

Prepared for:

ARIZONA DEPARTMENT OF TRANSPORTATION 205 South 17th Avenue Phoenix, Arizona 85007

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Final Design Concept Report





State Route 86: Sandario Road to Kinney Road Why -Tucson Highway Federal No. STP-086-A(APA) Project No. 086 PM 156 H6806 01 L **Tucson District - Pima County**





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Prepared for: Arizona Department of Transportation Intermodal Transportation Division Roadway Engineering Group Roadway Predesign Section

April 2010









ARIZONA DEPARTMENT OF TRANSPORTATION 205 South 17th Avenue

Phoenix, Arizona 85007

ARIZONA DEPARTMENT OF TRANSPORTATION

OFFICE MEMO

INTERMODAL TRANSPORTATION DIVISION

May 3, 2010

TO: TODD EMERY, TUCSON DISTRICT, T100 JEFF STINE, PROJECT MANAGER, T100 MARY VIPARINA, ASSISTANT STATE ENGINEER, 611E

FROM: TIM WILSON, ROADWAY PREDESIGN, 605E

SUBJECT: DESIGN MEMORANDUM 86 PM 156.00 H680601L SR 86, SANDARIO ROAD TO KINNEY ROAD WHY-TUCSON HWY SR 86

This memorandum is prepared pursuant to Section 3.3 of the ADOT Action Plan for Federal-Aid Highway projects. The proposed major design features for this project are described in the attached Final Design Concept Report.

Your concurrence/approval on the proposed major design features is requested.

PAUL O'BRIEN, ROADWAY PREDESIGN MANAGER, 605E

Concurrence: TODD/EMERY, TUCSON DISTRICT, T100 Concurrence: JEFF STINE PROJECT MANAGER, T100 Approved:

Date

MARY VIPARINA ASSISTANT STATE ENGINEER-ROADWAY, 611E



EXECUTIVE SUMMARY

Introduction

This Final Design Concept Report (DCR) presents the results of an investigation of alternatives for improving State Route (SR) 86 between Sandario Road and Kinney Road, Project No. 086 PM 156 H6806 01L, Federal No. STP-086-A(APA).

The project is listed in the 2010- 2014 Arizona Department of Transportation (ADOT) Five-Year Transportation Facilities Construction Program, March 2010 Board Actions, as follows:

• <u>Item #11508</u>; A programmed cost of \$22,000,000 using STP Funds and \$1,540,000 using PAG 2.6% funds for Construct roadway widening to 4 lanes in FY 2011.

The Arizona State Transportation Improvement Program (STIP) for FY 2010-2013; TIP Amendment #5 – Approved 01/28/2010, shows the following:

- \$475,000 using PAG 2.6% funds and \$5,700,000 using ASTP funds for design and construction in FY 2010.
- \$22,000,000 in FY 2011 and \$7,000,000 in FY 2012 for construction using ASTP funds.

Currently the project is programmed as "Valencia Road – Kinney Road, Construct roadway widening to 4 lanes." The programmed project limits are from Milepost (MP) 159.5 to MP 166.1. Subsequently at the initial stages of the development of this DCR, the team agreed to extend the westerly project limits by 2.62 miles and the easterly limits by 0.48 miles. The new limits begin at MP 156.88 and end at MP 166.58. The project name has been changed from SR 86, Valencia Road – Kinney Road to SR 86, Sandario Road – Kinney Road.

This Final DCR will document the development and evaluation of alternatives for improvement of SR 86 between Sandario Road and Kinney Road to enhance safety and traffic operational characteristics of the roadway and to meet current and future traffic needs. This Final DCR is intended to provide a long-range plan that will guide future decisions and design regarding the improvements to this section of SR 86.

