  
Sec. 6, T. 14 N., R. 1 W., MDB&M

USGS 7.5 Minute Quadrangle:  
ARBUCKLE



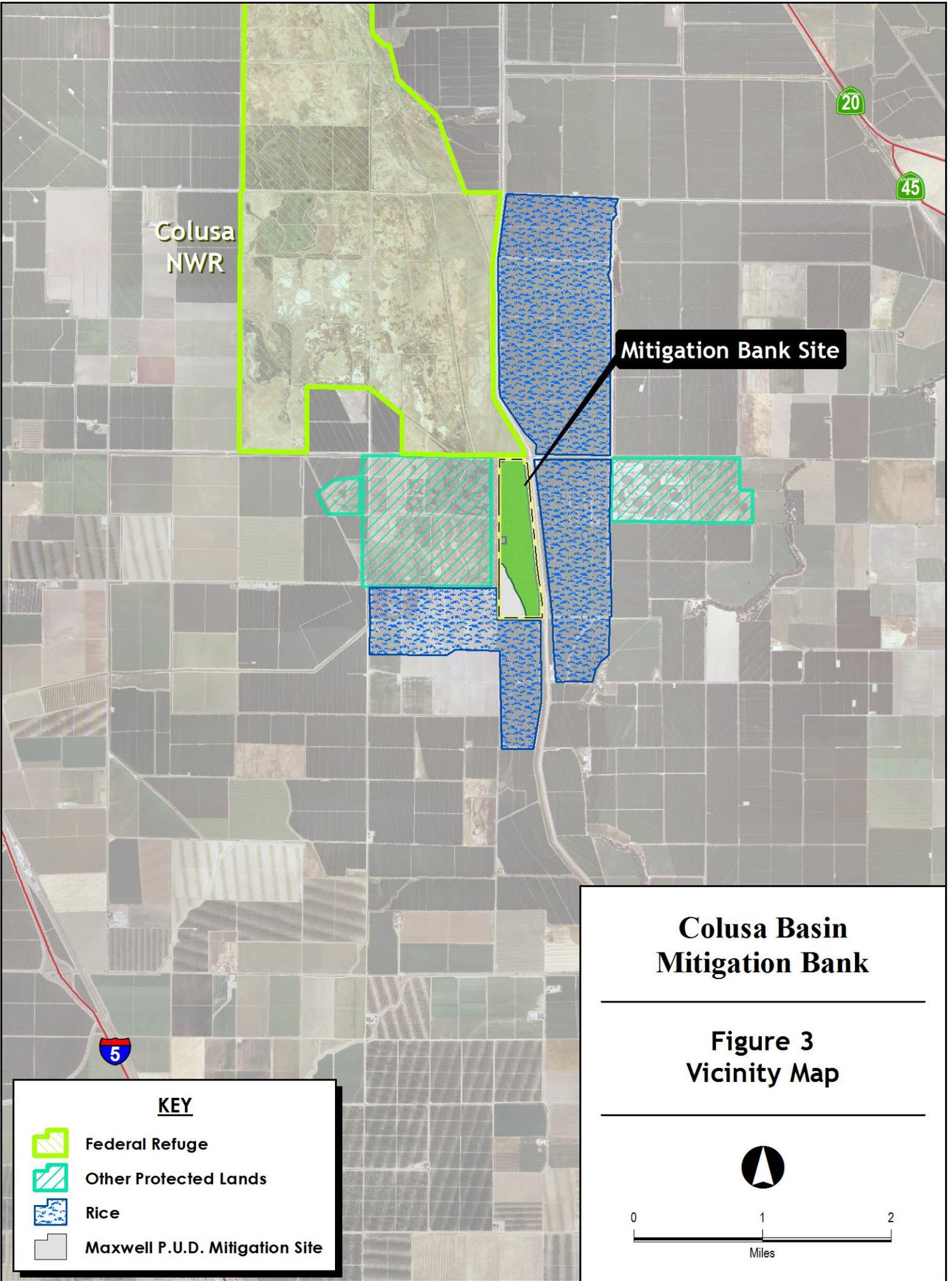
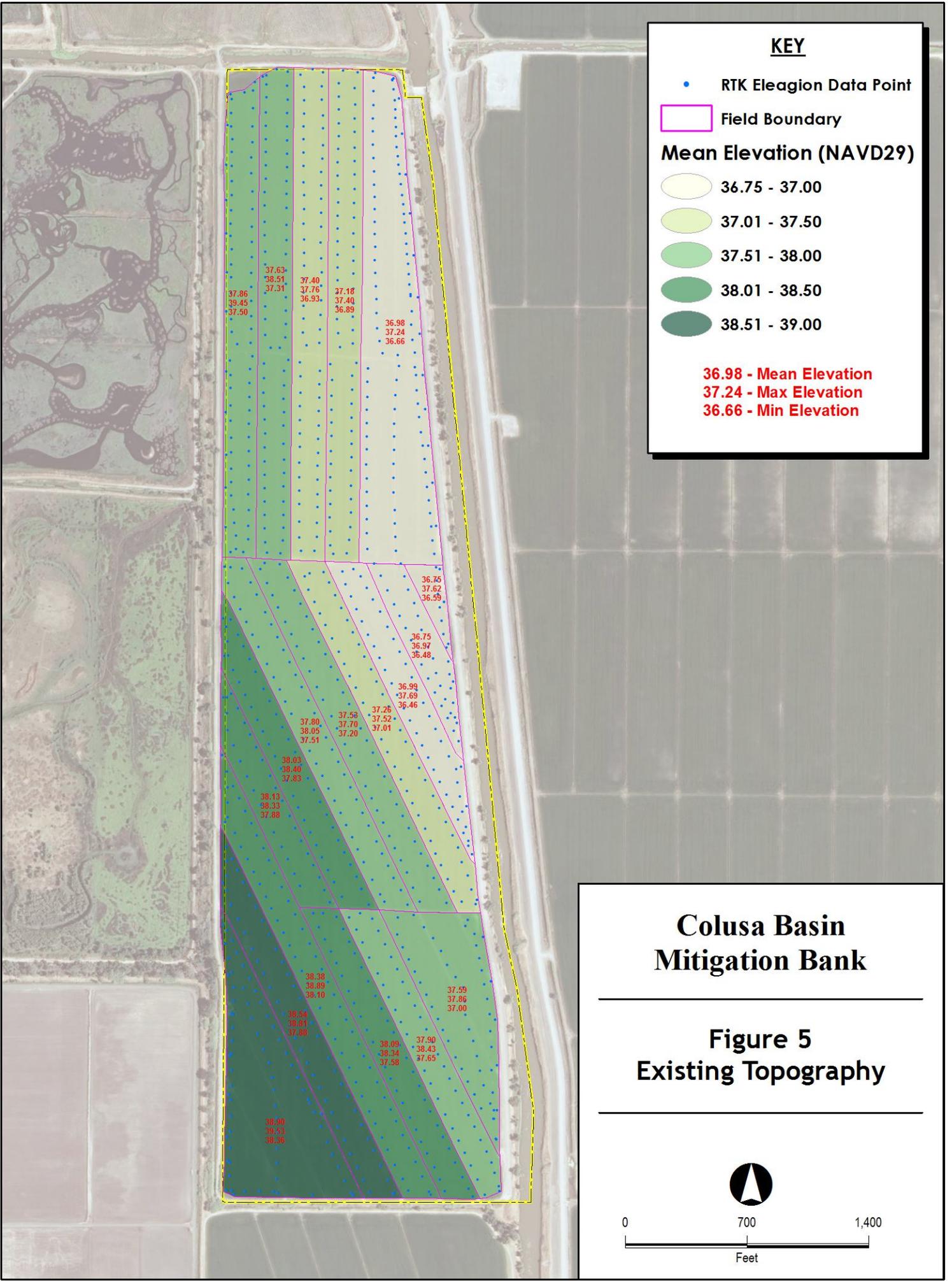


