FINDING OF NO SIGNIFICANT IMPACT

PROPOSED EXPANSION OF PARKING/STORAGE FACILITIES AND CONSTRUCTION OF A TRAFFIC CHECKPOINT USBP SONOITA STATION, SONOITA, ARIZONA

PURPOSE AND OBJECTIVE: The primary purpose of the proposed traffic checkpoint is to assist in the detection and apprehension of illegal smugglers and aliens who have successfully breached the US border. The purpose of the proposed improvements to the parking and storage is to provide the necessary capacity for parking and storage at the US Border Patrol (USBP) Sonoita Station. The current traffic checkpoint is located within the community of Sonoita and does not provide the necessary security to prevent circumvention by illegal entrants. The USBP Station was designed for 21 agents, but currently supports 54 agents, with an additional 35 more agents expected in the near future. The current parking and storage area is not adequate to securely park and store government and privately-owned vehicles and government equipment.

PROPOSED ACTION: The Proposed Action is to construct a traffic checkpoint at milepost 40.8 along State Route (SR) 83, approximately seven miles north of Sonoita and to expand and pave a parking/storage area at the USBP Sonoita Station. Less than one-half acre would be disturbed to construct the traffic checkpoint, which would consist of a small temporary trailer and parking area. All construction would be within existing Arizona Department of Transportation (ADOT) right-of-way (ROW). Approximately 2.2 acres of land currently used by USBP would be developed into a permanent parking and storage area at the USBP Station. The parking area would be fenced with chain-link fence and seven light poles would be installed around the perimeter for security purposes.

ALTERNATIVES: Alternatives carried forward for analysis in the EA include the No Action and the Proposed Action described above. The No Action alternative would not satisfy the need to expand the parking and storage area to accommodate the increased number of USBP agents, nor would it satisfy the need to provide a traffic checkpoint at a location that eliminates the possibility of circumvention by illegal smugglers and aliens. Of the alternatives considered, the Proposed Action would be the most cost-efficient and strategically effective approach to accommodate the additional, secured parking/storage capacity and to provide an effective location for detecting and apprehending illegal entrants who have successfully crossed the border region. Other alternatives considered by eliminated from further evaluation included other locations of the traffic checkpoint, construction of the traffic checkpoint only, expansion of the parking/storage area only, and closure of all traffic checkpoints within the Sonoita area of operations.

A Programmatic Environmental Impact Statement (PEIS) was prepared in 1994 for the Immigration and Naturalization Service (INS) and JTF-6 to address similar proposed projects and missions along the southwestern border of the U.S. The EA for the Proposed Action is tiered from that PEIS in accordance with the President's Council on Environmental Quality's Regulations for Implementing the National Environmental Policy Act of 1969.

ENVIRONMENTAL CONSEQUENCES: No significant adverse affects to the natural or human environment are expected upon implementation of the Proposed Action. In addition, no adverse effects to cultural resources are expected. All construction at both the proposed traffic

checkpoint and the Sonoita USBP Station would occur on lands that have been previously disturbed. Thus, no effects to listed species, cultural resources, wetlands, and/or other sensitive resources would be expected.

Based upon the results of the EA and the environmental design measures to be incorporated as part of the Proposed Action, it has been concluded that the Proposed Action will not have a significant adverse effect on the environment. Anyone having comments regarding this action should contact Mr. Ramon Garcia, INS Headquarters, Facilities and Engineering Division, at (202) 616-2588. Or write to Mr. Garcia at INS, Facilities and Engineering Division, 425 I Street Northwest, Room 2060 Washington, D.C. 20536

R. Diefenbeck

Richard J. Diefenbeck
Director, Office of Administration
Headquarters Facilities and Engineering Division

1/9/01
Date

DRAFT

ENVIRONMENTAL ASSESSMENT

IMMIGRATION AND NATURALIZATION SERVICE

EXPANSION OF PARKING/STORAGE FACILITY

AND NEW TRAFFIC CHECKPOINT

AT SONOITA, ARIZONA

October 2000

Lead Agency:	INS Western Region 24000 Avila Road Laguna Niguel, California 92677
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EXECUTIVE SUMMARY

PROPOSED ACTIONS:	This Environmental Assessment (EA) addresses the potential effects, beneficial and adverse, of the proposed expansion of the parking and storage facilities at the Sonoita U.S. Border Patrol (USBP) Station, Sonoita, AZ, and the construction of new traffic checkpoint along State Route (SR) 83 at milepost 40.8, approximately eight miles north of Sonoita, AZ
PURPOSE AND NEED:	With the huge influx of illegal entrants to the Sonoita area that have occurred during recent years, additional infrastructure is needed to detect illegal traffic and facilitate apprehensions. The Station was originally designed for a maximum of 21 employees, but is currently staffed at 54 with an expected increase to 90 employees in the future. The secure area available for parking of government vehicles, seized vehicles, and the storage of government equipment has reached its capacity and requires expansion. The Sonoita Station also requires the construction of a new traffic checkpoint at a site where there are fewer routes of circumvention and less interference with the community.
ALTERNATIVE ADDRESSED:	The No Action Alternative would require the USBP to operate the Sonoita Station as it currently exists with no expansion of the parking/storage facility. The No ACtion Alternative would also eliminate the possibility of construction of a new traffic checkpoint.
ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION:	The proposed action would involve construction activities within sites that have been previously disturbed and within the existing right-of-way. No significant adverse effects to air quality, water quality, cultural resources, unique areas, soils, protected species, or land use are expected as a result of the proposed action.
CONCLUSIONS:	Based on the findings of this analysis, no significant adverse impacts would occur from the proposed action. Increased or enhanced interdiction of illegal and drug entry and activities would have positive, indirect socioeconomic benefits.

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SECTION 1.0
INTRODUCTION

1.0 INTRODUCTION

This Environmental Assessment (EA) addresses the potential effects, beneficial and adverse, of the proposed expansion of the parking and storage facilities near the Sonoita U.S. Border Patrol (USBP) Station, Sonoita, Arizona (AZ), and the construction of new traffic checkpoint along State Route (SR) 83 at milepost 40.8, approximately eight miles north of Sonoita, AZ.

1.1 BACKGROUND

The U.S. Immigration and Naturalization Service (INS) has the responsibility to regulate and control immigration into the United States. The INS has four major areas of responsibility: 1) facilitate entry of persons legally admissible to the United States, 2) grant benefits under the Immigration and Nationality Act (INA), including assistance to persons seeking permanent resident status or naturalization, 3) prevent unlawful entry, employment or receipt of benefits, and 4) apprehend or remove aliens who enter or remain illegally in the United States. In regards to the latter responsibility, the U.S. Congress in 1924 created the USBP to be the law enforcement arm of the INS. The USBP's primary function is to detect and deter the unlawful entry of aliens and smuggling along the nation's land borders and ports-of-entry (POE). With the increase in illegal drug trafficking, the USBP also has become the leader for drug interdiction between the POEs.

Since 1980, an average of 150,000 immigrants have been naturalized every year. At the same time, however, illegal aliens have become a significant issue. INS apprehension rates are currently averaging more than 1.5 million illegal aliens throughout the country. The INS estimates that there are currently from three to six million illegal aliens in the United States. Other studies have indicated higher numbers, closer to 10 million.

The USBP field activities are administered under the Field Operations Division. As mentioned previously, the USBP's primary function is to detect and prevent the unlawful entry of aliens and smuggling along the nation's borders. With the increase in illegal drug trafficking, the USBP also has assumed a major Federal responsibility for illegal drug interdiction. In fiscal year (FY) 1999, the USBP made almost one million apprehensions of

(FY) 1999, the USBP made almost one million apprehensions of illegal immigrants and seized more than 1.1 million pounds of marijuana and over 29,000 pounds of cocaine (USBP 2000a). In FY 2000, the Sonoita Station has made 7,583 apprehensions of illegal immigrants and seized 32, 878 pounds of marijuana and less than one pound of cocaine (USBP 2000b).

Still, the United States is also experiencing epidemic levels of drug use and drug-related crimes as reported by the Office of National Drug Control Policy (1998 and 1999): illegal drugs cost our society approximately $110 billion annually;

- 1.5 million Americans were arrested in 1997 for violating drug laws;
- 819 persons per 100,000 population were murdered during drug related offenses;
- 322,000 Americans are casual heroin users and over 800,000 are heavy users;
- 1.5 to 3 million Americans are casual cocaine users and over 800,000 are heavy users;
- state and Federal prison populations (drug-related crimes) doubled between 1989 and 1996; and,
- over 10 percent of Americans used some form of illicit drug in 1998.

1.2 REGULATORY AUTHORITY

The primary sources of authority granted to officers of the INS are the INA, found in Title 8 of the United States Code (8 U.S.C.), and other statutes relating to the immigration and naturalization of aliens. The secondary sources of authority are administrative regulations implementing those statutes, primarily those found in Title 8 of the Code of Federal Regulations (8 C.F.R. Section 287), judicial decisions, and administrative decisions of the Board of Immigration Appeals. In addition, the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) of 1996 mandates INS to acquire and/or improve equipment and technology along the border, hire and train new agents for the border region, and develop effective border enforcement strategies.

Subject to constitutional limitations, INS officers may exercise the authority granted to them in the INA. The statutory provisions related to enforcement authority are found in Sections 287(a), 287(b), 287(c), and 287(e) [8 U.S.C. § 1357(a,b,c,e)]; Section 235(a) [8 U.S.C. § 1225]; Sections 274(b) and 274(c) [8 U.S.C. § 1324(b,c)]; Section 274(a) [8 U.S.C. § 1324(a)]; and Section 274(c) [8 U.S.C. § 1324(c)] of the INA. Other statutory sources of authority are Title 18 of the United States Code (18 U.S.C.), which has

several provisions that specifically relate to enforcement of the immigration and nationality laws; Title 19 [19 U.S.C. § 1401(i)], relating to US Customs Service cross-designation of INS officers; and Title 21 [21 U.S.C. § 878], relating to Drug Enforcement Agency cross-designation of INS officers.

1.3 LOCATION OF PROPOSED ACTION

The proposed projects are located in Santa Cruz County near the city of Sonoita, Arizona (Figure 1). Sonoita is located approximately 45 miles southeast of Tucson at the intersection of SR 82 and SR 83. The proposed expansion of the parking/storage facility is located within the City of Sonoita (Figure 2) and the proposed construction of the traffic checkpoint is located approximately eight miles north of Sonoita along SR 83 at milepost 40.8 (Figure 3).

1.4 PURPOSE AND NEED

INS is responsible for the control of immigration into the U.S. and its Territories. With the huge influx of illegal entrants to the Sonoita area that have occurred during recent years, additional infrastructure is needed to detect the illegal traffic and facilitate apprehensions. The Station was originally designed for a maximum of 21 employees, but is currently staffed at 54 with an expected increase to 90 employees in the future. The secure area available for parking of government vehicles, seized vehicles, and the storage of government equipment has reached its capacity and requires expansion. The Sonoita Station also requires the construction of a new traffic checkpoint at a site where there are fewer routes of circumvention and less interference with the community.

1.5 APPLICABLE ENVIRONMENTAL STATUTES AND REGULATIONS

This EA was prepared by the U.S. Army Corps of Engineers (USACE), Fort Worth District, INS Architect-Engineer Resource Center (AERC), in accordance with, but not limited to the National Environmental Policy Act of 1969 (NEPA); Endangered Species Act (ESA) of 1973, as amended; the National Historical Preservation Act of 1966, as amended; the Archaeological and Historical Preservation Act of 1974, as amended; Executive Order (E.O.) No. 11593, "Protection and Enhancement of the Cultural

Environment"; E.O. No. 11988, "Flood Plain Management"; E.O. No. 11990, "Protection of Wetlands"; and E.O. No. 12898 "Federal Actions to Address Environmental Justice." Table 1 summarizes the pertinent environmental requirements that guided the development of this EA.

Table 1

Applicable Environmental Statutes and Regulations

Federal Statutes
Archaeological and Historical Preservation Act
Clean Air Act, as amended
Clean Water Act, as amended
Endangered Species Act, as amended
Migratory Bird Treaty Act
National Historic Preservation Act, as amended
National Environmental Policy Act, as amended
Watershed Protection and Flood Prevention Act
Wild and Scenic Rivers Act, as amended
Farmland Protection Policy Act
Native American Graves Protection and Repatriation Act
Executive Orders, Memorandums, etc.
Floodplain Management (E.O. 11988)
Protection of Wetlands (E.O. 11990)
Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations (E.O. 12898)

Figure 1: Project Vicinity

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DATE: OCTOBER 2000

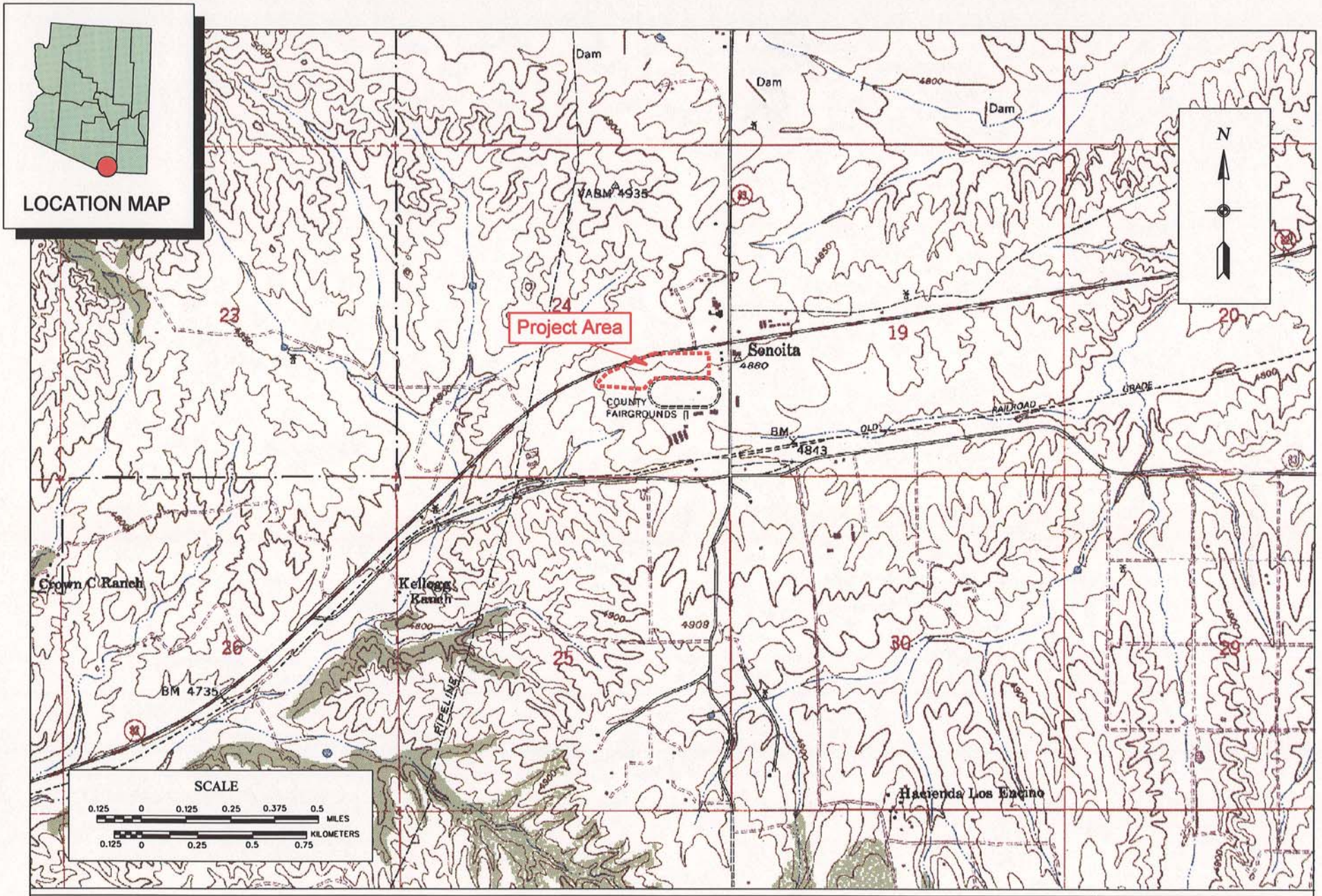

Figure 2: Portion of Soniota, Arizona (1983 photorevised) 7.5' Quadrangle
Showing the Location Proposed Parking/Storage Expansion

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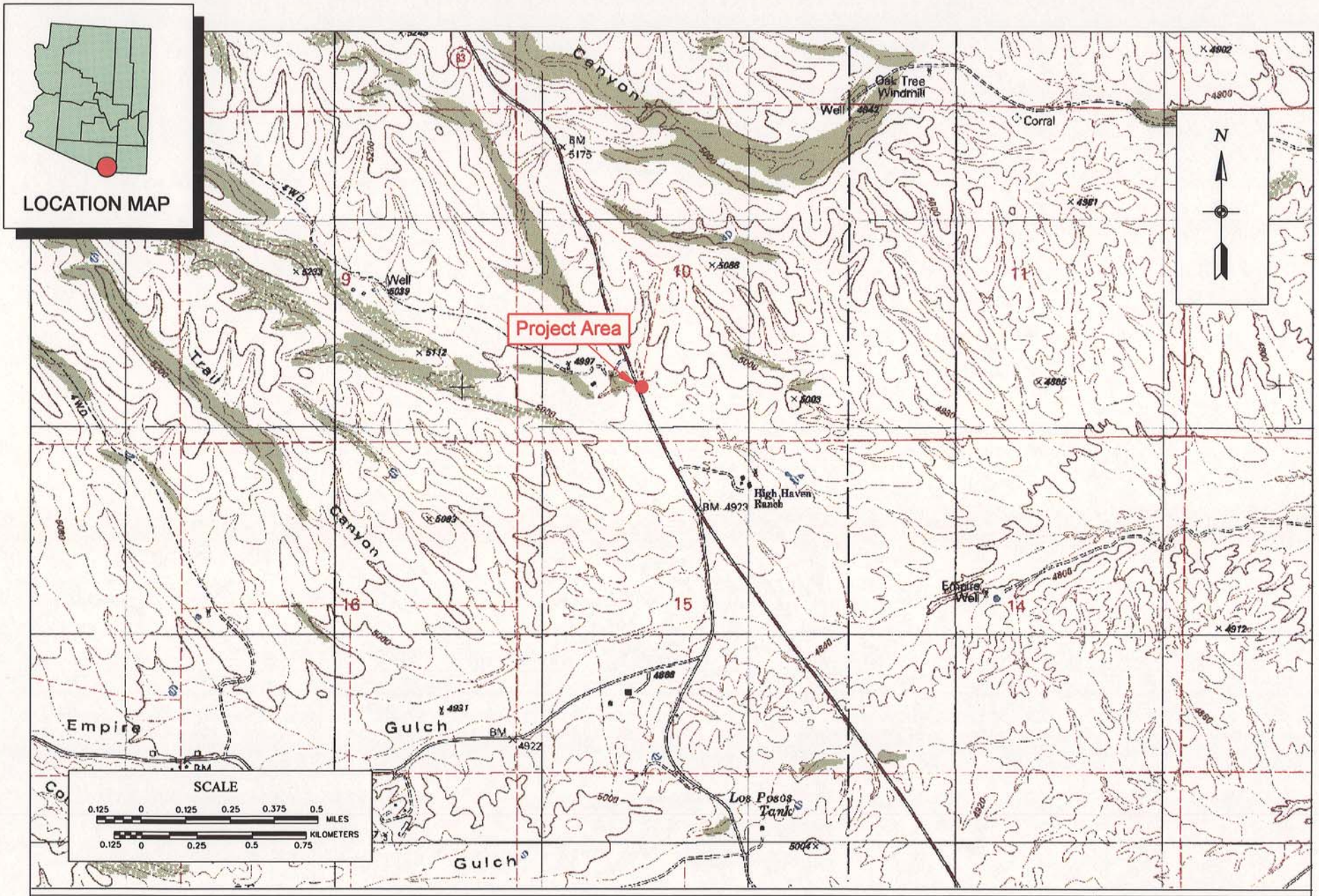

Figure 3: Portion of Empire Ranch, Arizona (1981) 7.5' quadrangle showing the location proposed traffic checkpoint

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SECTION 2.0
DESCRIPTION OF PROPOSED AND NO ACTION ALTERNATIVES

2.0 ALTERNATIVES

Various alternatives were identified and considered during the planning stages of the proposed project including the Proposed Action and the No Action Alternative. The other alternatives, however, were considered but eliminated from further evaluation because they did not satisfy the purpose and need of the project, were cost-prohibitive, or socially or environmentally sensitive. The following paragraphs describe each of the alternatives considered.

2.1 PROPOSED ACTION

The proposed action consists of expansion of the parking/storage facility near the Sonoita USBP Station, Arizona (see Figure 2). The existing parking/storage facility consists of a 1.4 acre paved and fenced-in lot that houses the USBP Station and storage facilities. The existing fence on the southern portion of paved lot will be removed and an additional 2.2 acres will be graded and paved with a 2-inch layer of asphalt. This paved area will then be enclosed with a chain link fence with one electric gate at the northeastern portion and one drive-through gate at the southwestern portion. In addition, seven 20-foot lights will be installed throughout the paved area. The 2.75 acre to the west of the paved lot will be bounded by State Right-of-Way (ROW) barbed wire fence and will have wire drive through "Texas" style gates at the southeastern and southwestern corners of the lot. Figures 4 and 5 depict the construction activity for the proposed parking/storage facility expansion.

The proposed action also includes the development of a new temporary traffic checkpoint at milepost 40.8 on SR 83. The existing checkpoint site at milepost 32 on SR 82, located adjacent to the Sonoita USBP Station, will be moved to the new location but will remain as a potential site depending on future enforcement needs. The location of this new checkpoint site was selected because it provides fewer routes of circumvention, has minimal impact on the community, and has easy access to electricity and telephone lines. The checkpoint will be located on the east side of SR 83 within the ROW and will require grading and the placement of three 24-inch diameter, 60-foot (ft) long culverts in the existing ditch. A small travel trailer (30 ft x 7 ft) will be placed on the graded area. Utilities will be provided by an existing electric pole located adjacent the project site.

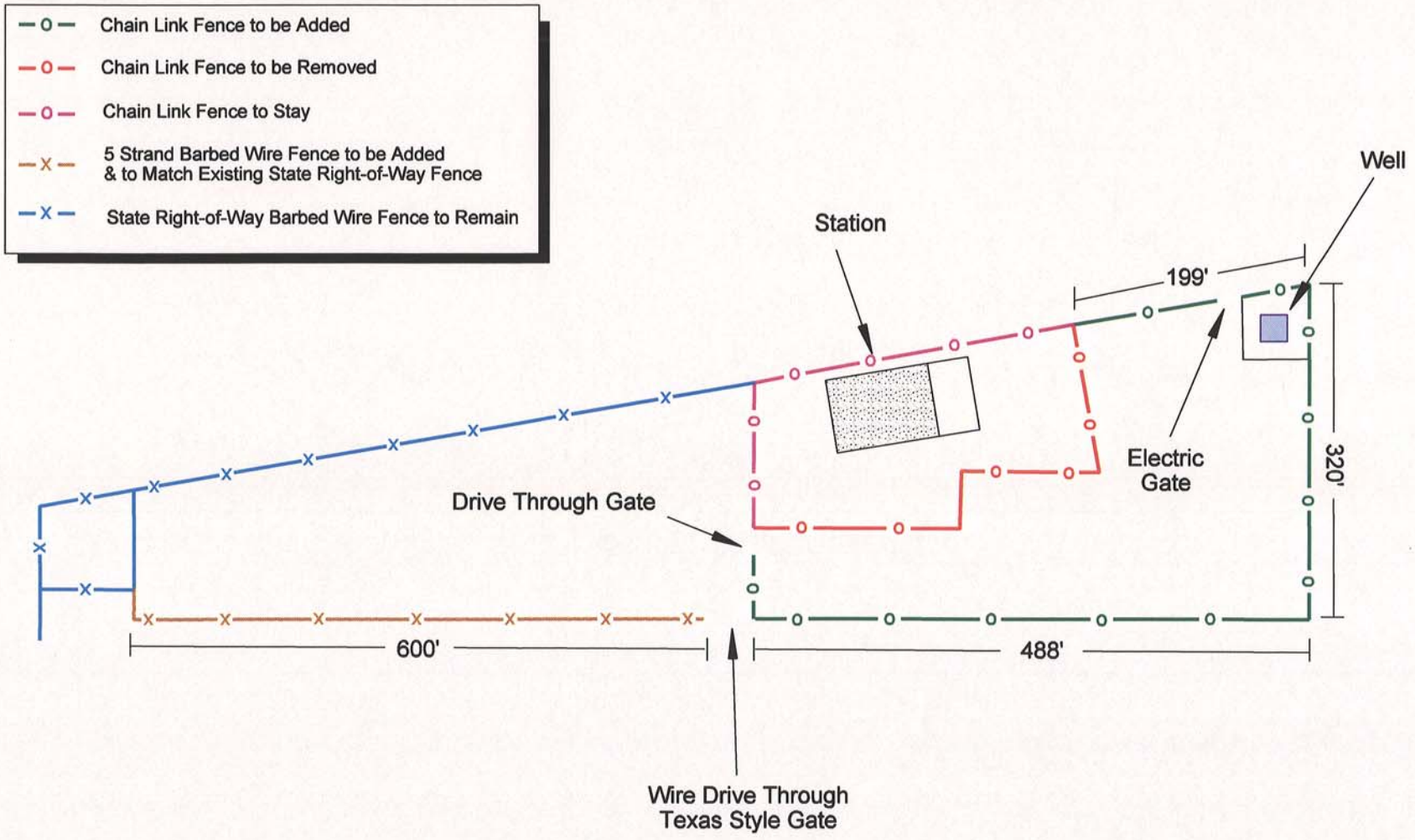

Figure 4: Fencing Plan for Proposed Parking/Storage Facility Expansion

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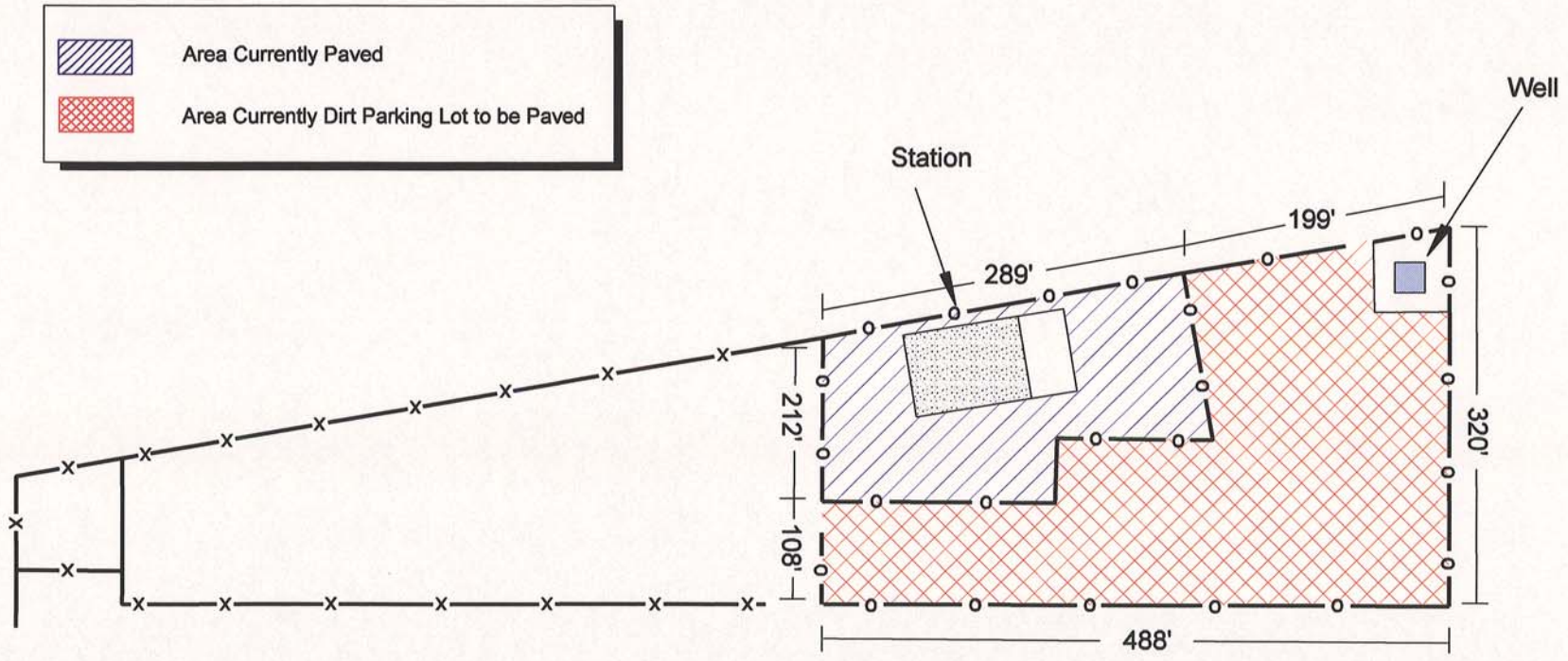

Figure 5: Paving Plan for Proposed Parking/Storage Facility Expansion

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Northbound traffic will be diverted into the checkpoint site by USBP agents and with the use of safety cones. Figure 6 depicts the construction activity for the proposed traffic checkpoint on SR 83.