Existing SR 86 between the easterly end of this project, just east of Kinney Road, and I-19 is currently a four lane roadway. With the

rapidly growing population and increasing volumes of traffic to the west of Kinney Road, the existing four lane roadway from Kinney Road to I-19 and the existing two lane roadway to the west will become increasingly congested in the near future. Capacity and safety improvements for this segment of SR 86 will be needed to accommodate the increased traffic in coming years.

A number of governmental agencies have been involved in the study including the Federal Highway Administration (FHWA), Pima County Department of Transportation, Pima County Flood Control District, Pima County Department of Environmental Quality (DEQ), the City of Tucson, Arizona Department of Public Safety (DPS), Tucson Water Department, Drexel Heights Fire District, Arizona State Land Department, Arizona Department of Environmental Quality, U.S. Bureau of Land Management (BLM), U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Tucson Airport Authority, Central Arizona Project (CAP), several Divisions within ADOT, and various public utilities.

The Design Concept Study begins at MP 156.88, just east of the intersection of SR 86 and Sandario Road, and proceeds easterly to MP 166.58 east of the intersection of SR 86 and Kinney Road. The study route is located within Pima County and lies within the ADOT Tucson District. **Figure 1** shows the location of the study.



Figure 1

Purpose and Need

SR 86 serves as a regional transportation route connecting the Tucson metropolitan area to the communities of Sells and Ajo and serves the sparsely populated areas in south-central Arizona.



SR 86 is experiencing a steadily increasing volume of commuter traffic between the developing residential areas to the west and the employment destinations in Tucson. Large developments that are in the planning stage to the west of San Joaquin Road will accelerate the growth of traffic as they are completed and contribute commuting traffic to SR 86. A traffic analysis showed that without improvements, the mainline level of service (LOS) of SR 86 in 2007 at peak hour was D – E east of San Joaquin Road and C – D west of San Joaquin Road. In 2030 the peak hour LOS will decline to F east of San Joaquin Road and E - F west of San Joaquin Road. See Section 2, Traffic and Crash Data.

The frequency of crashes is increasing, particularly at intersections. The crash history at the intersection of SR 86 and Camino Verde has warranted the installation of a traffic signal using federal HES funding. The signal, which was installed and became operational in July 2008, will alleviate the crash problems at the intersection for several years. However, as the traffic volumes grow and the mainline LOS drops, the Camino Verde intersection will exceed its design capacity with SR 86 as a two-lane roadway.

Improvement of SR 86, to increase capacity of the mainline and intersections, is necessary to provide a safe, efficient highway for both the near future and through design year 2030.



The Arizona Department of Transportation and Pima County will develop a Joint Project Agreement (JPA) for improvements to Kinney Road and other local roads intersecting SR 86 where adjustments to the local roads extend outside the ADOT Right-of-Way (R/W). The JPA will address the funding responsibilities of each agency. ADOT will construct the intersections with local roads as agreed are necessary to provide functional intersections with SR 86.



Design Concept Alternatives

SR 86 is considered a fringe urban highway for design year 2030 analysis. The ADOT Roadway Design Guidelines (RDG) requires a design year LOS of C-D for fringe urban highways.

The traffic analysis for SR 86 within the project limits shows that a four-lane roadway is necessary to accommodate projected 2030 traffic volumes on the mainline roadway. Signalization of major intersections will be required to accommodate turning movements. It will also be necessary to add additional through-traffic lanes at the signalized intersection of Kinney Road and SR 86.

No-Build Alternative:

The No-Build Alternative provides no improvements to the capacity, safety and operational features of the existing roadway, and involves no cost and no apparent change to the environmental features of the SR 86 corridor. However, the No-Build Alternative:

- the existing, aging roadway;

been eliminated from consideration.

The following alternatives have been identified for consideration to achieve the desired improvements in highway capacity, safety, and operating conditions. All of the alternatives will provide similar improvements to the ability of the highway to accommodate traffic both on the SR 86 mainline and at the intersections of SR 86 and the crossroads.