Figure 4. Colusa Basin Mitigation Bank Site Photographs May 25, 2012







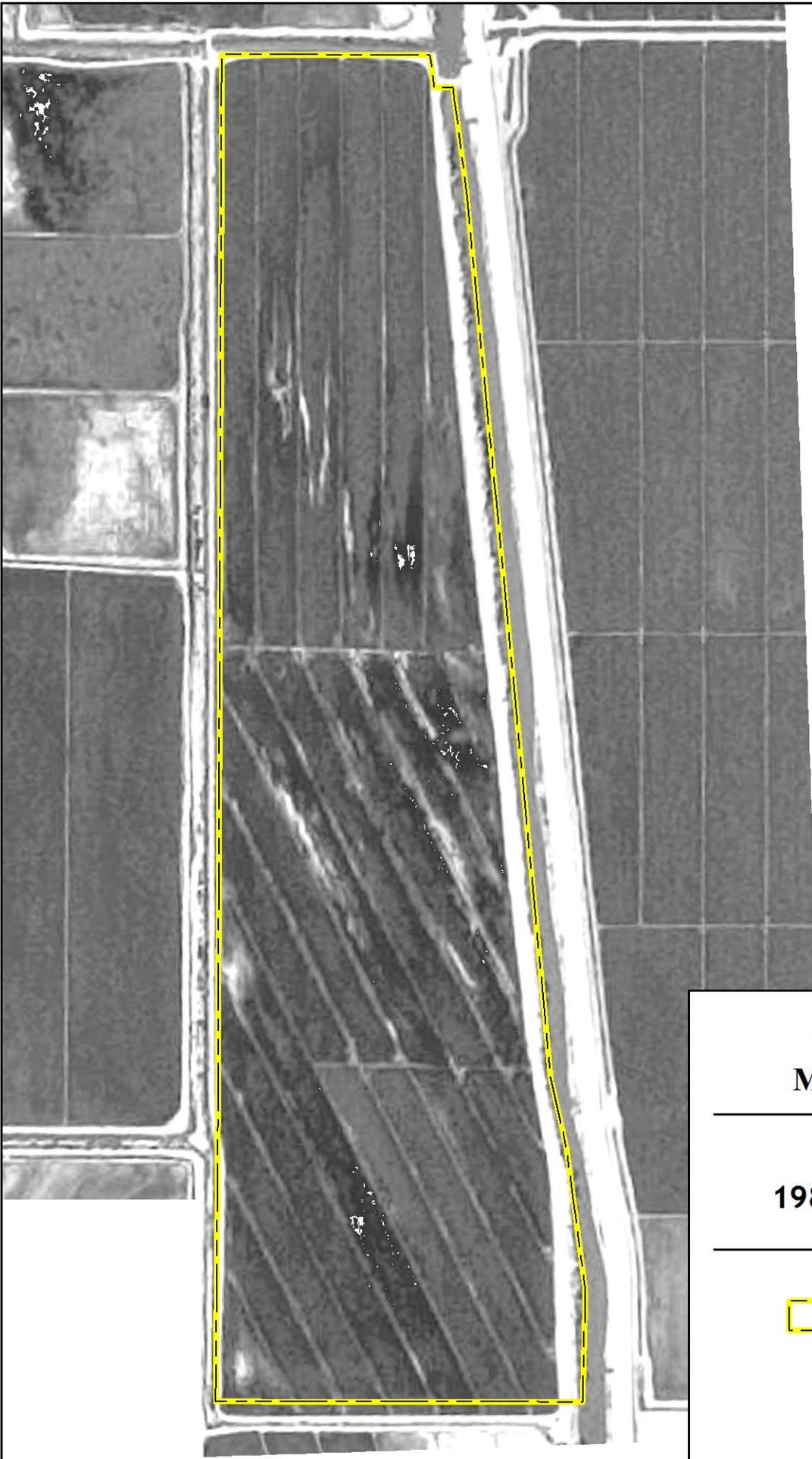
## Colusa Basin Mitigation Bank

### Figure 6 1964 Aerial Photo

 Property Boundary



0 700 1,400  
Feet



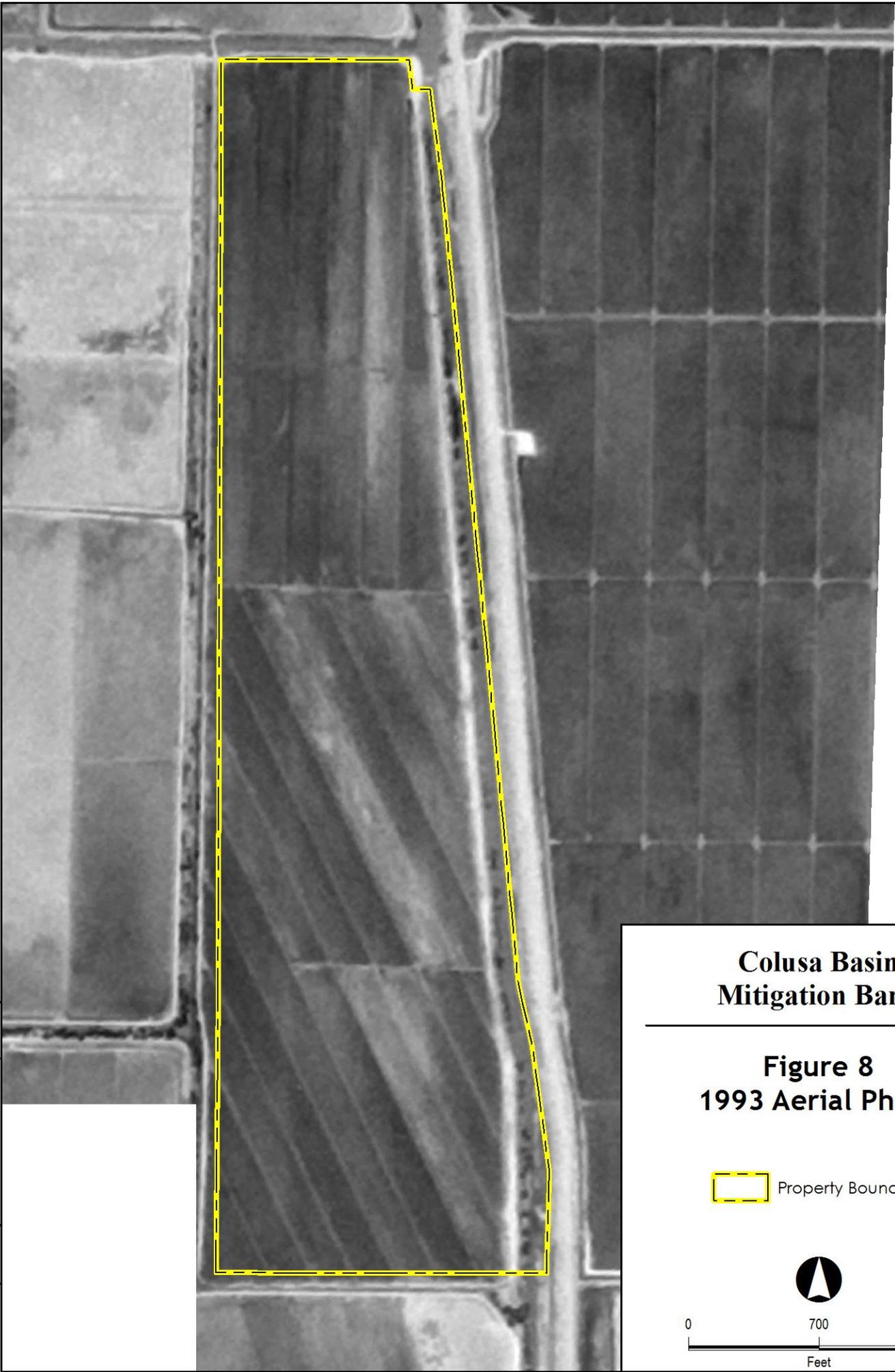
## Colusa Basin Mitigation Bank

### Figure 7 1987 Aerial Photo

 Property Boundary



0 700 1,400  
Feet