2.2 ALTERNATIVE 1. NO ACTION ALTERNATIVE

The No Action Alternative would continue the USBP efforts as they currently exist with no expansion of the parking/storage facility and no construction of the new traffic checkpoint. The current fenced parking area only accommodates 29 vehicles. This area also is used for loading/unloading undocumented aliens (UDA), storing seized vehicles, storing government equipment, and receiving supplies. If the expansion does not occur, vehicles and equipment will be moved into unsecured areas to facilitate operations, which will increase the potential for vandalism and theft. In addition, safety of both USBP agents and detainees will be compromised as the area becomes more compacted. The current traffic checkpoint located at milepost 32 on SR 82 would remain the only checkpoint within the Sonoita Area of Operations (AO). Although this checkpoint is effective, its location allows smugglers and illegal immigrants several routes of egress towards the north, particularly SR 83. Selection of the No Action Alternative, therefore, would not satisfy the purpose and need of the proposed project.

2.3 ALTERNATIVE CONSIDERED BUT ELIMINATED

2.3.1 Alternative Checkpoint Location

An alternative traffic checkpoint location was considered on SR 83 at milepost 39, but was eliminated as a viable alternative. The location of this checkpoint would have allowed several routes of circumvention (Madera Canyon Road and Empire-Cienega Wilderness Road). The use of these roads would have also indirectly affected the environmentally sensitive areas that utilize the roads, particularly the Empire Cienega Ranch (see Section 3.3.5.4). In addition, it would have been difficult to obtain utilities at this site. Thus, it would not be as effective as the construction of a traffic checkpoint at milepost 40.8.

2.3.2 Construction of Traffic Checkpoint Only

An alternative to construct the traffic checkpoint at milepost 40.8 on SR 83 with no parking/storage facility expansion was considered. Due to the increase in illegal traffic to the Sonoita AO, the expansion of the parking/storage facility is needed to accommodate the growing needs of the USBP Sonoita Station. This alternative did not meet the requirements of the purpose and need discussed in Section 1.4 and thus was eliminated as a viable alternative.

2.3.3 Parking/Storage Facility Expansion Only

An alternative to expand the parking/storage facility with continued utilization of the traffic checkpoint on SR 82 was considered. This alternative would allow the USBP Sonoita Station to accommodate its growing number of vehicles and equipment; however, the location of this checkpoint allows illegal traffic several routes of circumvention. Thus, this alternative did not meet the requirements of the purpose and need and was eliminated as a viable alternative.

2.3.4 Closure of all Traffic Checkpoints

An alternative to close the existing checkpoint without relocation to SR 83 was considered, but eliminated as a viable alternative. This alternative would not provide the additional infrastructure needed to detect the increase in illegal traffic in the Sonoita AO.

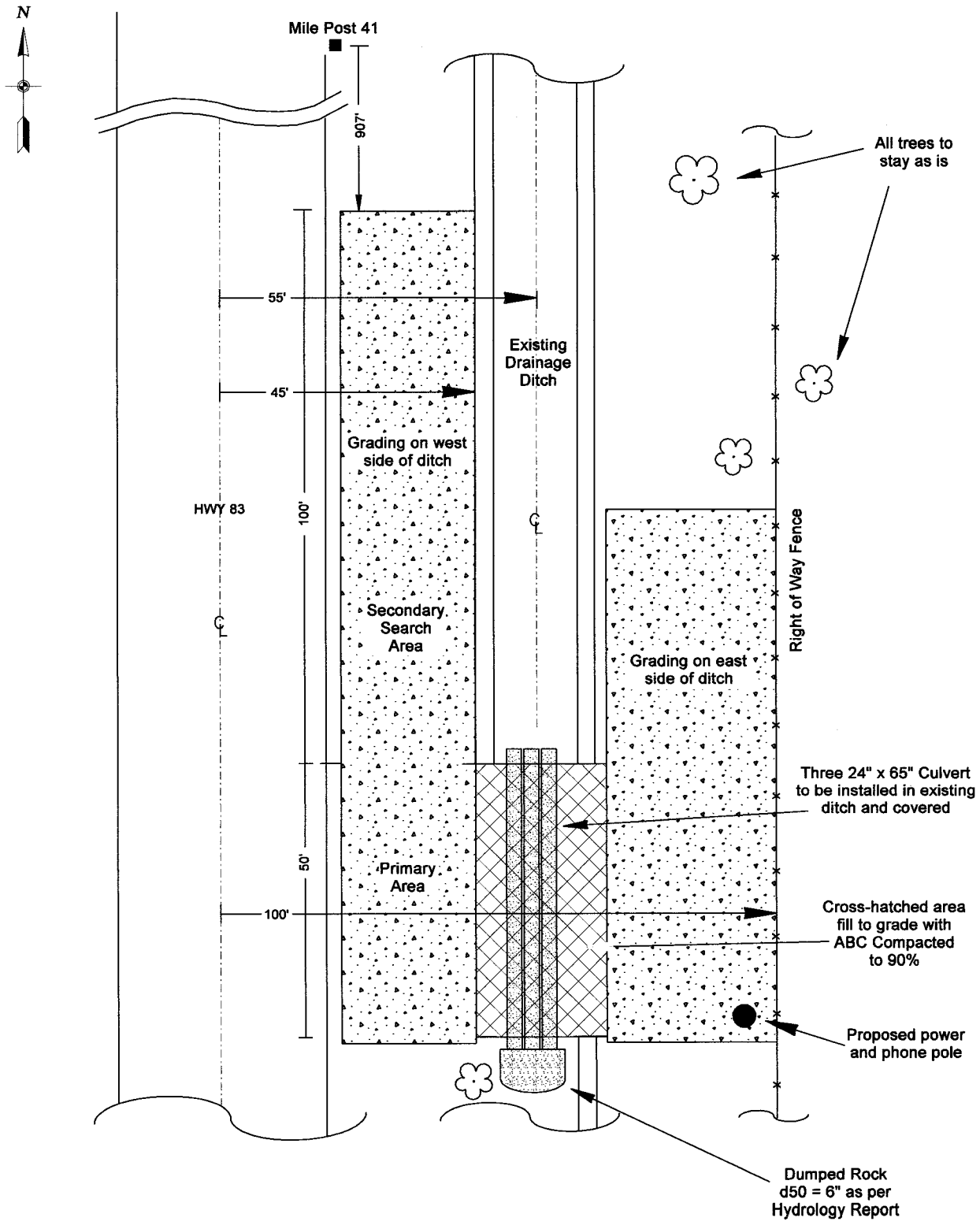

Figure 6: Construction Plan for Proposed Traffic Checkpoint

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SECTION 3.0
AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

3.1 LAND USE

In general, the land use is indicative of the land ownership. The major land uses include: agriculture, rangeland, urban, forest, recreation/special use, and water. The major Federal agencies controlling large land areas in Santa Cruz County are the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM). The major state agencies controlling large areas of land are the Department of Land and State Parks and the Arizona Game and Fish Deparment. The Native American nations also own significant areas of land. Private and corporate land ownership, a small percentage of the total land area, contains the urban areas and intensive specialized agriculture land, along with large areas of range. The "other" land ownership category includes land controlled by other Federal agencies, such as, the National Park Service, Department of Defense, and U.S. Fish and Wildlife Service (USFWS), along with county and municipal lands.

The total area of Santa Cruz County is 1,238 square miles (smallest county in Arizona) with a population of 39,150. The BLM and USFS control approximately 421,00 acres (53 percent). Private and corporate land owners have 309,000 acres (39 percent). Outside of urban areas, the major land use of private and corporate land is rangeland and a small amount of agriculture. The State of Arizona controls approximately 62,000 acres (eight percent). Nogales, the county seat, is the largest urban area with a population of 21,205. Other urban areas include Sonoita, Patagonia, Tubac, and Amado.

3.2 SOILS

The National Resource Conservation Service (NRCS) soil survey information for Santa Cruz County (NRCS 1979) was reviewed to determine general soil types found within the proposed project area. The soil association in the proposed project area is the Bernardo-White House-Hathaway Association. This association is found mainly in the Sonoita area and slopes range from zero to 45 percent. The soils are more than 60 inches deep and formed in alluvium from igneous and calcareous sedimentary rocks.

Runoff is slow to medium, and the hazard of erosion is light to high. This association is mainly used for grazing by livestock and wildlife.

3.3 BIOLOGICAL RESOURCES

3.3.1 Provinces

There are four biotic provinces in Arizona. The two provinces in the study area are: 1) the Apachian province which runs west from the New Mexico-Arizona state line through a large portion of Cochise County, Santa Cruz County, and parts of Pima County and 2) the Sonoran province which includes the northwestern part of Santa Cruz, Pima, Maricopa, Yuma, and La Paz counties (Dice 1943). The Apachian biotic province covers the high grassy plains and mountains of southeastern Arizona and consists of plant and wildlife species adapted to semiarid conditions. The Sonoran biotic province covers the desert region of southwestern Arizona and is characterized by extensive plains from which isolated small mountains and buttes rise abruptly.

3.3.2 Vegetation Communities

The rich flora communities (3,666 species of native and naturalized plants) of Arizona can be defined on the basis of the interaction of geology, soils, climate, animals, and humans. There are six major vegetation communities in Arizona; however, only three (i.e., Forest, Woodland, and Grassland) are located within the project vicinity.

3.3.2.1 Forest

The forest community consists of the Petran Subalpine Conifer Forest and the Petran Montane Conifer Forest. The Petran Subalpine Conifer Forest is a boreal forest found only in Cochise County in the Chiracahua Mountains at elevations above 2,450 feet. It consists of Engelmann spruce (*Picea engelmanni*)/alpine fir (*Abies lasiocarpa*) series and bristle-cone (*Pinus aristata*)/limber pine (*Pinus flexilis*) series. The Petran Montane Conifer Forest is a cold-temperate forest that occurs in Santa Cruz County in the Huachuca and Santa Rita Mountains between 2,300 and 3,000 feet in elevation. The major tree series are Douglas fir (*Pseudotsuga menziesii*)/white fir (*Abies concolor*) series, pine series (*Pinus* sp.), and Gambel oak *(Quercus gambelii*) series.

3.3.2.2 Woodland

The only woodland vegetation found near the project vicinity is the Madrean Evergreen Woodland. It is a warm-temperate woodland found throughout the mountains of Santa Cruz County at an elevation of 1,200 feet. This community includes dominant tree species such as Arizona white oak (*Quercus arizonica*), Mexican pinyon pine (*Pinus cembroides*), and Mexican blue oak (*Quercus oblongifolia*).

3.3.2.3 Grassland

The grassland community is comprised of the Plains and Great Basin Grassland and the Semidesert Grassland. The Plains and Great Basin Grassland is located in eastern Santa Cruz County and is dominated by cold-temperate grasses and functions as a transition between the woodland and the desert scrub vegetation. The dominate grasses include: grama grass (*Bouteloua* sp.), buffalo-grass (*Buchhloe dactyloides*), wheatgrass (*Agropyron trachycaulum*), mixed bunchgrass (*Elyonurus barbiculmis*), ricegrass (*Oryzopsis* sp.), and sacaton (*Sporoboulus airoides.*). The Semidesert Grassland is found in the valley areas of Santa Cruz County. This community is dominated by species such as grama grass, tobosa grass (*Hilaria mutica*), curley mesquite grass (*Hilaria belangeri*), sacaton, and shrub-scrubs such as honey mesquite (*Prosopis glandulosa*), one-seed juniper (*Juniperus monosperma*), and littleleaf sumac (*Rhus microphylla*).

3.3.2.4 Project Area Vegetation

The site of the proposed parking/storage facility expansion is characterized by disturbed grassland species including love grass (*Eragrostis* sp.), Devil's claw (*Sclerocactus parviflorus* var. *intermedius*), cocklebur (*Xanthium strumarium*), sneezeweed (*Helenium bigelovii*), Johnson grass (*Sorghum halepense*), and puncture vine (*Tribulus terrestris*). The wetland area located to the west of the proposed parking/storage facility is characterized primarily by rushes (*Juncus* sp.) and cat-tails (*Typha* sp.) (see Photograph 3 in Appendix B). The site of the proposed traffic checkpoint on SR 83 at milepost 40.8 is also characterized by disturbed grassland species including grama grass, Johnson grass, sensitive plants (*Mimosa* sp.), ragweed (*Ambrosia* sp.), sunflowers (*Helianthus* sp.), and honey mesquite.

3.3.3 Fish and Wildlife Resources

Arizona contains an enormous diversity of environments of wildlife (751 vertebrate species) ranging from hot, dry deserts at low elevations through rich upland deserts, grasslands, and woodlands at mid-elevations to cold, moist montane/alpine habitats. The distribution of these environments is controlled generally by climatic conditions as well as by topographic features. Physiographic features such as scarps, plateaus, plains, mountains, and drainage systems along with soil types and pedogenic and biotic elements influence wildlife distribution (Hendrickson and McKinley 1984).

3.3.3.1 Wildlife

The native faunal components of southeastern Arizona include 370 species of birds. The study area is dominated by sparrows and towhees (35 species); wood warblers (32 species); swans, geese, and ducks (31 species); tyrant flycatchers (30 species); and sandpipers and phalaropes (26 species). The majority of these bird species occur in spring and fall when neotropical migrants (e.g., flycatchers and warblers) pass through on their way to summer breeding or wintering grounds and in the winter when summer resident birds (e.g., robins, kinglets, and sparrows) from the north arrive to spend the winter. The majority of the 109 mammal species found in the study area are bats and rodents (i.e., mice and rats, squirrels) with rodents (e.g., pocket mice and kangaroo rats) being the most commonly encountered mammals. Of the 23 amphibian species which inhabit southeastern Arizona, spadefoot toads and true toads are dominant and the most widespread. A total of 72 species of reptiles can be found in the area with the iguanid lizards and colubrid snakes being the most prevalent along with whiptail lizards (Lowe 1964; Hoffmeister 1986; Lane 1988; USDOI 1989; USACE 1990; Davis and Russell 1991; Lowe and Holm 1992).

No wildlife was observed at either the USBP Sonoita Station or the proposed traffic checkpoint during recent field surveys conducted on 22 August and 4 October 2000.

3.3.3.2 Fish

Distribution patterns of freshwater fish in Arizona are controlled by climatic and geological factors. The Santa Cruz River is the only major body of water flowing through Santa Cruz County. This river system supports 12 fish species; eight of which are non-

native species (Table 2). No waterbodies are present at either the USBP Sonoita Station or the proposed traffic checkpoint which could support fish.

Table 2

Fish Fauna of the Santa Cruz River, Santa Cruz County, Arizona

Native Fish	Scientific Name	Non-Native Fish	Scientific Name
Desert sucker	*Catostomus clarki*	Beautiful shiner	*Cyprinella formosa*
Gila chub	*Gila intermedia*	Black crappie	*Pomoxis nigromaculatus*
Gila topminnow	*Poeciliopsis occidentalis*	Bluegill	*Lepomis cyanellus*
Longfin dace	*Agosia chrysogaster*	Channel catfish	*Ictalurus punctatus*
		Common carp	*Cyprinus carpio*
		Fathead minnow	*Pimephales promelas*
		Largemouth bass	*Miropterus salmoides*
		Western mosquitofish	*Gambusia affinis*

Source: Minckley 1973; Rinne and Minckley 1991; Robbins *et al.* 1991

3.3.4 Threatened and Endangered Species

A total of 14 Federal endangered, threatened, or candidate species occur or potentially occur within Santa Cruz County. Two species are listed as threatened and 12 as endangered. Information pertaining to the distribution, habitat requirements, and reason of decline for the endangered, threatened, and candidate species are listed in Table 3.

The Arizona Department of Fish and Game (ADFG) maintains lists of Wildlife of Special Concern (WC). This list includes species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats of population declines. These species are not necessarily the same as those protected by the Federal government under the ESA. Information pertaining to WC potentially occurring in Santa Cruz County is presented in Appendix A.

No Federal or state listed species were found at either site during recent field surveys conducted on 22 August and 4 October 2000.

Table 3

Federally Listed Species of Potential Occurrence in Santa Cruz County, Arizona

COMMON NAME SCIENTIFIC NAME	FEDERAL STATUS	DATE LISTED	DESIGNATED CRITICAL HABITAT	HABITAT DESCRIPTION
AMPHIBIANS				
Sonora tiger salamander *Ambystoma tigrinum stebbinsi*	E	1/6/1997	NA	Stock tanks and impounded cienegas in San Raphael Valley, Huachuca Mountains
BIRDS				
Mexican spotted owl *Strix occidentalis lucida*	T	11/4/1991	NA	Old growth forest associated with steep canyons
Northern aplomado falcon *Falco femoralis septentrionalis*	E	2/25/1986	NA	Desert grasslands
Southwestern willow flycatcher *Empidonax traillii extimus*	E	2/27/1995	50 CFR 17.95 (b)	Dense riparian vegetation
FISHES				
Desert pupfish *Cyprinodon macularius*	E	3/31/1986	51 CFR 18.42	Warm desert pools, cienegas, streams and springs
Gila topminnow *Poeciliopsis occidentalis occidentalis*	E	3/11/1967	NA	Streams, springs, and cienegas between 4,000-5,000 feet elevation
Sonora chub *Gila ditaenia*	T	4/30/1986	51 CFR 16.42	Creeks and streams with riparian vegetation
MAMMALS				
Jaguar *Panthera onca*	E	2/31/1972	NA	Variety of habitats: lowland wet habitats and swampy areas
Jaguarundi *Felis yagouaroundi cacomitli*	E	6/14/1976	NA	Dense thorny thickets of mesquite and acacia
Ocelot *Felis pardalis*	E	3/30/1972	NA	Humid tropical and sub-tropical forests, savannas, and semi-arid thornscrub
Lesser long-nosed bat *Leptonycteris curasoae yerbabuenae*	E	9/30/1988	NA	Desert scrub habitat with agave and columnar cacti present as food plants

Federally Listed Species of Potential Occurrence in Santa Cruz County, Arizona (continued)

PLANTS				
Canelo Hills ladies' tresses *Spiranthes delitescens*	E	1/6/1997	NA	Finely grained, organic, saturated soils of cienegas
Huachuca water umbel *Lilaeopsis schaffneriana recurva*	E	1/6/1997	50 CFR 17.95 (a)	Cienegas, perennial low gradient streams, wetlands
Pima pineapple cactus *Corypthantha scheeri robustispina*	E	9/23/1993	51 CFR 17.95 (e)	Disturbed areas and open spaces

T=Threatened
E=Endangered
NA=Not Applicable

Source: USFWS 2000

3.3.5 Unique and Environmentally Sensitive Areas

Southeastern Arizona is an ecological crossroads, where habitats and species from the Sierra Madre of Mexico, the Rocky Mountains, and the Sonoran and Chihuahuan deserts converge. Ongoing efforts by many government agencies, as well as private entities, have set aside these areas for preservation. These areas are intended for use by the public in hopes of better understanding of the myriad of natural systems exhibitedin their natural state. Riparian (riverbank) areas, basin wetlands, scenic canyons, and vast wilderness represent these unique areas. The following sub-sections describe unique and environmentally sensitive areas found in the region of the project area.

3.3.5.1 Patagonia Lake State Park

Patagonia Lake State Park is located approximately 12 miles north of Nogales on SR 82 (Arizona State Parks 2000). The lake is 2.5 miles long and approximately 250 acres and was created by damming Sonoita Creek, which flows 2.5 miles along the edge of the park. The lake is stocked every winter with bass, crappie, bluegill, and catfish. The new Sonoita Creek State Natural Area is located in the northeastern portion of the park and the Patagonia/Sonoita Creek Preserve is located near the northwestern portion of the park.

3.3.5.2 Sonoita Creek State Natural Area

The Sonoita Creek State Natural Area is Arizona's first major natural area. The site is located in the northeastern portion of Patagonia Lake State Park and totals 5,000 acres. It is designated as a significant riparian area dominated by cottonwoods, willows, sycamores, and mesquites. A management plan for the area is currently being proposed; however, there has been no scheduled opening date for this area (BLM 2000a).

3.3.5.3 Patagonia/Sonoita Creek Preserve

The Patagonia/Sonoita Creek Preserve is located near the City of Patagonia, which is approximately 20 miles south of Sonoita on SR 82. This 850 acre preserve is managed by The Nature Conservancy (TNC). It is located in the floodplain valley between the

Patagonia and Santa Rita Mountains and provides a rich habitat of cottonwood-willow riparian forest supporting a wide array of wildlife.

3.3.5.4 Empire-Cienega Ranch

Since 1988, the Empire and Cienega ranches have been under the administration of the BLM under the principles of multiple-use and ecosystem management. The Empire-Cienega Resource Conservation Area (RCA) is a working cattle ranch of 45,000 acres of public land located in southeastern Pima County and northeastern Santa Cruz County. The diversity of habitat in this RCA supports healthy populations of fish and wildlife. Three species of native fish are found in the Cienega Creek: Gila topminnow, Gila chub, and longfin dace. A variety of amphibians and reptiles are found in the RCA and nearly 200 bird species have been identified. Numerous game and non-game mammals are found in the RCA, including 11 species of bats. The BLM's field station is located 46 miles southeast of Tucson and 10 miles north of Sonoita. The station is accessed by two roads: one seven miles north of Sonoita on SR 83 and one five miles east of Sonoita on SR 82 (BLM 2000b).

3.3.5.5 The Appleton-Whittell Research Ranch

The Appleton-Whittell Research Ranch is a collaboration among the National Audubon Society, USFS, BLM, Appleton family, and the Research Ranch Foundation. The Research Ranch is an 8,000 acre refuge located near Elgin, Arizona, which is approximately 20 miles east of Sonoita. The Research Ranch was established in 1968 by the Appleton family for ecological research and has not been grazed by cattle since 1968. The undisturbed habitat consists of semidesert grasslands, oak savannah, oak woodland, and riparian systems (National Audubon Society 2000).

3.4 AIR QUALITY

The Clean Air Act, last amended in 1990, required states to adopt ambient air quality standards that are at least as stringent as the Federal National Ambient Air Quality Standards (NAAQS); however, the state standards may be more stringent. The State of Arizona has adopted NAAQS as the state's air quality criteria (Table 4). Primary standards are established to protect public health while secondary standards provide

Table 4

National Ambient Air Quality Standards

POLLUTANT	STANDARD VALUE	STANDARD TYPE
Carbon Monoxide (CO)		
8-hour average	9ppm (10mg/m^3)**	Primary
1-hour average	35ppm (40mg/m^3)**	Primary
Nitrogen Dioxide (NO_2)		
Annual arithmetic mean	0.053ppm (100μ/m^3)**	Primary and Secondary
Ozone (O_3)		
1-hour average*	0.12ppm (235μg/m^3)**	Primary and Secondary
8-hour average*	0.08ppm (157μg/m^3)**	Primary and Secondary
Lead (Pb)		
Quarterly average	1.5μg/m^3	Primary and Secondary
Particulate<10 micrometers (PM-10)		
Annual arithmetic mean	50μg/m^3	Primary and Secondary
24-hour average	150μg/m^3	Primary and Secondary
Particulate<2.5 micrometers (PM-2.5)		
Annual arithmetic mean	15μg/m^3	Primary and Secondary
24-hour Average	65μg/m^3	Primary and Secondary
Sulfur Dioxide (SO_2)		
Annual arithmetic mean	0.03ppm (80μg/m^3)**	Primary
24-hour average	0.14ppm (365μg/m^3)**	Primary
3-hour average	0.50ppm (1300μg/m^3)**	Secondary

Source: U.S. Environmental Protection Agency (USEPA) 1995.

Legend: ppm = parts per million
mg/m^3 = milligrams per cubic meter of air
μg/m^3 = micrograms per cubic meter of air

*The ozone 1-hour standard applies only to areas that were designated non-attainment when the ozone 8-hour standard was adopted in July 1997.

**Parenthetical value is an approximate equivalent concentration.

protection for the public's welfare including wildlife, climate, recreation, transportation, and economic values.

3.4.1 Potential Sources of Air Pollutants

The majority of the southwestern border of Arizona is sparsely settled desert or semi-desert. A number of anthropogenic (man-made) sources of air contaminants affect the air quality of the border region. These include industrial emissions, vehicle emissions, area emissions (e.g., emissions from numerous residences and small commercial establishments in an urban setting), dust resulting from wind erosion of agriculturally

3.4.2 Ambient Air Quality/Monitoring Status

There are very few monitoring stations located in Santa Cruz County and the only parameter monitored in Santa Cruz County is PM_{10} (particulate matter less than 10 microns in diameter). Under Federal NAAQS, Santa Cruz County is classified as non-attainment for PM_{10} (USEPA 2000a). Although air pollutant status for other pollutants is not available for Santa Cruz County, data are available for Pima County, located north of Santa Cruz County. Pima County is designated either as in attainment or unclassified for other criteria pollutants (USEPA 2000a).

3.5 WATER RESOURCES

The Arizona Department of Water Resources (ADWR), which is part of the Arizona Department of Environmental Quality (ADEQ), is the regulatory body in the state that is in charge of surface water quality and designation of uses. The ADWR recognizes the geologic and hydrologic diversity of the state by delineating major river basins and reservoirs/lakes as classified segments. The study area is located in the Santa Cruz Active Management Area (AMA). This AMA consists of 716 square miles and is located in the basin and range physiographic province. The Santa Cruz River bisects the AMA, forming a river valley bordered on the east by the Patagonia, San Cayentano, and Santa Rita Mountains and bordered on the west by the Pajarito, Atacosa, and Tumacacori Mountains.

3.5.1 Water Quality

Water quality data are collected from a series of monitoring stations by the ADWR and by the U.S. Geological Survey's (USGS) National Stream Quality Accounting Network (NASQAN) program. The quality of water in the Upper Santa Cruz AMA has been classified by ADWR as suitable for most uses (ADWR 2000).

Water quality assessments for the study area indicate that the major causes of surface water non-attainment include heavy metals, ammonia, low dissolved oxygen, turbidity, total dissolved solids, and fecal coliform bacteria. The potential sources contributing to non-attainment of assigned uses include mining operations, municipal point sources including wastewater effluent, agriculture irrigation and recirculation, range management, and non-point sources.