Alternative A:

Alternative A consists of constructing a new 2-lane westbound roadway on the north side of the existing 2-lane roadway to provide a 4-lane divided highway for the entire length of the project. The existing roadway will be converted to carry eastbound traffic. Crossroad intersections will be improved. Signalization and turn lanes will be constructed at major intersections. Where required, local roads will be realigned at their intersection with SR 86.

Alternative B:

Alternative B consists of constructing a new 2-lane eastbound roadway on the south side of the existing 2-lane roadway to provide a 4-lane divided highway for the entire length of the project. The existing roadway will be converted to carry westbound traffic. Crossroad intersections will be improved. Signalization and turn lanes will be constructed at major intersections. Where required, local roads will be realigned at their intersection with SR 86.

Alternative C:

A third alternative, Alternative C, was identified that essentially combines elements of both Alternatives A and B to better fit the corridor, minimize adverse impacts to adjacent properties and utilize as much of the existing Right-of-Way, drainage channels, and dikes as is feasible. Alternative C will provide a 4-lane divided roadway, and will utilize the existing 2-lane roadway for one direction of travel through the majority of the length of the project. The horizontal alignment will be modified to shift the location of the new 2-lane roadway from one side of the existing 2-lane road to the other. Existing SR 86 will be used as the westbound roadway and a new eastbound roadway will be

Will require continuing expenditures to rehabilitate and maintain

- Will not fulfill the purpose and need of improving the capacity, safety, and traffic operational characteristics of the route.

Therefore, the No-Build Alternative is not recommended and has

SR 86; Sandario Road to Kinney Road

constructed from the beginning of the project at MP 156.88 to approximately MP 160.1. From MP 160.1 to MP 160.4 the horizontal alignment transitions to the north. Through the transition the existing roadway will be removed and new eastbound and westbound roadways will be constructed.

From MP 160.4 to MP 163.2 the existing 2-lane roadway will be converted to the eastbound roadway and a new westbound roadway will be constructed.

Between MP 163.2 and MP 163.6 the horizontal alignment will again transition to the south with the existing roadway being removed and new eastbound and westbound roadways being constructed.

From MP 163.6 to MP 164.2 the existing 2-lane roadway will be converted to the westbound roadway and a new eastbound roadway will be constructed.

At MP 164.2 the alignment will transition to being symmetrical with respect to the existing roadway with new eastbound and westbound roadways being constructed from MP 164.2 to approximate MP 166.58 where the roadway will match the existing SR 86 eastbound and westbound roadways.

Preferred Alternative:

Evaluation of the alternatives indicates the following:

- Alternative C has significantly less adverse impact on adjacent improved properties than Alternative A or B.
- Alternative C will require less new R/W than Alternative A or B.
- The cost of Alternative C is approximately 4.2% higher than Alternative A and 3.7% higher than Alternative B. The slightly higher cost is more than offset by the reduced impact on adjacent properties and the lesser amount of new R/W and Easements required.

Alternative C is the Preferred Alternative to be carried forward for further development.

The summary cost for the preferred alternative (Alternative C) for SR 86 is shown in Table 1: Summary of Estimated Costs for SR 86. The summary cost for the preferred alternative (Alternative C) for local roads is shown in Table 2: Summary of Costs to Pima County for Local Roads.

As a result of coordination with the Utility Owners it was determined by ADOT that the R/W for SR 86 will be widened enough to allow most of the utility lines that are now within the SR 86 R/W to relocate within the expanded SR 86 R/W. Utility lines that are currently outside the SR 86 R/W, but that will be within the expanded SR 86 R/W may