## Colusa Basin Mitigation Bank

**Figure 8**  
**1993 Aerial Photo**

 Property Boundary



0 700 1,400  
Feet



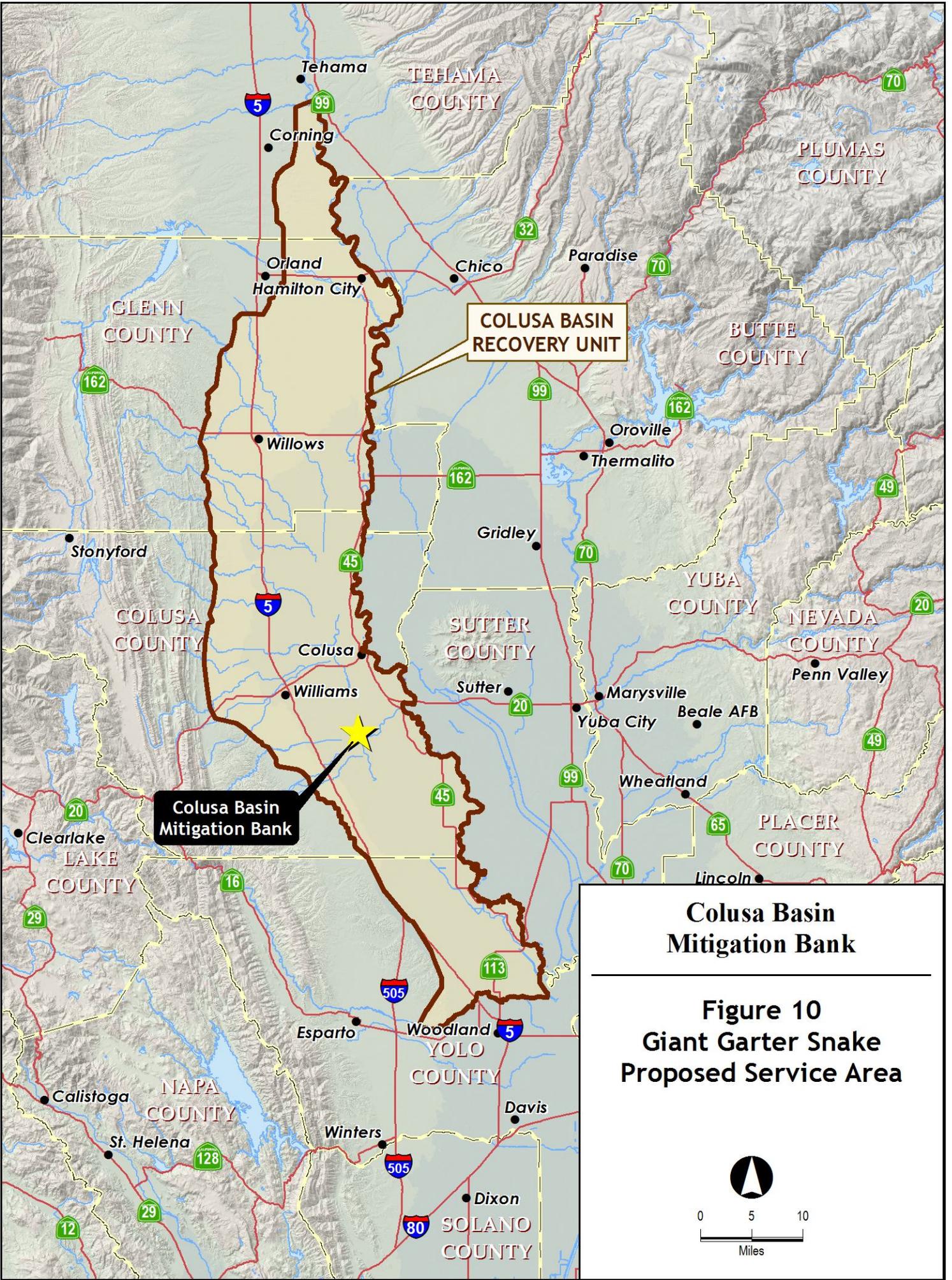
## Colusa Basin Mitigation Bank

**Figure 9**  
**Current Aerial Photo**

 Property Boundary



0 700 1,400  
Feet

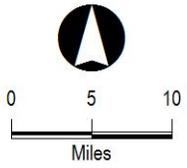


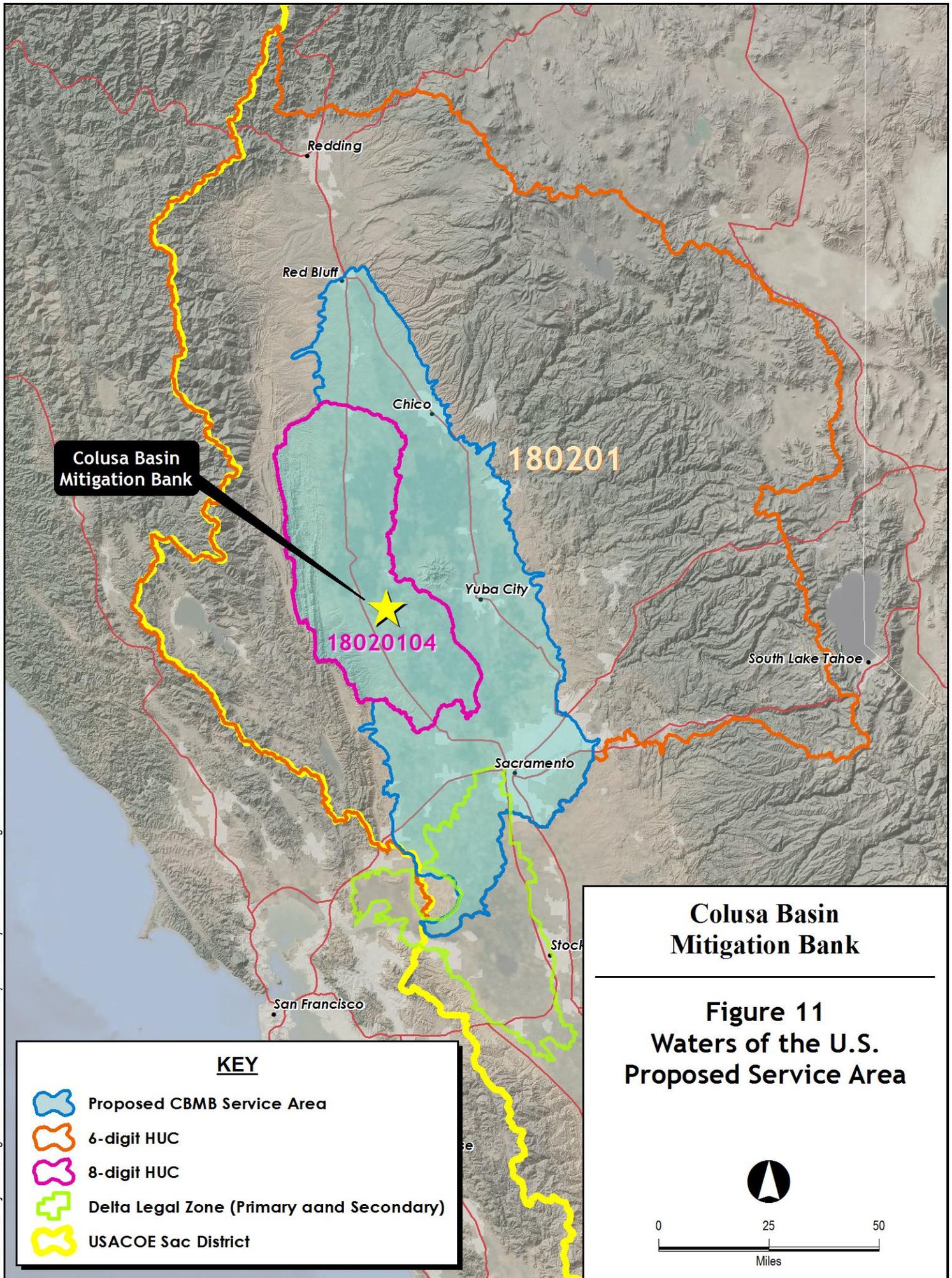
**COLUSA BASIN RECOVERY UNIT**

**Colusa Basin Mitigation Bank**

