

RECLAMATION

Managing Water in the West

Final Environmental Assessment

GRIC CAP Water Delivery to the FICO Groundwater Savings Facility

**Freeport-McMoRan Sierrita Inc.
Pima County, Arizona**



**U.S. Department of the Interior
Bureau of Reclamation
Phoenix Area Office**

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Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Acronyms and Abbreviations

ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
af	acre-feet
afa	acre-feet annually
AGFD	Arizona Game and Fish Department
AMA	Active Management Area
APE	area of potential effect
A.R.S.	Arizona Revised Statutes
ASM	Arizona State Museum
AZPDES	Arizona Pollutant Discharge Elimination System
bgs	below the ground surface
BIA	U.S. Department of Interior, Bureau of Indian Affairs
BMPs	best management practices
CAP	Central Arizona Project
CAP easement	existing right-of-way held by the Bureau of Reclamation for the CAP
CAWCD	Central Arizona Water Conservation District
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CGP	construction general permit
CO	carbon monoxide
CRBPA	Colorado River Basin Project Act
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FCAP	FICO CAP Line, LLC
FICO	Farmers Investment Co.
Freeport-McMoRan	Freeport Minerals Corporation, Freeport-McMoRan Inc. and related entities, predecessors, and subsidiaries
GRIC	Gila River Indian Community
GSF	Groundwater Savings Facility
HDMS	Heritage Database Management System
I-19	Interstate 19
IPaC	Information for Planning and Conservation
ITA	Indian Trust Asset
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places

Pub. L.	Public Law
PAG	Pima Association of Governments
PDEQ	Pima County Department of Environmental Quality
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
ROW	right-of-way
San Xavier Segment	segment of the proposed pipeline that would cross tribal land within the San Xavier District of the Tohono O’odham Nation
Secretary	U.S. Secretary of the Interior
SHPO	State Historic Preservation Office
Sierrita	Freeport-McMoRan Sierrita Inc.
SIP	State Implementation Plan
SWPPP	Stormwater Pollution Prevention Plan
WWTP	wastewater treatment plant
UPRR	Union Pacific Railroad
U.S.C.	United States Code
USF	underground storage facility
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) has received a request from Freeport-McMoRan¹ to consider plans for the delivery of Central Arizona Project (CAP) water leased from the Gila River Indian Community (GRIC) to an existing Groundwater Savings Facility (GSF) owned and operated by the Farmers Investment Co. (FICO). Use of the renewable CAP water at the GSF would allow for the accrual of long-term storage credits for future use by Freeport-McMoRan.

This Environmental Assessment (EA) describes the environmental impacts that may result from the proposed use of the renewable CAP water at the GSF, including the construction and operation of a water delivery pipeline,² and its connection to the CAP system pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. § 4321-4347), as amended. This EA has also been prepared in compliance with the Council on Environmental Quality (CEQ) regulations implementing NEPA and the Department of the Interior's regulations for implementing NEPA (43 C.F.R. Part 46; October 15, 2008).

Reclamation is the lead agency responsible for the preparation of the EA. The U.S. Department of Interior, Bureau of Indian Affairs (BIA) has also received a request to consider granting an easement for the segment of the proposed pipeline that would cross tribal land within the San Xavier District of the Tohono O'odham Nation (San Xavier Segment). For this reason, the BIA will serve as a participating agency for the preparation of this EA.

1.1 Background

1.1.1 CAP System

The CAP system is a water project comprised of a series of pumping plants, canals, aqueducts, tunnels, dams, and reservoirs, which delivers water from the Colorado River to central and southern Arizona for use in irrigation, municipal, industrial, and other projects. The rights to use water from the Colorado River are shared by seven Colorado River basin states, tribes, and Mexico. Rights to water from the Colorado River are determined by Federal legislation, court decisions and decrees, contracts, compacts, international treaty, and administrative decisions, which in combination create the "Law of the River." Included within the Law of the River is the Colorado River Basin Project Act (CRBPA), passed by Congress on September 30, 1968,

¹ Freeport Minerals Corporation and Freeport-McMoRan Inc. and related entities, predecessors, and subsidiaries are collectively referred to herein as Freeport-McMoRan.

² The proposed pipeline would be owned and operated by FICO's affiliate, FICO CAP Line, LLC (FCAP).

Pub. L. No. 90-537, 82 Stat. 885 (1968)). The CRBPA authorized the Secretary of the Interior (Secretary), acting through Reclamation, to build, operate, and maintain the CAP system. The Central Arizona Water Conservation District (CAWCD) was formed to operate and maintain the CAP system, contract for delivery of Colorado River water, and repay the Federal Government for the construction cost of the CAP. Responsibilities related to the operation and maintenance of the CAP system are delineated, in part, under the terms and conditions of the Operating Agreement.³

Pursuant to Article 12 of the Operating Agreement, the CAWCD is required to obtain written consent from Reclamation if a “substantial change” to the CAP system is proposed, including physical modifications such as a turnout. Reclamation has determined that the proposed connection to the CAP system within Reclamation’s right-of-way (ROW; the “CAP easement”) comprises a substantial change based on the increased operational capacity that would result, and the requirement that facilities within the CAP easement become a part of the CAP system. For this reason, this EA considers the CAWCD’s proposed improvements and connection within the CAP easement to be a connected action pursuant to 40 C.F.R. § 1508.25(a)(1). This is further described in Section 2.1.1.

1.1.2 Groundwater Savings and Water Storage

FICO owns and manages approximately 6,600 acres along the Santa Cruz River south of Tucson in Pima County, Arizona, within the Tucson Active Management Area (AMA; Figure 1). The orchard of FICO’s Sahuarita Farm includes approximately 3,500 acres of pecan trees, located within the Town of Sahuarita and extending south from Pima Mine Road along Nogales Highway more than six miles. Freeport-McMoRan Sierrita Inc. (Sierrita) operates the Sierrita Mine, also located in the Santa Cruz Valley, approximately 10 miles southwest of Sahuarita (Figure 2).

In 2001, the Arizona Department of Water Resources (ADWR) granted approval of FICO’s GSF Permit (Right No. 72-584465.0002), which was subsequently renewed in 2017. In accordance with Arizona Revised Statutes (A.R.S.) § 45-812.01, the GSF Permit allows for delivery of up to 22,000 acre-feet annually (afa) of renewable CAP water to be used in lieu of groundwater on the Sahuarita Farm on a gallon-for-gallon substitute basis. Historically, groundwater has been the exclusive source of water for FICO’s operations. The proposed pipeline would allow the planted portion of the orchard to be irrigated with up to 10,000 afa of CAP water in lieu of groundwater;⁴ this capacity corresponds to the portion of the Sahuarita Farm north of Sahuarita Road. The proposed pipeline would also provide for the future delivery of additional CAP water to irrigate the portions of the Sahuarita Farm south of Sahuarita Road.

³ The “Operating Agreement” is the 2000 *Operating Agreement between the United States of America and the Central Arizona Water Conservation District for Operation and Maintenance of the Central Arizona Project*.

⁴ Currently, approximately 1,800 acres of pecan trees are planted in the Sahuarita Farm north of Sahuarita Road.

In 2016, ADWR issued a separate Water Storage Permit (No. 73-584465.0100) to Freeport-McMoRan. The Water Storage Permit allows Freeport-McMoRan to store up to 10,000 afa at the FICO GSF, pursuant to A.R.S. § 45-831.01. In order to store water at a permitted GSF, an applicant must demonstrate to the ADWR that it has a legal right to the source water proposed for recharge. The renewable CAP water to be used at the GSF is leased by Freeport-McMoRan from the GRIC under the terms of the executed Lease and Option Agreement.⁵

1.1.3 Delivery System and Water Proposed for Use

Sierrita and FICO CAP Line, LLC (FCAP) (an affiliate of FICO), executed a *Cost-Sharing and System Operation Agreement* (Agreement) in 2015, to construct and operate the proposed pipeline to bring renewable CAP water supplies to the GSF for use on FICO's pecan orchard in lieu of pumping an equivalent volume of groundwater. The storage capacity of the GSF would be shared by FICO and Freeport-McMoRan under the Agreement.⁶

Under the terms of the executed Lease and Option Agreement with the GRIC, Freeport-McMoRan is entitled to lease 12,000 afa of GRIC's CAP water, with an option to lease an additional 10,000 afa. Groundwater saved through delivery of CAP water to the FICO GSF would allow the accrual of long-term storage credits pursuant to A.R.S. § 45-852.01.⁷ According to Section 6.8 of the Lease and Option Agreement, Freeport-McMoRan may use the leased CAP water for any lawful purpose, including (1) direct use at any location within the CAWCD Service Area; (2) direct or indirect recharge at any location within the CAWCD Service Area; (3) direct use, including direct and indirect recharge, by diversions from the CAP

⁵ The "Lease and Option Agreement" is the 2005 *Lease and Option Agreement for CAP Water Between Phelps Dodge Corporation, Gila River Indian Community and the United States, as Trustee for the Gila River Indian Community*. In addition, a *Letter Agreement Re-confirming Secretary of Interior's Execution of the Lease and Option Agreement* was signed March 24, 2014. Sierrita plans to store CAP water leased by Freeport-McMoRan from the GRIC at the FICO GSF; other legally accessible CAP water supplies could also be stored at the GSF until the GSF is fully committed.

⁶ FICO has a contract with CAWCD for CAP water from the excess agricultural settlement pool (the agricultural settlement pool is part of the excess priority water pool that is distributed by CAWCD). To the extent that it is available, this CAP water supply would be used on the GSF before other water is stored in accordance with A.R.S. § 45-812.01. This allocation, however, is insufficient to meet all of the water demands of the Sahuarita Farm. Also, the entire supply of excess agricultural settlement pool CAP water is being systematically reduced over time and is slated for elimination beginning in 2030.

⁷ Other than FICO's excess agricultural settlement pool CAP water arrangement with CAWCD, the CAP water used on FICO's GSF is intended to accrue long-term storage credits for future use in support of Freeport-McMoRan operations.

canal at any location authorized by the Arizona Water Settlements Act of 2005; or (4) through exchange with the GRIC or other parties within the CAWCD Service Area allowing beneficial use of the water obtained in exchange, at any location authorized by the Act.

1.1.4 Tribal Land

As depicted in Figure 2, the San Xavier District of the Tohono O’odham Nation Reservation (San Xavier Reservation) is located adjacent to, and immediately north of, Pima Mine Road. The United States holds title to the land underlying the CAP easement in trust for the Tohono O’odham Nation.⁸ The Arizona Department of Transportation (ADOT) was granted a ROW for Interstate 19 (I-19) from the United States.

Due to the underlying tribal land ownership, this EA considers the BIA’s review of the grant of easement request for the San Xavier Segment to be a connected action pursuant to 40 C.F.R. § 1508.25(a)(1). The proposed easement would be located entirely within an area that has been previously disturbed and is encumbered by the existing ADOT ROW for I-19. This is further described in Section 2.1.2.⁹

1.2 Purpose and Need

The applicants’ purpose is to deliver renewable CAP water supplies to the FICO GSF in lieu of pumping an equivalent volume of groundwater. Use of the renewable CAP water at the GSF would allow for the accrual of long-term storage credits for use in the future. Pursuant to Section 6.8 of the Lease and Option Agreement, environmental compliance is required for the use of the renewable CAP water at the GSF.

1.2.1 Reclamation

In accordance with its responsibility to manage the allocation and delivery of Colorado River water, Reclamation’s purpose is to ensure the proposed action complies with appropriate Federal environmental requirements for the use of CAP water leased by Freeport-McMoRan from GRIC for the accumulation of long-term storage credits at the FICO GSF, as authorized under the Lease and Option Agreement. Reclamation’s review is needed pursuant to Section 6.8 of the Lease and Option Agreement, which indicates that changes in the proposed use or location of leased CAP water may require additional environmental compliance.

⁸ The United States government holds title to tribal land in trust for the benefit and use of the tribe and individual Indian owners.

⁹ The proposed improvements and connection within the CAP easement require notification to, and coordination with, the San Xavier District and Tohono O’odham Nation; however, a new or revised easement or ROW for this segment of the project area is not required.

In addition, Reclamation’s purpose is to determine whether or not to approve the substantial change to the CAP system (from the point of connection to the CAP mainline and within the CAP easement). Reclamation’s approval is needed pursuant to Article 12 of the Operating Agreement and their letter to the CAWCD dated February 22, 2018 (Appendix C), which requires completion of an EA and other stipulations.

1.2.2 BIA

The BIA’s purpose is to consider the request for a grant of easement, which would allow construction, operation, and maintenance of the proposed pipeline across tribal land. The action is needed to support the delivery and use of CAP water at the FICO GSF.

1.3 Decisions to be Made

After review of the analysis prepared under NEPA, in consideration of public comments, and upon completion of consultation requirements, Reclamation will decide whether or not to:

- Accept the final environmental clearance for the use of CAP water leased by Freeport-McMoRan from the GRIC to the FICO GSF for the accumulation of long-term storage credits pursuant to Section 6.8 of the Lease and Option Agreement; and
- Approve the substantial change to the CAP system pursuant to Article 12 of the Operating Agreement, including the proposed improvements and connection within the CAP easement.

In addition, the BIA Papago Agency will decide whether or not to:

- Approve the grant of easement(s) for the construction, operation, and maintenance of the San Xavier Segment of the proposed pipeline.¹⁰

Reclamation and the BIA Papago Agency will make separate decisions.

1.4 Public Involvement

Reclamation solicited input from the public on the proposed project to assist in identifying key issues and defining the scope of the project and environmental analysis. Reclamation conducted scoping via mail; project information was sent to the agencies and entities listed in Section 5.0.

¹⁰ The scope of analysis for the BIA is limited to the San Xavier Segment. No other actions are currently planned or proposed (*i.e.*, “ripe for decision”) that have a relationship, interdependence, or common timing or geography to the proposed action. Past, present, and reasonably foreseeable future actions, however, are evaluated and analyzed under cumulative effects in Section 3.0, as appropriate.

A 30-day comment period was initiated June 22, 2018 and closed on July 23, 2018. Two letters were received during the public scoping period. Comments within each letter were identified, and key issues have been considered in this EA.

An electronic copy of a notice of availability and the Draft EA were posted on Reclamation's Phoenix Area Office website at www.usbr.gov/lc.phoenix/ for public viewing and an opportunity to comment during a 30-day review period which began September 27, 2018. The notice of availability was also emailed to project stakeholders (Section 5.0).

2.0 Proposed Action and Alternatives

2.1 Proposed Action

Reclamation is reviewing the environmental analysis for the proposed use of CAP water at the FICO GSF and connection to the CAP system. In addition, the BIA Papago Agency would grant an easement for the San Xavier Segment of the proposed pipeline that would cross approximately 1,150 feet of tribal land within the San Xavier District of the Tohono O'odham Nation.

2.1.1 Location of Delivery System and Use of CAP Water

2.1.1.1 Location of CAP Water Delivery System

The proposed 36-inch diameter, gravity-driven pipeline would convey renewable CAP water to FICO's Sahuarita Farm pecan orchard (Figure 3). From the existing CAP mainline, the proposed pipeline would cross I-19 and follow Pima Mine Road to the east for approximately 2.5 miles, including a crossing of the Santa Cruz River, before turning south into the orchard.