	TABLE 1: SUMMARY OF ESTIMATED COSTS FOR SR 86									
Segment No.	Segment Name	Begin MP	End MP	Length (miles)	SR 86 Construction Costs (\$)	SR 86 Design Costs (\$)	SR 86 R/W & DE Costs (\$)	SR 86 Utility Relocation Costs (\$)	Envir. Mit. (\$)	Totai Project Costs (\$)
C1	Sandario Rd. to San Joaquin Rd.	156.88	163.23	6.35	42,280,000	3,382,000	1,785,000	200,000	0	47,647,000
C2	San Joaquin Rd. to Kinney Rd.	163.23	166.58	3.35	20,290,000	1,623,000	2,171,000	1,000,000	800,000	25,884,000
	Project Totais	3		9.70	62,570,000	5,005,000	3,956,000	1,200,000	800,000	73,531,000

TABLE 2: SUMMARY OF ESTIMATED COSTS TO PIMA COUNTY FOR LOCAL BOARS

FOR LOCAL ROADS				
Segment No.	Construction (\$)	Design (\$)	R/W & DE (\$)	Totai (\$)
C1	189,000	15,000	27,000	231,000
C2	6,166,000	493,000	925,000	7,584,000
Totai	6,356,000	508,000	952,000	7,816,000

be accommodated within the expanded R/W or may relocate outside the expanded R/W. Specific conflicts between the utility facilities and the improvement of SR 86 will be determined through further coordination between the utility owners and ADOT during the Design Phase of the improvement of SR 86. Estimated costs associated with relocation of utility lines that are located outside the existing ADOT R/W, and have prior rights, have been included in the Summary of Estimated Costs for SR 86 based on information available.

Access Management Plan

State highways such as SR 86 that are located close to urban areas, in this instance, the City of Tucson, are intended to allow commerce to take place and the public to travel safely and efficiently, whether commuting or traveling to and from the urban area for other purposes. Management of access by restricting the number of access points and by locating and designing permitted access points to minimize conflicts with through traffic is a successful strategy for maintaining a high level of service on the highway while accommodating increasing numbers of vehicles to and from adjacent developments.

The section of SR 86 within the study limits of this project is currently being proposed for improvement to a four-lane facility from Sandario Road to just west of Kinney Road. SR 86 will be improved to a sixlane facility through the Kinney Road intersection. Implementation of access management in conjunction with the added capacity provided by additional lanes will preserve the function of the highway as a safe and efficient transportation corridor.

Access to adjacent properties will be in accordance with the current publication of the ADOT Access Category System: Characteristics and Requirements for Approach Permitting. A "Proposed" publication is now available. When adopted the approved publication is to be used. The Access Category Assignment for SR 86 within the project limits is MR as shown in Section 6.1.

Spacing of intersecting streets, roads and highways will be planned on intervals of three-quarters to one mile. One-half mile spacing of public roadways may be permitted to the highway when no reasonable alternative access to the general street system exists.

Median crossovers will be provided at major intersections. Intermediate median crossovers will be provided as requested by the Arizona Department of Public Safety and to provide reasonable access from all directions to right-in/right-out turnouts, subject to a one-half mile minimum spacing. Eastbound and westbound traffic on SR 86 will have the opportunity to make U-turns at median crossovers as discussed in Section 6.4. The access control features are shown on the plans for the preferred alternative in Appendix B.

All properties fronting on SR 86 will continue to have reasonable access to a public road. Where private access is available to a local road, the private access to SR 86 may be revoked. Where private access is permitted, turnouts will be right-in/right-out only. New private access points will be spaced no closer than ¹/₄-mile. Existing private access points that are less than ¹/₄-mile apart may be permitted if revocation would result in a property being landlocked. Frontage/access roads will not be constructed as part of the reconstruction of SR 86.

Access management will be implemented utilizing the highway planning and improvement authority of ADOT and the planning and land use powers of Pima County in a cooperative partnership.

Access control will be implemented as the construction to provide a four-lane divided highway is completed. Future access to SR 86 will be determined by cooperative actions of ADOT and Pima County. ADOT and the County should jointly determine the type and location of access

points that will preserve the functionality of SR 86 while accommodating the needs of developers of adjacent properties.