### Colusa Basin Mitigation Bank

**Figure 10  
Giant Garter Snake  
Proposed Service Area**





Colusa Basin Mitigation Bank

180201

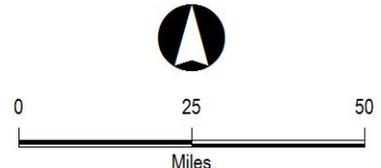
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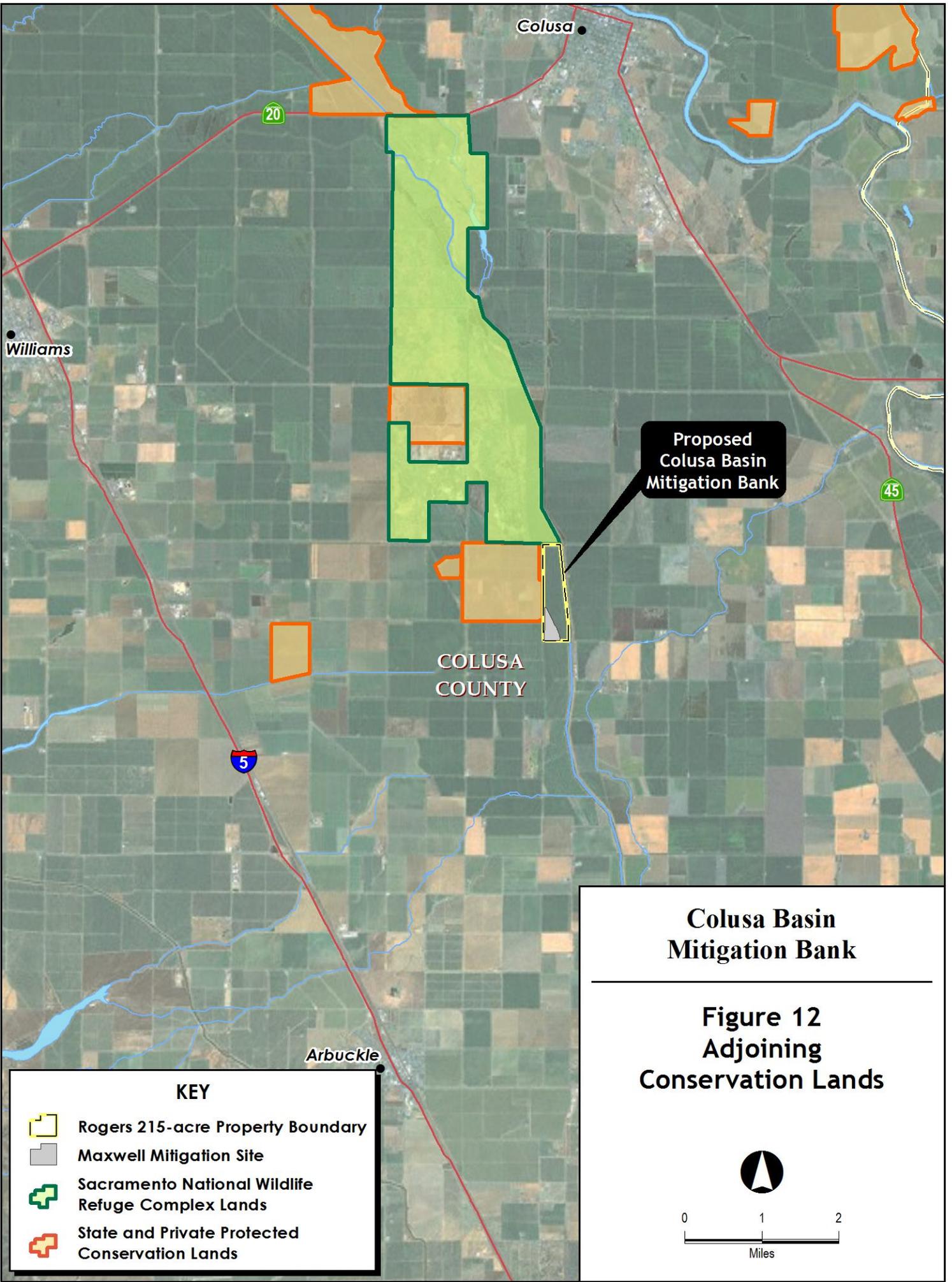
### Colusa Basin Mitigation Bank

Figure 11  
Waters of the U.S.  
Proposed Service Area

#### KEY

- Proposed CBMB Service Area
- 6-digit HUC
- 8-digit HUC
- Delta Legal Zone (Primary and Secondary)
- USACOE Sac District





**KEY**

-  Rogers 215-acre Property Boundary
-  Maxwell Mitigation Site
-  Sacramento National Wildlife Refuge Complex Lands
-  State and Private Protected Conservation Lands

**Colusa Basin Mitigation Bank**

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**Figure 12 Adjoining Conservation Lands**