3.5.2 Groundwater

Basin-fill sediments in the Upper Santa Cruz River valley form three aquifer units: the Nogales formation, older alluvium, and younger alluvium. The structure of the younger alluvium can generally be divided into upstream and downstream segments from the Nogales International Wastewater Treatment Plant (NIWWTP). Upstream from the NIWWTP, the Santa Cruz River flows through a series of four microbasins. Groundwater flow between microbasins is limited by subsurface rock outcrops. During periods of low flow, not all of the microbasins may be recharged. Recent water level data indicate that depth-to-water is generally less than 10 feet below the surface, and may increase to 40-50 feet during times of low flow. Downstream from the NIWWTP, the floodplain of the Santa Cruz River widens due to influence from Sonoita Creek and Nogales Wash. Recent water level data indicate that depth-to-water is less than 10 feet in the first five miles below the NIWWTP and then increases to 10-20 feet to the AMA boundary.

3.5.2 Effected Watershed Descriptions

There are five watersheds found in Santa Cruz County: Upper San Pedro, Upper Santa Cruz, Rillito, Brawley Wash, and Rio de la Concepcion (USEPA 2000b). Three

watersheds are found within the study region: Upper San Pedro, Upper Santa Cruz, and Rillito.

3.5.2.1 Upper Santa Cruz

The Upper Santa Cruz watershed covers 2,203 square miles of Santa Cruz County (307 mile perimeter) including the cities of Tucson, Nogales, and Sierra Vista. There are seven major rivers and streams within the watershed: Big Wash, Canada del Oro, Josephine Canyon, Rillito Creek, Santa Cruz River, Sonoita Creek, and Sopori Wash. The approximate total river miles are 2,989, with 348 of these listed as perennial.

3.5.2.2 Upper San Pedro

The Upper San Pedro watershed covers 1,778 square miles of southeastern Santa Cruz County (241 mile perimeter) including the cities of Benson, Sierra Vista, and Bisbee. There are five major rivers and streams within this watershed: Babocomari River, Dragoon Wash, Tres Alomos Wash, Walnut Gulch, and the San Pedro River. The approximate total river miles are 2,239 with 258 miles described as perennial.

3.5.2.3 Rillito

The Rillito watershed covers 928 square miles of northeastern Santa Cruz County (178 mile perimeter) including the cities of Tucson and Huachuca City. There are seven major rivers and streams within this watershed: Cienega Creek, Mesca Arroyo, Potano Wash, Rillito Creek, Rincon Creek, Santa Cruz River, and Tanque Verde Creek.

3.5.3 Waters of the U.S. and Wetlands

Section 404 of the Clean Water Act (CWA) of 1977 (P.L. 95-217) authorizes the Secretary of the Army, acting through the USACE, to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to ebb and flow of tide, and all interstate waters including interstate wetlands. Waters of the United States are further defined as all other waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas. Jurisdictional boundaries for Waters of the U.S.

are defined in the field as the ordinary high water mark (OHWM) which is that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987).

Activities that result in the dredging and/or filling of jurisdictional wetlands are regulated under Section 404 of the CWA. The USACE has established Nationwide Permits (NWPs) to efficiently authorize common activities, which do not significantly impact Waters of the U.S., including wetlands. The NWPs were modified and reissued by the USACE in the Federal Register on 9 March 2000, with an effective date of 7 June 2000. The USACE has the responsibility to authorize permitting under a NWP, or to require an Individual Permit.

According to the National Wetlands Inventory Center, there are no wetlands or Waters of the U.S. located on either the proposed expansion site or the proposed traffic checkpoint (USFWS 2000). There is a wetland area to the western portion of the proposed parking/storage facilities near the USBP Sonoita Station (see Photograph 3 in Appendix B). The drainage ditch along SR 83 near the proposed traffic checkpoint is not considered a jurisdictional wetland (Flatau 2000).

3.6 NOISE

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as a sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the USEPA (USEPA 1972) and has been adopted by most Federal agencies (Federal Interagency Committee on Noise [FICON] 1992).

A DNL of 65 dB is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction which do cause noise. Areas exposed to DNL above 65 dB are generally not considered suitable for residential use. A DNL of 55 dB was identified by USEPA as a level below which there is effectively no adverse impact (USEPA 1972). This is the lowest level at which adverse health effects could be credible in a DNL of 75 dB (USEPA 1972). The very high annoyance levels make such areas unsuitable for residential land use.

3.7 CULTURAL RESOURCES

3.7.1 Cultural Resources Overview

The archeology of southern Arizona is quite detailed, and relatively complex considering the various geographic and related cultural features. For purposes of clarity, the following text will present the broad overview of southern Arizona prehistory before outlining the various previous investigations that are important to the understanding of the study area.

The cultural chronology of southern Arizona is composed of five periods, namely:

Paleo-Indian	10,000—7,500 B.C.
Archaic	7,500—400 B.C.
Formative	A.D. 100—1450
Protohistoric	A.D. 1450—1539
Historic	A.D. 1539—Present

These periods are commonly subdivided into smaller temporal phases based on particular characteristics of the artifact assemblages encountered in each of three archeological regions within southern Arizona. The prehistoric periods and corresponding phases are defined by the presence of particular diagnostic artifacts such as projectile points, certain types of pottery, and occasionally, particular site locations. For the Historic period,

documentary information more often is used to distinguish certain phases; nevertheless, particular artifacts also can be used to recognize certain historic affiliations.

3.7.1.1 Paleo-Indian (10,000-7500 B.C.)

The nature and temporal position of the first people in southern Arizona is a subject of debate. Most researchers contend that successive migrations occurred throughout the latter part of the Pleistocene, coinciding with global temperature drops that resulted in massive quantities of water being frozen. As the ice caps increased in size, sea levels dropped, exposing land bridges in the areas where the sea was the most shallow. One of these land bridges connected Alaska with Siberia across the Bering Strait. This land bridge has successively appeared and disappeared over the last 100,000 years as temperatures fluctuated.

"Early man sites" in the New World, those defined as being occupied prior to 12,000 years ago, are most frequently reported in the southwestern deserts. Early man sites have been reported for ancient Lake Mannix, China Lake, Calico, and the Yuha Desert in California (Schuiling 1972; Davis 1978; Davis *et al.* 1981), and the Sierra Pinacate region of nearby Sonora, Mexico (Hayden 1976; Moratto 1984). No claims for humans in southern Arizona predating 12,000 years ago have met the scrutiny of the entire scientific community.

3.7.1.2 Archaic (7500-400 B.C.)

The cultural remains of Archaic people, post-Pleistocene foragers, are more common manifestations than those of Paleo-Indian populations. The cultural affiliation and age of Archaic materials in southern Arizona are not well understood. Two Archaic traditions have been proposed for southern Arizona: the Desert culture (also called San Dieguito II and III) and the Cochise culture. Haury (1950) and Ezell (1954) have argued that the Papagueria was the zone of contact between the Cochise culture, located primarily within southeastern and south-central Arizona and New Mexico, and the Desert culture, recorded in southern California (Rogers 1939; Hester 1973; King 1976) and southwestern Arizona (Rogers 1941; Haury 1950; Hayden 1970; Rosenthal *et al.* 1978). Other researchers disagree with Haury and Ezell, arguing instead that the Desert culture is a pan-southwestern occurrence extending from California to the Trans-Pecos Region of Texas.

3.7.1.3 Formative (A.D. 100-1450)

Following the Archaic, the Formative period refers to the prehistoric ceramic-making agriculturists. In southern Arizona, some researchers date the beginning of the Formative as early as 300 B.C. (Haury 1976), and others as late as A.D. 500 (Schiffer 1982). In south central Arizona, the principal inhabitants are called Hohokam, a Piman word meaning "all used up" (Haury 1976). Peripheral cultures are the Trincheras in northern Sonora (Bowen n.d.; Sauer and Brand 1931; Hinton 1955; Johnson 1960, 1963; McGuire and Villalpando 1991), the Mogollon in eastern Arizona (Douglas and Brown 1984, 1985), and the Patayan in western Arizona (Rogers 1945; Waters 1982).

The Mogollon culture evolved from the Cochise culture; in fact, early Mogollon villages appear to be little more than late Archaic villages with pottery (Sayles 1945). The hallmarks of this stage are agriculture, red-on-brown pottery, and pithouses. Southeastern Arizona has been included in the San Simon Branch of the Mogollon (Sayles 1945), which has been divided into three periods and six phases. The Early period consists only of the Penasco phase, which was derived from the San Pedro stage of the Cochise culture. In essence, the only difference appears to be the addition of plainware and red slipped pottery. Following this is an Intermediate period composed of the Dos Cabezas, Pinaleno, and Galiuro phases, which are defined by the introduction of decorated ceramics. The Late period is composed of the Cerros and Encinas phases, which exhibit considerable influence from the Hohokam to the northwest and Mimbres to the east (Sayles 1945). Although dates for these phases are not clear, the whole sequence likely ranges from about A.D. 200 to 1200.

The appearance of rock and adobe pueblos in the southeastern part of Arizona has been identified with three traditions. One of these traditions is the Ringo phase that, unfortunately, is known only from a single excavation in the Sulphur Springs Valley. The Ringo site consists of two small adobe compounds with 27 rooms with a variety of ceramic trade wares. The ceramic assemblage suggests contact with four areas; (1) Chihuahua (over 25% of the decorated wares), (2) the White Mountain area, (3) the Tonto Basin (these ceramics could have been made locally), and (4) the Tucson Basin (Johnson and Thompson 1963). The suggested dates for them fall between 1250 and 1325 (Johnson

and Thompson 1963). The Ringo phase, although interpreted as basically Mogollon, reflects outside influences likely from the Anasazi to the north or possibly the Chihuahuan area to the south (Johnson and Thompson 1963).

The Animas phase, best known from Hidalgo County, New Mexico, is represented at the Pendleton Ruin (Kidder *et al.* 1949). This phase generally has been interpreted very differently from the Ringo phase even though the two overlap temporally. The dating of the Animas phase (ca. A.D. 1175-1350) and the presence of Ramos Polychrome and other Casas Grandes pottery types implies an association with Casas Grandes at its zenith. Unlike the Ringo site, a number of Animas sites fall in the 100 to 300 room category. The nature of the association between the Animas phase and Casas Grandes has been debated for the last 30 years. Kidder *et al.* (1949) argued that the traits found at the Pendleton Ruin were quite distinct from those at Casas Grandes. More recent researchers have accepted the Animas phase as peripheral to Casas Grandes, but directly interacting with the core area (LeBlanc 1980; DeAtley and Findlow 1980). These authors viewed the Animas phase as non-Mogollon. In fact, LeBlanc (1980) specifically suggests a population movement from the south into the Mimbres Valley that absorbed the remaining indigenous population. Others remain unconvinced of a Casas Grandes expansion into southwestern New Mexico, pointing out that the five excavated Animas phase sites, the few available dates, and the published survey data collected by DeAtley and Findlow (1980) do not present enough data for such a conclusion.

The term Animas phase has not been generally applied in southeastern Arizona. Nevertheless, the great similarities in ceramic types and their frequencies, architectural features, burial patterns, and projectile point styles between most of the pueblo sites in southeastern Arizona and the Animas phase sites in southwestern New Mexico suggest that they are part of the same cultural tradition (Amsden 1928; Sauer and Brand 1930; Kidder *et al.* 1949; Neily and Beckwith 1985; LeBlanc 1980; DeAtley and Findlow 1980; Klein *et al.* 1982).

3.7.1.4 Protohistoric Period (A.D. 1450-1539)

The abandonment of the large, aggregated pueblos in the southwest around A.D. 1450 marks the beginning of the Protohistoric period, which is another time period that is poorly

understood. Based on cross-dating with Hohokam and Salado ceramics, Di Peso (1951) concluded that the inhabitants of Babocomari Village in the San Pedro Valley moved into that vicinity at a time roughly contemporaneous with the Tucson phase, ca. A.D. 1200-1450. It is possible that abandonment occurred quite late, perhaps during Apache times (Di Peso 1951). If this is the case, then Babocomari Village represents the only large Protohistoric site excavated to date.

3.9.1.5 Historic Period (1539-present)

The Historic period in southern Arizona began with the Spanish explorations by Fray Marcos de Niza in 1539 and Francisco Vasquez de Coronado, Melachor Diaz, and Alarcon in 1540. When the Spanish arrived, the majority of native populations in southern Arizona were living in rancherias dispersed beside the major watercourses. It is difficult to assess what cultural groups were in southeastern Arizona. The Opata, a Uto-Aztecan speaking group occupying much of northeastern Sonora, are known to have inhabited the southern part of the valleys; however, the Spanish did not record any of their villages north of the International Border. The Janos and Jocome Indians lived in nomadic bands in the area where Sonora, Chihuahua, and the International Border meet. In general, the Opata, Janos, and Jocome suffered such a rapid population decline and assimilation after Spanish contact that few data are available to indicate how these cultures could be identified.

After the Spanish entrada, sporadic contact continued until 1687, when Eusebio Kino, a Jesuit priest, traveled through the Santa Cruz Valley and the adjacent Papagueria. Until his death 24 years later, Padre Kino embarked upon at least 50 major journeys in Pimeria Alta visiting many Papago and Pima villages. He established a chain of missions and branch missions, or visitas, including San Xavier del Bac, Guevavi, Tubac, San Cayetano de Tumacacori, and others. Following Kino was an influx of Spanish missionaries, explorers, miners, ranchers, and settlers.

Between 1736 and 1741, a silver strike occurred near the rancheria of Arissona bringing more Spanish prospectors into the territory. These events had a tremendous impact on the natives and contributed to the antagonism that was already developing among the Indians, miners, and frontiersmen. Events finally culminated in a revolt by the Pima and

Papago in 1751, which resulted in the destruction of many of their own villages. Ultimately, the revolt, along with a series of epidemics in 1773 and constant Apache attacks, had a disastrous effect on the Pima and Papago, causing populations to decline.

In 1830, at a time when Apache raids had lessened, Lieutenant Perez, a member of one of the most prominent land-holding families in Sonora, petitioned the government for a land grant between the existing settlements in Sonora and the Apache Indians. His petition was approved and he was permitted to purchase almost 100,000 acres for 90 pesos plus fees. He named his hacienda El Rancho de San Bernardino. Apache raiding began again in the late 1830s forcing the abandonment of the rancho.

In the mid-1800s El Camino del Diablo, a route linking Sonoita, Mexico with Yuma, Arizona became popular with travelers attempting to get to the gold fields in California. The conditions along the route were harsh and the loss of life along the route was heavy (Sykes 1937).

The Gadsden Purchase occurred in 1854, but it was not until 1856 that the land left Mexican domain and came under the domain of the United States. Border surveys were initiated immediately. Lieutenant Michler of Major Emory's Border Survey traveled the International Border along the southern periphery of the present day Papago (Tohono O'odham) Indian Reservation in 1855. Aside from placing iron and stone border monuments, Emory reported on the topography and people he encountered (Wagoner 1975). Much of the land acquired in the Gadsden Purchase was held through Mexican and Spanish land grants and promptly fell into contention. One of the contested land grants was the Los Nogales de Elias Grant of 1843 in the area of present day Nogales, Arizona. This land grant was denied by the United States Supreme Court in 1897, thus leaving ownership to the settlers and residents of the area.

The Maria Santisima del Carmen (Buena Vista) Grant, dated 1826, survived the land disputes and remained a Spanish stock ranch. It was located in the Santa Cruz River Valley on both sides of the International Border and contained 45,687 acres. The portion on the Arizona side, 5,733 acres, was acquired in 1881 and stayed intact until 1934 when the owners divided it.

"Gold," in the form of mineral and grasslands, was discovered in the Arizona Territory and California in the mid and late 1800s. This brought an influx of settlers and a need for military protection from Indian raids. Several forts were established in southern Arizona and troops were stationed in the San Bernardino Valley at Silver Creek, Guadalupe Canyon, and, briefly in 1878, at Camp Supply (Wells 1927).

Miners and cattlemen moved into the legally unclaimed Papagueria after the Civil War. As a rule, the mining towns established at ore-bearing localities like Vekol, Comobabi, and Quijotoa were typical western mining boomtowns. Lively, ramshackle, crowded, and above all ephemeral, "Quijotoa in 1884 was a town of ten thousand with the usual quota of blacksmith shops, stores, and saloons. Within a few years it was a ghost town" (Spicer 1962). Although the individual Papago occasionally found wage-work in such towns, most avoided the communities, preferring instead to live in their traditional villages tending gardens and raising cattle.

The Apaches continued to raid the San Pedro Valley until 1884 when Colonel George Crook forced them onto the San Carlos Reservation. However, peace was short-lived. In 1885, a large number of Apaches led by Geronimo fled the reservation, crisscrossing southeastern Arizona and southwestern New Mexico. However, in 1886 they surrendered to General Crook at Canon de los Embudos in the mountains 30 miles south of the San Bernardino Ranch headquarters.

The U.S.- Mexican Border once again became a focal point during the Mexican Revolution in 1910. For the first time in U.S. history, Nogales, Naco, and Douglas had American soldiers stationed along their borders. Approximately 100 men were assigned the task of patrolling the border between Douglas and the San Pedro River.

In 1916, airplanes were used to patrol the border between El Paso and Douglas, and Douglas became the site of the first operational military airfield. The border was quiet by 1921 and the airfield was abandoned in 1926. Then, in 1929, the Escobar rebellion again created the need for air patrol along the border. The Mexican Government enlisted U.S. aid. The U.S. provided two armed planes that flew dawn-to-dusk patrols. No incidents occurred until a careless insurgent pilot dropped two homemade bombs near Naco, Arizona, and a third on the town. The latter broke windows and injured several

bystanders. Seven days later an American pilot flying for the Escobaristas attempted to drop a bomb on the Federal trenches. His bomb, however, fell on the American side, inflicting no damage.

3.7.2 Past Investigations

Several cultural resources surveys have been conducted within the project area of the proposed traffic checkpoint along SR 83 and the proposed parking/storage facility expansion at the USBP Sonoita Station. The proposed traffic checkpoint along SR 83 was covered previously by a 100% cultural resources survey conducted by the Arizona Department of Transportation (ADOT). No archaeological sites were found within the proposed project area and no further work is considered necessary for the proposed checkpoint.

The area of the proposed parking/storage facility expansion for the USBP Sonoita Station has also been previously surveyed by ADOT. The survey was conducted in 1986 and was for a proposed rest room facility adjacent to SR 82. The survey resulted in the 100% coverage of the area and no archaeological sites being recorded. In addition, surveys were conducted on both SR 82 and SR 83 by ADOT in 1992 and 1996, respectively, which are immediately adjacent to the project area. Nether of these surveys resulted in the recording of sites within the immediate vicinity of the project area.

3.8 SOCIOECONOMICS

3.8.1 Population

The Region of Influence (ROI) for the proposed projects is Santa Cruz County. The 1999 population of Santa Cruz County was estimated to be 39,150 which ranked twelfth in the state of Arizona (U.S. Bureau of the Census 1998). This is an increase of 32 percent over the revised 1990 census population of 29,676. The racial mix of Santa Cruz County is mainly comprised of Caucasians (98 percent) with the remaining two percent split among Asian and Pacific Islanders, African-Americans, Native Americans and other races. The majority of the total population claim to be of Hispanic origin (82 percent). This has not changed significantly from the 1990 racial mix mainly comprised

of Caucasians (99 percent) with the remaining one percent split among Asian and Pacific Islanders, African-Americans, Native Americans, and other races (U.S. Bureau of the Census 1998). The majority of the total 1990 population claimed to be of Hispanic origin (78 percent).

3.8.2 Employment, Poverty Levels, and Income

The total number of jobs in the study area in 1997 was 15,167, an increase of 35 percent over the 1987 number of jobs of 11,268 (Regional Economic Information System 2000). The services industry provided the most jobs, followed by the retail trade industry and the government sector. The January 1997 seasonally adjusted unemployment rate for Santa Cruz County was 18.2 percent. This is higher than the January unemployment rate for the state of Arizona of 5.4 percent (Arizona Department of Economic Security 2000).

The 1997 annual total personal income (TPI) for the ROI was $532,369 (in thousands of dollars). This TPI ranked twelfth in the state of Arizona and accounted for 0.5 percent of the state total (Regional Economic Information System 2000). This was a 96 percent increase over the 1987 TPI of $270,934. Over the past ten years, the average annual growth rate of TPI was seven percent. This is lower than the annual growth rate for the state of 7.1 percent and only higher than that for the nation of 5.8 percent. Per capita personal income (PCPI) for Santa Cruz County was $14,312 in 1997. This PCPI ranked twelfth in the state, and was 65 percent of the state average, $21,998, and 57 percent of the national average, $25,288. This represents a 139 percent increase over the 1987 PCPI of $10,572. The average annual growth rate of PCPI over the past 10 years was 3.1 percent, which is lower than the state's growth rate of 4.2 percent and the national growth rate of 4.7 percent. The estimated number of people of all ages in poverty for Santa Cruz County was 9,935. This represented 26.7 percent of the County, which is higher than the estimated 16.3 percent of the state population that lives in poverty.

3.8.2 Housing

The total number of housing units in the ROI was 9,595 in 1990 (U.S. Bureau of the Census 1991). This represents two percent of the total housing units reported for the state of Arizona. Of the housing units within Santa Cruz County, 8,808 (92 percent) are occupied and the remaining 787 (eight percent) are vacant. Approximately 66 percent (58,17) of the occupied housing units are owner occupied, while 34 percent (2,991) are renter occupied (U.S. Bureau of the Census 1991). The number of households within Santa Cruz County grew from 8,808 in 1990 to an estimated 11,485 in 1998. This represents an annual growth rate of 3.4 percent for the County (Arizona Housing Commission 1999). This is the same as the annual growth rate of 3.4 percent for the state of Arizona. The number of new private housing units by authorized building permits in 1997 was 415 which is a 71 percent increase over the 1990 number of new private housing units of 243 (U.S. Bureau of the Census 1998).

SECTION 4.0
ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 LAND USE

4.1.1 Proposed Action

Land use in the project region would not be affected by the proposed action. The proposed parking/storage facility expansion is located on land already owned by the USBP and is currently in use as an unpaved and unsecured parking/storage facility. The proposed traffic checkpoint on SR 83 at milepost 40.8 will occur within existing ADOT ROWs.

4.1.2 Alternative 1. No Action

Implementation of the No Action Alternative would have no effect upon the region's current land use.

4.2 SOILS

4.2.1 Proposed Action

Implementation of the Proposed Action would require approximately 2.2 acres of soils to be covered at the site of the proposed parking/storage facility expansion. However, paving will occur on areas currently used for parking and storage, so the soils have been previously disturbed. The Proposed Action will also require approximately 0.4 acres to be graded at the site of the proposed traffic checkpoint. However, construction will occur within the existing ROW, so these soils have also been previously disturbed. Thus, soils would not be significantly impacted under the Proposed Action alternative.

4.2.2 Alternative 1. No Action

Soils will remain in the existing condition under the No Action Alternative. These conditions exhibit characteristics that are consistent with erosion due to traffic, water, and wind. There would be no benefit to soils under the No Action alternative.

4.3 BIOLOGICAL RESOURCES

4.3.1 Vegetation

4.3.1.1 Proposed Action

Expansion of the parking/storage facility expansion will remove minimal vegetation due to paving of 2.2 acres. However, because this area has already been extensively used for parking and storage, there is little native vegetation in the area proposed to be paved (see photographs 1 and 2 in Appendix B). The vegetation located in the wetland area to the west of the proposed paving area will not be disturbed by the proposed expansion. In addition, this area will be further protected from future disturbance due to the fence that will be added around the area.

The development of a new temporary traffic checkpoint will impact approximately 0.4 acres of vegetation due to grading and increased foot and vehicle traffic. However, this vegetation consists primarily of disturbed grassland species because it located in the existing ROW. In addition, no trees located in the area will be removed.

4.3.1.2 Alternative 1. No Action

Implementation of the No Action Alternative would have no effect upon the area's vegetation. Any vegetation located on the unpaved parking/storage facility will continue to be disturbed by heavy foot and vehicle traffic and the wetland area to the west will continue to be in an unsecured area.

4.3.2 Wildlife

4.3.2.1 Proposed Action

Impacts to wildlife will be negligible due to the small nature of the proposed projects. Only 2.2 acres of previously disturbed habitat will be paved at the USBP Sonoita Station. Since this area has been extensively used as an unpaved and unsecured parking/storage, it is unsuitable habitat for wildlife. Less than 0.4 acres of potential habitat will be lost due to grading at the proposed traffic checkpoint. Since this area is located within the existing ROW, this area is also unsuitable habitat for wildlife. The

area surrounding the proposed checkpoint location is a vast expanse of valleys and desert grasslands. Therefore, wildlife in this area will not be significantly impacted because the amount of habitat actually lost is minimal. In addition, traffic will be forced to decrease speed through the traffic checkpoint, which may decrease the amount of roadkill occurring on SR 83.

The only potential habitat for wildlife is the small wetland area to the west of the proposed parking area. Wildlife that currently inhabits this area may be temporarily affected by the addition of lighting to the paved area; however, this effect should be minimal and temporary. The lights will be located approximately 300 feet away from the wetland area and light should be attenuated greatly at this location. The adverse and/or potential beneficial affects of lighting on reptiles and amphibians is currently unknown; however, continual exposure to light has been proven to slightly alter circadian rhythms in mammals and birds. Under constant light, the amount of time an animal is active increases in diurnal animals, but decreases in nocturnal animals (Carpenter and Grossberg 1984). The alteration of circadian rhythms by high intensity lighting is minimal, accounting for a maximum of two to three hours of increase or decrease in activity per day (Luce 1977). It has also been shown that habituation occurs after several weeks of constant light: mammals and birds will stabilize and reset their circadian rhythms back to the original schedules (Carpenter and Grossberg 1984). The long-term effect of an increased photoperiod on mobile wildlife species is expected to be insignificant.

4.3.2.2 Alternative 1. No Action

No direct impacts, beneficial or adverse, would occur to wildlife populations as a result of the No Action Alternative.

4.3.3 Fish

No surface waters would be filled or dredged under the Proposed Action; therefore, no fish or other aquatic assemblages would be impacted by any of the alternatives.

4.3.4 Threatened or Endangered Species

4.3.4.1 Proposed Action

There will be no impact to protected species by the Proposed Action at either location due to the lack of suitable habitat for these species. The Pima pineapple cactus and Northern aplomado falcon are found in desert grassland areas; therefore, there is a potential for them to occur near the proposed traffic checkpoint. However, because this area is located within the existing ROW, this area is unsuitable habitat for these species. The area surrounding the proposed traffic checkpoint is suitable habitat for these species. The construction activity will not impact these species.

No state-listed species were observed during the field surveys. As mentioned previously, the area of impact is small and is surrounded by suitable habitat; therefore, there should be little loss of habitat and no loss of state protected species as a result of the Proposed Action.

4.3.4.2 Alternative 1. No Action

The No Action Alternative would produce no direct adverse impact on Federal or state listed species.

4.3.5 Unique and Environmentally Sensitive Areas

4.3.5.1 Proposed Action

Although there are five unique and environmentally sensitive areas located in the vicinity of the project area, the proposed parking/storage facility and the proposed traffic checkpoint are not located within these sensitive areas. Therefore, there will be no impact to these areas under the Proposed Action.

4.3.5.2 Alternative 1. No Action

The No Action Alternative would result in no change to the unique and environmentally sensitive areas in the study area.