Approximately 3 miles to the south, the proposed pipeline would split at Sahuarita Road, directing CAP water east and west to connect to three discharge points within the existing FICO irrigation system infrastructure for delivery to the orchard. The approximately 6.6 miles of the proposed pipeline would be entirely constructed on previously disturbed land within existing water line easements, roadway ROWs, and private agricultural land owned by FICO.

2.1.1.2 Alignment and Construction

The term "Proposed Action Area" identifies the area contemplated in this EA for the alignment of the proposed pipeline and associated equipment. An overview of the approximately 62-acre Proposed Action Area is depicted in Figure 3. Detailed views of the Proposed Action Area are provided in Figures 4, 5, and 6. Generally, the Proposed Action Area is 100 feet wide along Pima Mine Road, and 60 feet wide through the orchard (additional width provided in certain locations).

For the purposes of this EA, the proposed pipeline has been divided into four distinct segments, as summarized in Table 1 and described in detail below. Generally, the proposed pipeline would be constructed beneath five to six feet of soil cover, and construction disturbance would be

limited to an approximately 15 to 20-foot wide area, plus the installation of appurtenant equipment in certain locations.¹¹ Overall, the total projected ground disturbance (temporary) would be less than 15 acres (Table 1).

Conventional methods, such as open-cut trenching and placement of bedding material, pipe, and backfill, would be used for the majority of the construction area. Horizontal/directional drilling by jacking and boring a casing pipe and existing pipe sleeves or segments would be used at select locations and is discussed in more detail in subsequent sections.

Permits, easements, or licenses would be obtained in advance of construction in areas subject to the regulatory or permitting authority of a public or private entity, including:

- Encroachment permit from ADOT (Segment 2)
- Grant of easement from the BIA Papago Agency (Segment 2)
- Crossing agreements from the Union Pacific Railroad (UPRR; Appendix D)
- Construction permits and license agreements/easements from the Town of Sahuarita

Access for the majority of the pipeline is readily available from existing roadways (public and on FICO property) adjacent to the alignment. Staging areas for the storage of construction materials and equipment would be anticipated to occur adjacent to the proposed pipeline within previously disturbed areas. Prior to operation, the completed pipeline would be pressure tested for potential leaks.

Segment 1: CAP Easement Connection An existing branch tapped to the CAP mainline provides two points of connection within the CAP easement at the northwest corner of the intersection of I-19 and Pima Mine Road (Figure 4). From this branch, two parallel pipelines are planned, one of which has been constructed for the Community Water Company of Green Valley.¹² The proposed pipeline would connect to an existing pipe stub extending from an existing isolation valve vault. Additionally, a second vault with a flow meter is proposed as part of the water delivery system. A pre-fabricated concrete equipment shelter/building (approximately 11 feet by 14 feet) with an emergency generator and fuel tank would be constructed within the CAP easement to support pipeline operations. The generator is for emergencies and would only be used to actuate valves remotely if electricity was (temporarily) not available. A total of approximately 200 feet of pipe is proposed to be constructed within the CAP easement.

¹¹ Excavations would generally be less than 10 feet below the ground surface. As described under Segment 4, the easement would expand to 80 feet wide for a length of approximately 400 feet, and to 100 feet wide for a length of approximately 200 feet to accommodate a water line filter and backwash basin within the orchard.

¹² *Final Environmental Assessment and Finding of No Significant Impact, Community Water Company of Green Valley Central Arizona Project Water Delivery System Pima County, Arizona* (Reclamation, 2010).

Under the proposed actions, Reclamation would approve the “substantial change” to the CAP system. The “substantial change” comprises the proposed improvements for the connection between the CAP mainline and the proposed pipeline within Segment 1, the CAP easement. The facilities constructed within Segment 1 would become part of the CAP system and would be managed and operated by the CAWCD.

Segment 2: San Xavier Segment From the CAP easement (Segment 1) and as depicted in Figure 4, the proposed pipeline would run adjacent to the north side of Pima Mine Road within the boundaries of the San Xavier District. This segment is also entirely located within ADOT’s existing ROW for I-19. For the San Xavier Segment, an estimated 1,150 feet of pipe would be constructed roughly 100 feet north of Pima Mine Road. Construction would occur via open trench, except for the crossing of I-19 and its two access roads (on/off ramps), which would be accomplished via horizontal/directional drilling/jack and bore techniques. The construction and operation/maintenance of the San Xavier Segment would require a grant of easement from the BIA Papago Agency (refer to Section 2.1.2), as well as an encroachment permit from ADOT. As a provision of the encroachment permit, construction within the San Xavier Segment would need to adhere to a Native Plant Preservation Plan (see Section 2.1.3).

Segment 3: Pima Mine Road East of I-19 and the San Xavier Segment, the proposed pipeline would continue eastward within the Pima Mine Road ROW for approximately two miles. The Town of Sahuarita would issue a license agreement for a 15-foot wide easement for this segment. At the crossing of the Santa Cruz River, the proposed pipeline would connect to an existing 36-inch diameter pipe that was constructed as part of the Town of Sahuarita’s improvements to the Pima Mine Road bridge. The approximately 1,100 feet of existing pipe extends the length of the bridge plus over 400 feet to each side. Because the proposed pipeline can tie into existing hardware, the only construction activity proposed over this reach is air release valves to be installed at the bridge connection. From the east side of the bridge, the proposed pipeline would continue another approximately 1,700 feet before turning south onto the Sahuarita Farm.

Segment 4: Sahuarita Farm South of the Pima Mine Road ROW, the proposed pipeline would immediately cross a UPRR spur line at roughly a perpendicular angle and then turn again to the east paralleling the south side of UPRR on FICO property. With a few turns, the proposed pipeline continues through the orchard generally to the south and east. The proposed pipeline crosses the Nogales Highway (first crossing) and continues southward to Sahuarita Road. On the north side of Sahuarita Road, the proposed pipeline would intersect a perpendicular pipeline and then extend to three existing irrigation ditches for water discharge and delivery to the orchard. Two discharge points are located to the east, and the proposed pipeline would also extend onto Sahuarita Road to the third discharge point located just west of Nogales Highway. Delivery to the third discharge point would require a second crossing of Nogales Highway using the jack and bore method. The proposed pipeline would also cross the UPRR track along Sahuarita Road, east of Nogales Highway. Segment 4 is located predominantly within private land held by FICO; FICO would grant an easement for the proposed pipeline following construction. Table 2 outlines the planned construction methods where other property interests exist within Segment 4.

Along Segment 4, a water line filter and backwash basin (to hold filter backwash for irrigation on the farm) would be constructed within the orchard. A vault with flow meter and valves would also be constructed downgradient of the filter.

2.1.1.3 Operations and Maintenance

While the proposed pipeline would have a total capacity of over 30,000 afa, the anticipated delivery to the portion of the Sahuarita Farm north of Sahuarita Road is estimated to be approximately 10,000 afa. The anticipated irrigation schedule is listed in Table 3.

Operation of the turnout would be conducted remotely by the CAWCD. The CAWCD would monitor flow readings and operate its valve in the CAP easement (in Segment 1) primarily for scheduled maintenance of the line and during emergencies. FICO would be responsible for the operation and maintenance of the proposed pipeline (Segments 2-4). Daily operations of the proposed pipeline would be conducted via the valve on the farm (in Segment 4) for irrigation based on flow meter readings. FICO staff would also routinely monitor the proposed pipeline and would operate the water line filter and backwash basin. Minimal maintenance would be anticipated.

The automated water line filter in Segment 4 would be backwashed as needed during scheduled irrigation; the series of filter cartridges would be anticipated to rotate backwash cycle hourly during deliveries. The backwash water would be stored within the filter basin and would be used on the farm. The filter basin would be designed to retain backwash flows generated from a 14-day irrigation cycle.

2.1.1.4 CAP Water Use

Under the proposed actions, Reclamation is reviewing the environmental analysis for the proposed use of renewable CAP water leased by Freeport-McMoRan from GRIC for the accumulation of long-term storage credits at the FICO GSF. Under the terms of the Lease and Option Agreement, Freeport-McMoRan and the GRIC agreed to a lease of 12,000 afa of renewable CAP water. Sierrita is currently permitted to store 10,000 afa of its available CAP water at the FICO GSF. Renewable CAP water conveyed to the FICO GSF would be used to irrigate the orchard in lieu of pumping an equivalent volume of groundwater. The total storage capacity of the GSF is 22,000 afa, as permitted by the ADWR based on the documented consumptive use of the Sahuarita Farm; 10,000 afa would be used onto the portion of the Sahuarita Farm north of Sahuarita Road.

Freeport-McMoRan would have the right to recover, sell, and/or transfer long-term storage credits it earns from the storage of CAP water at the FICO GSF. Future recovery of long-term storage credits would occur within the Upper Santa Cruz subbasin of the Tucson AMA and may include recovery of water by Sierrita through the operation of its existing mitigation wells.

2.1.2 Grant of Easement

Under the proposed actions, the BIA Papago Agency, with the consent of the San Xavier District and the Tohono O'odham Nation would grant easement(s) for the proposed pipeline. The

proposed easement would be located entirely within an area that is currently encumbered by an existing ADOT ROW for I-19; the proposed easement area has been previously disturbed for the initial construction of the highway and subsequent maintenance and improvements. As depicted in Figure 4, the easement(s) would provide for the short-term/temporary construction of the proposed pipeline and its operation and maintenance.

- A short-term (estimated less than one year), temporary construction easement would be issued for approximately 1.5 acres, allowing for access and construction of the pipeline.
- A long-term (50 year), commercial easement in gross would be issued for approximately 0.5 acres (approximately 1,150 feet by 20 feet) located on tribal land for the operation and maintenance of the proposed pipeline.¹³

2.1.3 Applicant Proposed Measures

Best management practices (BMPs) and applicant proposed measures incorporated as part of the proposed actions include:

- Construction activities would be covered by the Arizona Pollutant Discharge Elimination System (AZPDES) construction general permit (CGP). A notice of intent would be filed with the Arizona Department of Environmental Quality (ADEQ), and a Stormwater Pollution Prevention Plan (SWPPP) detailing construction best management practices would be maintained on-site to:
 - Implement pollution prevention controls,
 - Minimize the discharge of pollutants from stormwater and spilled or leaked materials, and
 - Install and maintain erosion and sediment controls.
- Biological resources
 - Prior to construction, the San Xavier Segment (Segment 2) would be inventoried for native plants, and construction would adhere to a detailed Native Plant Preservation Plan, including details for avoiding, and flagging and tagging viable protected plants (i.e. transplantable barrel cacti, saguaros, etc.). Where construction activities cannot avoid viable protected plants, the plan would provide for specific plant salvage, transplanting, and monitoring. Existing plants that would be preserved in place and areas designated to remain undisturbed would be fenced prior to construction. Existing viable trees and shrubs would be preserved in place at the edges of construction, where possible.

¹³ At the end of the term, the grant of easement would be renewed, or the pipeline would be abandoned in place.

- Tree removal for construction would be minimized as much as practicable throughout the Proposed Action Area. Where possible, tree removal within the orchard would be scheduled *outside* of the migratory bird nesting season of March 1st to August 31st. If tree removal activities within the orchard are scheduled to occur during the nesting season, surveys for nesting birds would be conducted in the area of tree removal, including a 500-foot buffer. Active nests found during these surveys would be avoided, and a buffer area¹⁴ would be established to prevent accidental harm by equipment/people until the nest is vacated or fails.
- Noxious weeds and invasive plant species management and control would be implemented consistent with applicable regulations. The introduction of noxious weeds and invasive plants would be addressed through the use of certified weed-free seed and mulching (where applicable) and preconstruction cleaning of vehicles to avoid invasive weed introduction. To prevent the introduction of invasive species seeds, the contractor shall inspect earthmoving and hauling equipment at the storage facility. Vehicles and equipment would be washed and free of attached plant/vegetation and soil/mud debris prior to entering the construction site.
- Cultural resources
 - An archaeological monitor would observe construction activities within the existing CAP easement (Segment 1) and the San Xavier Segment (Segment 2).
 - If previously unidentified cultural resources are discovered during ground disturbing activities, work would cease in the vicinity, and Reclamation (and BIA, as needed) would be notified promptly to seek guidance on an appropriate course of action.

2.2 No Action Alternative

Under the no action alternative, final environmental clearance would not be obtained for the use of CAP water leased by Freeport-McMoRan from the GRIC for the accumulation of long-term storage credits at the FICO GSF and a connection to the CAP system would not be approved. FICO would continue to pump groundwater from the Tucson AMA to meet the irrigation needs of the orchard. In addition, the BIA Papago Agency would not grant an easement for the proposed pipeline.

¹⁴ The disturbance-free buffer would be established at 100 feet for ground and burrow nesting birds; 500 feet for raptors, and 50 feet for other species.

2.3 Alternatives Considered but Eliminated from Analysis

Construction of the tap into the CAP mainline and the availability of a point of connection within the CAP easement made other potential points of connection impracticable and unreasonable in light of cost and engineering logistics. Two alternative alignments for the location of the delivery system had been considered, but were eliminated from further analysis, as outlined below. No alternative uses of the CAP water leased by Freeport-McMoRan from the GRIC were considered as part of this assessment.

2.3.1 Pima Mine Road Alternative

Under one alternative, a water delivery pipeline would originate at the terminus of the CAP, approximately 800 feet south of Pima Mine Road and just west of I-19. Under this alternative, the pipeline would be routed northwesterly along the CAP easement, crossing the existing UPRR and then turning east along Pima Mine Road before turning into the Sahuarita Farm. The pipeline would cross under I-19 within the existing Pima Mine Road ROW and would not be located within the San Xavier Reservation.

This potential alignment was eliminated from further analysis due to the availability of a point of connection to the CAP mainline. In addition, the number, size, diversity, and location of existing utilities within the Pima Mine Road ROW, particularly at its intersection with I-19, all but preclude construction of another 36-inch diameter water line. Further, construction at the intersection of Pima Mine Road and I-19 has recently resulted in protracted roadway restrictions and travel limitations.

2.3.2 Private Land Alternative

A second alternative considered originating a water delivery pipeline at the terminus of the CAP and routing northward for a short distance before turning east to cross beneath I-19. This alternative alignment would bisect several privately-owned properties before crossing beneath the UPRR and turning east within the Pima Mine Road ROW. This alternative would not be located within the San Xavier Reservation. This alternative was also eliminated from further analysis due to the availability of a point of connection to the CAP mainline; the challenges associated with gaining approvals to cross privately held land; and increased use of undisturbed land in excess of the preferred alternative.

3.0 Affected Environment and Environmental Consequences

This chapter provides details of the existing or baseline conditions (affected environment) occurring within and around the Proposed Action Area and analyzes the potential impacts

associated with the proposed actions identified in Chapter 2.¹⁵ The consequences of the no action alternative are described as a basis for comparison. Identified impacts are changes to the existing condition of the environment and/or probable future conditions that are reasonably expected to occur as a result of the implementation of the actions. Potential impacts are described in terms of duration, magnitude, type (beneficial, neutral or adverse), and context (site-specific, local or regional).¹⁶

3.1 Soil Resources

Soil refers to the layer of rocks, minerals, organic materials, air, and water that is found on the surface of the land. Proper soil condition is a fundamental aspect of high functioning ecosystems and supports important physical and biological processes. As several resources and resource uses, such as agriculture, vegetation, and wildlife habitat, depend upon suitable soil, their attributes, conditions, and management should be considered.