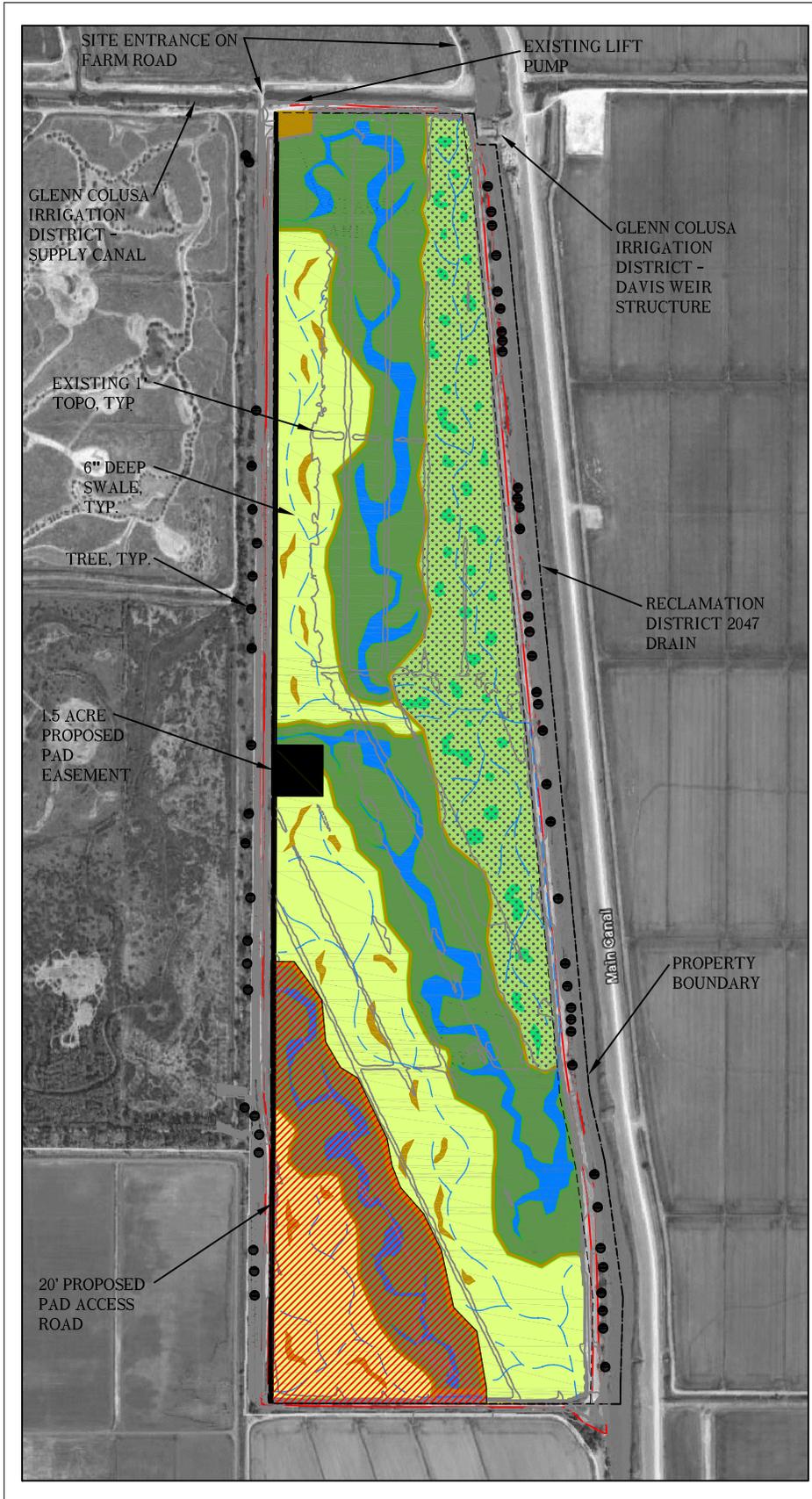
0 1 2  
Miles



# Colusa Basin Mitigation Bank

GIANT GARTER SNAKE HABITAT / WETLAND RESTORATION

COLUSA COUNTY, CALIFORNIA



HABITAT RESTORATION LEGEND	
Item	Description
	Perennial Marsh
	Semi-Permanent Marsh
	Open Water Within Perennial Marsh
	Seasonal Wetlands - (404 Wetlands)
	Uplands
	1' Deep Pothole Within Seasonal Wetland