4.4 AIR QUALITY

4.4.1 Proposed Action

Santa Cruz County is located within EPA's Region 9 and is currently in nonattainment for particulates (PM_{10}) (USEPA 2000a). Construction activities would be limited to paving of the 2.2 acre lot near the Sonoita USBP Station and grading of the area near milepost 40.8 on SR 83. Traffic idling at the traffic checkpoint may increase air pollutants in the area; however, because traffic idling would be relocated from the checkpoint on SR 82, this would not increase overall air pollutants in Santa Cruz County. Therefore, air quality in Santa Cruz County would not be impacted. Furthermore, the short duration of these activities, the type of equipment used, and the good dispersion patterns of the region, indicate that air emissions would not be created that would adversely affect air quality in Santa Cruz County.

4.6.2 Alternative 1. No Action

Implementation of the No Action Alternative would result in no change to the air quality in Santa Cruz County.

4.5 WATER RESOURCES

4.5.1 Proposed Action

The proposed parking/storage facility expansion would have negligible effects on either the water quality or supply in that region. The paving of the parking area may have indirect effects on the wetland area located to the west during the rainy season, including potential for sedimentation from obstructed water flow or increases in turbidity.

The proposed traffic checkpoint on SR 83 at milepost 40.8 will have no effect on either water quality or supply in that region. Results of a hydrology report conducted for this project determined that runoff from the site will be conveyed within existing channels and that existing drainage patterns will not be changed (see Appendix C for report). Runoff

will be conveyed through three 24-inch diameter, 60-ft long culverts placed within the existing ditch.

4.5.2 Alternative 1. No Action

The No Action Alternative would have no direct impact on either the water quality or supply in the project area.

4.5.3 Waters of the U.S. and Wetlands

None of the alternatives would impact jurisdictional wetlands or Waters of the U.S. No activities will occur within the wetland area located to the west of the proposed parking/storage facility expansion. Therefore, a Section 404 permit application is not necessary for this project.

4.6 NOISE

4.6.1 Proposed Action

Implementation of the Proposed Action Alternative would result in temporary increases in ambient noise levels due to construction activities, primarily paving at the USBP Sonoita Station and grading at the traffic checkpoint on SR 83. These effects are temporary in nature and will not effect long-term ambient noise levels in the area. Ambient noise levels will decrease at the current traffic checkpoint on SR 82 and will increase at the proposed traffic checkpoint on SR 83. However, this effect is not an increase in the overall ambient noise level, but rather a relocation of the noise level in the area.

4.6.2 Alternative 1. No Action

Implementation of the No Action Alternative would result in no increase in ambient noise levels.

4.7 CULTURAL RESOURCES

4.7.2 Proposed Action

No cultural resources were located at any of the project sites during previous field surveys. Therefore, no impacts to historic or pre-historic properties are expected as a result of the Proposed Action.

4.7.3 Alternative 1. No Action

No direct impacts to cultural resources would occur upon implementation of the No Action Alternative.

4.8 SOCIOECONOMICS

4.8.2 Proposed Action

The proposed construction activities would result in short term direct economic benefits to the local businesses involved. Long term population levels would not be affected by the Proposed Action. There would be no impacts on housing by the Proposed Action. No housing units would be eliminated because none exist on the proposed project areas.

Although construction impacts are temporary in nature, the effects associated with implementation of the Proposed Action is expected to benefit overall socioeconomics in the region from increased detection, deterrence, and interdiction of UDAs and illegal drug smuggling activities. The benefits include reduction of enforcement costs, losses to personal properties, violent crimes, and entitlement programs. These actions can also have direct positive benefits from increased economic activity.

4.8.3 Alternative 1. No Action

Implementation of the No Action Alternative would have no impact on the housing and income in the region. However, USBP would be forced to continue to utilize an

unsecured parking/storage facility that is currently too small, which increases the potential for vandalism and theft in that region. USBP will continue to operate the current traffic checkpoint on SR 82, which allows smugglers and immigrants several routes of egress towards the north. USBP enforcement efforts will be hindered resulting in an increase in illegal entrants and the amount of drug smuggling. The negative impacts of widespread drug use on society continue to affect the work force, educational system, and general law and order (Office of National Drug Control Policy, 1998 and 1999).

4.8.4 Environmental Justice

Executive Order 12898 of February 11, 1994, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires each Federal agency to identify and address, as appropriate, disproportionate adverse effects of its proposed actions on minority populations and low-income communities. No residences or commercial structures will be displaced as a result of the Proposed Action; therefore, implementation of this alternative would not disproportionately affect minority or low-income populations in the area.

4.9 CUMULATIVE IMPACTS

Cumulative impacts are impacts on the environment resulting from incremental impacts of the proposed action added to other past, present, and reasonably foreseeable future actions. Cumulative impacts associated with the proposed action are discussed in the following paragraphs.

In order to evaluate cumulative effects of the past and present projects in the region, EAs from previous and current operations in the region, a Programmatic Environmental Impact Statement (USACE 1994), and a Revised Supplemental Draft Programmatic Environmental Impact Statement (USACE 2000) developed for all Joint Task Force Six (JTF-6) activities in support of INS/USBP activities along the U.S.-Mexico border were reviewed.

The primary cumulative effect of the past and proposed projects is permanent loss of vegetation and associated wildlife habitat. Throughout the entire U.S.-Mexico Border (California to Texas), a total of 3,750 acres of vegetation, mostly semidesert grassland and desert scrub communities, has been removed by JTF-6 road, range, fence, and helipad repair and construction activities (USACE 2000). This represents less than 0.01 percent of the total land area within the area along the entire U.S.-Mexico border. Air emissions have been produced by vehicles, aircraft, and heavy equipment; however, these have not resulted in significant cumulative impacts due to the short duration of the activities, the dispersion capabilities of the region, and the remote locations of most of the operations.

Since 1994, INS and JTF-6 activities were expected to impact approximately 2,054 acres primarily due to construction of road and fence projects (USACE 2000). These effects combined with the area anticipated to be disturbed over the next five years and the amount altered previous to 1994, would amount to approximately 10,700 acres during the period 1989 to 2004. Most of the past and potential future effects have occurred in Texas, as would be expected since it is the largest state within the study area. If the proposed construction activities discussed in this EA occur, another 2.6 acres of disturbed grassland area would be altered.

According to the USACE (2000) Revised Supplemental Draft Programmatic Environmental Impact Statement, the total amount of wetlands and Waters of the U.S. that have been impacted by INS/JTF-6 since 1994 has been less than five acres. Impacts to these valuable habitats have been avoided, wherever practicable, resulting in the low acreage figure. Each project that can not avoid wetland effects, however, is coordinated through the Section 404 permit process with the appropriate regulatory agencies. The proposed project discussed in this EA will not impact any wetland area or Waters of the U.S.

Many positive cumulative impacts have occurred throughout the border region and the nation through reductions in illegal drug smuggling activities. In addition, by strengthening the ability of agents to perform their law enforcement duties, these actions can have cumulative positive socioeconomic impacts through reductions in illegal immigration, though the levels of these benefits are, at this point, unquantifiable.

INS is not aware of any other public projects planned for the project area that would cause additional cumulative impacts on the environment. However, INS/USBP is currently considering additional infrastructure construction in the Sonoita AO. These activities include placement of remote sensors, placement of remote video cameras, and maintenance of patrol roads and drag roads. Location and aerial extent of these proposed activities have not been determined and will require further NEPA documentation.

SECTION 5.0
ENVIRONMENTAL DESIGN MEASURES

5.0 ENVIRONMENTAL DESIGN MEASURES

This chapter describes environmental design measures that would be implemented as part of the proposed action to expand the parking/storage facility near the USBP Sonoita Station and the construction of a new traffic checkpoint at milepost 40.8 on SR 83. Due to the limited nature of this project, impacts are expected to be slight. Therefore, mitigation measures are only described for those resources with potential for impacts.

5.1 BIOLOGICAL RESOURCES

Impacts to existing vegetation during construction activities would be minimized through avoidance. Existing roads would be utilized and the only vegetation to be cleared would be associated with grading at the proposed traffic checkpoint. Existing trees, such as honey mesquite trees, will not be removed from this site.

The impact to wildlife and protected species will be minimal due to the small amount of actual habitat loss, as well as to the existing disturbance to each site. The Migratory Bird Treaty Act (MBTA) requires that private contractors obtain a construction permit if the construction activity is scheduled during nesting seasons (March through August). Surveys would have to be performed to identify active nests, which would have to be avoided. However, since the proposed construction activities will not occur on suitable habitat for nesting birds and is expected to occur outside of the nesting seasons, this permit will not be required. Although the effect of lighting on wildlife is expected to be minimal, lights should be turned so that the wetland area near the proposed parking/storage area receives the least amount of light as possible.

5.2 AIR QUALITY

Proper and routine maintenance of all vehicles and other equipment used during and after construction would be implemented to ensure that air emissions are within the design standards of the piece of equipment. As a result of Santa Cruz County being in non-attainment for PM_{10}, construction activities would be coordinated with the appropriate environmental agency(s) to ensure that the emissions would conform with regulations specified in the Clean Air Act. Project related PM_{10} emissions would be

minimized by the implementation of Best Management Practices (BMPs) in the form of a truck watering program for the project area dirt surfaces, construction curtailed in winds exceeding 25 mph, efficient utilization of equipment to minimize the amount of time engines are left idling, and upkeep of construction equipment to ensure that all engines are properly tuned. Any necessary air quality operating permits are the responsibility of the contractor.

5.3 WATER RESOURCES

Since construction at either site is less than five acres, a Stormwater Pollution Prevention Plan (SWPPP) as part of the National Pollution Discharge Elimination System (NPDES) permit process is not required. The wetland area to the west of the proposed parking/storage facility would be flagged prior to construction to ensure avoidance by maintenance equipment to eliminate potential impacts to this sensitive area. In addition, silt fences and hay bales should be placed around the wetland area to retard sedimentation of the wetland area. The wetland area will not be disturbed during construction. Therefore, a Section 404 permit will also not be required. The use of culverts in the drainage ditch at the proposed traffic checkpoint on SR 83 will avoid effects to water quality in the region.

Conservation measures would be implemented to preclude unnecessary waste of water supplies. Discharge of gray water and other wastes to drainages or other water bodies is prohibited. Portable latrines, provided and maintained by licensed contractors, would be used to the extent practicable during construction and operational support activities.

5.4 CULTURAL RESOURCES

Since the area has been previously surveyed and no archaeological sites have been found no further cultural resources work is deemed necessary for the area. If any cultural remains are uncovered during construction, activities should stop and ADOT and the Arizona State Historic Preservation Office (SHPO) should be notified immediately.

SECTION 6.0
PUBLIC INVOLVEMENT

6.0 PUBLIC INVOLVEMENT

6.1 AGENCY COORDINATION

This chapter discusses consultation and coordination that will occur during preparation of the draft and final versions of this document. This will include contacts that are made during the development of the proposed action and writing of the EA. Formal and informal coordination will be conducted with the following agencies:

- U.S. Fish and Wildlife Service (USFWS)
- U.S. Forest Service (USFS)
- Bureau of Land Management (BLM)
- U.S. Environmental Protection Agency (USEPA)
- Natural Resource Conservation Service (NRCS)
- Arizona State Historic Preservation Office (SHPO)
- Arizona Department of Transportation (ADOT)
- Arizona Game and Fish Department (AGFD)
- Arizona Department of Agriculture
- City of Sonoita

6.2 PUBLIC REVIEW

The draft EA will be made available for public review, and the Notice of Availability (NOA) will be published in local newspapers. Exhibit 1 is a copy of the NOA that will be published. Comments received concerning the draft will be addressed, and where appropriate, changes will be incorporated into the final EA.

Exhibit 1

NOTICE OF AVAILABILITY

DRAFT ENVIRONMENTAL ASSESSMENT
IMMIGRATION AND NATURALIZATION SERVICE
EXPANSION OF PARKING/STORAGE FACILITIES
AND NEW CHECKPOINT STATION AT
SONOITA, ARIZONA

The public is invited to comment on the Draft Environmental Assessment (EA) for the Immigration and Naturalization Service and U.S. Border Patrol construction of a new temporary traffic checkpoint station at the Palo Parado Interchange near Nogales, Arizona. The Draft EA will be available at the following libraries: Tucson Public Library - Main Library, 101 N. Stone Ave., Tucson, Arizona, 85701 (520) 791-4391 and the Nogales/Santa Cruz County Public Library, 518 N. Grand Ave, Nogales, AZ 85621-2711 (520) 287-3343. Send written comments to Eric Verwers, INS A/E Resource Center, 819 Taylor Street, Room 3A28, Fort Worth, Texas 76012-0300 (817) 978-0202. . Comments will be received until November 27, 2000.

SECTION 7.0
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7.0 REFERENCES

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SECTION 8.0
LIST OF ACRONYMS/ABBREVIATIONS

8.0 LIST OF ACRONYMS/ABBREVIATIONS

ADEQ	Arizona Department of Environmental Quality
ADFG	Arizona Department of Fish and Game
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AERC	Architect-Engineer Resource Center
AMA	Active Management Area
AO	Area of Operations
AZ	Arizona
BLM	Bureau of Land Management
BMP	Best Management Practice
CFR	Code of Federal Regulations
CWA	Clean Water Act
CO	Carbon monoxide
dB	decibel
DNL	Day-night average sound level
EA	Environmental Assessment
E.O.	Executive Order
ESA	Endangered Species Act
FICON	Federal Interagency Committee on Noise
FY	Fiscal Year
GIS	Geographic Information System
GSRC	Gulf South Research Corporation
INA	Immigration and Nationality Act
INS	Immigration and Naturalization Service
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
JTF-6	Joint Task Force Six
$\mu g/m^3$	Micrograms per cubic meter
mg/m^3	Milligrams per cubic meter
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NASQAN	National Stream Quality Accounting Network
NEPA	National Environmental Policy Act of 1969
NIWWTP	Nogales International Wastewater Treatment Plan
NOA	Notice of Availability
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service (formerly Soil Conservation Service)
NWP	Nationwide Permit
O_3	Ozone
OHWM	ordinary high water mark
PM_{10}	Particulate matter
PCPI	Per Capita Personal Income
Pb	Lead
POE	Port of Entry
ppm	Parts per million
RCA	Resource Conservation Area
ROI	Region of Influence
ROW	Right-of-way
$S0_2$	Sulfur dioxide

SHPO	State Historic Preservation Office
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
TNC	The Nature Conservancy
TPI	Total Personal Income
UDA	Undocumented Aliens
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
USC	United States Code
USDOI	U.S. Department of the Interior
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WC	Wildlife of Special Concern

SECTION 9.0
LIST OF PREPARERS

9.0 LIST OF PREPARERS

The following people were primarily responsible for preparing this Environmental Assessment.

NAME	AGENCY/ORGANIZATION	DISCIPLINE/EXPERTISE	EXPERIENCE	ROLE IN PREPARING EA
Eric Verwers	INS A-E Resource Center	Biology	14 years in NEPA and related studies	Program Manager and EA review and coordination
Sheyna Wisdom	Gulf South Research Corporation	Biology	4 years Natural Resources and NEPA studies	Project Manager
Chris Ingram	Gulf South Research Corporation	Biology/Ecology	22 years NEPA and related studies	EA Review; field surveys
Jerry Bolton	Gulf South Research Corporation	Biology/Ecology	14 years NEPA and related studies	EA Review
Steve Smith	Gulf South Research Corporation	Biology/Ecology	6 years NEPA and T&E surveys	EA Review; field surveys
John Lindemuth	Gulf South Research Corporation	Archaeology/Project Archaeologist	8 years archaeological studies	Cultural resources and socioeconomics
Sharon Newman	Gulf South Research Corporation	GIS/Graphics	7 years GIS analysis	Graphics and GIS

APPENDIX A
CORRESPONDENCE

U.S. Department of Justice
Immigration and Naturalization Service
Architect-Engineer Resource Center

Attention: CESWF-PM-INS
819 Taylor Street, Room 3A28
P.O. Box 17300
Fort Worth, TX 76102-0300

October 17, 2000

Arizona Game and Fish Department
ATTN: John Hervert
9140 E. County 10½ Street
Yuma, Arizona 85365

Dear Mr. Hervert,

The Immigration and Naturalization Service (INS) intends to prepare two Environmental Assessments (EA) addressing U.S. Border Patrol (USBP) activities in the Sonoita Area of Operations (AO) Nogales AO within the USBP Tucson Sector. The first EA will address the potential effects of a proposed expansion of parking and storage facilities near the Sonoita U.S. Border Patrol (USBP) Station, Sonoita, AZ, and the construction of new traffic checkpoint along State Route (SR) 83 at milepost 40.8, approximately eight miles north of Sonoita, AZ. The second EA will address the potential effects of a proposed construction of a new temporary checkpoint station (Palo Parado) at milepost 15.6 on Interstate 19 (I-19), approximately seven miles north of Nogales, AZ. Refer to the enclosed maps for the locations of each proposed project.

We are currently in the process of gathering the most current information available regarding Federally and state listed species potentially occurring within the Sonoita and Nogales AOs. Activities are concentrated in Santa Cruz County. A current list of federally threatened or endangered species that potentially occur in these counties is included as attachment A. Please review this list for accuracy and completeness. The INS AERC respectfully requests that your agency provide a list and/or description of the sensitive resources (e.g., protected species, state wildlife management areas, state parks, etc.) that you believe may be affected by the USBP activities in this area. We intend to provide your agency with a copy of the Draft EAs once they are completed. Please inform us if additional copies are needed and/or if someone else within your agency other than you should receive the Draft EAs.

Your prompt attention to this request would be greatly appreciated. If you have any questions, please call me at (817) 978-0202.

Sincerely,

Eric Verwers, Assistant Director
Immigration and Naturalization Service
A/E Resource Center

Enclosure

Threatened and Endangered Species
Listing by County
near USBP Sonoita AO

Common Name	Scientific Name	Listing Status	County
Beautiful shiner	*Cyprinella formosa*	Threatened	Cochise
Canelo Hills ladies'tresses	*Spiranthes delitescens*	Endangered	Cochise, Santa Cruz
Cochise pincushion cactus	*Coryphantha robbinsorum*	Threatened	Cochise
Desert pupfish	*Cyprinodon macularius*	Endangered	Santa Cruz, Pima
Gila topminnow	*Poeciliopsis occidentalis occidentales*	Endangered	Cochise, Santa Cruz, Pima
Huachuca water umbel	*Lilaeopsis schaffneriana recurva*	Endangered	Cochise, Santa Cruz, Pima
Jaguar	*Panthera onca*	Endangered	Cochise, Santa Cruz, Pima
Jaguarundi	*Felis yagouaroundi cacomitli*	Endangered	Cochise, Santa Cruz, Pima
Kearney's blue star	*Amsonia kearneyana*	Endangered	Pima
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	Endangered	Cochise, Santa Cruz, Pima
Masked bobwhite	*Colinus virginianus ridgwayi*	Endangered	Pima
Mexican spotted owl	*Strix occidentalis lucida*	Threatened	Cochise, Santa Cruz, Pima
New Mexico ridge-nosed rattlesnake	*Crotalus willardi obscurus*	Threatened	Cochise
Nichol's Turk's head cactus	*Echinocactus horizonthalonius nicholii*	Endangered	Pima
Northern aplomado falcon	*Falco femoralis septentrionalis*	Endangered	Cochise, Santa Cruz
Ocelot	*Felis pardalis*	Endangered	Cochise, Santa Cruz, Pima
Pima pineapple cactus	*Coyphantha scheeri robustispina*	Endangered	Santa Cruz, Pima
San Xavier talussnail	*Sonorella eremita*	Species of Concern	Pima
Sonora tiger salamander	*Ambystoma tigrinum stebbinsi*	Endangered	Cochise, Santa Cruz
Sonoran pronghorn	*Antilocapra americana sonoriensis*	Endangered	Pima
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Cochise, Santa Cruz, Pima
Yaqui catfish	*Ictalurus pricei*	Threatened	Cochise
Yaqui chub	*Gila purpurea*	Endangered	Cochise

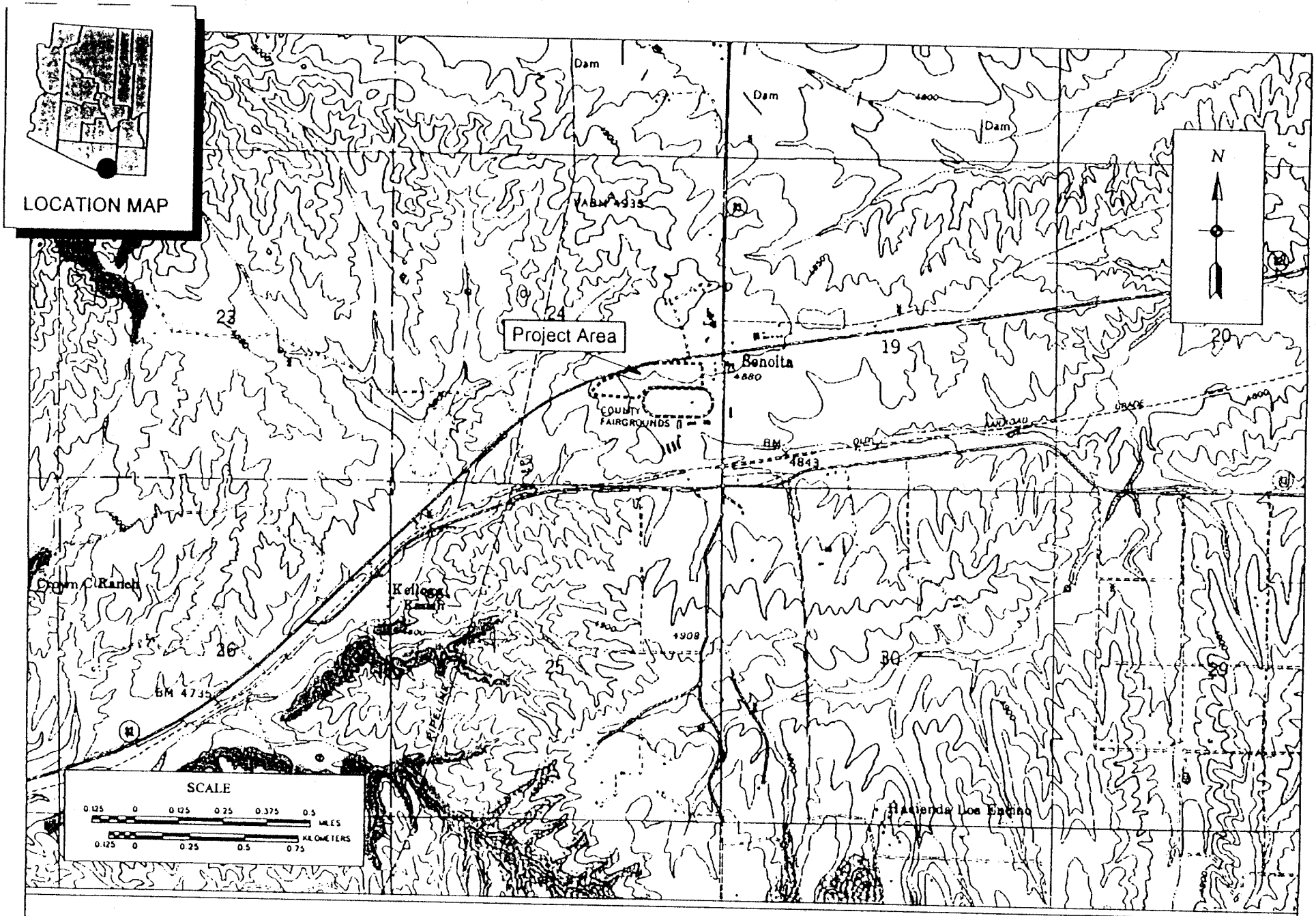

Figure 2: Portion of Soniota, Arizona (1983 photorevised) 7.5' Quadrangle
Showing the Location Proposed Parking/Storage Expansion

gsrc / GULF SOUTH RESEARCH CORPORATION

SCALE: 1:24,000

DATE: October 2000

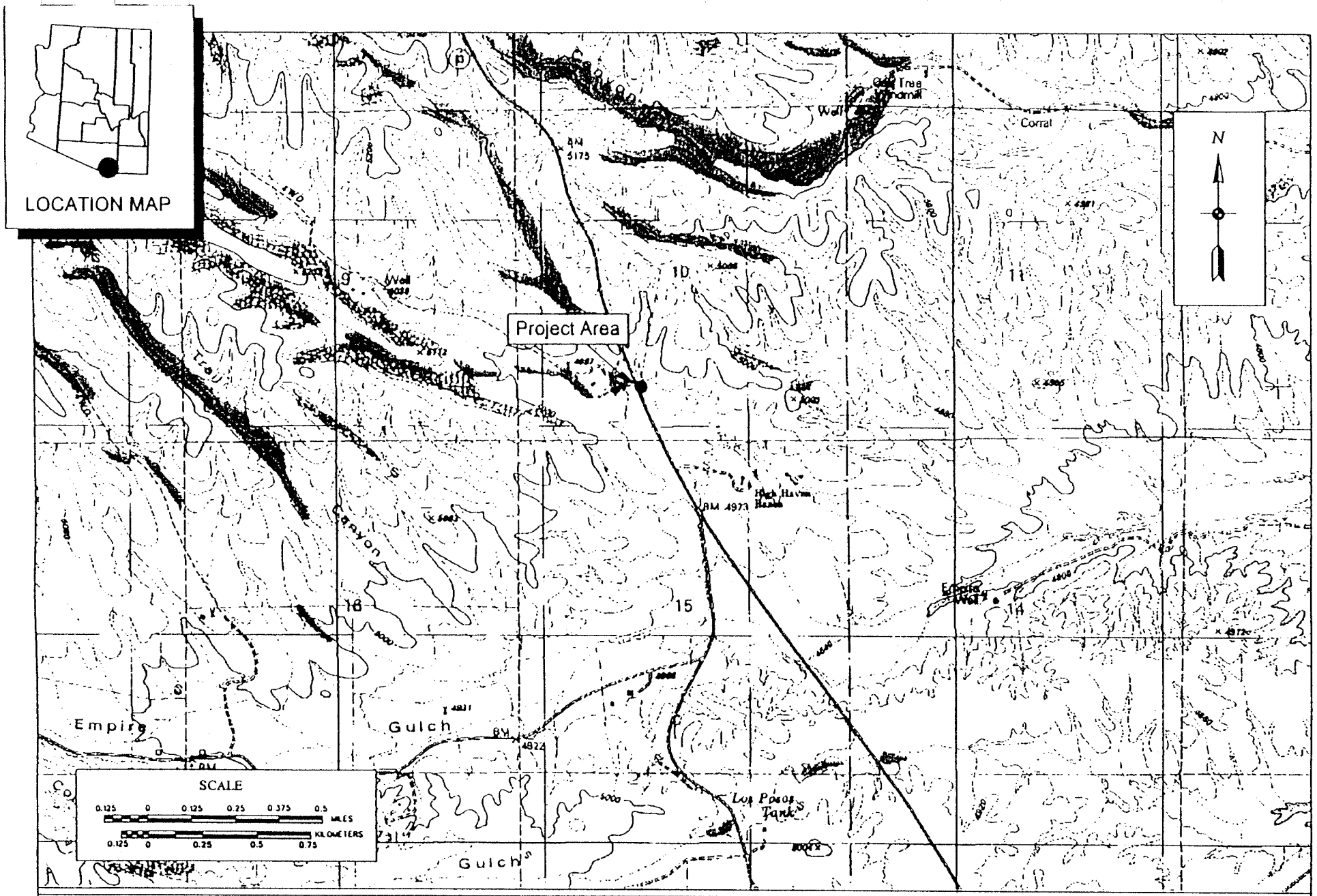

Figure 3: Portion of Empire Ranch, Arizona (1981) 7.5' quadrangle showing the location proposed traffic checkpoint