3.1.1 Affected Environment

As depicted in Figure 7, approximately 56 percent of the Proposed Action Area consists of Grabe loam/silty clay loam and Comoro loam/sandy loam (NRCS, 2018). Typically found on flood plains and alluvial fans, these soils are well drained, and are moderately high to highly permeable. The depth to seasonal high water table for these soils is greater than six feet below the ground surface (bgs). Ponding and flooding of these soils are rare. The parent material for these soils consists of recent alluvium. The Comoro loam has a low to moderate water storage capacity; the Grabe loam has a high water storage capacity.

Remaining soil types that occur within the Proposed Action Area include: Hayhook-Sahuarita complex (approximately 20 percent), Sonoita-Tubac complex (approximately 10 percent), Pima silty clay loam (approximately 5 percent), and Anthony gravelly sandy loam (approximately 5 percent); additional soil types cover less than 2 percent each. The soils mapped in Segment 4 and the western portion of Segment 3 (approximately 78 percent of the Proposed Action Area) are identified as prime farmland.¹⁷

¹⁵ Because the BIA's granting of an easement would result in the construction of Segment 2 of the proposed pipeline, the effects of this action are encompassed by the analysis presented under "Location of Delivery System." The effects of the BIA's proposed action are not specifically identified herein. Similarly, Reclamation's approval of a "substantial change" to the CAP system would result in the construction of Segment 1 of the proposed pipeline and are not specifically identified.

¹⁶ The terms "effects" and "impacts" are used synonymously in this EA.

¹⁷ When irrigated and either protected from flooding or not frequently flooded during the growing season.

3.1.2 Environmental Consequences

3.1.2.1 Proposed Actions

3.1.2.1.1 Location of Delivery System

Implementation of the proposed actions would result in soil disturbance during construction of the proposed pipeline and appurtenant equipment. Construction would occur entirely within areas that have been previously disturbed. Less than 10 acres of the approximately 3,500-acre orchard would be dedicated as an easement for the proposed pipeline. An estimated 175 pecan trees would be removed from the easement area for pipeline construction; however, there would not be an irreversible conversion of prime farmland to nonagricultural uses.

Implementation of BMPs provided in the SWPPP (Section 2.1.3) would minimize the potential for erosion during construction. Direct impacts on soils from the proposed actions would be minor and short term. No indirect impacts to soils are anticipated as a result of the proposed actions. The operation of the proposed pipeline would have no impact on soils within the Proposed Action Area.

3.1.2.1.2 CAP Water Use

The use of the renewable CAP water conveyed to the FICO GSF for irrigation of the orchard in lieu of pumping an equivalent volume of groundwater and the accrual of long-term storage credits would have no impact on soils within the Proposed Action Area. The pecan orchard would continue to be irrigated on the same schedule; the change in water source from groundwater to renewable CAP water would have a negligible impact on soils.

3.1.2.1.3 No Action Alternative

No direct or indirect effects on soils are anticipated from the no action alternative; soil conditions would remain in their current state.

3.2 Water Resources

Similar to the evaluation in the *Final EA for the Community Water Company of Green Valley Central Arizona Project Water Delivery System* (Reclamation, 2010), the groundwater resources analysis considers an oblong area, extending approximately 10 miles north, 6 miles south, and 5 miles east and west from the southern boundary of the Sahuarita Farm (Figure 2). Surface water resources are also discussed herein.

3.2.1 Affected Environment

3.2.1.1 Surface Water

As the backbone of the valley, the ephemeral Santa Cruz River runs north through the Proposed Action Area, paralleling I-19 and the western boundary of the Sahuarita Farm. The Santa Cruz River conveys stormwater runoff downgradient and northward from Mexico and the Santa Rita and Sierrita mountains on either side of the valley. At Continental (Figure 8), the Santa Cruz

River has a 1,682 square mile contributing drainage area (ADWR, 2010). The other primary surface water feature of the area is the CAP system, which conveys Colorado River water to central and southern Arizona. The proposed actions would connect to the CAP system just above its terminus at Pima Mine Road.

3.2.1.2 Groundwater

Groundwater occurs within the Upper Santa Cruz subbasin (Figure 1) within the Tucson AMA. In the subbasin, groundwater flow generally mirrors the course of the Santa Cruz River, flowing from the mountain fronts to the valley from south to north. The depth to groundwater ranges from 50 to 100 feet bgs at the Santa Cruz River, increasing to approximately 200 feet bgs near Sahuarita. Well production rates range from 1,000 to 2,000 gallons per minute in the vicinity.

Natural recharge to the subbasin occurs via groundwater inflow from the south, infiltration of stormwater, and mountain-front recharge; incidental sources of groundwater recharge include agricultural, municipal, and industrial sources. With groundwater pumping, over time, withdrawals have exceeded the natural and incidental recharge in the Sahuarita/Green Valley area. Groundwater use has lowered the local water table, which increases the cost of pumping, degrades water quality, and contributes to land subsidence. Reclamation, in cooperation with local entities, prepared the *Green Valley Area Water Supply Study* (Reclamation, 2017), which evaluates opportunities to alleviate groundwater use. The report provides details of several existing/permitted, planned, and potential groundwater recharge projects in the vicinity of the proposed actions, including underground storage facilities (USFs) and GSFs. The recharge projects listed in Table 4 have already, or are expected to, contribute to a localized rise in groundwater, reversing the trend of decreasing groundwater levels through recharging and storing renewable surface water supplies in the aquifer (Reclamation, 2017).

3.2.1.3 Consumptive Use

Groundwater has historically served as the source of irrigation water for the Sahuarita Farm. FICO withdraws groundwater from 21 wells located throughout the orchard, with an average pumping capacity of approximately 1,265 gallons per minute. Over the past 20 years, the amount of groundwater used on the Sahuarita Farm has averaged approximately 18,232 afa, with some degree of variability, as demonstrated in Table 5. Historic water use varies based on temperature patterns, precipitation, irrigation method, soil conditions and mulching, and the mix of mature and young trees. FICO actively evaluates and manages the water demand/irrigation need on a routine basis, matching the volume of water applied to the orchard with the consumptive use of the trees. The consumptive use is calculated using evapotranspiration rate,

which accounts for water loss from the soil surface due to evaporation and transpiration from the trees.¹⁸ FICO carefully manages this resource to avoid overwatering and has an economic disincentive due to the added cost of pumping.

3.2.1.4 Water Quality

The CAP water proposed for delivery to the FICO GSF originates from the Colorado River and is regularly tested for contaminants (CAP, 2016). While of good quality, the CAP water has a higher mineral content (commonly referred to as salinity and measured as total dissolved solids) than local groundwater. While not hazardous, high salinity water may taste salty. It also reduces the effectiveness of detergents and may make it necessary to replace plumbing fixtures, home appliances, and car radiators more frequently (Reclamation, 2017).

3.2.2 Environmental Consequences

3.2.2.1 Proposed Actions

3.2.2.1.1 Location of Delivery System

Construction and the physical operation of the proposed pipeline would not affect surface water or groundwater water quantity or quality in the analysis area (the effects of using renewable CAP water for irrigation are discussed below). With the exception of the construction of air release valves, no construction activities would occur within, contiguous to, or over the Santa Cruz River, as an existing 36-inch diameter pipe has already been constructed across the roadway bridge, extending over 400 feet to each side. In addition, implementation of BMPs identified within the SWPPP (Section 2.1.3) would include erosion and sediment controls to minimize potential impacts to surface water resources during construction.

The connection to the CAP system would be made at an existing pipe stub extending from an existing isolation valve vault; there would be no impact to surface water or groundwater resources from the construction or operation of the proposed pipeline.

3.2.2.1.2 CAP Water Use

The use of the renewable CAP water conveyed to the FICO GSF for irrigation in lieu of pumping an equivalent volume of groundwater and the accrual of long-term storage credits would not impact surface water quantity or quality. The use of CAP water reduces groundwater pumping and helps to prolong and sustain the groundwater aquifer in the analysis area. This also helps to reduce the potential for aquifer compaction and subsidence. Implementation of the proposed

¹⁸ Transpiration is the process by which moisture is carried through plants from roots to small pores on the underside of leaves, where it changes to vapor and is released to the atmosphere.

actions would allow the use of existing CAP water allocations to substitute for a portion of local groundwater demand. Beneficial effects of the proposed actions align with many of the goals outlined in the *Green Valley Area Water Supply Study*, including (Reclamation, 2017):

- Improving availability of water supplies
- Reducing overdraft of the aquifer
- Reducing subsidence

In the event that long-term storage credits are recovered, five percent of the stored water would be retained in the aquifer for the purpose of recharge, consistent with ADWR regulations (A.R.S. § 45-852.01). The long-term effect would be to conserve groundwater supplies that otherwise would be reduced in the absence of the proposed actions.

Given the consumptive use of the CAP water by the pecan trees in the GSF, no change in groundwater quality would be anticipated from the implementation of the proposed actions.

3.2.2.1.3 No Action Alternative

Under the no action alternative, there would be no effect to surface water quantity or quality. Renewable CAP water would not be available for use on the Sahuarita Farm, and groundwater pumping would continue for irrigation of FICO's orchard. Groundwater level decline, aquifer depletion, and the potential for accelerated subsidence would be predicted to occur faster than with the proposed actions. In addition, groundwater quality would have the potential to degrade under the no action alternative (Reclamation, 2017).¹⁹

3.3 Air Quality

The Pima County Department of Environmental Quality (PDEQ) has regulatory authority for air quality. In addition, the Pima Association of Governments (PAG) supports regional planning efforts, including air quality. The Tohono O'odham Nation, Pima County, and the Town of Sahuarita are members of PAG (PAG, 2018).

3.3.1 Affected Environment

Pima County is currently in attainment for the six National Ambient Air Quality Standards (NAAQS) (Pima County, 2018), and the Tucson region meets the Federal environmental health standards (PAG, 2018). However, the northern portion of the proposed pipeline is located within the southern limits of a Limited Maintenance Plan area for carbon monoxide (CO) (EPA, 2018). This area has attained the NAAQS for CO and has demonstrated that the improvement is due to permanent and enforceable control measures, the area has an approved maintenance plan, and the

¹⁹ Withdrawal of water from the upper parts of an aquifer can allow underlying saline water to move upward and degrade water quality (USGS, 2003).

area has met other relevant requirements in the Clean Air Act (EPA, 2018). There have been no exceedances of the CO standard in the Tucson Air Planning Area from 1993 to the present, and a second 10-year CO Limited Maintenance Plan was approved by the EPA in 2009.

Carbon monoxide is a localized pollutant that disperses rapidly. In Pima County, greater than 50 percent of CO emissions come from a combination of on-road and off-road motor vehicles (PAG, 2017). Implementation of the following measures have helped maintain the average 8-hour concentration of CO well below the NAAQS:

- Federal motor vehicle control program (tailpipe emission standards for new cars)
- State inspection and maintenance programs
- Since 1990, use of oxygenated fuels from September 30 to March 31 in Pima County

3.3.2 Environmental Consequences

3.3.2.1 Proposed Actions

3.3.2.1.1 Location of Delivery System

Air emissions resulting from the proposed actions would include fugitive dust associated with construction activities, clearing of vegetation, and emissions from vehicles and equipment. To reduce the emission of pollutants, appropriate construction BMPs would be followed and vehicles and equipment would be properly maintained. Per Pima County requirements, a dust control plan would be implemented to ensure emissions and fugitive dust are kept at a minimum during construction. With the implementation of BMPs, temporary construction activities, including excavation and movement of soils, would result in short-term, minor adverse impacts on local air quality. No indirect impacts to air quality are anticipated as a result of the proposed actions.

The operation of the proposed pipeline would have no impact on air quality.

3.3.2.1.2 CAP Water Use

The use of the renewable CAP water conveyed to the FICO GSF for irrigation of the orchard in lieu of pumping an equivalent volume of groundwater and the accrual of long-term storage credits would have no impact on air quality.

3.3.2.1.3 No Action Alternative

No direct or indirect effects on air quality are anticipated from the no action alternative, because conditions would remain in their current state.

3.4 Biological Resources

This section describes biological resources that may be affected by implementation of the proposed actions, including vegetation, wildlife, and special status species. The area of analysis associated with biological resources is focused on the Proposed Action Area.

3.4.1 Affected Environment

3.4.1.1 Vegetation

The proposed actions are located within the Arizona upland subdivision of the Sonoran desertscrub biotic community (Brown, 1994). This community typically occurs from 1,000 to 3,000 feet above mean sea level, and the vegetation is characterized by sparse creosotebush (*Larrea tridentata*), foothills palo verde (*Parkinsonia microphylla*), and white bursage (*Ambrosia dumosa*) in the open areas, with a greater density and diversity of plants along the drainages, including ironwood (*Olneya tesota*), blue palo verde (*Parkinsonia floridum*), velvet mesquite (*Prosopis velutina*), desert broom (*Baccharis sarothroides*), and catclaw acacia (*Senegalia greggii*). Cacti are common in the Arizona upland subdivision of the Sonoran desertscrub, including saguaro (*Carnegiea gigantea*), prickly pear (*Opuntia* spp.), fishhook barrel cactus (*Ferocactus wislizeni*), and cholla (*Cylindropuntia* spp.).

The alignment of the proposed pipeline occurs within areas that have been previously disturbed, including the existing CAP easement, the ADOT ROW for I-19, the Pima Mine Road ROW, and FICO's Sahuarita Farm. The vegetation of each segment of the proposed pipeline is summarized in Table 6.

3.4.1.2 Wildlife

The project area vicinity provides habitat for many species of wildlife. Mammals known to exist within the project area include coyote (*Canis latrans*), collared peccary (*Pecari tajacu*), desert cottontail (*Sylvilagus audubonii*), blacktailed jackrabbit (*Lepus californicus*), and antelope jackrabbit (*Lepus alleni*), round-tailed ground squirrel (*Spermophilus tereticaudus*), Merriam's kangaroo rat (*Dipodomys merriami*), and the white-throated woodrat (*Neotoma albigula*). Lizard species in the vicinity include the tiger whiptail (*Aspidoscelis tigris*), side-blotched lizard (*Uta stansburiana*), and Gila monster (*Heloderma suspectum*). Snakes in the area include the red racer (*Masticophis flagellum picues*), western diamondback rattlesnake (*Crotalus atrox*), and gophersnake (*Pituophis catenifer*). Migratory birds are discussed below.

3.4.1.3 Special Status Species

3.4.1.3.1 Endangered Species Act (ESA)

An official query of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) online database was conducted to identify federally listed species that have the potential to occur within the project area (USFWS, 2018a). Species range and habitat data was obtained from information provided by the USFWS and the Arizona Game and Fish Department (AGFD) Heritage Database Management System (HDMS; AGFD, 2018b). The natural history for each of the species was reviewed to determine habitat and life history requirements and to assess potential habitat in the project area. Table 7 lists the six federally-listed species identified in the IPaC and assesses their potential for occurrence within the project area vicinity. There are no proposed or designated critical habitats in the Proposed Action Area; the nearest critical habitat is associated with the jaguar (*Panthera onca*), approximately 10 miles to the southeast in the Santa Rita Mountains (USFWS, 2018b).