MAXWELL P.U.D MITIGATION SITE

**FIGURE 13** SITE PLAN

Berms and Refugia



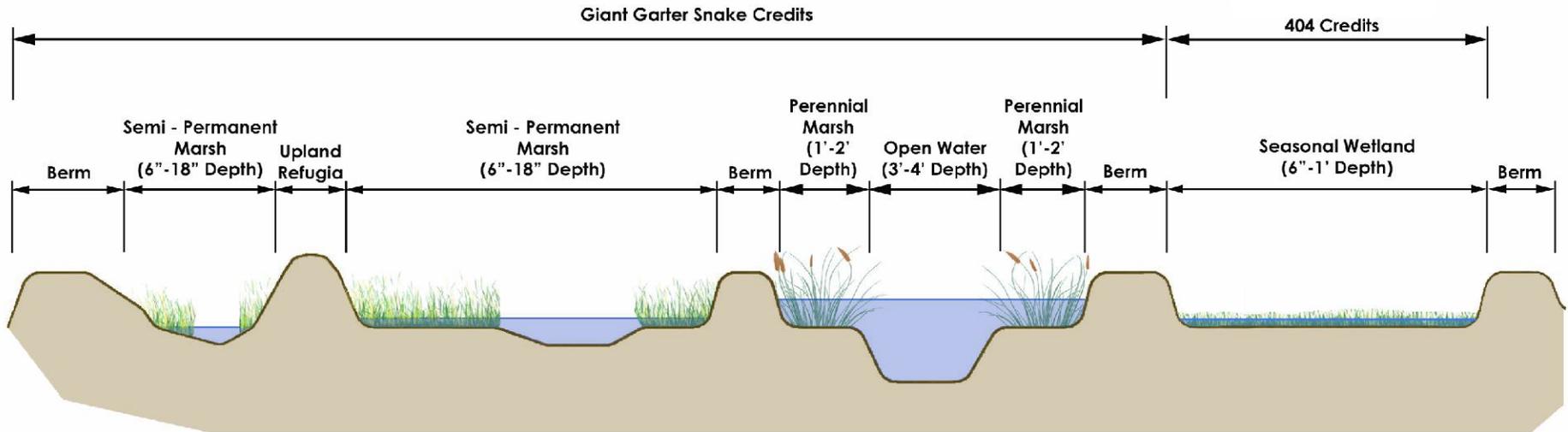
Semi-Permanent Marsh



Perennial Marsh and Open Water



Seasonal Wetland



## Colusa Basin Mitigation Bank

Figure 14  
Typical Habitat Cross-section

Not To Scale

**Covered Species Credits**

- GGS Habitat
- Managed Wetlands
- Uplands
- 119 Acres = 119 Credits

**Waters of the U.S. Creation Credits**

- Seasonal Wetlands, Precipitation Only
- 42 Acres = 42 Credits

**Property Boundary**



## Colusa Basin Mitigation Bank

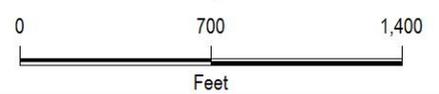
### Figure 15 Credit Evaluation

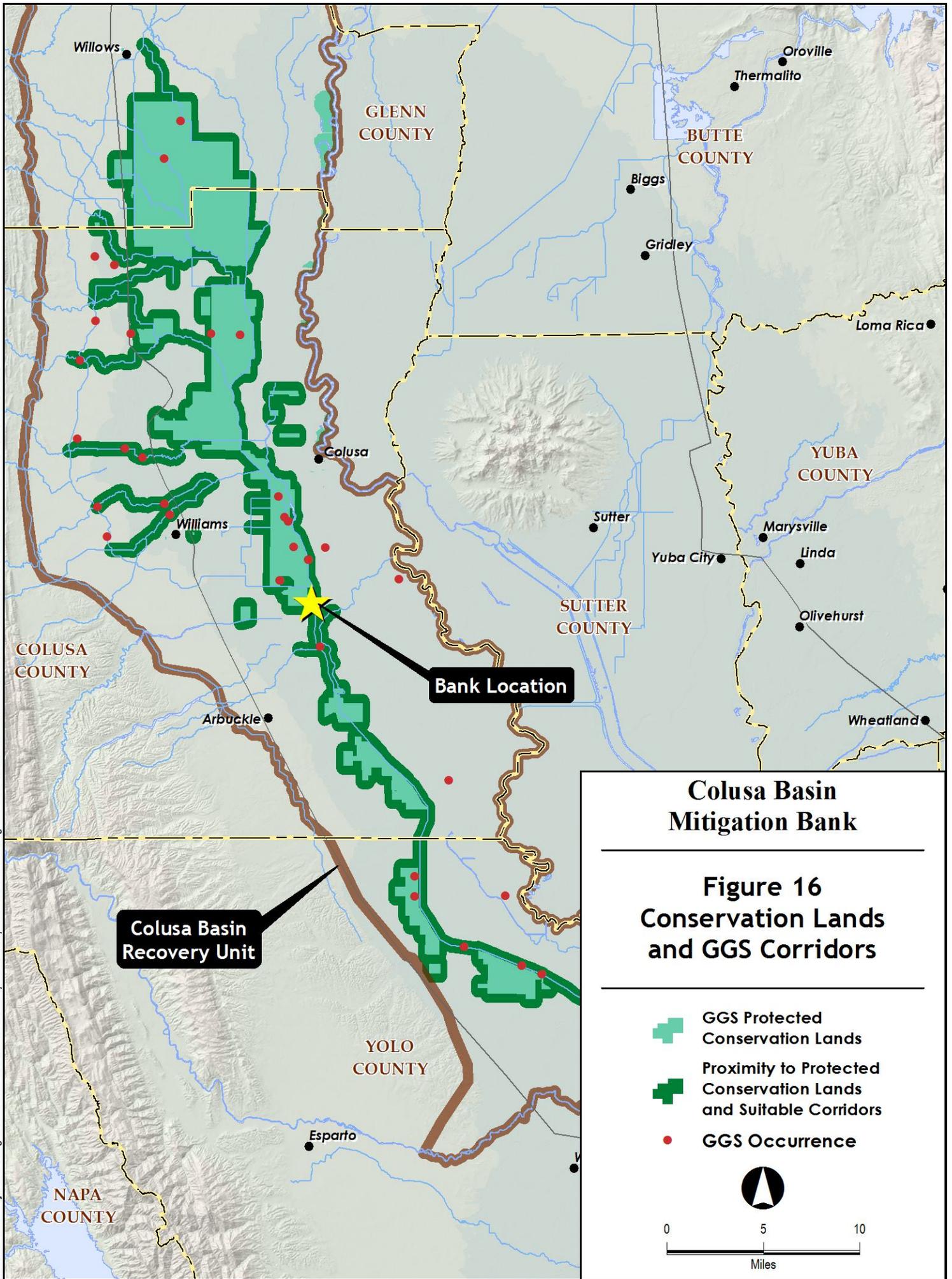
#### Credit Type

-  Covered Species
-  Waters of the U.S.

#### Habitat

-  Seasonal Wetland
-  Open Water
-  Perennial Marsh
-  Semi-Permanent Marsh
-  Upland





Management Outparcel

Minerals Pad  
and Access  
Reservation

Reclamation District  
2047 Easement for  
Canal Maintenance

Maxwell PUD  
Mitigation Site

### Colusa Basin Mitigation Bank

### Figure 17 Conservation Easement

-  Property Boundary
-  Bank Property Easement
-  Exclusion