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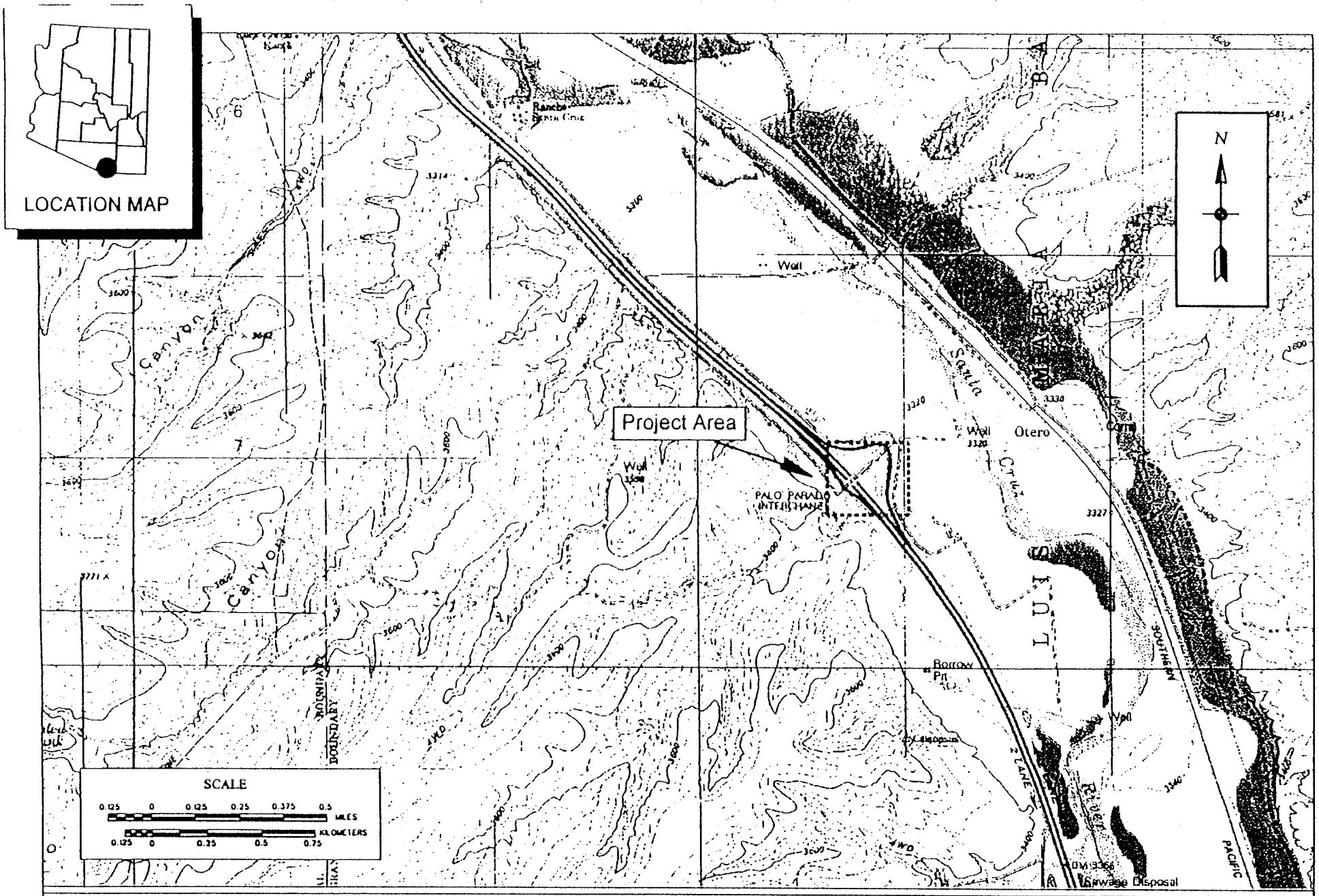

Figure 2: Portion of Tubac, Arizona (1981) 7.5' quadrangle showing the location proposed traffic checkpoint

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U.S. Department of Justice
Immigration and Naturalization Service
Architect-Engineer Resource Center

Attention: CESWF-PM-INS
819 Taylor Street, Room 3A28
P.O. Box 17300
Fort Worth, TX 76102-0300

October 17, 2000

U.S. Department of Agriculture
Tucson Office
Plant Services Division
400 W. Congress, Suite 124
Tucson, AZ 85710

To Whom It May Concern:

Immigration and Naturalization Service (INS) intends to prepare two Environmental Assessments (EA) addressing U.S. Border Patrol (USBP) activities in the Sonoita Area of Operations (AO) Nogales AO within the USBP Tucson Sector. The first EA will address the potential effects of a proposed expansion of parking and storage facilities near the Sonoita U.S. Border Patrol (USBP) Station, Sonoita, AZ, and the construction of new traffic checkpoint along State Route (SR) 83 at milepost 40.8, approximately eight miles north of Sonoita, AZ. The second EA will address the potential effects of a proposed construction of a new temporary checkpoint station (Palo Parado) at milepost 15.6 on Interstate 19 (I-19), approximately seven miles north of Nogales, AZ. Refer to the enclosed maps for the locations of each proposed project.

The INS AERC respectfully requests that your agency provide a list and/or description of the native plants that you believe may be affected by the USBP activities in this area. We intend to provide your agency with copies of the Draft EAs once they are completed. Please inform us if additional copies are needed and/or if someone else within your agency other than you should receive the Draft EAs.

Your prompt attention to this request would be greatly appreciated. If you have any questions, please call me at (817) 978-0202.

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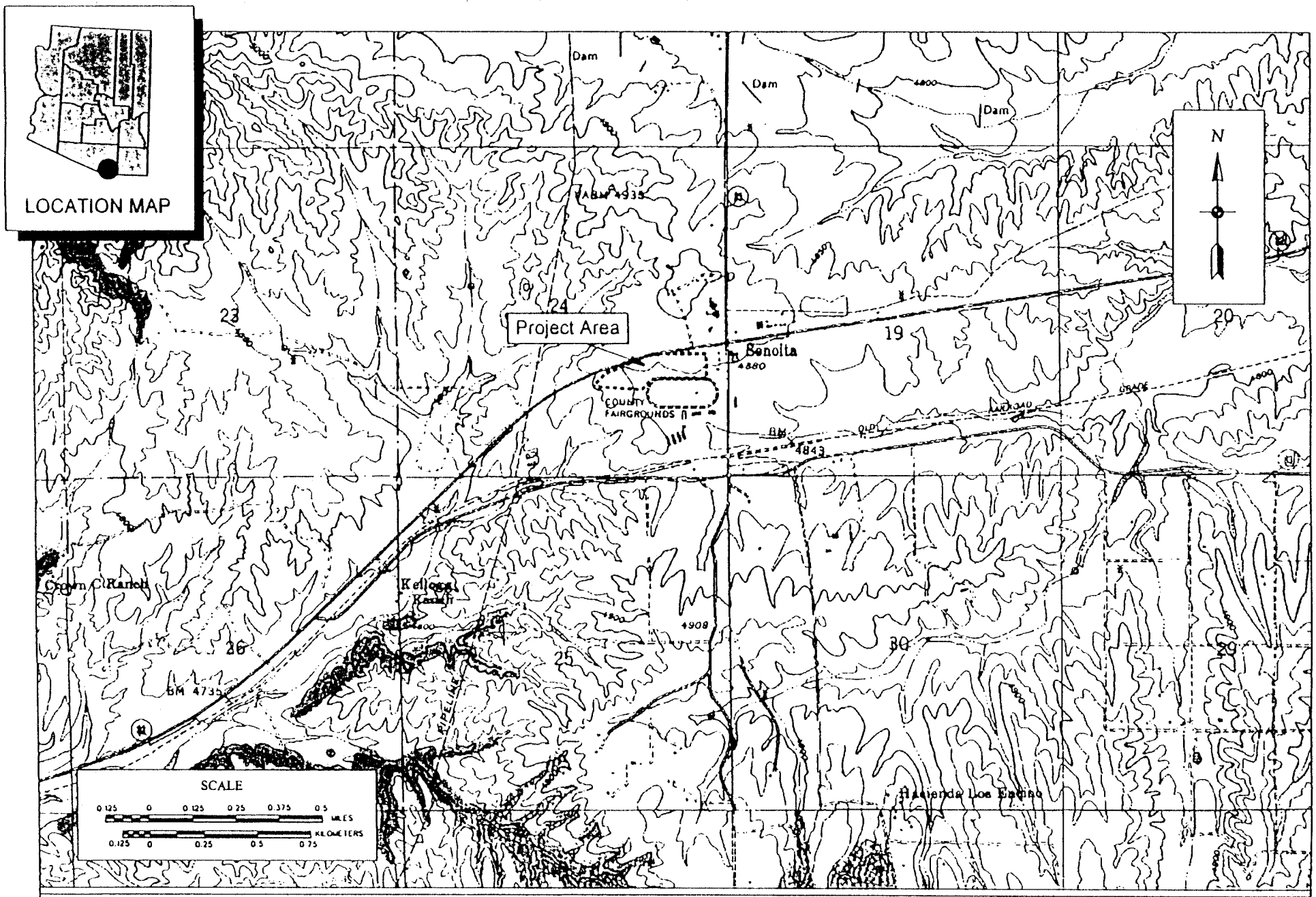
Immigration and Naturalization Service
A/E Resource Center



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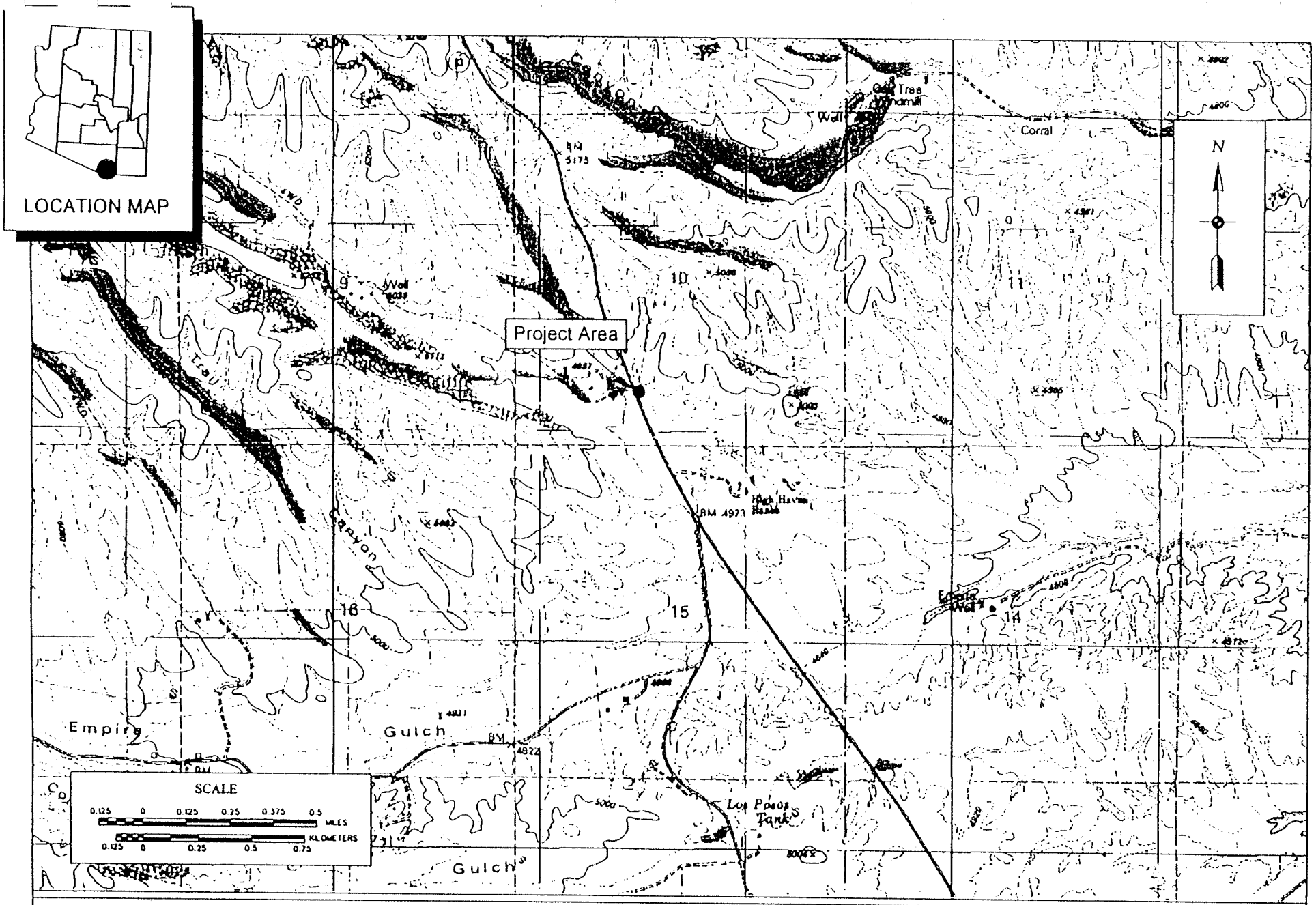

Figure 3: Portion of Empire Ranch, Arizona (1981) 7.5' quadrangle showing the location proposed traffic checkpoint

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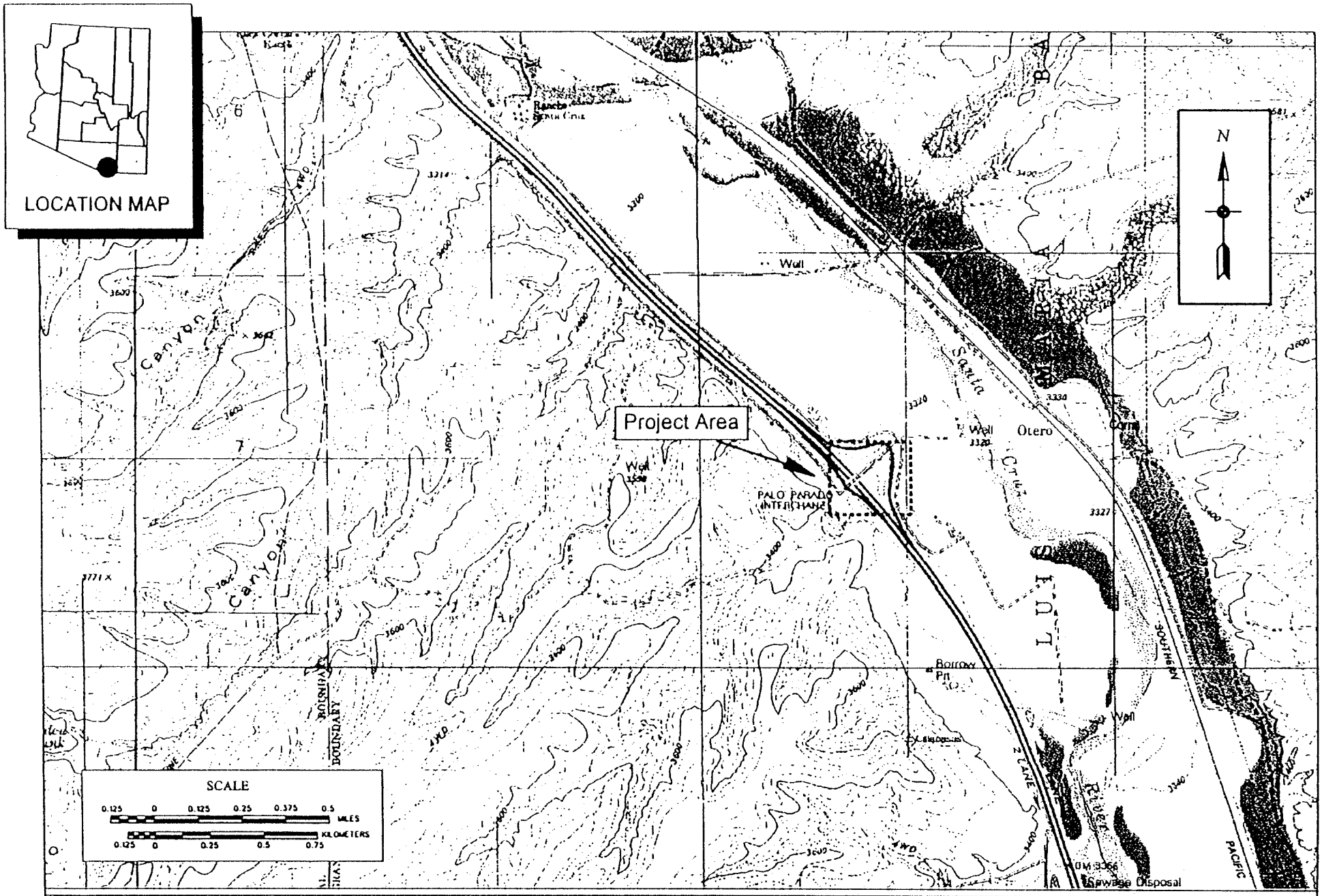

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U.S. Department of Justice
Immigration and Naturalization Service
Architect-Engineer Resource Center

Attention: CESWF-PM-INS
819 Taylor Street, Room 3A28
P.O. Box 17300
Fort Worth, TX 76102-0300

October 17, 2000

U.S. Fish and Wildlife Service
ATTN: Dave Harlow
2321 W. Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951

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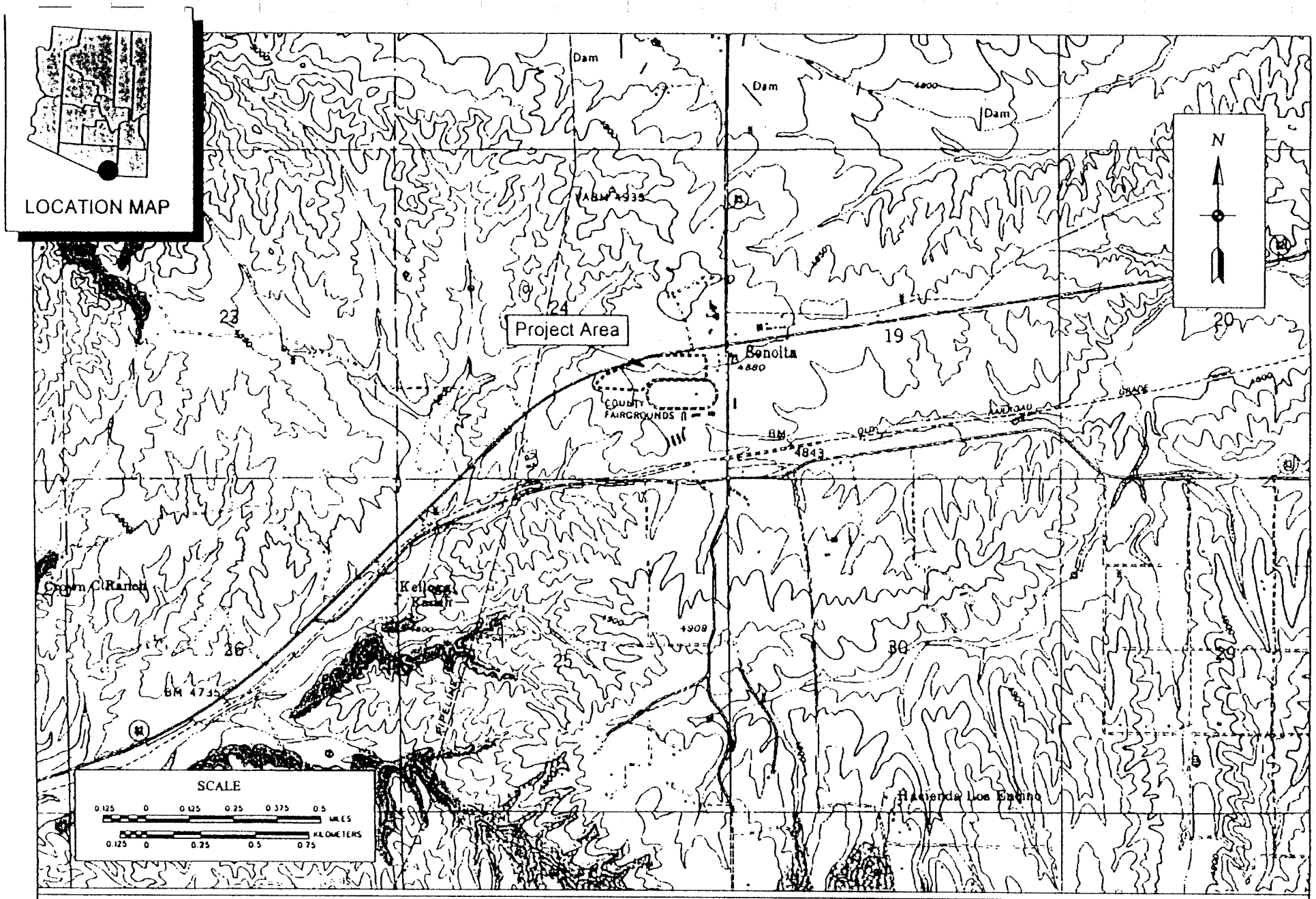

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SCALE: 1:24,000

DATE: October 2000

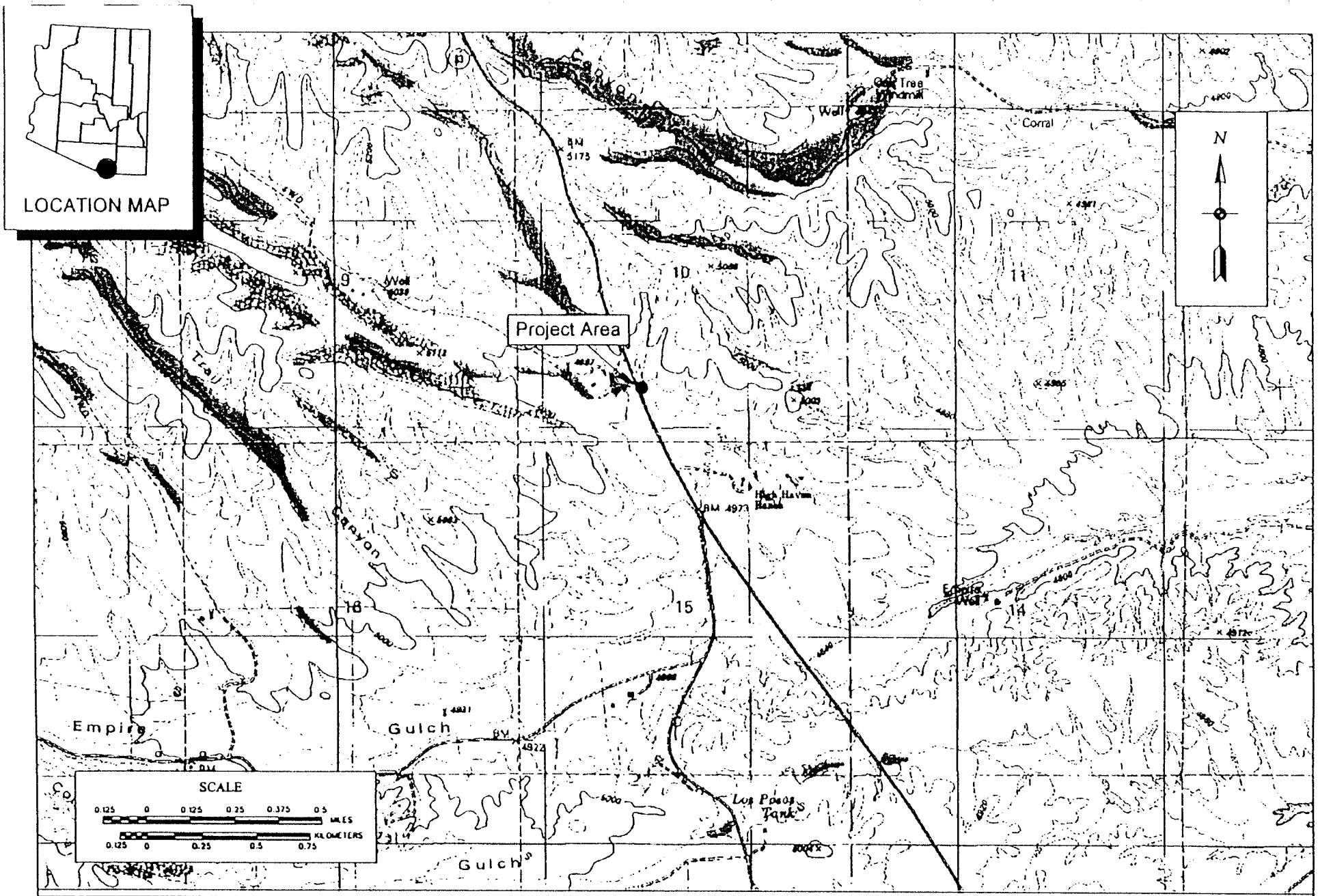


Figure 3: Portion of Empire Ranch, Arizona (1981) 7.5' quadrangle showing the location proposed traffic checkpoint

gsrc/ GULF SOUTH RESEARCH CORPORATION

SCALE: 1:24,000

DATE: October 2000

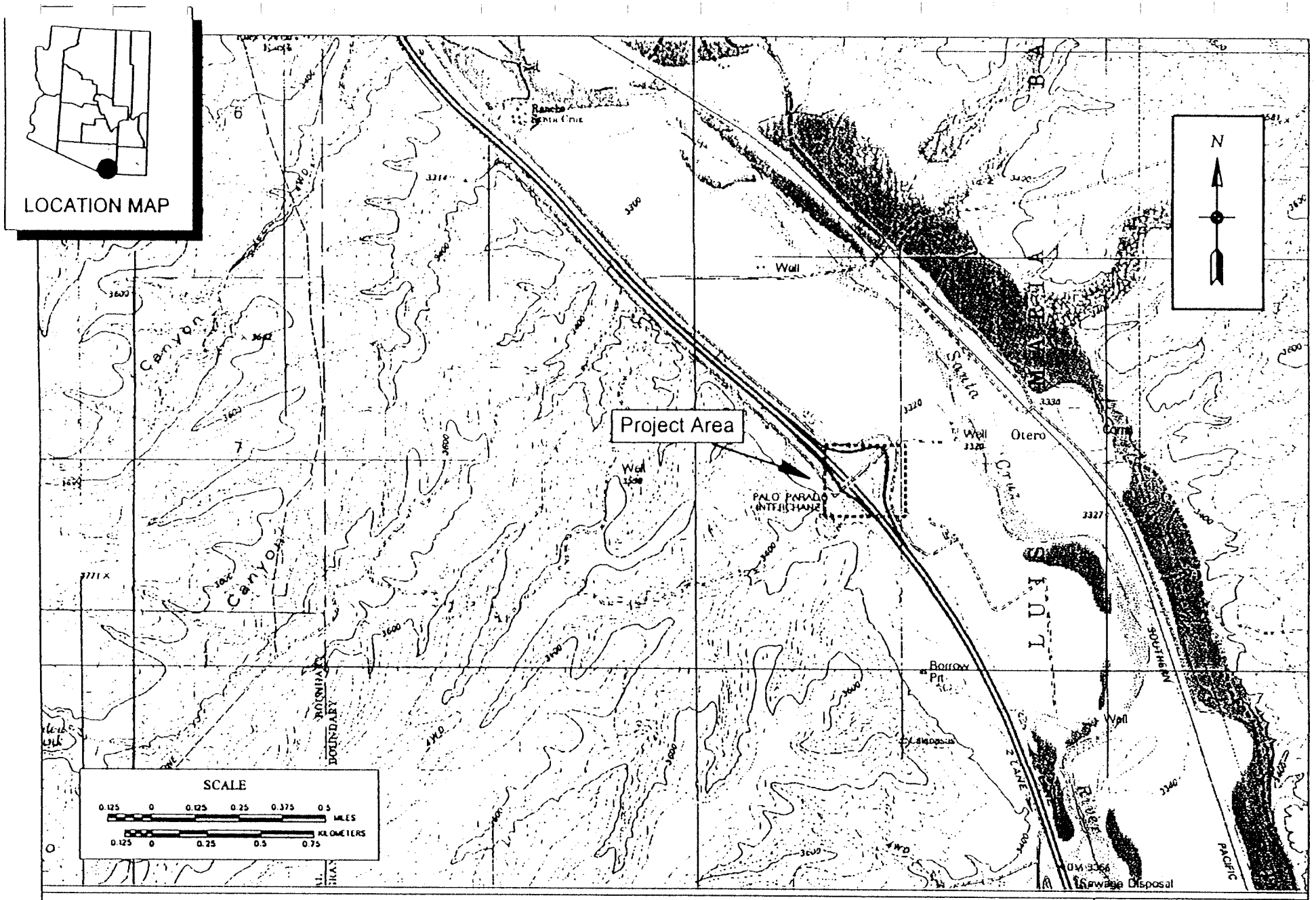


Figure 2: Portion of Tubac, Arizona (1981) 7.5' quadrangle showing the location proposed traffic checkpoint

gsrc/ GULF SOUTH RESEARCH CORPORATION

SCALE: 1:24,000

DATE: October 2000

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

October 23, 2000

Environmental Division

SUBJECT: Proposed Immigration & Naturalization Service (INS) Sonoita Border Patrol Station Expansion Activities and USBP Temporary Checkpoint Site on Hwy 83, Sonoita, Arizona

Honorable Donald R. Antone, Governor
Gila River Indian Community Council
P.O. Box 97
Sacaton, AZ 85247

Dear Governor Antone:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed expansion activities at the US Border Patrol Station at Sonoita, Arizona and the temporary checkpoint on Hwy 83, north of Sonoita. The EA will address impacts specifically associated with activities of the station expansion and the temporary checkpoint. We enclose two maps that indicate the location of these projects.