One endangered plant species, Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*) may occur within Segment 2; Segments 1, 3, and 4 do not have potential habitat for this species due to existing and prior disturbance.²⁰ Segment 2 was surveyed for the Pima pineapple cactus in accordance with the USFWS protocol; no individuals were located.

3.4.1.3.2 Migratory Bird Treaty Act (MBTA)

A list of migratory birds that may occur in the project area during breeding and nesting season is provided in Table 8 (USFWS, 2018a).

3.4.2 Environmental Consequences

3.4.2.1 Proposed Actions

3.4.2.1.1 Location of Delivery System

Vegetation – The proposed pipeline route is within existing disturbed areas. Minimal impacts to reestablished native vegetation would occur during construction in Segment 2. Section 2.1.3 includes applicant proposed measures for the treatment of native plants during construction in Segment 2. Construction of Segment 3 would occur predominantly beneath existing pavement or in the graded gravel shoulder. A few mesquite trees may be removed at the transition from Segment 3 to Segment 4 near Pima Mine Road and the UPRR crossing. Impacts to native vegetation during construction of the proposed actions would be negligible. Within Segment 4, approximately 175 nonnative pecan trees would be removed as part of the construction of the proposed actions. This represents less than 0.2 percent of the estimated 93,000 trees planted in the Sahuarita Farm. Impacts to nonnative vegetation (pecan trees) related to construction of the proposed actions would be negligible.

Wildlife – Wildlife use of the Proposed Action Area is limited because of its proximity to roads, agricultural fields, and the disturbed and degraded nature of the habitat. During construction, local wildlife may be temporarily displaced and there may be loss of some individuals, including small rodents, reptiles, birds, and mammals from soil disturbance and vegetation removal. However, loss of wildlife from construction of the proposed actions would likely be negligible.

Special Status Species – There would be no affect to federally listed threatened or endangered species from implementation of the proposed actions; no additional coordination or consultation with the USFWS is warranted. The mature pecan trees in the agricultural fields may provide

²⁰ Segment 1 is proposed within the existing CAP easement, which is generally maintained in a cleared state, devoid of vegetation; in addition, this area was disturbed in 2017 for the construction of the existing branch and vaults at the connection to the CAP mainline. Segment 3 corresponds to the existing Pima Mine Road ROW (within the maintained pavement and shoulder), and Segment 4 is within the irrigated area of the Sahuarita Farm. The Proposed Action Area in Segments 1, 3, and 4 do not provide potential habitat for the Pima pineapple cactus.

habitat for migratory birds; potential impacts to migratory birds would be minimized with the implementation of the applicant proposed measures provided in Section 2.1.3.

3.4.2.1.2 CAP Water Use

The use of the renewable CAP water conveyed to the FICO GSF for irrigation of the orchard in lieu of pumping an equivalent volume of groundwater and the accrual of long-term storage credits would not affect vegetation, wildlife, or special status species.

3.4.2.1.3 No Action Alternative

Under the no action alternative, there would be no impacts to vegetation, wildlife, or special status species.

3.5 Cultural Resources

3.5.1 Affected Environment

A cultural resources literature records review and archaeological survey was completed in 2018 to identify and document cultural resources within the area of potential effect (APE).²¹ The literature and records search included a review of previously recorded prehistoric and historic archaeological sites located within a one-mile radius of the APE. The records review and pedestrian survey of the APE were completed in compliance with Arizona State Museum (ASM) and State Historic Preservation Office (SHPO) inventory standards and guidelines. The purpose was to evaluate identified cultural resources for National Register of Historic Places (NRHP) eligibility and assess the effects to historic properties.

Based on the results of the records review, the portions of the proposed pipeline located within the boundaries of the San Xavier Reservation (Segments 1 and 2), as well as the crossings of the UPRR within Segment 4 have been previously surveyed to current professional standards (PaleoWest Archaeology, 2018). No cultural resources were identified in Segments 1 and 2, and the area was not resurveyed. Three previously documented archaeological sites extend into the APE (PaleoWest Archaeology, 2018):

- The Twin Buttes Railroad, located on land owned by the UPRR, has been previously recorded and determined eligible for listing on the NRHP;
- The Old U.S. 89/Tucson-Nogales Highway is a historic road that has been determined eligible for inclusion in the NRHP as a component of the Historic State Highway System; and

²¹ Approximately 6.6-mile proposed pipeline at a width of 100 feet along Pima Mine Road, 60 feet through the orchard, and 62 feet along Sahuarita Road.

- The historic Sahuarita townsite, has been previously recorded and recommended eligible for listing on the NRHP.

In addition, the survey identified one newly recorded historic site, the Pima Spur Railroad. This linear site is located along the south side of Pima Mine Road and may be eligible for listing on the NRHP, but further archival research would be necessary to make an informed eligibility recommendation (PaleoWest Archaeology, 2018).

The Class III Cultural Resources Survey was submitted to the Arizona SHPO in July 2018. Initial consultation on the report revealed that one site was mistakenly omitted; the report was revised and resubmitted for consultation in August 2018 (PaleoWest Archaeology, 2018). The report recommended that the project proceed with a finding of “no adverse effect” to historic properties. Reclamation has initiated consultation with the SHPO, several tribes, and other agencies. A summary of the project and the findings of the Class III Cultural Resources Survey have been provided, along with a request to hear concerns the tribal communities may have regarding the proposed actions. Appendix E provides a listing of the tribal consultation (both formal and informal) conducted during the EA process to date.

In the unlikely event that undocumented cultural resources or human remains are encountered during ground-disturbing activities at the site, work in the immediate area of the discovery should cease and a qualified archaeologist should be notified. The discovery of human remains would also require notification of the ASM, SHPO, and appropriate tribes and agencies within 24 hours. Work should not resume until the resource has been documented and evaluated for eligibility on the NRHP, in compliance with Section 106 of the National Historic Preservation Act and/or without proper authorization in accordance with the Native American Graves Protection and Repatriation Act, in the case of human remains.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Actions

3.5.2.1.1 Location of Delivery System

The construction and operation of the proposed pipeline would have no impact on cultural resources within the Proposed Action Area. Construction at the railroad and roadway crossings would be via horizontal/directional drilling using the jack and bore method or existing casing.

3.5.2.1.2 CAP Water Use

The use of the renewable CAP water conveyed to the FICO GSF for irrigation of the orchard in lieu of pumping an equivalent volume of groundwater and the accrual of long-term storage credits would have no impact on cultural resources within the Proposed Action Area. The pecan orchard would continue to be irrigated, and the change in water source would have no impact on cultural resources.

3.5.2.1.3 No Action Alternative

No direct or indirect effects on cultural resources are anticipated from the no action alternative, because conditions would remain in their current state.

3.6 Land Use and Transportation

Land use represents the current and planned use of the property in a jurisdiction by the governing authorities. It also includes land ownership and general use (*i.e.*, agriculture). Transportation refers to changes in the vehicular traffic related to the Proposed Action Area and how surrounding traffic patterns might be impacted.

3.6.1 Affected Environment

The Proposed Action Area is predominately located within the limits of the Town of Sahuarita and includes private land owned by FICO and maintained as a pecan orchard (Segment 4) and the existing roadway ROW maintained by the Town (Segment 3). The remainder of the proposed pipeline (approximately 1,150 feet) is located within the San Xavier Reservation, which corresponds to the existing ADOT ROW for I-19 (Segment 2) and within the existing CAP easement issued to Reclamation (Segment 1). Transportation networks in the Proposed Action Area include I-19, Pima Mine Road, Nogales Highway, and the UPRR.

The Town of Sahuarita was incorporated in 1994 and covers approximately 31 square miles. In June 2015, the Town adopted an updated General Plan (Sahuarita, 2015). According to the 2015 General Plan, the majority of the Proposed Action Area (Segment 4 and the eastern portion of Segment 3) is located within an area defined as a “specific planned community” associated with the *Sahuarita Farms Specific Plan* (FICO, 2015). Although FICO is strongly committed to its agricultural operations for the foreseeable future, the goal of the document is to provide guidance for the comprehensive, mixed-use development of a master-planned community over the next 40-50 years.²² The Proposed Action Area is included in the area to eventually be converted from orchard to mixed-use development. The remainder of Segment 3 is located in areas defined by the General Plan as light industrial, rural residential, and rural homestead (Sahuarita, 2015). Segments 1 and 2 are located within the boundaries of the San Xavier Reservation; planning documents associated with these areas are not available. As identified in Section 3.5, a portion of the De Anza National Historic Trail (De Anza Trail) crosses the Proposed Action Area at its intersection with I-19; however, this section of the De Anza Trail is part of the “Auto Route” and no recreational trails cross the Proposed Action Area.

²² While ultimately anticipated, conversion of the orchard to planned community development is not specifically scheduled, and hence this is not accounted for as a reasonably foreseeable future action in applicable cumulative impact analyses.

3.6.2 Environmental Consequences

3.6.2.1 Proposed Actions

3.6.2.1.1 Location of Delivery System

The proposed pipeline would be constructed entirely on previously disturbed land within existing water line easements, ROWs, and private agricultural land owned by FICO. No transfer of ownership is required for the proposed pipeline, and there would be no impact on property values or tax revenues. General land use would not change, and the proposed pipeline would be compatible with existing Sahuarita land use plans and zoning. Construction of Segment 2 would require an ADOT encroachment permit for construction and maintenance; however, no impacts to traffic on I-19 would occur, including the access roads (on/off ramps), as the proposed pipeline would be constructed via horizontal/directional drilling (jack and bore) techniques. Short-term and temporary traffic impacts and delays may occur during open trench construction of the proposed pipeline along Pima Mine Road (Segment 3). Construction activities associated with Segment 3 would be coordinated with the Town of Sahuarita and traffic control measures designed to minimize impacts on local traffic would be implemented. No impacts to traffic would occur for the construction of Segment 4, as pipes and/or sleeves at roadway crossings are already in place and crossings of the UPRR would occur via horizontal/directional drilling.

Construction of the proposed pipeline would result in negligible impacts on land use, and short-term, minor impacts would occur on transportation patterns within the Proposed Action Area.

The operation of the proposed pipeline would have no impact on land use patterns or transportation within the Proposed Action Area.

3.6.2.1.2 CAP Water Use

The use of the renewable CAP water conveyed to the FICO GSF for irrigation of the orchard in lieu of pumping an equivalent volume of groundwater and the accrual of long-term storage credits would have no impact on land use or transportation within the Proposed Action Area. The pecan orchard would continue to be irrigated and the change in water source would have no impact on land use or transportation.

3.6.2.1.3 No Action Alternative

No direct or indirect effects on land use patterns or transportation are anticipated from the no action alternative, because conditions would remain in their current state.

3.7 Indian Trust Assets

Indian Trust Assets (ITAs) are legal assets associated with rights or property held in trust by the United States for the benefit of federally recognized Indian Tribes or individual tribal members. The United States, as trustee protects and maintains the specific rights reserved by, or granted to, Indian tribes or individuals by treaties, statutes, and executive orders.

Reclamation requested government-to-government consultation with potentially affected tribes to identify and address concerns for ITAs. These included the GRIC, the San Xavier District of the Tohono O’odham Nation, the Tohono O’odham Nation, the Pascua Yaqui Tribe, and the Hopi Tribe. Based on meetings and discussions among the tribes, BIA, and Reclamation, this section describes ITAs that have the potential to be impacted by the proposed actions.

3.7.1 Affected Environment

The following section provides a description of the tribes that are directly associated with elements of the proposed actions.

3.7.1.1 Gila River Indian Community

Under the Arizona Water Settlements Act of 2005, the GRIC has been allocated CAP water. Section 5.3.7.1 of the GRIC’s CAP Subcontract states, “The United States shall have no trust obligation or other obligation to monitor, administer, or account for: (i) any funds received by the [GRIC] as consideration under any such leases or options to lease or exchanges or options to exchange; or (ii) the expenditure of such funds.”²³

3.7.1.2 San Xavier District of the Tohono O’odham Nation

In the project vicinity, the San Xavier Reservation is located north of Pima Mine Road, and the Reservation underlies Segment 2 of the proposed pipeline. Originally allocated to allottees, the land within Segment 2 has since been purchased by the tribe. Segment 2 would also extend over and across an existing ROW issued to the Arizona Highway Department (now ADOT) for I-19, which was authorized by the BIA in 1966 pursuant to the act of February 5, 1948 (62 Stat. 17).

3.7.1.3 Tohono O’odham Nation

The Tohono O’odham Nation granted the CAP easement to the United States for the portion of the mainline that bisects the San Xavier Reservation. Construction of Segment 1 of the proposed pipeline would occur within this existing easement. The easement grant requires that Reclamation provide notice to the Tohono O’odham Nation for new work within the easement. Ongoing operation and maintenance activities of Segment 1 of the proposed pipeline would be managed by the CAWCD as part of the CAP system.

3.7.2 Environmental Consequences

The proposed actions and alternatives were reviewed to determine whether their implementation would result in adverse effects on ITAs.

²³ *Amended Central Arizona Project Water Delivery Contract between the United States and the Gila River Indian Community*, Final Execution Version dated October 21, 2005.

3.7.2.1 Proposed Actions**3.7.2.1.1 Location of Delivery System**

Construction of Segments 1 and 2 of the proposed pipeline have the potential for short-term, localized impacts on tribal land. However, impacts would not be substantial and would be short-term in duration. In addition, the grant of easement for the Segment 2 portion of the proposed pipeline is subject to approval by the San Xavier District, the Tohono O'odham Nation, and the BIA. The easement would be provided by a willing landowner; the tribe must determine the terms, compensation, and enforcement provisions associated with the grant. Therefore, the easement would not be an adverse effect on ITAs.

3.7.2.1.2 CAP Water Use

The use of the renewable CAP water conveyed to the FICO GSF for irrigation of the orchard in lieu of pumping an equivalent volume of groundwater and the accrual of long-term storage credits would not affect ITAs.

3.7.2.1.3 No Action Alternative

Under the no action alternative, baseline conditions would continue and no impacts to ITAs would occur.

3.8 Cumulative Impact Analysis

This section evaluates the potential for cumulative impacts to occur. Cumulative impact, as defined by the CEQ (40 C.F.R. § 1508.7), is

...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The objective of the cumulative effects analysis is to estimate the resulting impact of the project on a resource when viewed within the context of other past, present, and reasonably foreseeable actions within the vicinity of the project.

Past and present actions are those actions contributing to the current condition of the resources in the project area. The cumulative impact analysis does not attempt to quantify the effects of individual past actions, but by looking at current conditions, the residual effects of past actions and natural events are identified in the preceding resource discussions. Notable past and present actions in the vicinity include construction of roads and utility corridors, mining, existing groundwater recharge projects, and residential and commercial development. Reasonably foreseeable future projects include the construction and operation of the water delivery pipeline and groundwater recharge project for the Community Water Company of Green Valley

(Reclamation, 2010). An analysis of cumulative impacts of the proposed actions is summarized in Table 9.