Implementation Plan

It is anticipated that the total improvement of SR 86 from Sandario Road (MP 156.88) to Kinney Road (MP 166.58) will be implemented in two phases to address the most urgent needs first and to make improvements that can be accomplished with available funds. The final limits of each segment will be dependent on funding availability.

The priority of construction segments will proceed from east to west along the SR 86 corridor and will provide useable improvements to logical termini. Segment C2 will be constructed initially; however, the limits of construction may vary depending on availability of funds. The improvement of local roads adjacent to the SR 86 mainline will be included with the appropriate segment. The costs for local roads outside the ADOT R/W are attributed to Pima County (see Table 3).

The estimated cost of each improvement segment includes design, construction and R/W costs for the SR 86 mainline and for each local road requiring construction outside the ADOT R/W. An amount of \$1,200,000 is included for relocation of utility lines that will be attributable to ADOT where the utility substantiates a claim of prior rights. The extent of utility relocations and the responsibility for the cost of utility relocations will be determined during the design phase.

Total Est. Cost Seg	ment C1:	Total Est. Cost Segment C2		
SR 86:	\$47,647,000	SR 86:	\$25,884,000	
Local Roads:	<u>\$231,000</u>	Local Roads:	<u>\$7,584,000</u>	
Total Cost:	\$47,878,000	Total Cost:	\$33,468,000	

Estimate of Future Maintenance Costs

An estimate of the additional future annual maintenance costs that would result from the additional roadway lane miles added to this section of SR 86 was developed for the project. The additional future annual maintenance costs for SR 86; Sandario Road to Kinney Road are estimated to be approximately \$124,411 (See Section 7.3 of this Design Concept Report).

E 2. IMPLEMENTATION DLAN

Segment	Name and (Location)	Description	R/W and Drainage Easements (DE) (Acres)	Utility Relocation (\$)	Estimated Cost (\$)
C2	San Joaquin Rd. to Kinney Rd. (MP 163.23 to MP 166.58)	SR 86 Mainline from just west of San Joaquin Rd. to the End of Project east of Kinney Rd.	R/W & DE: 37.37	1,000,000	25,884,000
	Local Roads Outside	San Joaquin Rd. (Pima Co. Cost)	R/W: None		217,000
	ADOT H/W	Camino Verde (Pima Co. Cost)	R/W: 4.32		2,158,000
		Tucson Estates Pkwy. (North) (Pima Co. Cost)	R/W: 1.85		650,000
		Spencer St. (Pima Co. Cost)	R/W: 2.00		231,000
		Oklahoma St. (Pima Co. Cost)	R/W: 2.15		592,000
		 Sunset Blvd. (South) (Pima Co. Cost) 	R/W: 1.51		731,000
		Sheridan Ave. (Pima Co. Cost)	R/W: 0.07		134,000
		Kinney Road (Pima Co. Cost)	R/W: 2.30		2,871,000
		TOTAL: Local Roads; SEGMENT C2	Total R/W; Local Roads – 14.20		7,584,000
C1	Sandario Rd. to San Joaquin Rd. (MP 156.88 to MP 163.23)	SR 86 Mainline from Begin of Project east of Sandario Rd. to just west of San Joaquin Rd.	R/W & DE: 76.80	200,000	47,647,000
	Local Outside ADOT R/W	Continental Rd. (Pima County Cost)	R/W: None		99,000
		 Valencia Rd. (Planning, design & construction by Pima Co.) 	R/W: None		None
		Old Ajo Hwy. (Pima Co. Cost)	R/W: 0.28		132,000
		TOTAL: Local Roads; SEGMENT C1	Total R/W: Local Roads - 0.28	·····	231,000

Mitigation Measures

Following are the Mitigation Measures that have been provided as part of the Final Environmental Assessment submitted to FHWA on April 5, 2010. A Finding of No Significant Impact was issued by the Federal Highway Administration on April 16, 2010.

The following mitigation measures and commitments are not subject to change without the prior written approval of the Federal Highway Administration.