In accordance with federal laws and regulations in conducting these investigations, we wish to consult with the appropriate federally recognized Native American tribes who historically used this region or continue to use the area. We welcome your comments on this undertaking and look forward to hearing from you.

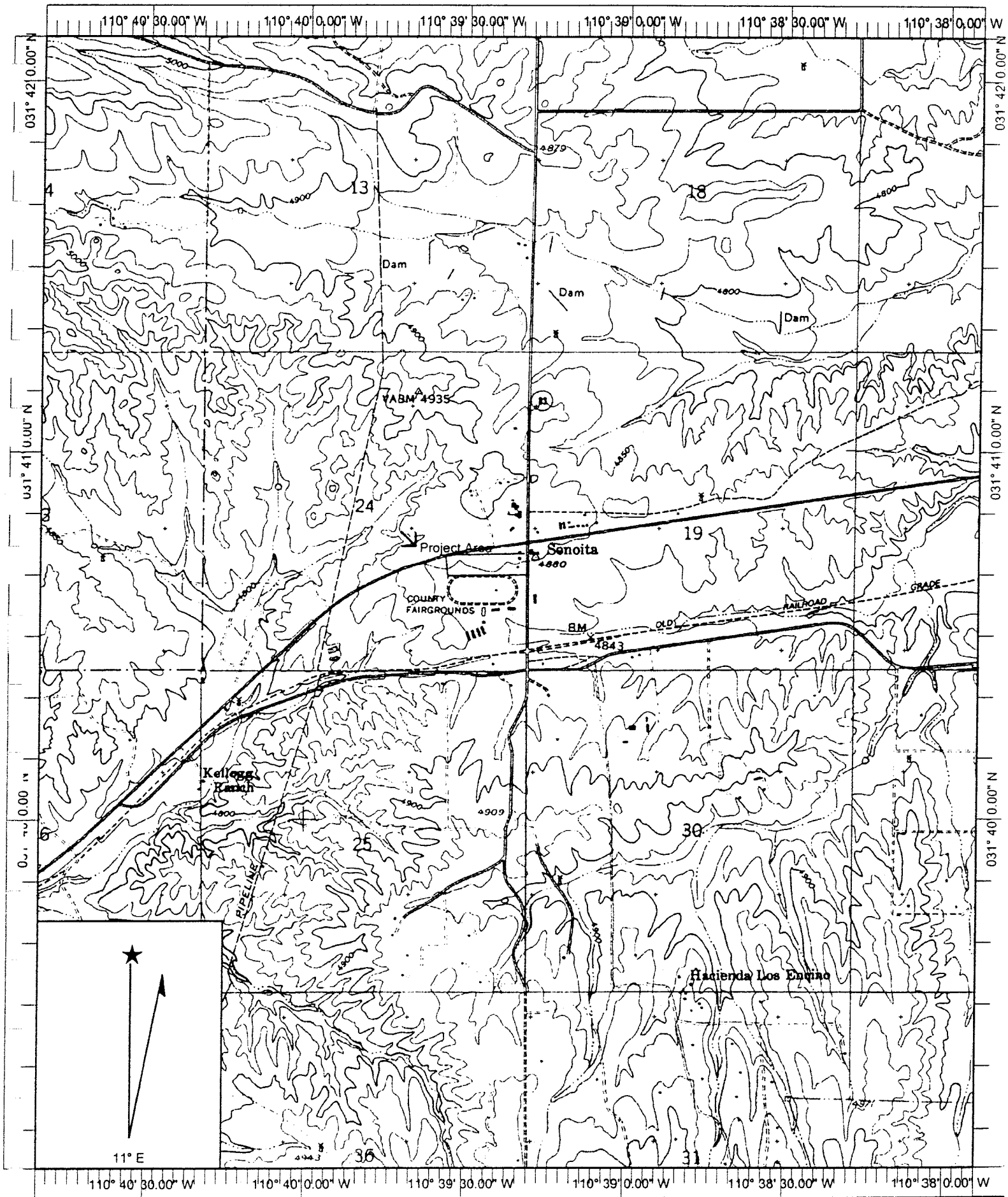
Archaeological surveys have been conducted in the past including these proposed project areas. Site files and records checks conducted by the Arizona State Museum (ASM) indicate that the following surveys have been conducted within the area of the proposed projects: 1986-87, 1996-345 and 1992-153. The 100% survey resulted in the discovery of two isolated occurrences and no archaeological sites. The temporary checkpoint site has been surveyed by the Arizona Department of Transportation; they found no archaeological sites within the project area.

A copy of the draft EA will be forwarded to your office upon completion. If you require any additional information at this time please contact Ms. Patience Patterson of my staff at (817) 978-6390.

Sincerely,

Emmett H. Du Bose
Lieutenant Colonel, Corps of Engineers
Acting District Engineer

Enclosures



Name: SONOITA
Date: 10/20/2000
Scale: 1 inch equals 2000 feet

Location: 031° 40' 35.5" N 110° 39' 21.9" W
Caption: Proposed US Border Patrol Station Expansion, Sonoita, AZ

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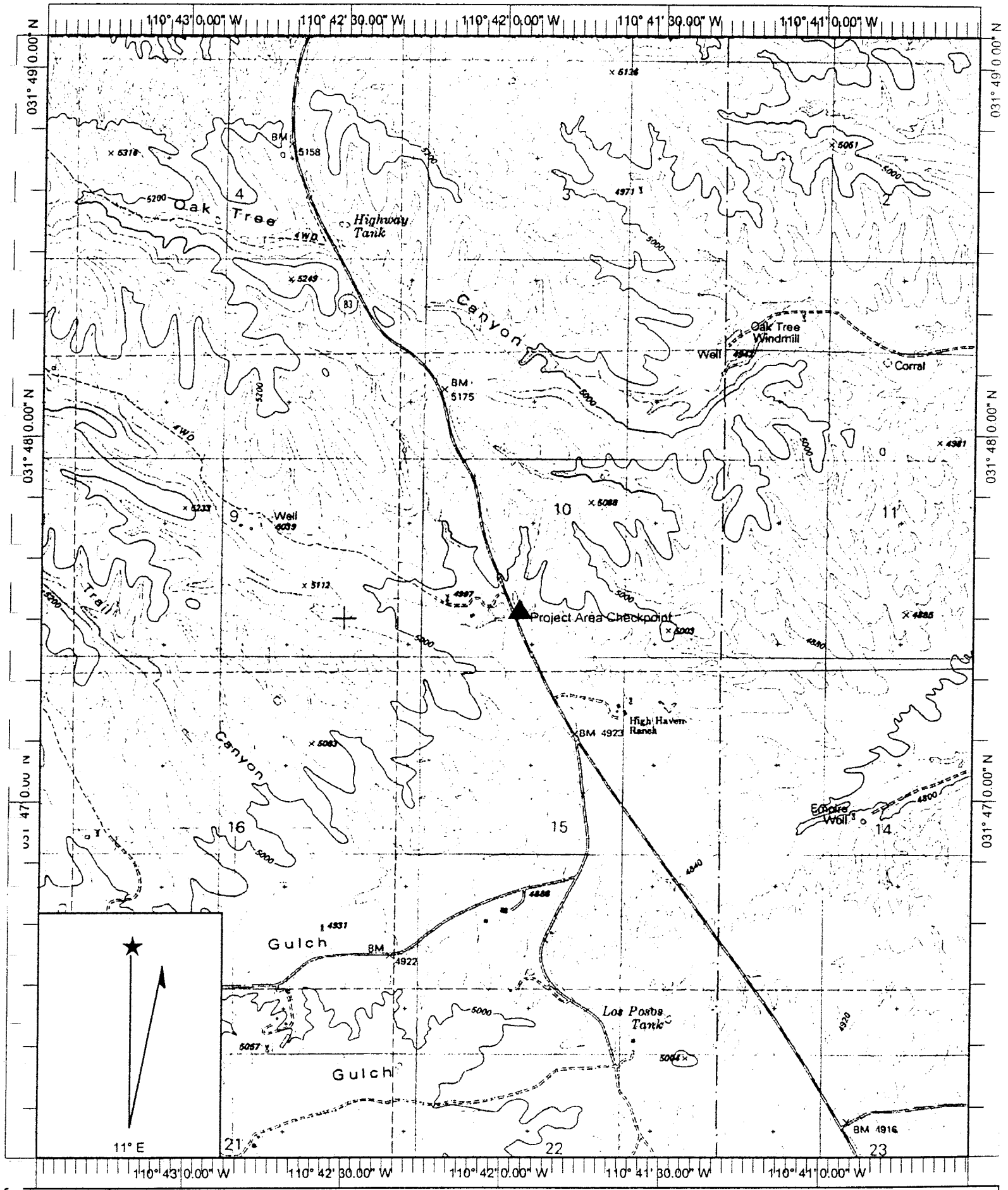

Name: EMPIRE RANCH
Date: 10/20/2000
Scale: 1 inch equals 2000 feet

Location: 031° 47' 33.6" N 110° 41' 59.4" W
Caption: Proposed Sonoita Temporary Checkpoint on Hwy 83

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DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

October 23, 2000

Environmental Division

SUBJECT: Proposed Immigration & Naturalization Service (INS) Sonoita Border Patrol Station Expansion Activities and USBP Temporary Checkpoint Site on Hwy 83, Sonoita, Arizona

Honorable Wayne Taylor, Jr., Chairman
Hopi Tribal Council
P.O. Box 123
Kykotsmovi, AZ 86039

Dear Chairman Taylor:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed expansion activities at the US Border Patrol Station at Sonoita, Arizona and the temporary checkpoint on Hwy 83, north of Sonoita. The EA will address impacts specifically associated with activities of the station expansion and the temporary checkpoint. We enclose two maps that indicate the location of these projects.

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Sincerely,

Emmett H. Du Bose
Lieutenant Colonel, Corps of Engineers
Acting District Engineer

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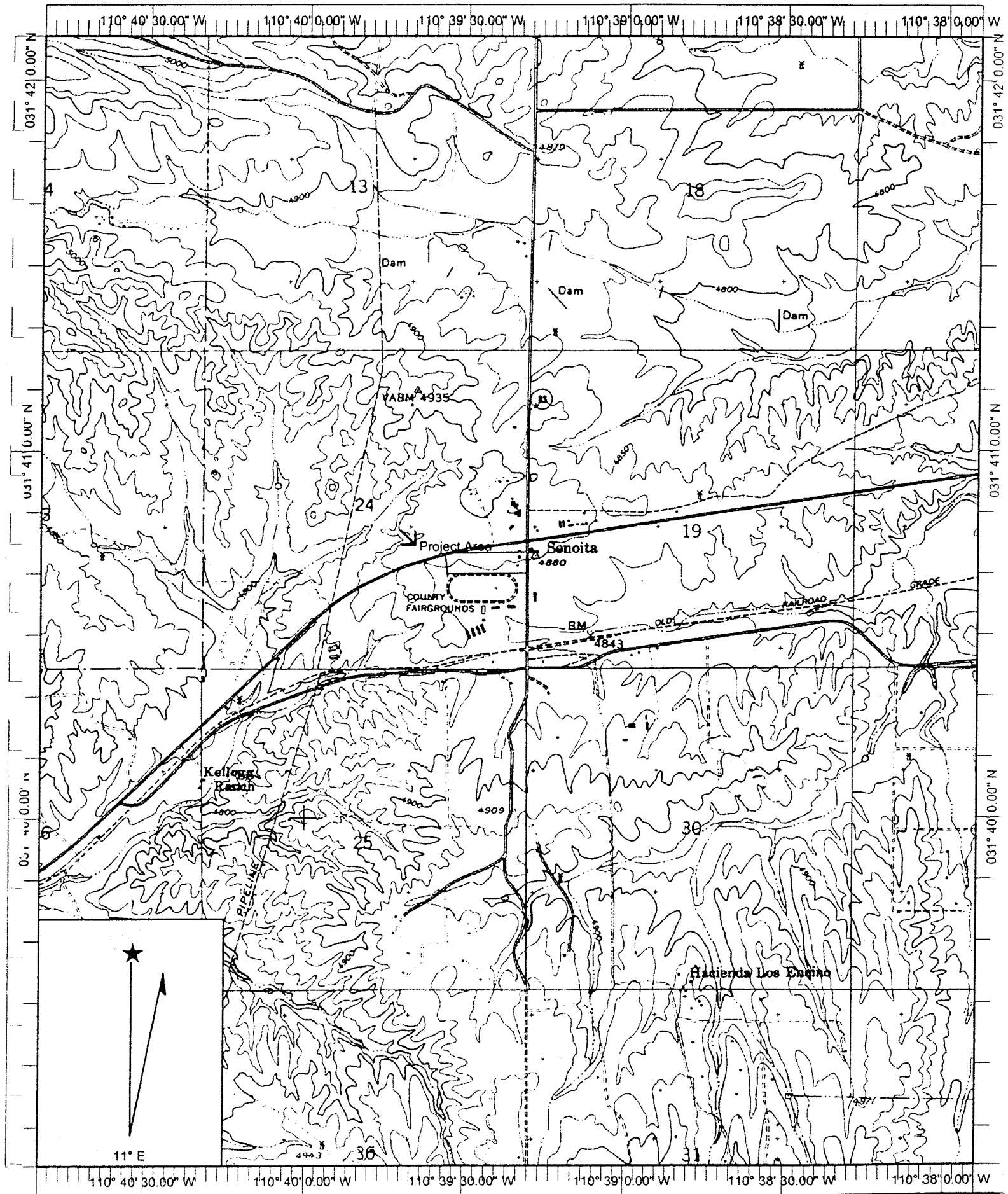

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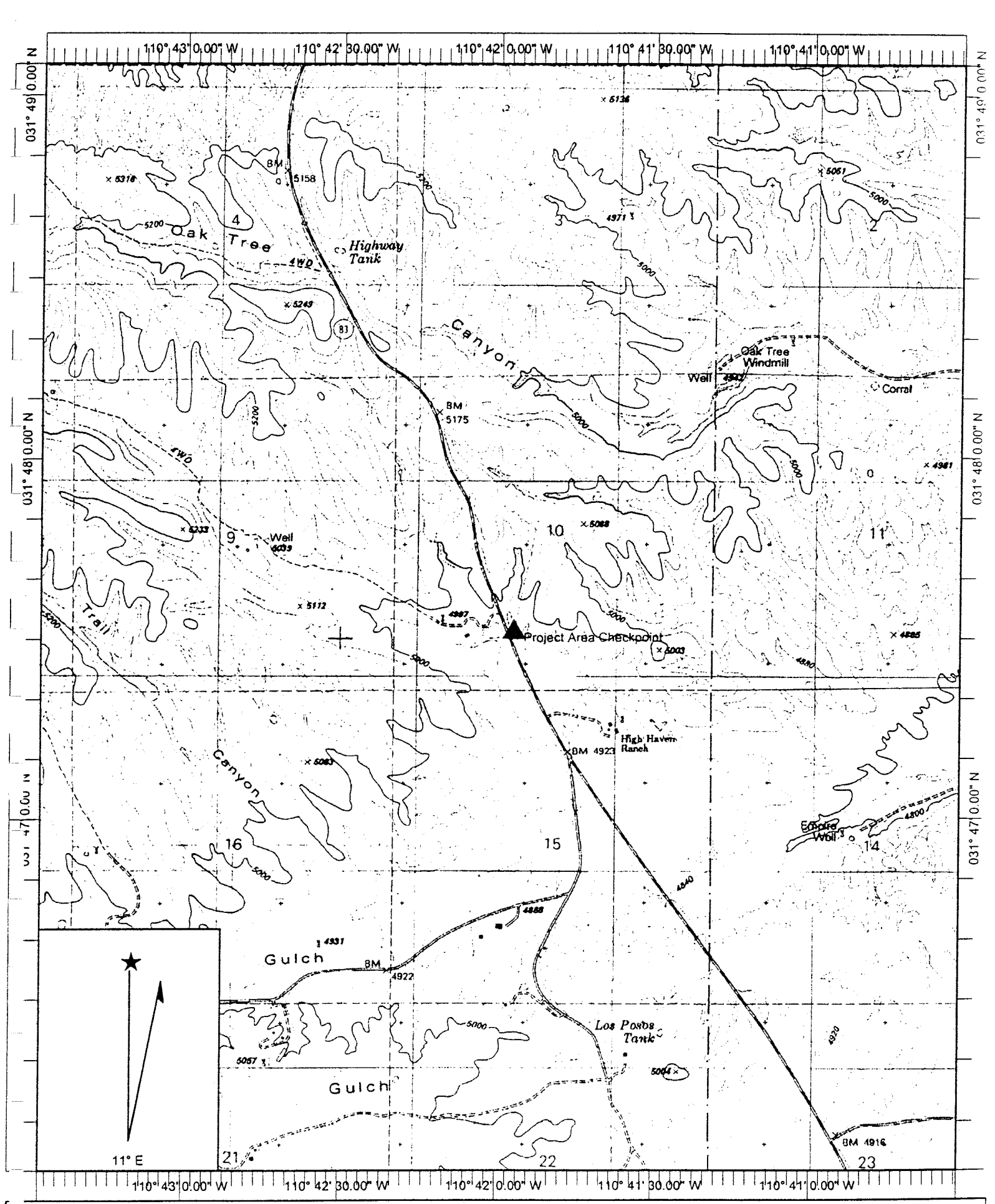

Name: EMPIRE RANCH
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Caption: Proposed Sonoita Temporary Checkpoint on Hwy 83

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DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

October 23, 2000

Environmental Division

SUBJECT: Proposed Immigration & Naturalization Service (INS) Sonoita Border Patrol Station Expansion Activities and USBP Temporary Checkpoint Site on Hwy 83, Sonoita, Arizona

Honorable. Delia Carlyle, Chairperson
Ak Chin Community Council
42507 W. Peters and Nall Road
Maricopa, AZ 85239

Dear Chairperson Carlyle:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed expansion activities at the US Border Patrol Station at Sonoita, Arizona and the temporary checkpoint on Hwy 83, north of Sonoita. The EA will address impacts specifically associated with activities of the station expansion and the temporary checkpoint. We enclose two maps that indicate the location of these projects.

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Lieutenant Colonel, Corps of Engineers
Acting District Engineer

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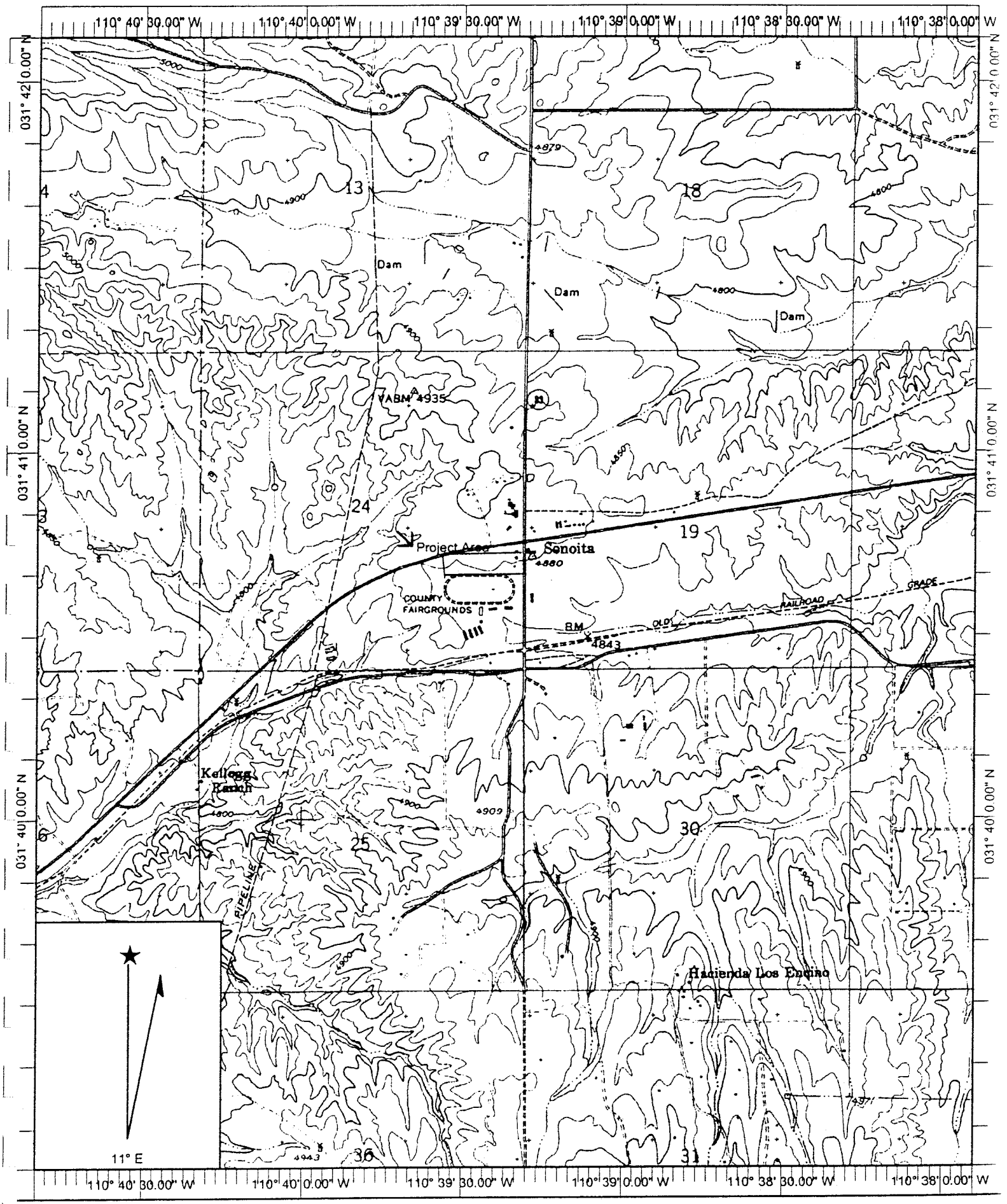

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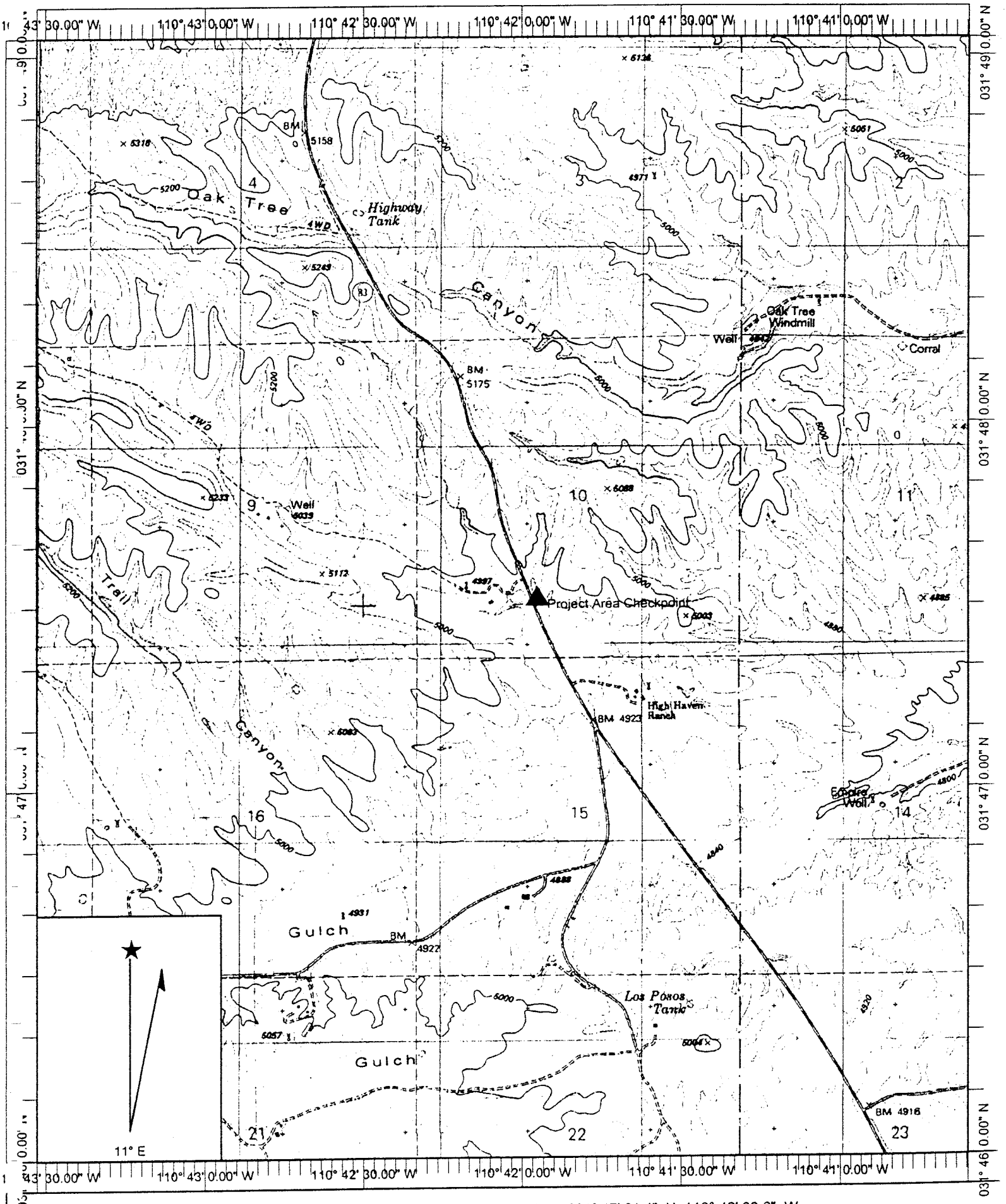

Name: EMPIRE RANCH
Date: 10/19/2000
Scale: 1 inch equals 2000 feet

Location: 031° 47' 31.4" N 110° 42' 03.6" W
Caption: Proposed Sonoita Temporary Checkpoint on Hwy 83

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DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

October 23, 2000

Environmental Division

SUBJECT: Proposed Immigration & Naturalization Service (INS) Sonoita Border Patrol Station Expansion Activities and USBP Temporary Checkpoint Site on Hwy 83, Sonoita, Arizona

Honorable Malcolm Bowekaty, Governor
Zuni Pueblo Tribal Council
P.O. Box 339
Zuni, NM 87327

Dear Governor Bowekaty:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed expansion activities at the US Border Patrol Station at Sonoita, Arizona and the temporary checkpoint on Hwy 83, north of Sonoita. The EA will address impacts specifically associated with activities of the station expansion and the temporary checkpoint. We enclose two maps that indicate the location of these projects.