3.9 Resources Considered but not Affected

Table 10 outlines resource areas that are not present in the Proposed Action Area or that are present but not affected, with a description of the rationale.

4.0 List of Preparers

Reclamation

Dominic Graziani, Environmental Protection Specialist
Sean Heath, Environmental Manager
James Beadnell, Contract and Repayment Specialist
Nathan Lehman, Engineer
Lawrence Marquez, NAAO Manager

BIA

Charles Lewis, Regional Environmental Protection Officer

Freeport-McMoRan

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FICO

Tim Campbell, Project Manager

HILGARTWILSON, LLC

Sheila A. Logan, PE, Manager – Environmental Services
Karl M. Rains, Assistant Project Manager
Rafael de Grenade, Senior Biologist
Cutter McCue, GIS Analyst

5.0 Consultations

An electronic copy of the Draft EA was posted for public viewing and comment on Reclamation's Phoenix Area Office website www.usbr.gov/lc.phoenix/. Notice of the availability and copies of the Draft EA were distributed electronically to the following entities:

- Federal agencies
 - Department of the Interior, Bureau of Indian Affairs
 - U.S. Army Corps of Engineers
 - U.S. Fish and Wildlife Service
- State agencies
 - Arizona Department of Environmental Quality
 - Arizona Department of Transportation
 - Arizona Department of Water Resources
 - Arizona Game and Fish Department
 - Arizona State Historic Preservation Office
 - Arizona Water Banking Authority
- Central Arizona Water Conservation District
- Local agencies
 - City of Tucson
 - Community Water Company of Green Valley
 - Farmers Water Company
 - Green Valley Domestic Water Improvement District
 - Pima County
 - Sahuarita Water Company
 - Town of Sahuarita
- Tribal entities
 - Gila River Indian Community
 - Hopi Tribe
 - Pascua Yaqui Tribe
 - San Xavier District of the Tohono O'odham Nation
 - Tohono O'odham Nation

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- Fort McDowell Yavapai Nation
 - Pascua Yaqui Tribe
 - Pueblo of Zuni
 - Tohono O'odham Nation
 - Tonto Apache Tribe of Arizona
 - White Mountain Apache Tribe
 - Yavapai-Apache Nation
 - Others
 - Farmers Investment Co.
 - Freeport-McMoRan Sierrita Inc.
 - Friends of the Santa Cruz River
 - Green Valley Council
 - Union Pacific Railroad