Arizona Department of Transportation Design Responsibilities

- 1. During final design, the Pima County Regional Flood Control District floodplain manager will be provided an opportunity to review and comment on the design plans.
- 2. During final design, the design plans will be reviewed to verify the extent of impacts to Waters of the United States. The Arizona Department of Transportation will prepare and submit an application to the United States Army Corps of Engineers for a Clean Water Act Section 404 permit and Section 401 Water Quality Certification for the project.
- 3. No work will occur within Waters of the United States until the appropriate Clean Water Act Section 404 permit and Section 401 Water Quality Certification are obtained.
- 4. During final design, the United States Fish and Wildlife Service list of threatened, endangered, proposed, and candidate species and the Arizona Game and Fish Department Heritage Data Management System will be reviewed by a qualified biologist to determine if new species or critical habitat has been identified or any changes in listing status have occurred. The Biological Evaluation and Biological Opinion will be updated to reflect any changes.
- 5. Prior to the start of construction, the Arizona Department of Transportation will acquire 60 acre-credits in a United States Fish and Wildlife Service-approved conservation bank for Pima pineapple cactus. Any change in the scope of the project that may occur during final design will require a reevaluation of impacts to Pima pineapple cactus habitat.

- 6. Invasive species control will be conducted both prior to and during construction to minimize colonization of disturbed areas by non-native grasses that may degrade potential Pima pineapple cactus habitat. The Arizona Department of Transportation Natural Resources Management Section will begin invasive species control two years prior to the commencement of work on the roadway project.
- 7. During final design, the Arizona Department of Transportation will develop a project-specific Plan for Control of Noxious and Invasive Plant Species, which would address appropriate control of occurrences of invasive plant species within the right-of-way during construction. The plan will include such provisions as vehicle inspection to prevent movement of noxious and invasive species seeds to and from the work site; procedures for collection, removal, and disposal of noxious and invasive plants; and proposed methods of control, such as application of herbicides and mechanical or manual removal, to be used for each plant species at various stages of plant development.
- 8. During final design, the Arizona Department of Transportation will develop a plan for topsoil salvage in natural areas where construction disturbance will occur and invasive species are not present. In these areas, 4 to 8 inches of surface soil will be salvaged and stockpiled to be redistributed over the cut and fill slopes adjacent to the new roadway upon completion of construction. During final design, a survey by a qualified biologist will be conducted to determine the presence of invasive species in the project area. In areas where topsoil is determined to contain invasive species seed banks, topsoil will not be reused.
- 9. All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction will be seeded using species native to the project vicinity.
- final design. Plant species protected under the Arizona Native Plant law will be avoided by construction to the extent practicable. If impacts to native plants cannot be avoided, the plants will be treated in accordance with state law. The plan will include salvaging all Pima pineapple cactus within the area of permanent disturbance and replanting them at a location approved by a qualified biologist. Any Pima

10. The Arizona Department of Transportation will develop a native plant salvage plan for the project during

pineapple cactus that are not within the area of permanent disturbance, but present within the right-of-way, will be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction.

- 11. Protected native plants within the project limits will be impacted by this project; therefore, the Arizona Department of Transportation Roadside Development Section will determine if Arizona Department of Agriculture notification is needed. If notification is needed, the Arizona Department of Transportation Roadside Development Section will send the notification at least 60 calendar days prior to the start of construction.
- 12. The Arizona Game and Fish Department will be invited by the Arizona Department of Transportation to participate in agency partnering during final design.
- 13. During final design, the Arizona Department of Transportation project manager will contact the Arizona Department of Transportation Environmental Planning Group noise coordinator to arrange for qualified personnel to review and update the noise analysis.
- 14. During final design, the Arizona Department of Transportation project manager will contact the Arizona Department of Transportation Environmental Planning Group hazardous materials coordinator (602.712.7767) to arrange for the preparation of an updated Preliminary Initial Site Assessment, lead-based paint assessment, and asbestos assessment.
- 15. During final design, the Arizona Department of Transportation Historic Preservation Team will develop and implement a data recovery plan for site AZ AA: 16.5 (ASM).
- 16. During final design, the Arizona Department of Transportation will consider extending the Option C proposed westbound outside lane into the Sandario Road/State Route 86 intersection to connect to the eastbound to northbound right-turn lane.