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Lieutenant Colonel, Corps of Engineers
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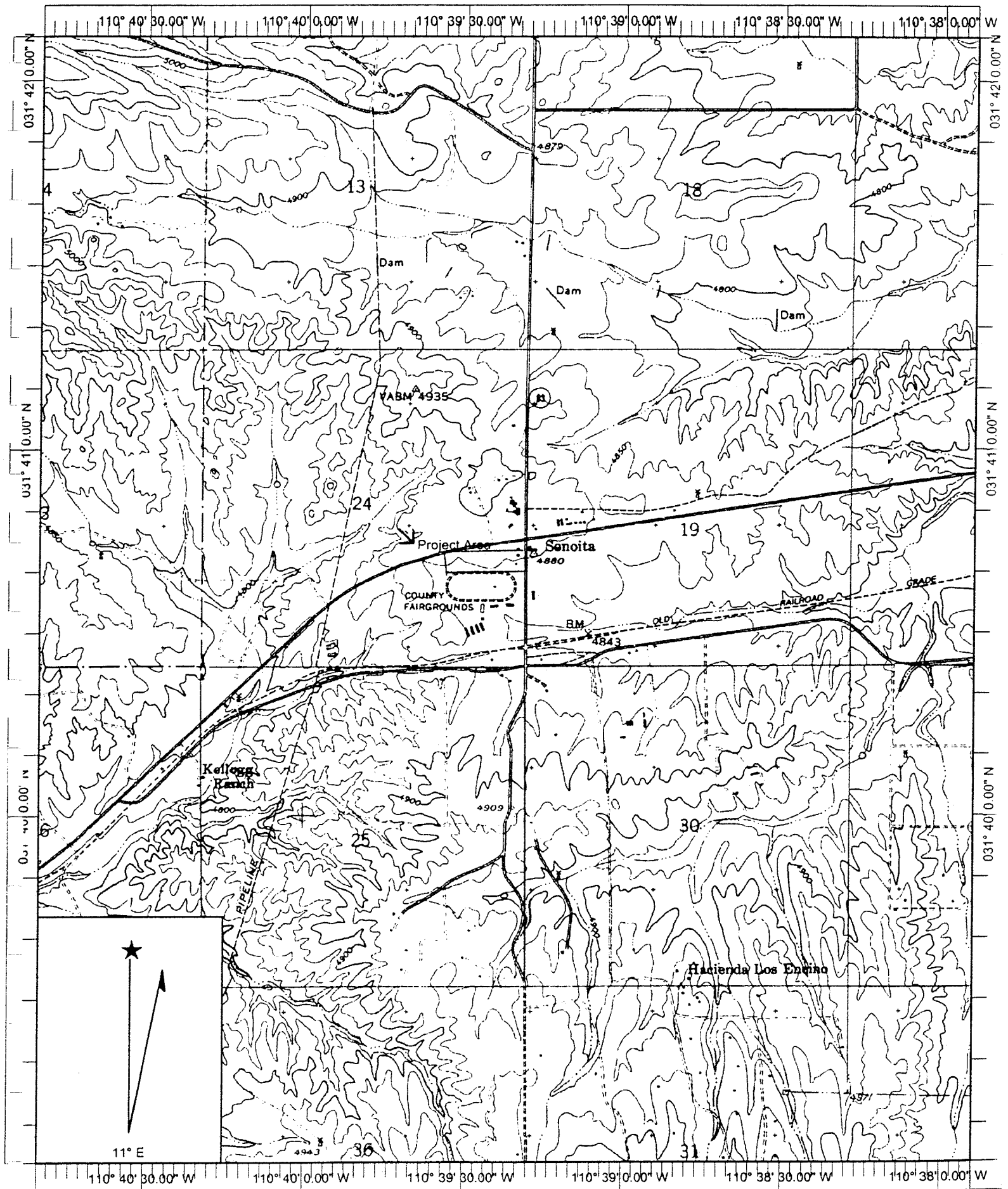

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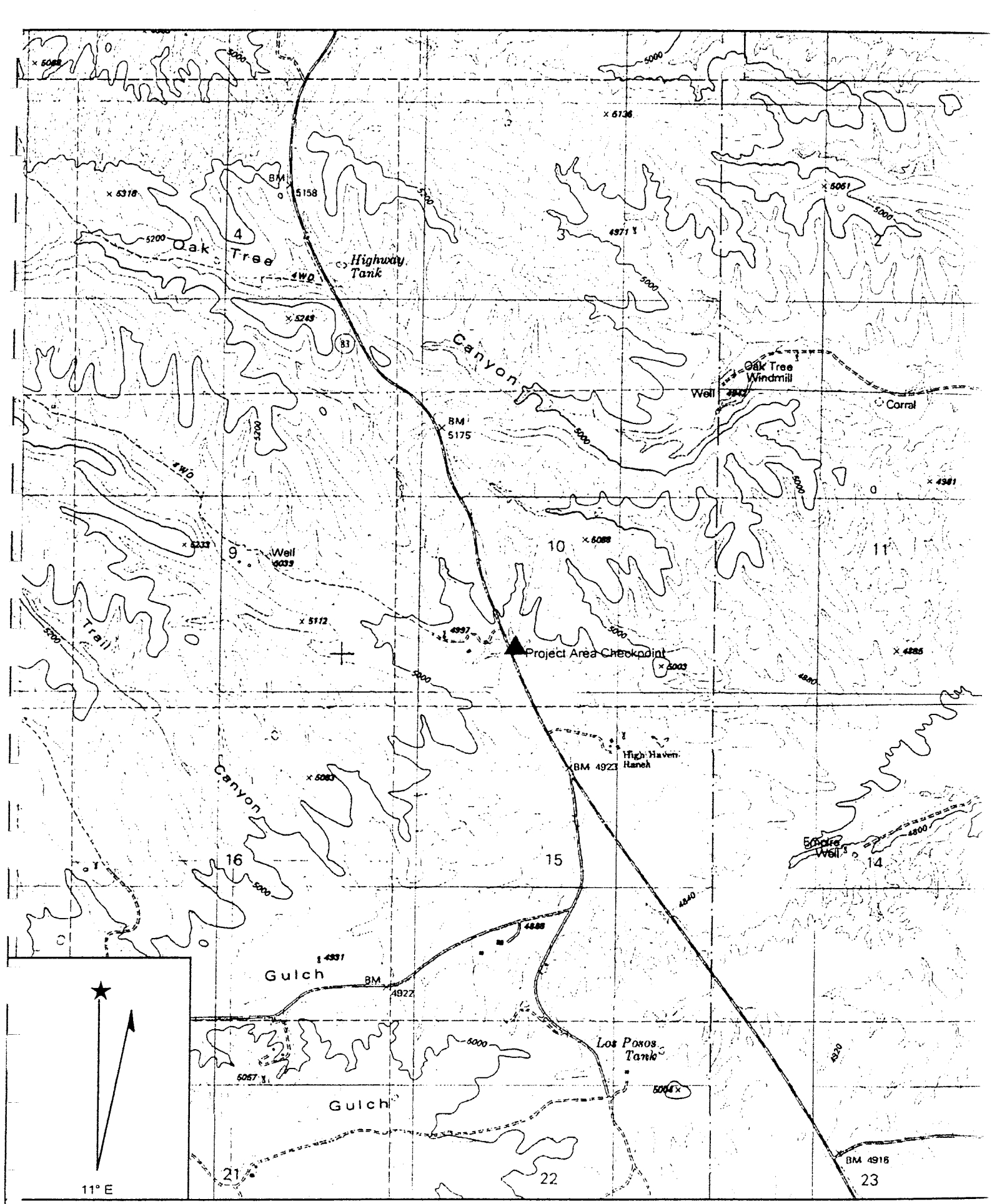

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Caption: Proposed Sonoita Temporary Checkpoint on Hwy 83.

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DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF

October 23, 2000

Environmental Division

SUBJECT: Proposed Immigration & Naturalization Service (INS) Sonoita Border Patrol Station Expansion Activities and USBP Temporary Checkpoint Site on Hwy 83, Sonoita, Arizona

Honorable Edward Manuel, Chairman
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

Dear Chairman Manuel:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed expansion activities at the US Border Patrol Station at Sonoita, Arizona and the temporary checkpoint on Hwy 83, north of Sonoita. The EA will address impacts specifically associated with activities of the station expansion and the temporary checkpoint. We enclose two maps that indicate the location of these projects.

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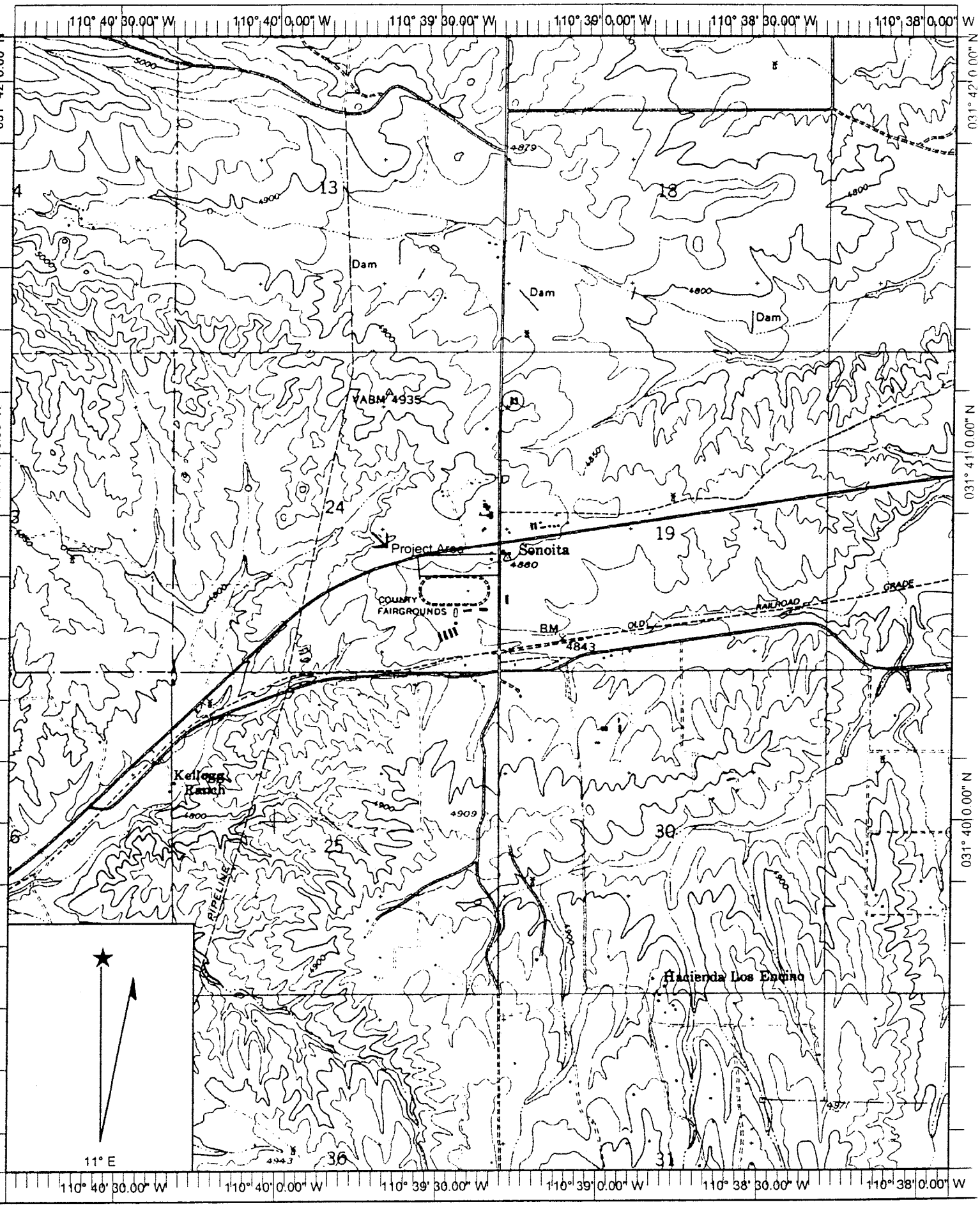

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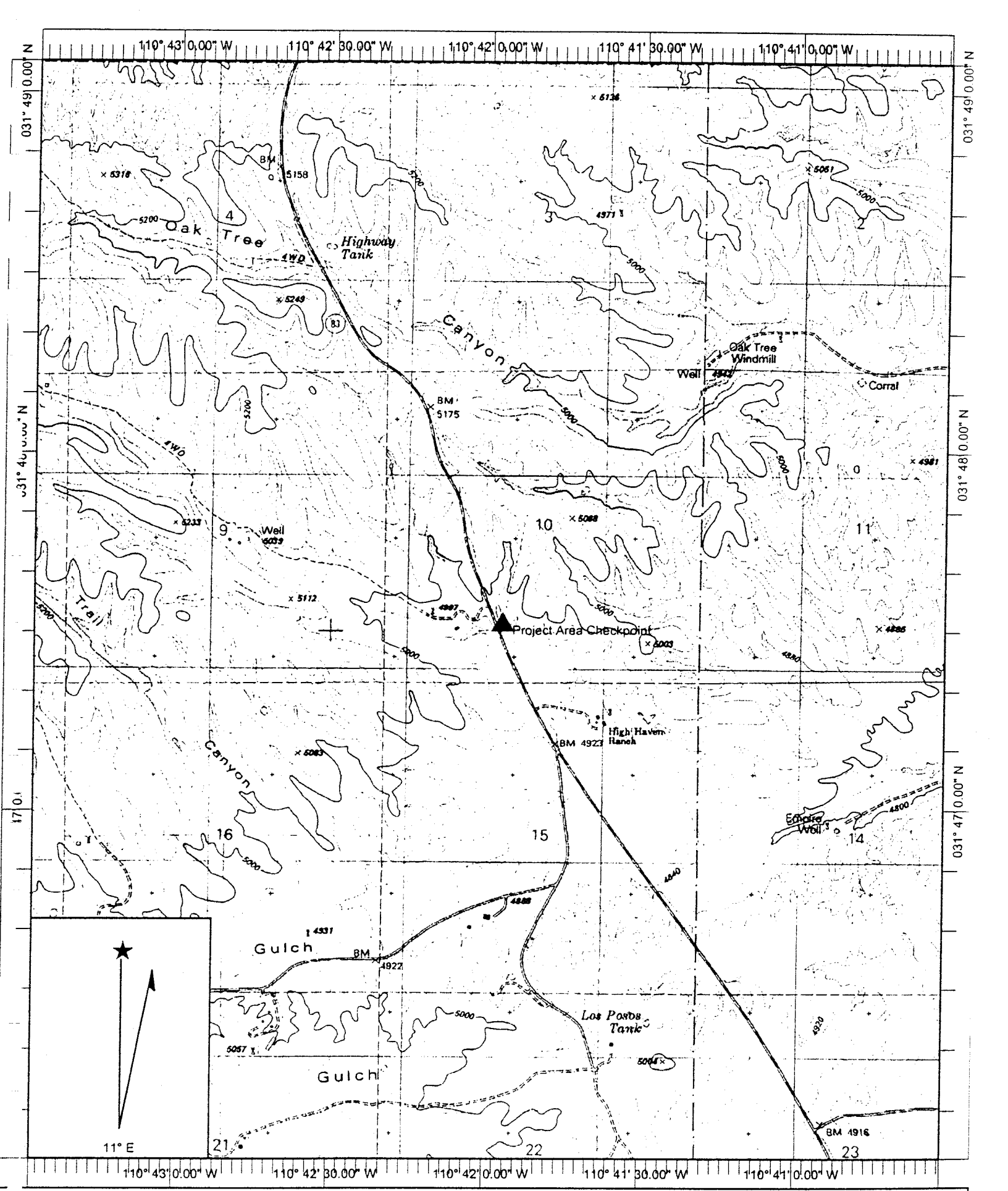

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FAX TRANSMISSION FORM

PHONE (602) 789-3618
FAX (602) 789-3928

TO: Sheyna Wisdom

FROM: **THE HABITAT BRANCH**
ARIZONA GAME & FISH DEPARTMENT
Sabra Schwartz

DATE: October 17, 2000

SUBJECT: **Special Status Species for Santa Cruz County, AZ**

COMMENTS:

NUMBER OF PAGES TO FOLLOW: 6

The Arizona Game & Fish Department is responsible for managing Arizona's fish and wildlife resource as an enduring public trust. In addition, the Department is charged with promoting safe and responsible use of watercraft and off-highway vehicles. Funding is provided from the sale of licenses and permits; watercraft registration fees; federal excise taxes on firearms, fishing equipment, boats, and other sporting goods; State lottery revenues; donations on State income tax forms; and various contracts and grants. Department policy is set by the Arizona Game & Fish Commission, whose five members are appointed by the Governor.

Scientific Name	Common Name	ESA	*Critical Habitat	USFS	BLM	WSCA	NPL	NESL	Taxonomic Group
COUNTYNAME : PINAL									
TUMAMOCA MACDOUGALII	TUMAMOC GLOBEBERRY			S	S		SR		PLANT
GOPHERUS AGASSIZII (SONORAN POPULATION)	SONORAN DESERT TORTOISE	SC				WC			REPTILE
PHYLLORHYNCHUS BROWNI LUCIDUS	MARICOPA LEAFNOSE SNAKE			S					REPTILE
THAMNOPHIS EQUES MEGALOPS	MEXICAN GARTER SNAKE	SC		S		WC			REPTILE
COUNTYNAME : SANTA CRUZ									
AMBYSTOMA TIGRINUM STEBBINSI	SONORAN TIGER SALAMANDER	LE				WC			AMPHIBIAN
ELEUTHERODACTYLUS AUGUSTI CACTORUM	WESTERN BARKING FROG			S		WC			AMPHIBIAN
GASTROPHRYNE OLIVACEA	GREAT PLAINS NARROWMOUTH TOAD					WC			AMPHIBIAN
RANA CHIRICAHUENSIS	CHIRICAHUA LEOPARD FROG	PT		S		WC			AMPHIBIAN
RANA YAVAPAIENSIS	LOWLAND LEOPARD FROG	SC		S		WC			AMPHIBIAN
ACCIPITER GENTILIS	NORTHERN GOSHAWK	SC		S		WC		4	BIRD
AIMOPHILA QUINQUESTRIATA	FIVE-STRIPED SPARROW			S					BIRD
AMAZILIA VIOLICEPS	VIOLET-CROWNED HUMMINGBIRD			S		WC			BIRD
AMMODRAMUS BAIRDII	BAIRD'S SPARROW	SC				WC			BIRD
ANTHUS SPRAGUEII	SPRAGUE'S PIPIT					WC			BIRD
ASTURINA NITIDA MAXIMA	NORTHERN GRAY HAWK	SC		S	S	WC			BIRD
ATHENE CUNICULARIA HYPUGAEA	WESTERN BURROWING OWL	SC			S				BIRD
BUTEOGALLUS ANTHRACINUS	COMMON BLACK-HAWK			S		WC			BIRD
COCCYZUS AMERICANUS OCCIDENTALIS	WESTERN YELLOW-BILLED CUCKOO			S		WC		3	BIRD
DENDROCYGNA AUTUMNALIS	BLACK-BELLIED WHISTLING-DUCK					WC			BIRD
EMPIDONAX TRAILLII EXTIMUS	SOUTHWESTERN WILLOW FLYCATCHER	LE	Y	S		WC		2	BIRD
FALCO PEREGRINUS ANATUM	AMERICAN PEREGRINE FALCON	SC	Y	S		WC		4	BIRD
GLAUCIDIUM BRASILIANUM CACTORUM	CACTUS FERRUGINOUS PYGMY-OWL	LE	Y			WC			BIRD
PACHYRAMPHUS AGLAIAE	ROSE-THROATED BECARD					WC			BIRD
PANDION HALIAETUS	OSPREY					WC			BIRD
POLIOPTILA NIGRICEPS	BLACK-CAPPED GNATCATCHER					WC			BIRD
STRIX OCCIDENTALIS LUCIDA	MEXICAN SPOTTED OWL	LT	P	S		WC		3	BIRD
TROGON ELEGANS	ELEGANT TROGON					WC			BIRD
TYRANNUS CRASSIROSTRIS	THICK-BILLED KINGBIRD					WC			BIRD
TYRANNUS MELANCHOLICUS	TROPICAL KINGBIRD					WC			BIRD
AGOSIA CHRYSOGASTER	LONGFIN DACE	SC			S				FISH
CATOSTOMUS CLARKI	DESERT SUCKER	SC			S				FISH
CATOSTOMUS INSIGNIS	SONORA SUCKER	SC			S				FISH
GILA DITAENIA	SONORA CHUB	LT	Y			WC			FISH
GILA INTERMEDIA	GILA CHUB	C		S		WC			FISH
GILA ROBUSTA	ROUNDTAIL CHUB	SC		S		WC		2	FISH
POECILIOPSIS OCCIDENTALIS OCCIDENTALIS	GILA TOPMINNOW	LE				WC			FISH
RHINICHTHYS OSCULUS	SPECKLED DACE	SC			S				FISH
HETERELMIS STEPHANI	STEPHAN'S HETERELMIS RIFFLE BEETLE	SC		S					INVERTEBRATE
PYRGULOPSIS THOMPSONI	HUACHUCA SPRINGSNAIL	C		S	S				INVERTEBRATE
CHOERONYCTERIS MEXICANA	MEXICAN LONG-TONGUED BAT	SC			S	WC			MAMMAL

FEB-16-2000 14:32 AZ GAME AND FISH DEPT 6027893928 P.02/07

Scientific Name	Common Name	ESA	*Critical Habitat	USFS	BLM	WSCA	NPL	NESL	Taxonomic Group
COUNTYNAME : SANTA CRUZ									
LASIURUS BLOSSEVILLII	WESTERN RED BAT					WC			MAMMAL
LEPTONYCTERIS CURASOAE YERBABUENAE	LESSER LONG-NOSED BAT	LE		S		WC			MAMMAL
MACROTUS CALIFORNICUS	CALIFORNIA LEAF-NOSED BAT	SC			S	WC			MAMMAL
MYOTIS VELIFER	CAVE MYOTIS	SC			S				MAMMAL
PLECOTUS TOWNSENDII PALLESCENS	PALE TOWNSEND'S BIG-EARED BAT	SC						4	MAMMAL
SIGMODON OCHROGNATHUS	YELLOW-NOSED COTTON RAT	SC							MAMMAL
SOREX ARIZONAE	ARIZONA SHREW	SC		S		WC			MAMMAL
THOMOMYS UMBRINUS INTERMEDIUS	SOUTHERN POCKET GOPHER			S					MAMMAL
ABUTILON PARISHII	PIMA INDIAN MALLOW	SC		S			SR		PLANT
ACACIA SMALLII	SWEET ACACIA			S					PLANT
AGAVE PARVIFLORA SSP PARVIFLORA	SANTA CRUZ STRIPED AGAVE	SC		S	S		HS		PLANT
ALLIUM RHIZOMATUM	REDFLOWER ONION			S	S		SR		PLANT
AMOREUXIA GONZALEZII	SAIYA	SC		S			HS		PLANT
AMSONIA GRANDIFLORA	LARGE-FLOWERED BLUE STAR	SC		S					PLANT
ASCLEPIAS LEMMONII	LEMMON MILKWEED			S					PLANT
ASCLEPIAS UNCIALIS	GREENE MILKWEED	SC		S					PLANT
ASTRAGALUS HYPOXYLUS	HUACHUCA MILK-VETCH	SC		S	S		SR		PLANT
BROWALLIA ELUDENS	ELUSIVE NEW BROWALLIA SPECIES	SC		S					PLANT
CAPSICUM ANNUUM VAR GLABRIUSCULUM	CHILTEPIN			S					PLANT
CAREX CHIHUAHUENSIS	A SEDGE			S					PLANT
CAREX ULTRA	ARIZONA GIANT SEDGE			S					PLANT
CHOISYA MOLLIS	SANTA CRUZ STAR LEAF	SC		S					PLANT
CONIOSELINUM MEXICANUM	MEXICAN HEMLOCK PARSLEY	SC		S					PLANT
CORYPHANTHA RECURVATA	SANTA CRUZ BEEHIVE CACTUS			S	S		HS		PLANT
CORYPHANTHA SCHEERI VAR ROBUSTISPINA	PIMA PINEAPPLE CACTUS	LE					HS		PLANT
COURSETIA GLABELLA		SC		S					PLANT
DALEA TENTACULOIDES	GENTRY INDIGO BUSH	SC		S	S		HS		PLANT
ERIGERON ARISOLIUS				S					PLANT
EUPHORBIA MACROPUS	WOODLAND SPURGE	SC					SR		PLANT
GRAPTOPETALUM BARTRAMII	BARTRAM STONECROP	SC		S	S		SR		PLANT
HEDEOMA DENTATUM	MOCK-PENNYROYAL			S					PLANT
HETEROTHECA RUTTERI	HUACHUCA GOLDEN ASTER	SC		S	S				PLANT
HEXALECTRIS REVOLUTA	CHISOS CORAL-ROOT			S	S				PLANT
HEXALECTRIS SPICATA	CRESTED CORAL ROOT						SR		PLANT
HIERACIUM PRINGLEI	PRINGLE HAWKWEED	SC		S					PLANT
IPOMOEA PLUMMERAE VAR CUNEIFOLIA	HUACHUCA MORNING GLORY			S					PLANT
IPOMOEA THURBERI	THURBER'S MORNING-GLORY			S					PLANT
LAENNECIA ERIOPHYLLA	WOOLLY FLEABANE			S					PLANT
LILAEOPSIS SCHAFFNERIANA VAR RECURVA	HUACHUCA WATER UMBEL	LE	Y				HS		PLANT
LILIUM PARRYI	LEMMON LILY	SC		S			SR		PLANT
LOBELIA FENESTRALIS	LEAFY LOBELIA						SR		PLANT
LOBELIA LAXIFLORA	MEXICAN LOBELIA						SR		PLANT
LOTUS ALAMOSANUS	ALAMOS DEER VETCH			S					PLANT

FEB-18-2000 14:32 AZ GAME AND FISH DEPT 6027893929 P.03/07

Scientific Name	Common Name	ESA	*Critical Habitat	USFS	BLM	WSCA	NPL	NESL	Taxonomic Group
COUNTYNAME : SANTA CRUZ									
LUPINUS HUACHUCANUS	HUACHUCA MOUNTAIN LUPINE			S					PLANT
MACROPTILIUM SUPINUM	SUPINE BEAN			S			SR		PLANT
MALAXIS CORYMBOSA	MADREAN ADDERS MOUTH	SC					SR		PLANT
MALAXIS PORPHYREA	PURPLE ADDER'S MOUTH						SR		PLANT
MAMMILLARIA WRIGHTII VAR WILCOXII	WILCOX FISHHOOK CACTUS						SR		PLANT
MANIHOT DAVISIAE	ARIZONA MANIHOT			S					PLANT
MARINA DIFFUSA	ESCOBA			S					PLANT
METASTELMA MEXICANUM	WIGGINS MILKWEED VINE	SC		S					PLANT
MUHLENBERGIA XEROPHILA	WEEPING MUHLY			S					PLANT
NOTHOLAENA LEMMONII	LEMMON CLOAK FERN	SC							PLANT
PASPALUM VIRLETII	VIRLET PASPALUM			S					PLANT
PASSIFLORA FOETIDA	FOETID PASSIONFLOWER			S					PLANT
PECTIS IMBERBIS	BEARDLESS CHINCH WEED	SC		S					PLANT
PENSTEMON DISCOLOR	CATALINA BEARDTONGUE			S			HS		PLANT
PENSTEMON SUPERBUS	SUPERB BEARDTONGUE			S					PLANT
PHYSALIS LATIPHYSA	BROAD-LEAF GROUND-CHERRY			S					PLANT
PSILOTUM NUDUM	WHISK FERN						HS		PLANT
SAMOLUS VAGANS	CHIRICAHUA MOUNTAIN BROOKWEED			S					PLANT
SCHIEDEELLA PARASITICA	FALLEN LADIES'-TRESSES						SR		PLANT
SENECIO CARLOMASONII	SEEMANN GROUNDSEL			S					PLANT
SENECIO HUACHUCANUS	HUACHUCA GROUNDSEL			S			HS		PLANT
SISYRINCHIUM CERNUUM	NODDING BLUE-EYED GRASS			S					PLANT
SOLANUM LUMHOLTZIANUM	LUMHOLTZ NIGHTSHADE			S					PLANT
SPIRANTHES DELITESCENS	MADREAN LADIES'-TRESSES	LE					HS		PLANT
STEVIA LEMMONII	LEMMON'S STEVIA			S					PLANT
TALINUM HUMILE	PINOS ALTOS FLAME FLOWER	SC		S			SR		PLANT
TALINUM MARGINATUM	TEPIC FLAME FLOWER	SC		S			SR		PLANT
TEPHROSIA THURBERI	THURBER HOARY PEA			S					PLANT
TRAGIA LACINIATA	SONORAN NOSEBURN			S					PLANT
CNEMIDOPHORUS BURTI STICTOGRAMMUS	GIANT SPOTTED WHIPTAIL	SC		S	S				REPTILE
CROTALUS WILLARDI WILLARDI	ARIZONA RIDGENOSE RATTLESNAKE			S		WC			REPTILE
OXYBELIS AENEUS	MEXICAN VINE SNAKE					WC			REPTILE
THAMNOPHIS EQUES MEGALOPS	MEXICAN GARTER SNAKE	SC		S		WC			REPTILE
COUNTYNAME : YAVAPAI									
BUFO MICROSCAPHUS MICROSCAPHUS	ARIZONA TOAD	SC		S					AMPHIBIAN
RANA CHIRICAHUENSIS	CHIRICAHUA LEOPARD FROG	PT		S		WC			AMPHIBIAN
RANA PIPIENS	NORTHERN LEOPARD FROG			S		WC		2	AMPHIBIAN
RANA YAVAPAIENSIS	LOWLAND LEOPARD FROG	SC		S		WC			AMPHIBIAN
ACCIPITER GENTILIS	NORTHERN GOSHAWK	SC		S		WC		4	BIRD
BUTEOGALLUS ANTHRACINUS	COMMON BLACK-HAWK			S		WC			BIRD
CERYLE ALCYON	BELTED KINGFISHER					WC		4	BIRD

FEB-18-2000 14:32 AZ GAME AND FISH DEPT 6027893928 P.04/07

STATUS DEFINITIONS

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

FEDERAL US STATUS

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

Listed

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

Proposed for Listing

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

Candidate (Notice of Review: 1999)

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

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

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

[\N No Status: certain populations of this taxon do not have designated status (check with state or regional USFWS office for details about which populations have designated status)].