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Appendix A. Figures

Figure 1. Regional Overview

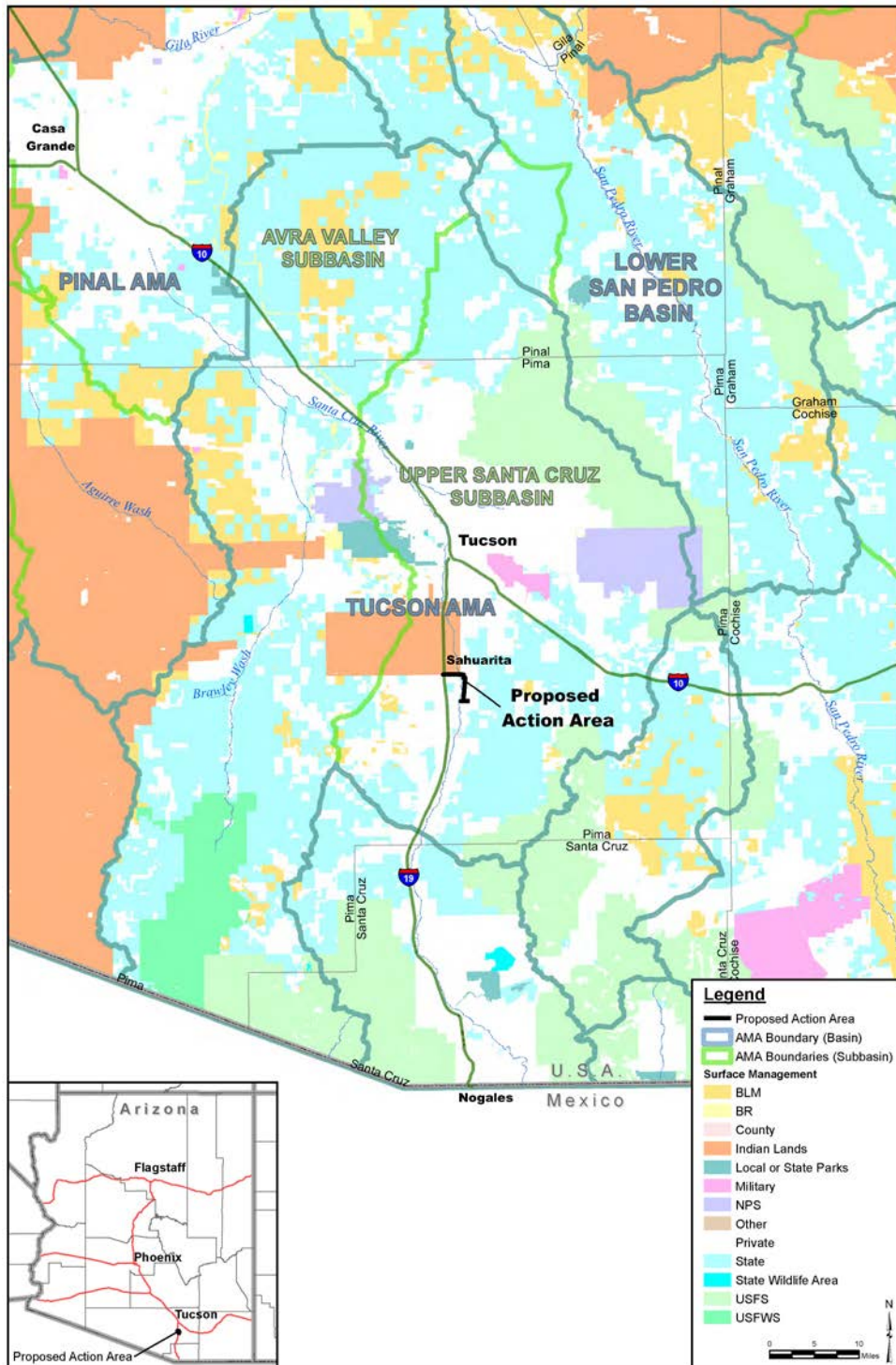


Figure 2. Project Vicinity

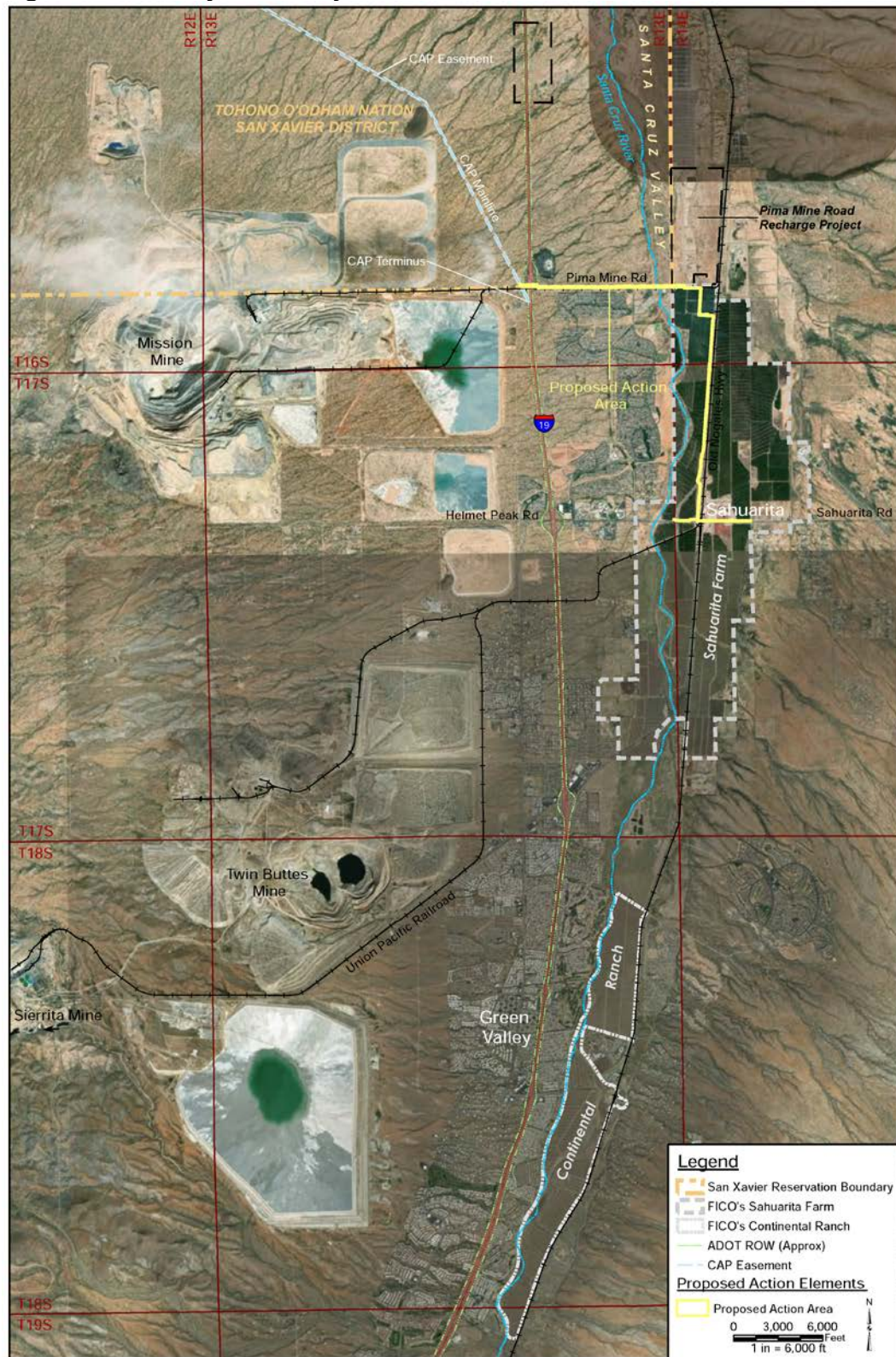


Figure 3. Proposed Actions – Overview

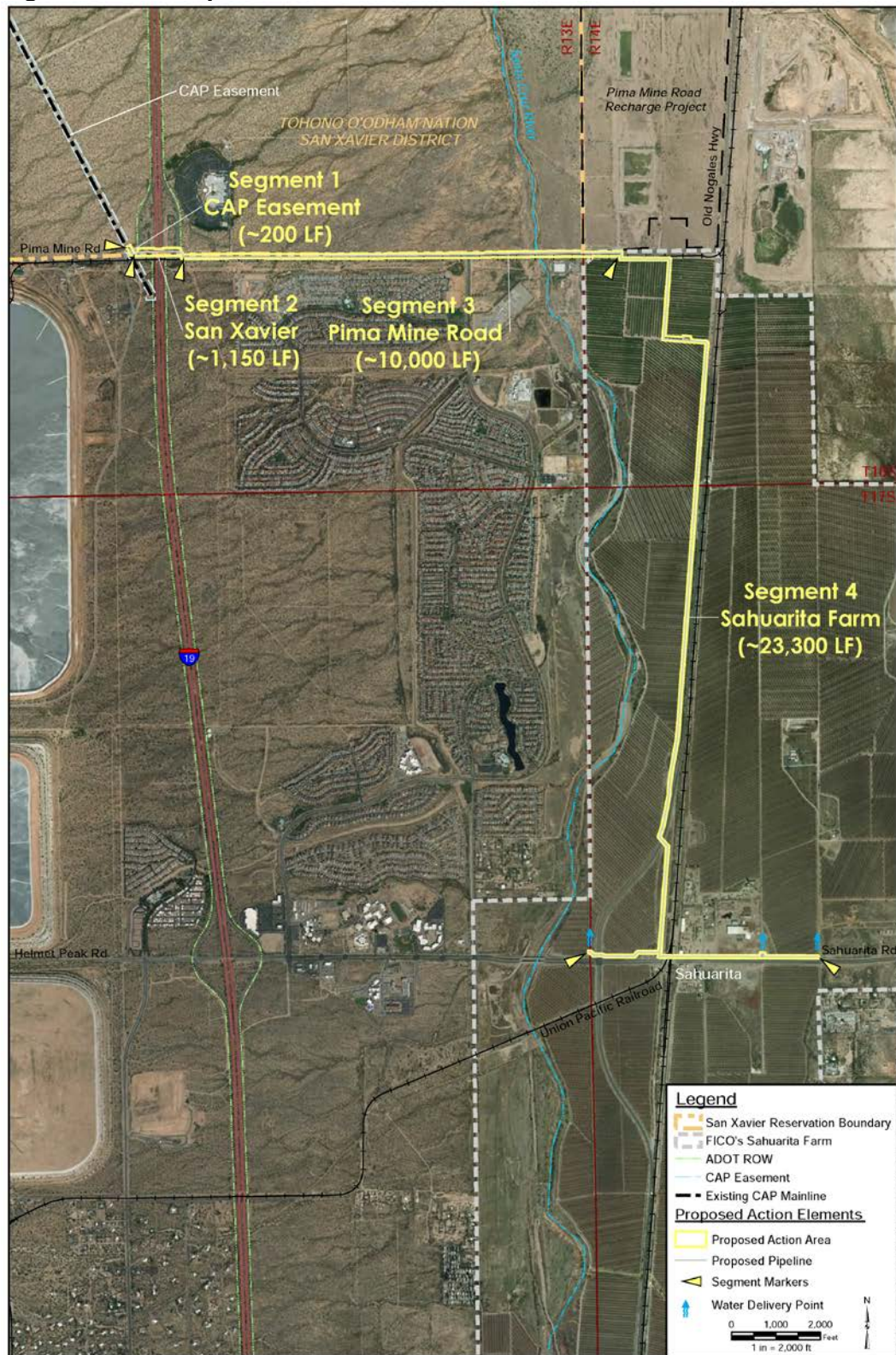


Figure 4. Segments 1 and 2



Figure 5. Segment 3

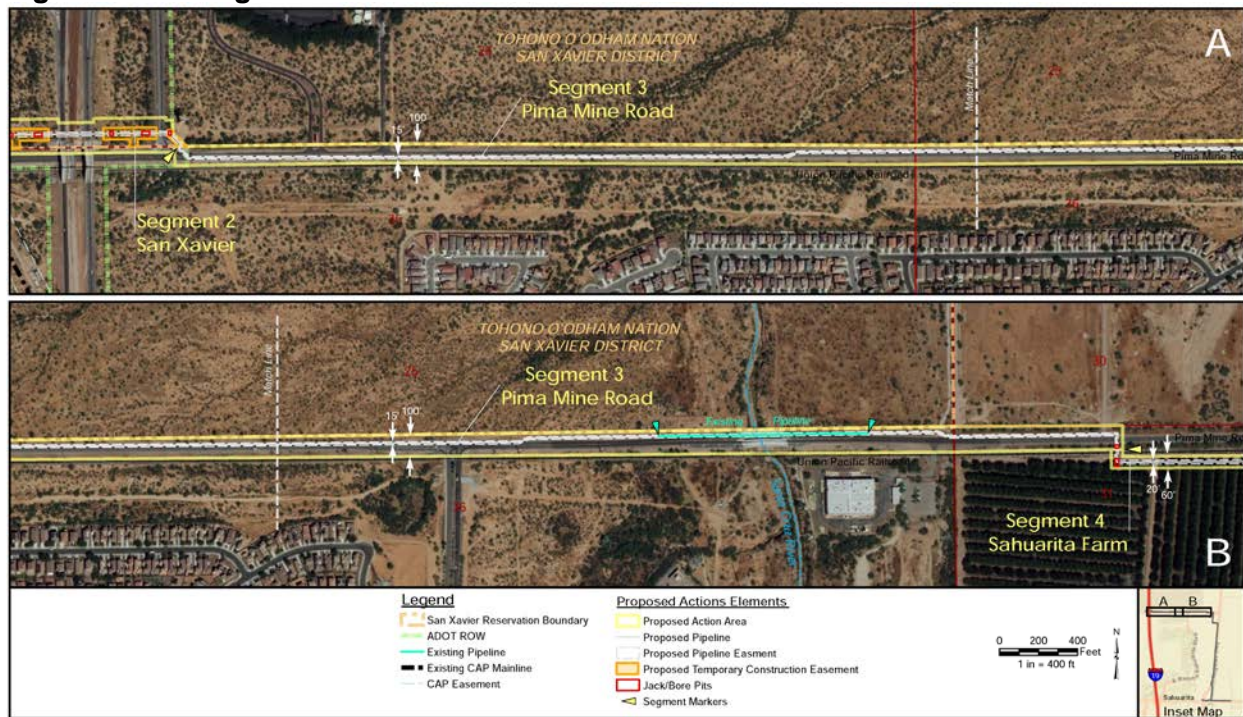


Figure 6. Segment 4

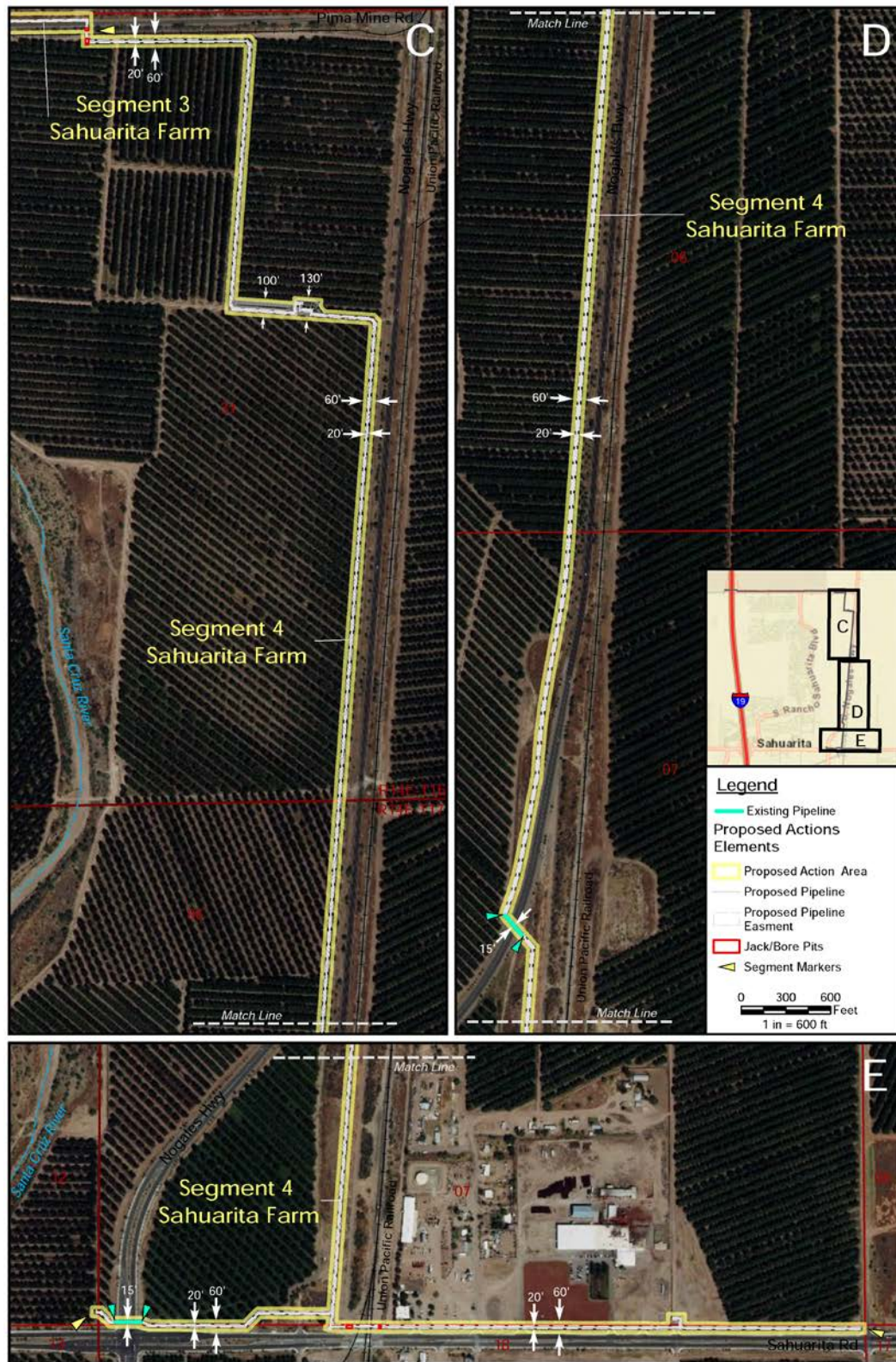


Figure 7. USGS Topographic and Soils Map

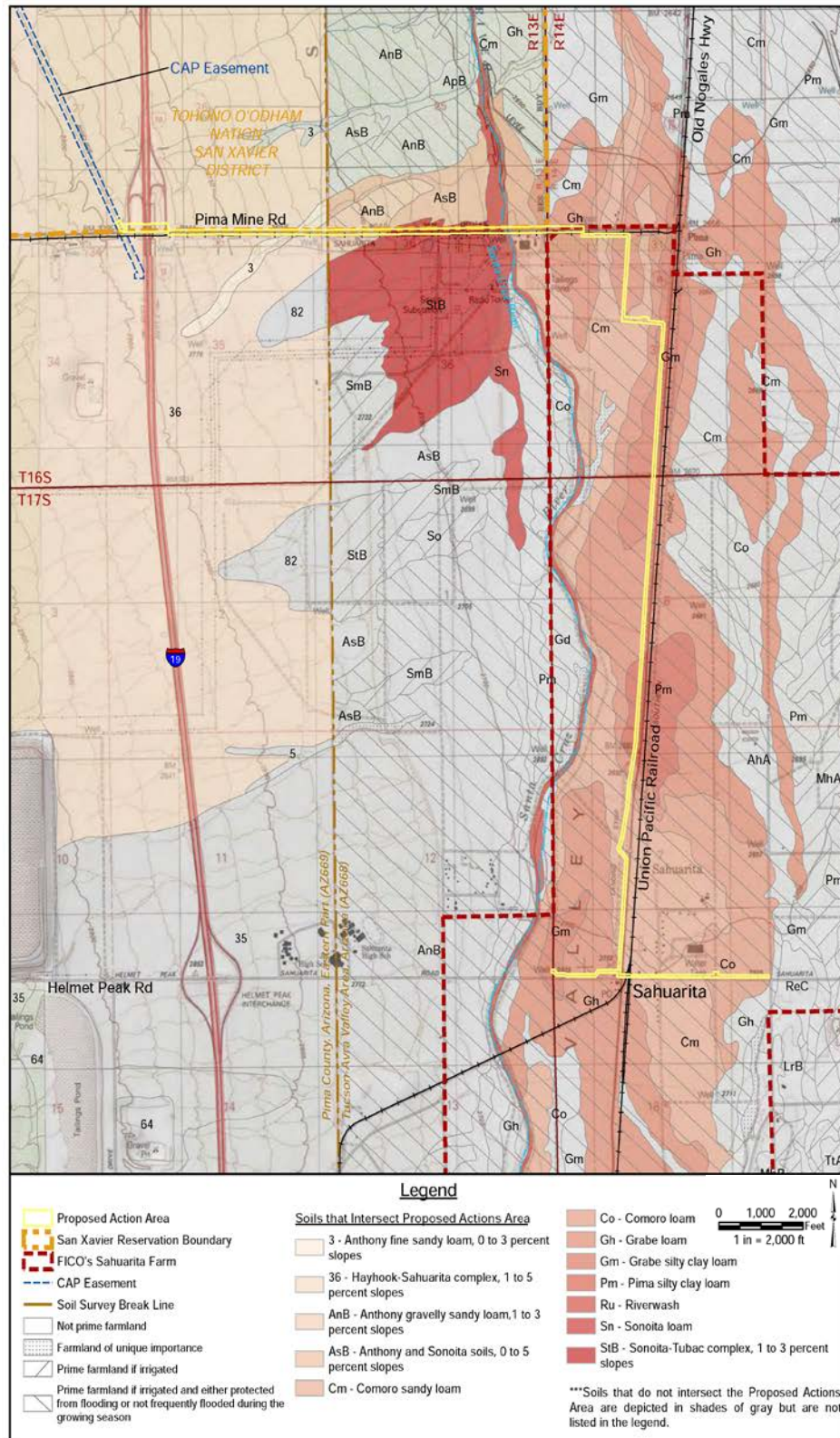
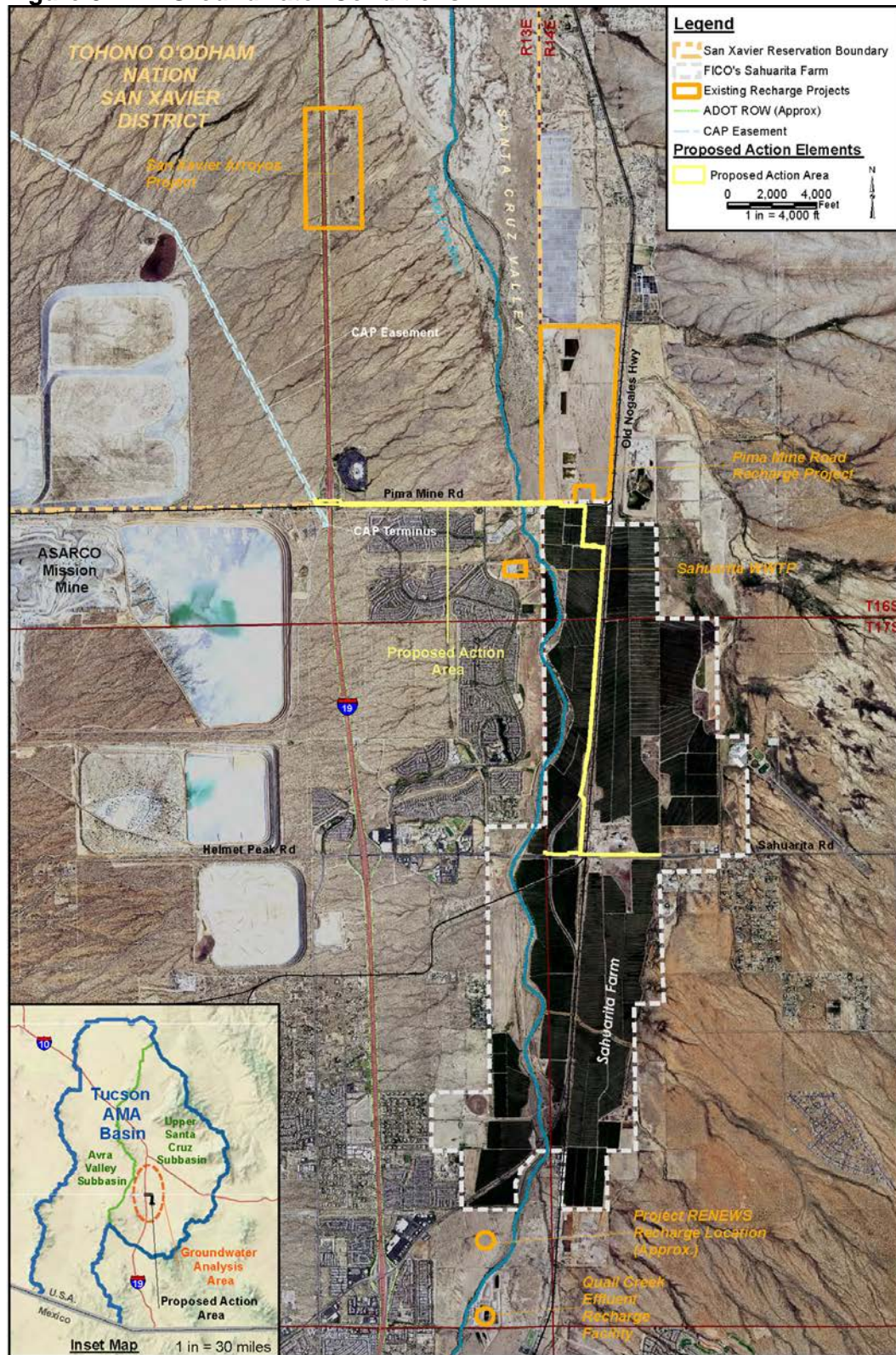


Figure 8. Groundwater Conditions



Appendix B. Tables

Table 1. Proposed Water Delivery System Segments

Segment	Description	Approximate Length (feet)	Approximate Length (miles)	Approximate Easement Area (acres)	Approximate Size of Proposed Action Area (acres)
1	CAP Easement Connection	200	<0.1	--*	0.6
2	San Xavier Segment	1,150	0.2	0.5	4.1
3	Pima Mine Road	10,000	1.9	3.4	24.2
4	Sahuarita Farm	23,300	4.4	10.9 [†]	32.7
	Total	34,650	6.6	14.8	61.6

*A separate easement is not necessary; the proposed improvements would be part of the CAP system.

[†]Includes easements that have been or would be dedicated by FICO, the UPRR, and the Town of Sahuarita.

Table 2. Construction Methods along Segment 4 outside of FICO Ownership

Location	Approximate Length, feet	Construction Method
UPRR (south of Pima Mine Road)	70	Jack and bore 54-inch casing for 36-inch diameter proposed pipeline
Nogales Highway (first crossing)	160	Connect to existing 36-inch diameter pipe (constructed and capped in place)
Nogales Highway (second crossing at Sahuarita Road)	200	Construct 24-inch diameter pipe within existing 34" sleeve to cross existing ROW for Nogales Highway (with 24" x 36" reducers)
UPRR (Sahuarita Road east of Nogales Highway)	300	Jack and bore 54-inch casing for 36-inch diameter proposed pipeline

Table 3. Typical Irrigation Schedule

Dates	Water Delivery Amount	Frequency
March 15 to June 15	4.5 inches	each 20 days
June 15 to October 1	4.5 inches	each 12 to 15 days
October 1 to November 15	4.5 inches	each 20 days
November 15 to March 15	4.5 inches	zero to two times

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Table 4. Permitted USFs and GSFs in Groundwater Analysis Area

Facility Name	Facility Type	Permitted Capacity, afa	Water Source
FICO GSF ¹	GSF	22,000	CAP water
Pima Mine Road (CAWCD)	USF	30,000	CAP water
Robson Ranch Quail Creek	USF	2,240	Effluent
Town of Sahuarita WWTP	USF	896	Effluent
Project RENEWS ²	USF	3,000	CAP water
ASARCO Mission Mine ³	(direct user)	10,000	CAP water
San Xavier Arroyos Recharge Project	USF	4,000	CAP water

¹ The FICO GSF is not currently operating; the proposed actions would enable transport of CAP water to the GSF.