Arizona Department of Transportation Tucson District Responsibilities

1. No work will occur within Waters of the United States until the appropriate Clean Water Act Section 404 permit and Section 401 Water Quality Certification are obtained.

- the "Environmental Protection on Arizona Department of Transportation Projects Instructions to Contractors" and review and sign the "Checklist for Environmental Compliance." The Arizona Department of Transportation Engineer will also sign the checklist and return it to the United States Army Corps of Engineers seven calendar days prior to construction.
- 3. The Arizona Department of Transportation Engineer will submit the contractors' Arizona Pollutant Discharge Elimination System Notice of Intent and the Notice of Termination to the District environmental coordinator.
- 4. The Arizona Department of Transportation Engineer will contact the Arizona Department of Transportation Environmental Planning Group biologist to schedule the preconstruction meeting on a mutually agreeable date to ensure a qualified biologist would be available to attend the meeting.
- 5. No work will occur within the right-of-way or proposed new right-of-way between milepost 161.3 and milepost 161.8 until the Arizona Department of Transportation Environmental Planning Group informs the Engineer that data recovery has been completed in accordance with the terms and stipulations of the project's Memorandum of Agreement.

Contractor Responsibilities

- 1. No work shall occur within Waters of the United States until the appropriate Clean Water Act Section 404 permit and Section 401 Water Quality Certification are obtained.
- 2. Prior to construction, the contractor shall review the "Environmental Protection on Arizona Department of Transportation Projects Instructions to Contractors" and review and sign the "Checklist for Environmental Compliance."
- 3. The contractor shall comply with all terms, general conditions, and special conditions of the project's Clean Water Act Section 404 permit and Section 401 Water Quality Certification.

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2. Prior to construction, the Arizona Department of Transportation Engineer will have the contractor review

- 4. The contractor, in association with the Engineer, shall submit the Arizona Pollutant Discharge Elimination System Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality only after the Engineer has reviewed and approved the Stormwater Pollution Prevention Plan.
- 5. The contractor shall adhere to the topsoil salvage plan developed by the Arizona Department of Transportation.
- 6. All disturbed soils that shall not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.
- 7. The contractor shall adhere to the native plant salvage plan developed by the Arizona Department of Transportation.
- 8. The contractor shall avoid all flagged and/or otherwise designated sensitive resource areas within or adjacent to the project area.
- 9. If any Sonoran desert tortoises are encountered during construction, the contractor shall adhere to the Arizona Game and Fish Department's Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects (Revised October 23, 2007).
- 10. Prior to construction, the contractor shall employ a qualified biologist to present an environmental awareness program to all personnel who would be on-site, including, but not limited to, contractors, contractors' employees, supervisors, inspectors, and subcontractors working at project locations on SR 86 in Pima County. This program shall contain, at a minimum, information concerning the biology and distribution of the Sonoran desert tortoise, legal status and occurrence in the project area, measures to avoid impacts to tortoises, and procedures to be implemented in case of desert tortoise encounters.
- 11. The contractor shall adhere to the project-specific Plan for Control of Noxious and Invasive Plant Species developed by the Arizona Department of Transportation.
- 12. To prevent the introduction of invasive species seeds, all earth-moving and hauling equipment shall be washed at the contractor's storage facility prior to entering the construction site.