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

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

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

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

TRIBAL STATUS

NESL Navajo Endangered Species List (1997)
Navajo Nation, Navajo Fish and Wildlife Department
(http://www.heritage.tnc.org/nhp/us/navajo/esl.html)

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

Groups

1 Those species or subspecies that no longer occur on the Navajo Nation.

2 Any species or subspecies which is in danger of being eliminated from all or a significant portion of its range on the Navajo Nation.

3 Any species or subspecies which is likely to become an endangered species, within the foreseeable future, throughout all or a significant portion of its range on the Navajo Nation.

4 Any species or subspecies for which the Navajo Fish and Wildlife Department (NF&WD) does not currently have sufficient information to support their being listed in Group 2 or Group 3 but has reason to consider them. The NF&WD will actively seek information on these species to determine if they warrant inclusion in a different group or removal from the list.

MEXICAN STATUS

MEX Mexican Federal Endangered Species List (May 16, 1994)
Secretaría de Desarollo Social, NORMA Oficial Mexicana NOM-059-ECOL-1994

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

P En Peligro de Extinción (Determined Endangered in Mexico): in danger of extinction.

A Amenazada (Determined Threatened in Mexico): could become endangered if factors causing habitat deterioration or population decline continue.

R Rara (Determined Rare in Mexico): populations viable but naturally scarce or restricted to an area of reduced distribution or very specific habitats.

Pr Sujeta a Protección Especial (Determined Subject to Special Protection in Mexico): utilization limited due to reduced populations, restricted distribution, or to favor recovery and conservation of the taxon or associated taxa.

[| = One or more subspecies of this species has status in Mexico, but the HDMS does not track it at the subspecies level (most of these subspecies are endemic to Mexico). Please consult the NORMA Oficial Mexicana NOM-059-ECOL-1994 for details.]

STATE STATUS

NPL **Arizona Native Plant Law** (1993)
Arizona Department of Agriculture (http://agriculture.state.az.us/PSD/nativeplants.htm)

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

WSCA **Wildlife of Special Concern in Arizona** (1996 in prep)
Arizona Game and Fish Department (http://www.azgfd.com)

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

Arizona Department of Transportation

Environmental Planning Group

MEMORANDUM

To: Sylvia Hannah Permit Supervisor Tucson District	**Date:** August 17, 2000
From: Owen Lindauer, Ph.D. Historic Preservation Specialist	**Permit:** SR 83 @ MP 40.8

Contact has been made by Allan J. Schilz for Immigration and Naturalization Service regarding a permitted activity in ADOT right-of-way. The proposed activity includes constructing a checkpoint (grading and drainage) within the SR 83 right-of-way at Milepost 40.8 on the east side of the roadway.

_____ Archaeological survey has been done. No sites found.

__x__ Existing records indicate a prior cultural resources survey has been done in this area.

"**A Cultural Resoruces Survey of State Route 83 Right-of-way Between Canelo and Interstate 10 (Mileposts 13.5-58.4), In Pima and Santa Cruz Counties, Arizona**" (ARS 1996). No sites in the proposed permit location.

_____ No prior survey data is available.

_____ Intensive cultural resources survey is necessary.

_____ Known sites must be avoided or have been determined to be avoidable.

_____ Minimal activity proposed

_____ Prior extensive disturbance.

__x__ Permitted activity may proceed; no further historic preservation review necessary.

__x__ Standard specification 107.06 applies.

For further information, call me at (602) 712-6819, FAX (602) 712-3066.

cc: Allan J. Schilz (505) 881-9228 x 102 FAX (505) 881-9357 ajschilz@oees.com

APPENDIX B
PHOTOGRAPHS

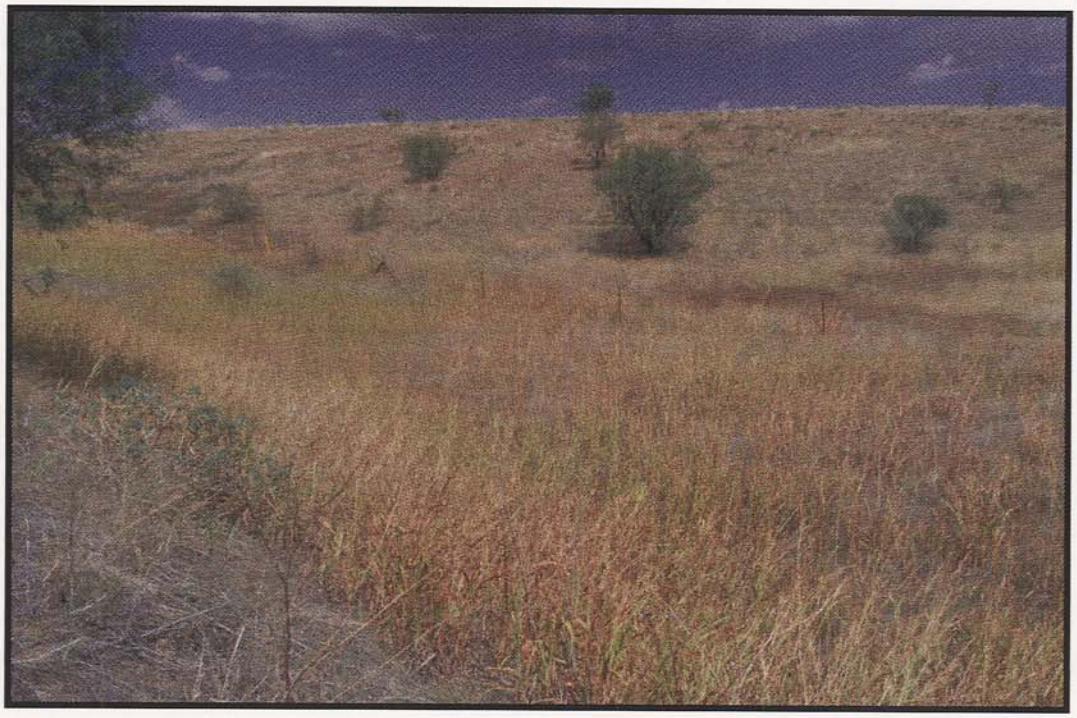
Photograph 1. View of proposed parking/storage facility expansion lot facing east.

Photograph 2. View of proposed parking/storage facility expansion lot facing west.

Photograph 3. View of wetland area located to the west of the proposed parking/storage facility expansion lot.

Photograph 4. View of proposed traffic checkpoint area facing north.

Photograph 5. View of proposed traffic checkpoint area facing south.



Photograph 6. View of drainage ditch at proposed traffic checkpoint area.

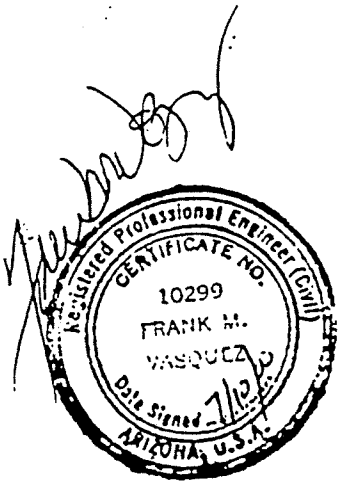
APPENDIX C
HYDROLOGY REPORT

Hydrology Report

INS State Route 83 Pullout
Sonoita, Az.

Prepared for:
Brent Bowden
P.O. Box 1007
Patagonia, Az. 85624

By:
VES Engineering and Surveying
P.O. Box 2091
Tubac, AZ. 85646
(520)-398-9919
VES Project No. 2006063
July, 2000



Hydrology Report

INS State Route Pullout

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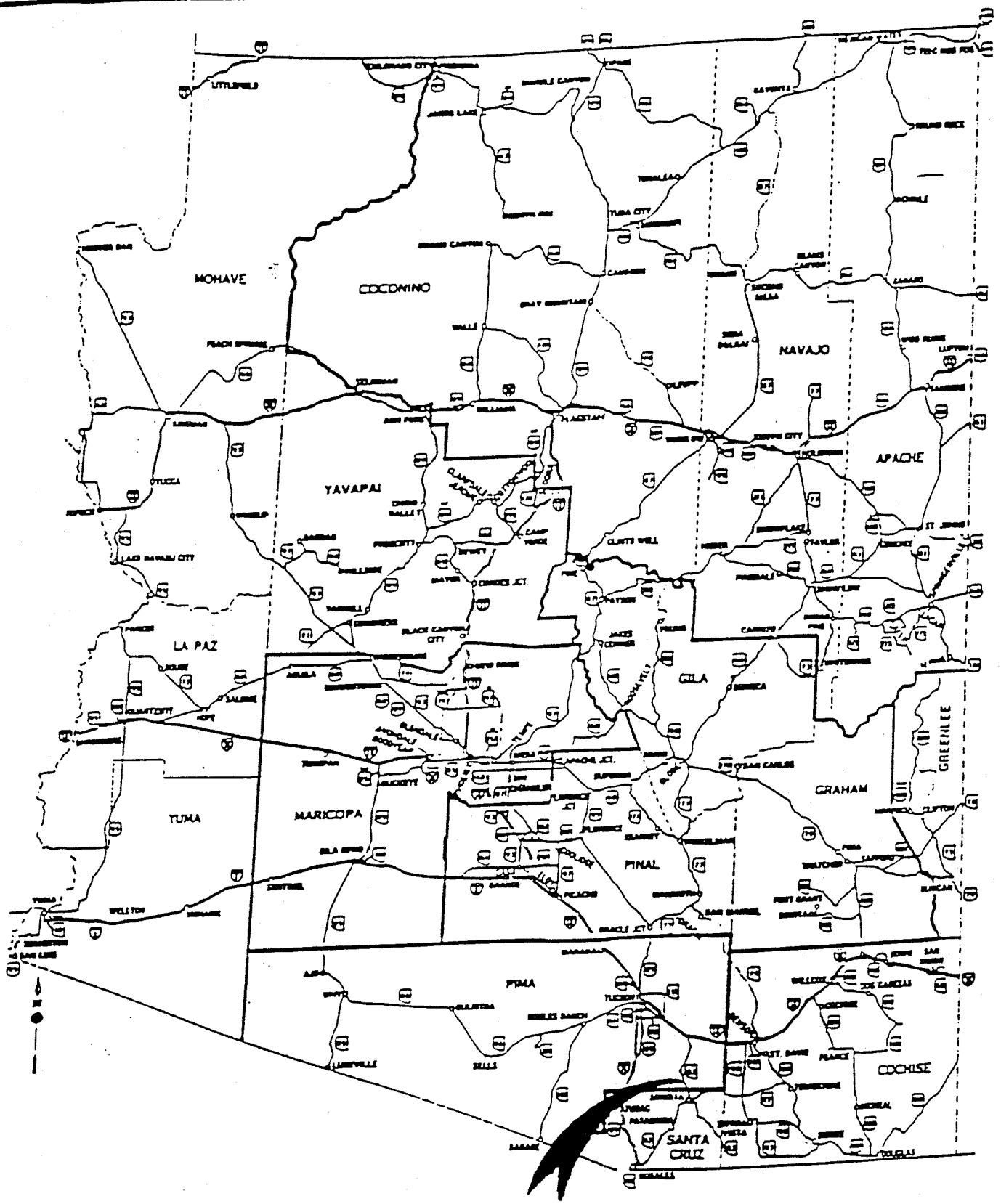
Figure No. 1 Location Map

Figure No. 2 Vicinity Map

Figure No. 3 Subwatershed Map

Appendix A Hydrologic Computation Sheet

Appendix B Pipe Culvert Analysis



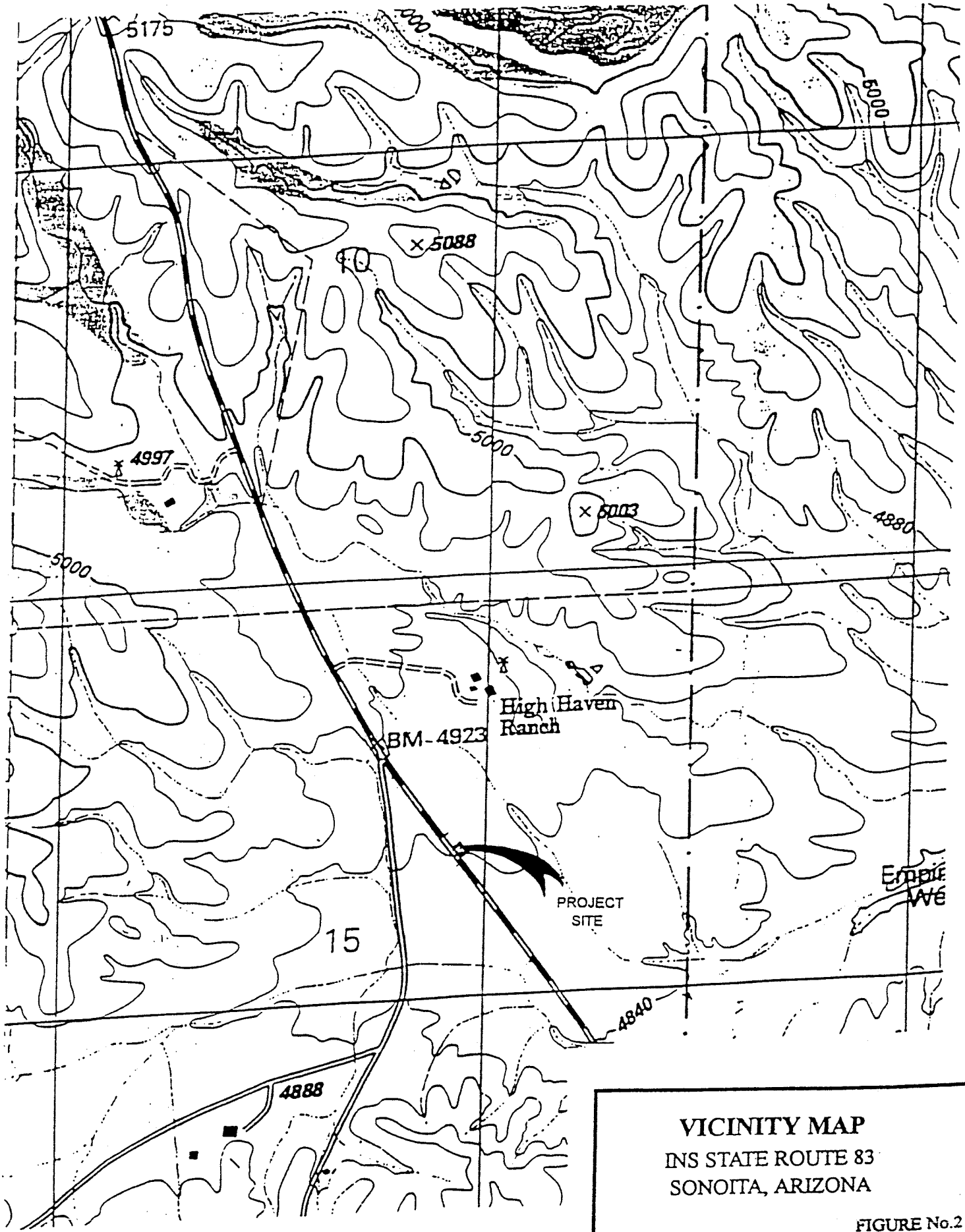
ARIZONA

ARIZONA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION PLANNING DIVISION

SCALE - MILES

LOCATION MAP
INS STATE ROUTE 83
SONOITA, ARIZONA

FIGURE NO.1



VICINITY MAP

INS STATE ROUTE 83
SONOITA, ARIZONA

FIGURE No.2

HYDROLOGY REPORT
INS STATE ROUTE 83 PULL OUT

INTRODUCTION

A hydrologic analysis has been performed to determine rainfall-runoff rates that will impact this Project.

LOCATION

The project is located approximately 8 miles Northwest from Sonoita on State Route 83 in Section 15, Township 19 South, Range 16 East, G. & S. R. B. & M., Pima County, Arizona.

ANALYSIS

General:

Peak discharge for the subwatershed was determined by the Pima County Computer Model.

Pipe Culverts were rated by the use of FHWA HEC 5.

HYDROLOGY

One subwatershed was analyzed with the concentration point labeled CP-1 for 100-yr return period design and regulatory storm.

Rainfall-Soils

The U.S. Weather Bureau Precipitation Maps found in the Arizona Department of Transportation Hydrologic Design Manual (ADOT) were used as reference in determining rainfall in the area. The Manual was also used as a reference for determining the soil group in the area.

RESULTS

Results of Hydrologic computations show that runoff from the site will be conveyed within the existing channels. The project not will cause adverse impact to adjoining areas. Existing drainage patterns will not be changed.

The contributing area for CP-1 is 7.13 Acres with discharge rate of 42 cfs it is proposed to convey the runoff through three 24 inch diameter CMP's to be placed under the new construction.

Since the exit velocity is greater than 5 feet per second, dumped rock (d_{50} = 6") will be required at the outlet of the pipes to prevent scour erosion.

A permit will be required by ADOT to perform this work.

APPENDIX "A"

APPENDEX "A"

PROJECT NAME AND LOCATION: BORDER PATROL REPORT

DRAINAGE CONCENTRATION POINT: CP-1

WATERSHED AREA (A): 7.13 acres

LENGTH OF WATERCOURSE (Lc): 1700. ft

LENGTH TO CENTER OF GRAVITY (Lca): 850. ft

INCREMENTAL CHANGE IN LENGTH (Li) - ft

700.
1000.

INCREMENTAL CHANGE IN ELEV (Hi) - ft

20.0
850.0

MEAN SLOPE (Sc): .1058 ft BASIN FACTOR (Nb): .0400

WATERSHED TYPE(S): RURAL

RAINFALL VALUES

	EVENT					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
P 1	1.21	1.53	1.74	2.02	2.27	2.51
P 2	1.35	1.72	1.96	2.28	2.57	2.85
P 3	1.44	1.84	2.11	2.45	2.77	3.07
P 6	1.62	2.08	2.39	2.79	3.15	3.50
P24	2.03	2.66	3.07	3.61	4.10	4.58

SOIL GROUPS

100. % C, CN= 89, COVER TYPE= DESERT BRUSH , COVER DENSITY= 10 %

IMPERVIOUS COVER= 5. %

RAINFALL/RUNOFF AND PEAK DISCHARGE DATA

	EVENT					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
RUNOFF SUPPLY RATE (q/i):	.293	.427	.499	.573	.626	.669
Tc (FUNCTION OF i) :	13.57	11.67	10.97	10.38	10.01	9.75
SOLUTION OF Tc (MINUTES):	8	6	5	5	5	5
RAINFL INT. @ Tc (IN/HR):	3.608	5.071	6.061	7.018	7.889	8.747
RUNOFF RATE @ Tc (IN/HR):	1.057	2.165	3.021	4.019	4.941	5.855
PEAK DISCHARGE (CFS) :	7.60	15.56	21.71	28.88	35.51	42.08

APPENDIX "B"

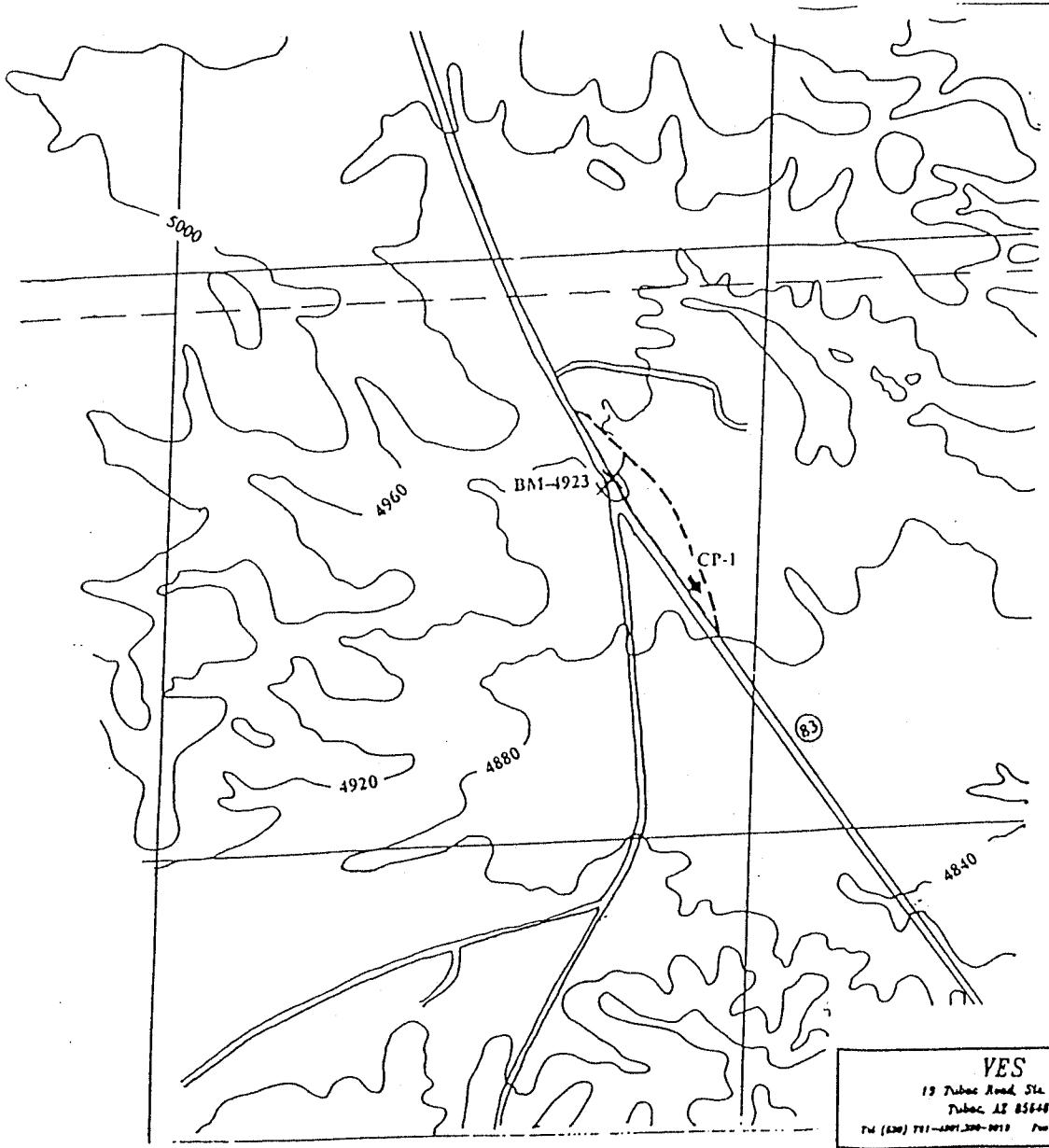
APPENDIX "B"

PIPE CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE

Culvert Diameter (feet)	2
FHWA Chart Number (1,2 or 3)	2
Scale Number on Chart (Type of Culvert Entrance)	3
Manning's Roughness Coefficient (n - value)	0.024
Entrance Loss Coefficient of Culvert Opening	0.9
Culvert Length (feet)	100
Culvert Slope (feet per foot)	0.03

*** RESULTS ***

Flow Rate (cfs)	Tailwater Depth (ft)	..Headwater (ft) .. In. Ctrl.	Out Ctrl.	Normal Depth (ft)	Critical Depth (ft)	Depth at Oulet (ft)	Oulet Vel. (fps)
14	2.0	2.33	0.88	1.19	1.35	1.19	7.21



N

LEGEND

----- Subwatershed Boundary

➡ Concentration Point

NOTES

CP-1 = 42.00 cfs

Source: USGS 7 1/2' Quad - Empire Ranch, Arizona

FIGURE No.3

VES
19 Tubac Road, Ste. 600
Tubac, AZ 85646
Tel (520) 751-4901,390-9019 Fax (520) 751-4906

Frank M. Vasquez, P.E., R.L.S.
Arizona Registration No. 10299, 13189

SUBWATERSHED MAP
INS STATE ROUTE 83, PULLOUT
SECTION 15, T.19 S., R. 16 E., G. S. R. B. & M.
SANTA CRUZ COUNTY, AZ.

DESIGN	FV	SCALE	PROJECT NO.	DATE	SHEET
DRAWN	MA	1" = 600'	[illegible]	07/11/00	1 OF 1
CHECK	FV				