² Project RENEWS is scheduled to begin construction in Fall 2018, and an application has already been filed with ADWR to expand the capacity of this USF to 7,000 afa (ADWR, 2017) (Reclamation, 2017).

³ This facility receives up to 10,000 afa of CAP water for mining purposes in exchange for an equivalent reduction in groundwater pumping pursuant to agreements with the Tohono O’odham Nation and A.R.S. § 45-841.01.

Table 5. Sahuarita Farm Water Use (for ~3,500 acres of trees)

Year	Total Groundwater Use, af
2015	14,659.18
2014	16,137.01
2013	18,113.65
2012	18,234.35
2011	17,811.57
2010	17,483.17
2009	20,945.13
2008	20,172.14
2007	21,196.90
2006	20,175.90
2005	18,995.30
2004	19,970.60
2003	17,947.60
2002	16,112.50
2001	17,280.40
2000	18,439.60
1999	15,918.80
1998	16,167.40
1997	18,858.00
1996	20,021.30

(FICO, 2016)

Table 6. Vegetation Summary in Proposed Action Area

Segment	Description	Approximate Length (feet)	Approximate Size of Proposed Action Area (acres)	Vegetation
1	CAP Easement	200	0.6	Limited vegetation due to CAP mainline construction and recent turnout construction.
2	San Xavier Segment	1,150	4.1	This section includes the steep slopes leading up to the constructed overpass of I-19, and the access roads (on/off ramps) where native vegetation has become reestablished, including velvet mesquite, blue palo verde, whitethorn acacia (<i>Vachellia constricta</i>), catclaw acacia, ocotillo, chain-fruit cholla (<i>Cylindropuntia fulgida</i>), Engelmann's prickly pear (<i>Opuntia engelmannii</i>), fishhook barrel cactus, and saguaro.
3	Pima Mine Road	10,000	24.2	Vegetation along this stretch has been disturbed by construction of Pima Mine Road. Sparse trees, shrubs, and cacti occur at the fringe of the existing pavement and maintained shoulder of Pima Mine Road including mesquite, chain-fruit cholla, and prickly pear. Near the bridge, riparian vegetation adjacent to and within the Santa Cruz River is also sparse and includes invasive buffelgrass (<i>Pennisetum ciliare</i>).
4	FICO Orchard	23,300	32.7	Vegetation comprised of mature pecan trees with additional weedy species.

Table 7. Summary of Screening Analysis for Federally Listed Species

Common Name (Species Name)	Status*	Potential for Occurrence in Project Area	Effects Analysis
California least tern (<i>Sterna antillarum browni</i>)	E	Does not occur	No effect
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	T	Does not occur	No effect
Pima pineapple cactus (<i>Coryphantha scheeri</i> var. <i>robustispina</i>)	E	May occur	No effect
Jaguar (<i>Panthera onca</i>)	E	Does not occur	No effect
Northern Mexican garter snake (<i>Thamnophis eques megalops</i>)	T	Does not occur	No effect
Sonoyta mud turtle (<i>Kinosternon sonoriense longifemorale</i>)	E	Does not occur	No effect

*USFWS status definitions:

E = Endangered. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

T = Threatened. The ESA specifically prohibits the take of a species listed as threatened. Take is defined by the ESA as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

Table 8. Migratory Birds Anticipated in the Project Vicinity

Species	Breeding Season
Allen’s hummingbird (<i>Selasphorus sasin</i>)	Breeds elsewhere
Bald eagle (<i>Haliaeetus leucocephalus</i>)	20 March – 15 September
Bendire’s thrasher (<i>Toxostoma benderei</i>)	15 March – 31 July
Black chinned sparrow (<i>Spizella atrogularis</i>)	15 April – 31 July
Burrowing owl (<i>Athene cunicularia</i>)	15 March – August 31
Clark’s grebe (<i>Aechmophorus clarkii</i>)	1 January – 31 December
Costa’s hummingbird (<i>Calypte costae</i>)	15 January – June 10
Elf owl (<i>Micrathene whitneyi</i>)	1 May – 15 July
Gila woodpecker (<i>Melanerpes uropygialis</i>)	1 April – 31 August
Gilded flicker (<i>Colaptes chrysoides</i>)	1 May – 10 August
Gray vireo (<i>Vireo vicinior</i>)	10 May – 20 August
Lawrence’s goldfinch (<i>Carduelis lawrencei</i>)	20 March – 20 September
Le Conte’s thrasher (<i>Toxostoma lecontei</i>)	15 February – 20 June
Long-billed curlew (<i>Numenius americanus</i>)	Breeds elsewhere
Marbled godwit (<i>Limosa fedoa</i>)	Breeds elsewhere
Rufous hummingbird (<i>Selasphorus rufus</i>)	Breeds elsewhere
Rufous-winged sparrow (<i>Aimophila carpalis</i>)	15 June – 3- September
Snowy plover (<i>Charadrius alexandrinus</i>)	5 March – 15 September
Whimbrel (<i>Numenius phaeopus</i>)	Breeds elsewhere
Willet (<i>Tringa semipalmata</i>)	Breeds elsewhere

(USFWS, 2018a)

Table 9. Cumulative Impact Analysis

Resource Area/Element	Identify Cumulative Effects Issues	Past, Present, and Reasonably Foreseeable Future Projects/Temporal and Spatial Extent	Establish Baseline/Trend	Analyze Cumulative Effects
Soil Resources	Minor and short term impacts to soils from construction (minimized through implementation of the SWPPP)	Potential for construction impacts, specifically from the planned water delivery pipeline for Community Water Company of Green Valley	Construction projects greater than 1 acre in size must implement BMPs in accordance with a SWPPP under the AZPDES CGP	No cumulative impact
Water Resources	Beneficial effects include groundwater conservation and reducing aquifer overdraft and land subsidence	Existing and planned groundwater recharge projects (Table 5) and existing groundwater use (agriculture, mining, and municipal demand)	Groundwater levels continue to decline	Maximizing recharge opportunities in the Upper Santa Cruz subbasin would have a beneficial, cumulative effect on groundwater resources
Air Quality	Minor and short term impacts to soils from construction (minimized through implementation of BMPs)	Potential for construction impacts, specifically from the planned water delivery pipeline for Community Water Company of Green Valley	BMPs would minimize dust from other construction projects	No cumulative impact
Biological Resources	Negligible impacts to vegetation, wildlife, and special status species from construction	Potential for construction impacts, specifically from the planned water delivery pipeline for Community Water Company of Green Valley	Past, present, and reasonably foreseeable future projects are focused in the developed portions of the Upper Santa Cruz Valley; additional disturbance to native vegetation, habitats, and species are not anticipated	No cumulative impact
Cultural Resources	No effect	--	--	No cumulative impact

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Resource Area/Element	Identify Cumulative Effects Issues	Past, Present, and Reasonably Foreseeable Future Projects/Temporal and Spatial Extent	Establish Baseline/Trend	Analyze Cumulative Effects
Land Use and Transportation	Negligible impacts to land use and short-term, minor impacts to transportation patterns during construction	Potential for construction impacts, specifically from the planned water delivery pipeline for Community Water Company of Green Valley	Construction activities associated would be coordinated with local entities, and traffic control measures would be designed to minimize impacts on local traffic	No cumulative impact
Indian Trust Assets	No adverse effect	--	--	No cumulative impact

Table 10. Resource Areas Not Retained for Detailed Analysis

Resource Area/Element	Rationale
Geology, Minerals, and Paleontology Resources	The proposed ground disturbance would be limited to surface materials, and occurs within areas that have been subject to previous disturbance. The potential for encountering a paleontological resource would be unlikely. Additionally, mining claims are not present in the Proposed Action Area. Therefore, no further analysis is presented in this EA.
Floodplain Management	The proposed actions would not result in the modification of a floodplain that would impede or redirect flood flows, have a potential to result in property damage, or increase flood flows to downgradient properties or communities. The flood carrying capacity of the floodplain and the pattern or magnitude of the flood flow would not be affected. Therefore, no further analysis is presented in this EA.
Climate Change (greenhouse gases)	The proposed actions would result in negligible amounts of emissions. Potential adverse impacts on climate change are also likely to be negligible and are not further analyzed in this EA. Potential impacts from climate change on the proposed project would be minimal. The CAP water service subcontracts acknowledge of and provide allocation protocols for years in which Arizona's full allocation of Colorado River water may not be available, whether due to drought or other situations possibly related to global climate change.
Recreation; Timber Harvesting; Hunting, Fishing, and Gathering; and Mineral Extraction	The proposed actions would not have an effect on recreation; timber harvesting; hunting, fishing and gathering; or mineral extraction, and thus are not further analyzed in this EA.
Socioeconomic Resources and Environmental Justice	The proposed actions would not alter the permanent population or result in changes to the socioeconomic characteristics of the area, including demographic trends, employment, or income. In addition, the proposed actions would not affect human health or the environment and would not cause disproportionately high or adverse effects to minority and low-income populations. Therefore, no further analysis is presented in this EA.
Hazardous Materials	Hazardous materials are not present in the Proposed Action Area and would not be generated in association with the proposed actions. Therefore, no further analysis is presented in this EA.

Appendix C. Reclamation Letter to CAWCD

RE: FICO Proposed CAP Turn-out Connection Dated February 22, 2018



IN REPLY REFER TO:

PXAO-3000
2.2.4.23

United States Department of the Interior

BUREAU OF RECLAMATION
Lower Colorado Region
Phoenix Area Office
6150 West Thunderbird Road
Glendale, AZ 85306-4001

FEB 22 2018

Mr. Ted Cooke
General Manager
Attention: Mr. Thomas Fitzgerald
Central Arizona Project
P.O. Box 43020
Phoenix, AZ 85080

Subject: Farmers Investment Company (FICO) Proposed Central Arizona Project (CAP),
Turn-Out Connection

Dear Mr. Cooke:

Thank you for your electronic mail message dated January 9, 2018, requesting the Bureau of Reclamation's review of the proposed FICO connection to the CAP Reach 6 Pipeline pursuant to section 12 of the Operation and Maintenance Agreement (O&M Agreement) between Reclamation and the Central Arizona Water Conservation District (CAWCD).

It is our understanding that a new 36-inch diameter pipeline is jointly proposed by FICO and Freeport McMoran, Inc. (Freeport) to deliver Central Arizona Project (CAP) water leased by Freeport from the Gila River Indian Community, to the FICO groundwater savings facility. FICO and Freeport propose to connect the new pipeline to the CAP Reach 6 pipeline within Reclamation's right-of-way on the San Xavier Reservation of the Tohono O'odham Nation, at the same location as the recently completed Project Renew's connection.

While the proposed pipeline will provide additional flexibility related to water delivery schedules for users within the same area, it does not modify the delivery limitations of FICO or Freeport's CAP contracts, nor does it allocate additional water to FICO or Freeport. However, based on the increased operational capacity that would result from the proposed pipeline and the requirement that all CAP facilities within the Reclamation right of way become a part of the CAP system, Reclamation has determined that the proposed pipeline and connection are a substantial change to the system requiring written consent by Reclamation pursuant to the O&M Agreement.

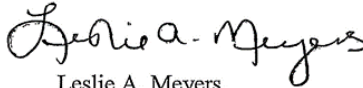
Reclamation requires the following before making a determination of whether or not to approve the substantial change: (1) completion of an operating agreement between the CAWCD and Freeport/FICO that ensures the parallel pipeline within the right of way will become a part of the CAP project works; (2) a determination by CAWCD that operation and maintenance activities

will not be adversely impacted by the parallel pipeline; (3) demonstration of rights-of-way and necessary clearances to construct the delivery pipeline; (4) completion of an Environmental Assessment (EA) that supports a Finding of No Significant Impact; and, (5) completion of the government to government Tribal Consultation.

Reclamation has initiated discussions with Freeport and FICO relative to the EA and is in the process of initiating Tribal Consultation with potentially affected Tribes.

If you have any questions please contact Mr. Lawrence Marquez via email at lmarquez@usbr.gov or at 623-773-6213.

Sincerely,



Leslie A. Meyers,
Area Manager

cc: PXAO-1500, 3000, 4000, 7000

Appendix D. Agreements with Union Pacific Railroad for Proposed Crossings

AUDIT 283689

Pipeline Crossing 080808
Last Modified: 03/29/10
Form Approved, AVP-Law

Folder No. 02990-55

PIPELINE CROSSING AGREEMENT

Mile Post: 18.49, Nogales Subdivision
Location: Sahuarita, Pima County, Arizona

THIS AGREEMENT ("Agreement") is made and entered into as of January 10, 2017, ("Effective Date") by and between **UNION PACIFIC RAILROAD COMPANY**, a Delaware corporation, ("Licensor") and FICO CAP LINE, LLC, to be addressed at 1525 E. Sahuarita Rd., P.O. Box 7 Sahuarita, Arizona 85629 ("Licensee").

IT IS MUTUALLY AGREED BY AND BETWEEN THE PARTIES HERETO AS FOLLOWS:

Article 1. LICENSOR GRANTS RIGHT.

In consideration of the license fee to be paid by the Licensee and in further consideration of the covenants and agreements herein contained to be by the Licensee kept, observed and performed, the Licensor hereby grants to the Licensee the right to construct and thereafter, during the term hereof, to maintain and operate

one 36.0 inch cased pipeline for transporting and conveying
non-potable water for farming and domestic supply only

across Licensor's track(s) and property (the "Pipeline") in the location shown and in conformity with the dimensions and specifications indicated on the print dated October 17, 2016, and marked **Exhibit A**, attached hereto and hereby made a part hereof. Under no circumstances shall Licensee modify the use of the Pipeline for a purpose other than transporting and conveying non-potable water for farming and domestic supply, and the Pipeline shall not be used to convey any other substance, any fiber optic cable, or for any other use, whether such use is currently technologically possible, or whether such use may come into existence during the life of this Agreement.

For the purposes of Exhibit A, Licensee acknowledges that if it or its contractor provides to Railroad digital imagery depicting the Pipeline crossing, Licensee authorizes Railroad to use the Digital Imagery in preparing the print attached as an exhibit hereto. Licensee represents and warrants that through a license or otherwise, it has the right to use the Digital Imagery and to permit Railroad to use the Digital Imagery in said manner.

Article 2. LICENSE FEE.

Upon execution of this Agreement, the Licensee shall pay to the Licensor a one-time License Fee of **Eight Thousand One Hundred Dollars (\$8,100.00)**.

Article 3. ADMINISTRATIVE HANDLING CHARGE.

Upon execution and delivery of this Agreement, the Licensee shall pay to the Licensor an License Fee of **Five Hundred Five Dollars (\$505.00)** for clerical, administrative and handling expense in connection with processing this Agreement.

Article 4. CONSTRUCTION, MAINTENANCE AND OPERATION.

The grant of right herein made to the Licensee is subject to each and all of the terms, provisions, conditions, limitations and covenants set forth herein and in **Exhibit B**, attached hereto and hereby made a part hereof.

Article 5. DEFINITION OF LICENSEE.

For purposes of this Agreement, all references in this Agreement to the Licensee shall include the Licensee's contractors, subcontractors, officers, agents and employees, and others acting under its or their authority. If a contractor is hired by the Licensee for any work performed on the Pipeline (including initial construction and subsequent relocation or maintenance and repair work), then the Licensee shall provide a copy of this Agreement to its contractor and require its contractor to comply with all the terms and provisions hereof relating to the work to be performed. Any contractor or subcontractor shall be deemed an agent of Licensee for the purpose of this Agreement, and Licensee shall require such contractor or subcontractor to release, defend and indemnify Licenser to the same extent and under the same terms and conditions as Licensee is required to release, defend and indemnify Licenser herein.

Article 6. INSURANCE.

A. During the life of the License, Licensee shall fully comply with the insurance requirements described in **Exhibit C**.

B. Failure to maintain insurance as required shall entitle, but not require, Licenser to terminate this License immediately.

C. If the Licensee is subject to statute(s) limiting its insurance liability and/or limiting its ability to obtain insurance in compliance with **Exhibit C** of this license, those statutes shall apply.

D. Licensee hereby acknowledges that it has reviewed the requirements of **Exhibit C**, including without limitation the requirement for Railroad Protective Liability Insurance during construction, maintenance, installation, repair or removal of the pipeline which is the subject of this Agreement.


Article 7. TERM.

This Agreement shall take effect as of the Effective Date first herein written and shall continue in full force and effect until terminated as herein provided.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date first herein written.

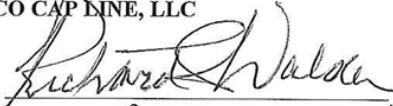
UNION PACIFIC RAILROAD COMPANY

By: _____


Kylan D. Crawford
Senior Manager – Real Estate

FICO CAP LINE, LLC

By: _____


Name Printed: RICHARD S. WALDEN

Title: President / Manager

NON-FLAMMABLE LIQUID PIPELINE		<input checked="" type="checkbox"/> CROSSING <input type="checkbox"/> ENCROACHMENT <input type="checkbox"/> BOTH
<p style="text-align: center;">PLAN SCALE: NONE</p>		
<p style="text-align: center;">SECTION A SCALE: NONE</p>		
<p>NOTES:</p> <p>1) ALL DIMENSIONS MEASURED PERPENDICULAR TO THE CENTERLINE OF TRACK</p> <p>2) REFER TO AREMA VOLUME 1, CHAPTER 1, PART 5, SECTION 5.1</p>		
<p>A) METHOD OF INSTALLATION <u>Bored and Jacked</u></p> <p>B) DIST. FROM CENTERLINE OF TRACK TO PIPE ENCROACHMENT _____</p> <p>C) SIGNS PROVIDED? <u>At minimum signs will be provided as stated above</u></p> <p>D) CARRIER MATERIAL <u>STEEL</u>. IF RCP, CLASS V? <u>NA</u> COMMODITY TO BE CONVEYED <u>Non-Potable water for farming and domestic supply</u> OPERATIONAL PRESSURE <u>70</u> PSI. MAOP <u>150</u> PSI. WALL THICKNESS (INCH)/ SCHEDULE <u>0.38"/</u>. DIAMETER <u>36.0</u> IN. CATHODIC/COATING PROTECTION <u>Yes</u></p> <p>E) CASING MATERIAL <u>Steel Pipe</u>. IF RCP, CLASS V? <u>NA</u> TOTAL LENGTH CASING PIPE: <u>188</u> FT. WALL THICKNESS <u>0.75</u>" IN. DIAMETER <u>54.0</u> IN. CATHODIC/COATING PROTECTION <u>Yes</u> CASING PIPE IS <u>Sealed</u> AT THE ENDS.</p> <p>F) DISTANCE FROM CENTERLINE OF TRACK TO NEAR FACE OF BORING AND JACKING PITS WHEN MEASURED AT RIGHT ANGLES <u>57</u> AND <u>57</u>.</p>		
<p style="text-align: center;">EXHIBIT "A"</p>		
<p>SUBDIVISION: <u>Nogales Sub.</u></p> <p>TRACK TYPE: <u>Mainline</u></p>		
<p>M.P.: <u>18.49</u> LAT.: <u>31.95805556</u></p> <p>E.S.M.: <u>19+34.3 ±</u> LONG.: <u>-110.95555556</u></p>		
<p>NEAREST CITY: <u>Sahuarita</u> COUNTY: <u>Pima</u> STATE: <u>AZ</u></p> <p>APPLICANT: <u>FICO CAP LINE, LLC</u></p>		
<p>FILE NO.: <u>0299055</u> DATE: <u>10/17/2016</u></p>		

AUDIT 287460

Pipeline Crossing 080808
Last Modified: 03/29/10
Form Approved, AVP-Law

Folder No. 03056-50

PIPELINE CROSSING AGREEMENT

Mile Post: 0.49, Asarco Lead
Location: Sahuarita, Pima County, Arizona

THIS AGREEMENT ("Agreement") is made and entered into as of October 26, 2017, ("Effective Date") by and between **UNION PACIFIC RAILROAD COMPANY**, a Delaware corporation, ("Licensor") and **FICO CAP LINE, LLC**, an Arizona limited liability corporation to be addressed at 1525 E. Sahuarita Rd., Sahuarita, Arizona 85629 ("Licensee").

IT IS MUTUALLY AGREED BY AND BETWEEN THE PARTIES HERETO AS FOLLOWS:

Article 1. LICENSOR GRANTS RIGHT.

In consideration of the license fee to be paid by the Licensee and in further consideration of the covenants and agreements herein contained to be by the Licensee kept, observed and performed, the Licensor hereby grants to the Licensee the right to construct and thereafter, during the term hereof, to maintain and operate

*one (1) 36.0 inch encased pipeline for transporting and conveying
non-potable water for farming purposes only*

across Licensor's track(s) and property (the "Pipeline") in the location shown and in conformity with the dimensions and specifications indicated on the print dated November 20, 2017, and marked **Exhibit A**, attached hereto and hereby made a part hereof. Under no circumstances shall Licensee modify the use of the Pipeline for a purpose other than transporting and conveying non-potable water for farming purposes, and the Pipeline shall not be used to convey any other substance, any fiber optic cable, or for any other use, whether such use is currently technologically possible, or whether such use may come into existence during the life of this Agreement.

For the purposes of Exhibit A, Licensee acknowledges that if it or its contractor provides to Railroad digital imagery depicting the Pipeline crossing, Licensee authorizes Railroad to use the Digital Imagery in preparing the print attached as an exhibit hereto. Licensee represents and warrants that through a license or otherwise, it has the right to use the Digital Imagery and to permit Railroad to use the Digital Imagery in said manner.

Article 2. LICENSE FEE.

Upon execution of this Agreement, the Licensee shall pay to the Licensor a one-time License Fee of **Three Thousand Seventy Dollars (\$3,070.00)**.

Article 3. CONSTRUCTION, MAINTENANCE AND OPERATION.

The grant of right herein made to the Licensee is subject to each and all of the terms, provisions, conditions, limitations and covenants set forth herein and in **Exhibit B**, attached hereto and hereby made a part hereof.

Article 4. DEFINITION OF LICENSEE.

For purposes of this Agreement, all references in this Agreement to the Licensee shall include the Licensee's contractors, subcontractors, officers, agents and employees, and others acting under its or their authority. If a contractor is hired by the Licensee for any work performed on the Pipeline (including initial construction and subsequent relocation or maintenance and repair work), then the Licensee shall provide a copy of this Agreement to its contractor and require its contractor to comply with all the terms and provisions hereof relating to the work to be performed. Any contractor or subcontractor shall be deemed an agent of Licensee for the purpose of this Agreement, and Licensee shall require such contractor or subcontractor to release, defend and indemnify Licensor to the same extent and under the same terms and conditions as Licensee is required to release, defend and indemnify Licensor herein.

Article 5. INSURANCE.

A. During the life of the License, Licensee shall fully comply with the insurance requirements described in **Exhibit C**.

B. Failure to maintain insurance as required shall entitle, but not require, Licensor to terminate this License immediately.

C. If the Licensee is subject to statute(s) limiting its insurance liability and/or limiting its ability to obtain insurance in compliance with **Exhibit C** of this license, those statutes shall apply.

D. Licensee hereby acknowledges that it has reviewed the requirements of **Exhibit C**, including without limitation the requirement for Railroad Protective Liability Insurance during construction, maintenance, installation, repair or removal of the pipeline which is the subject of this Agreement.

Article 6. TERM.

This Agreement shall take effect as of the Effective Date first herein written and shall continue in full force and effect until terminated as herein provided.

Article 7. SPECIAL PROVISION – SHORING.

Licensor requires Licensee to provide shoring plans prior to the start of construction if boring will take place closer than 30 feet to the center line of Licensor's railroad tracks.

Article 8. SPECIAL PROVISION – ONSITE OBSERVATION/INSPECTION.

Licensor requires Licensee to provide monitoring of tracks and on-site observation and/or inspection through Licensor approved inspector named below during all construction and installation work. Licensee is to directly coordinate services with the named inspector.

RailPros Contact: RPUtility@railprosfs.com

Final EA – Water Delivery and Use at FICO GSF

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date first herein written.

UNION PACIFIC RAILROAD COMPANY

By: 

Norma J. Reynolds
Real Estate

FICO CAPLINE, LLC

By: 

Name Printed: Richard S. Walden

Title: President / Member

NON-FLAMMABLE LIQUID PIPELINE		<input checked="" type="checkbox"/> CROSSING <input type="checkbox"/> ENCROACHMENT <input type="checkbox"/> BOTH
NOTES: 1) ALL DIMENSIONS MEASURED PERPENDICULAR TO THE CENTERLINE OF TRACK 2) REFER TO AREMA VOLUME 1, CHAPTER 1, PART 5, SECTION 5.1		
A) METHOD OF INSTALLATION <u>BORED AND JACKED</u> B) DIST. FROM CENTERLINE OF TRACK TO PIPE ENCROACHMENT _____ C) SIGNS PROVIDED? <u>AT MINIMUM SIGNS WILL BE PROVIDED AS STATED ABOVE</u> D) CARRIER MATERIAL <u>STEEL</u> , IF RCP, CLASS V? <u>NA</u> COMMODITY TO BE CONVEYED <u>NON-POTABLE WATER FOR FARMING PURPOSES</u> OPERATIONAL PRESSURE <u>37000</u> PSI, MAOP <u>37000</u> PSI. WALL THICKNESS (INCH)/ SCHEDULE <u>0.75</u> , DIAMETER <u>36</u> IN. CATHODIC/COATING PROTECTION <u>YES</u> E) CASING MATERIAL <u>STEEL PIPE</u> , IF RCP, CLASS V? <u>NA</u> TOTAL LENGTH CASING PIPE: <u>66.5</u> FT. WALL THICKNESS <u>1</u> IN. DIAMETER <u>54</u> IN. CATHODIC/COATING PROTECTION <u>YES</u> CASING PIPE IS <u>SEALED</u> AT THE ENDS. F) DISTANCE FROM CENTERLINE OF TRACK TO NEAR FACE OF BORING AND JACKING PITS WHEN MEASURED AT RIGHT ANGLES <u>27.5</u> AND <u>32</u> .		
EXHIBIT "A"		
SUBDIVISION: <u>Asarco Lead</u>		
TRACK TYPE: <u>MAINLINE</u>		
M.P.: <u>0.49</u>	LAT.: <u>32.001090609212</u>	
E.S.M.: <u>25+75 ±</u>	LONG.: <u>-110.9586755634</u>	
NEAREST CITY: <u>SAHUARITA</u>	COUNTY: <u>PIMA</u>	STATE: <u>AZ</u>
APPLICANT: <u>FICO CAP LINE, LLC</u>		
FILE NO.: <u>0305650</u>	DATE: <u>11/20/2017</u>	

Appendix E. Consultation

Reclamation has conducted government-to-government tribal consultation for the proposed actions. Below is a listing of the formal and informal consultation conducted during the process.

Date	From	To	Description
12/6/2017	PaleoWest Archaeology	Tohono O'odham Nation, Tribal Historic Preservation Office	Initial phone call in preparation for Class III survey
12/7/2017	Tohono O'odham Nation, Tribal Historic Preservation Office	PaleoWest Archaeology	Phone call. The project area has been recently surveyed and would not require resurvey; no sites are located in the area
1/26/2018	PaleoWest Archaeology	Tohono O'odham Nation, Tribal Historic Preservation Office	Phone call; confirmed prior survey and that no sites were located in the area
6/15/2018	Reclamation	Gila River Indian Community; Hopi Tribe; Pascua Yaqui Tribe; Tohono O'odham Nation (with cc to San Xavier District)	Request to Initiate Government-to-Government Consultation
6/19/2018	FICO/ Freeport-McMoRan	San Xavier District, Tohono O'odham Nation	Council Meeting; presentation by applicant to the Tribal Council
6/19/2018	San Xavier District, Tohono O'odham Nation	Resolution of the San Xavier District Council No. SXDC 06-18-03	Initial resolution supporting issuance of a short-term Temporary Construction Easement and long-term Grant of Easement
6/22/2018	Reclamation	(see recipient list in Section 5.0)	Notice of Public Scoping
6/25/2018	The Hopi Tribe	Reclamation	Request for continuing consultation and copy of Class III report
7/30/2018	FICO/ Freeport-McMoRan	Tohono O'odham Nation	Presentation/ project overview by applicant to the Agriculture/ Natural Resources Committee
8/1/2018	ADOT	Reclamation	Email: revision of Class III report to include the Old U.S. Highway 89 as a site previously determined eligible for inclusion in the NRHP
8/6/2018	Reclamation	Fort McDowell Yavapai Nation, Gila River Indian Community, Pascua Yaqui Tribe, San Xavier District, The Hopi Tribe, Tohono O'odham Nation, Tonto Apache Tribe, White Mountain Apache Tribe, BIA, SHPO, UPRR	Section 106 Consultation on Effect: Class III Cultural Resources Survey of a 6.60-Mile-Long Proposed Water Delivery Pipeline Near Sahuarita, Pima County, Arizona. (Report)
8/14/2018	White Mountain Apache Tribe	Reclamation	Preparation of EA for the Proposed GRIC CAP Water Delivery to FICO's GSF

Final EA – Water Delivery and Use at FICO GSF

Date	From	To	Description
8/24/2018	FICO/ Freeport-McMoRan	Tohono O'odham Nation	Presentation/ project overview by applicant to the Water Resources Committee
9/27/2018	Reclamation	(see recipient list in Section 5.0)	Notice of Availability of a Draft Environmental Assessment
10/20/2018	White Mountain Apache Tribe	Reclamation	Proposed project will not impact the tribe's historic properties and/or traditional cultural properties