- 13. To prevent invasive species seeds from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris prior to leaving the construction site.
- 14. The contractor shall ensure that all exhaust systems on equipment will be in good working order and properly designed engine enclosures and intake silencers will be used where appropriate. To minimize noise impacts during construction, idling equipment shall be located as far away from sensitive receivers, such as residences, as possible.
- 15. No work shall occur within the right-of-way or proposed new right-of-way between milepost 161.3 and milepost 161.8 until the Engineer informs the contractor that data recovery has been completed in accordance with the terms and stipulations of the project's Memorandum of Agreement. 16. With the exception of temporary, short-term closures (not exceeding 2 to 3 hours) of driveways, the contractor shall maintain driveway access to all businesses and residences throughout construction. If a given property has multiple driveways, at least one will remain open at all times. Standard Specifications Included as Mitigation Measures
- Construction, Section 104 Scope of Work, Subsection 09 Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs (2008 Edition), "The contractor shall take sufficient precautions, considering various conditions, to prevent pollution of streams, lakes, and reservoirs with fuels, oils, bitumens, calcium chloride, fresh Portland cement concrete, raw sewage, muddy water, chemicals or other harmful materials. None of these materials shall be discharged into any channels leading to such streams, lakes or reservoirs."
- 2. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 104 Scope of Work, Subsection 09 Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs (2008 Edition), "The contractor shall give special attention to the effect

1. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge

of its operations upon the landscape and shall take special care to maintain natural surroundings undamaged."

- 3. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 104 Scope of Work, Subsection 08 Prevention of Air and Noise Pollution (2008 Edition), "The contractor shall control, reduce, remove or prevent air pollution in all its forms, including air contaminants, in the performance of the contractor's work." Fugitive dust generated from construction activities will be controlled in accordance with the Arizona Department of Transportation's Erosion and Pollution Control Manual for Highway Design and Construction, special provisions, and local rules or ordinances. The contractor will comply with all applicable air pollution ordinances, regulations, and orders during construction. All dust-producing surfaces will be watered or otherwise stabilized to reduce shortterm impacts associated with an increase in particulate matter attributable to construction activity.
- 4. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 104 Scope of Work, Subsection 08 Prevention of Air and Noise Pollution (2008 Edition), "The contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract. Each internal combustion engine used for any purpose on the work or related to the work shall be equipped with a muffler of a type recommended by the manufacturer."
- 5. According to Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 107 Legal Relations and Responsibility to Public, Subsection 07 Sanitary, Health, and Safety Provisions (2008 Edition), "During construction operations, should material be encountered which the contractor believes to be hazardous or contaminated, the contractor shall immediately do the following: a) stop work and remove workers within the contaminated areas b) barricade the area and provide traffic control, and c) notify the Arizona Department of Transportation Engineer." The Arizona Department of Transportation Engineer will arrange for proper assessment, treatment, or disposal of those

materials. Such locations will be investigated and proper action implemented prior to the continuation of work in that location.

Construction, Section 107 Legal Relations and Responsibility to Public, Subsection 05 Archaeological Features (2008 Edition), "When archaeological, historical, or paleontological features are encountered or discovered during any activity related to the construction of the project, the contractor shall stop work immediately at that location and shall take all reasonable steps to secure the preservation of those resources and notify the Engineer." The Arizona Department of Transportation Engineer will, in turn, notify the Arizona Department of Transportation Historic Preservation Team to evaluate the significance of the resources. If human remains are encountered during any phase of the project on non-federal land, all work must stop and the Engineer will contact Arizona Department of Transportation Historic Preservation Team and the Arizona State Museum. If human remains are discovered on Bureau of Land Management

6. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge property, the Bureau of Land Management Tucson Area archaeologist must be notified as well.

Final Design Concept Report

Widening of Grand Avenue to a Continuous Six-Lane Arterial Street

US60, Grand Avenue (SR 303L to 99th Avenue)

ADOT CONTRACT NO. 05-26 TRACS No. 60 MA 139 H6866 01L

Prepared For:

ARIZONA DEPARTMENT OF TRANSPORTATION

Prepared by:

DMJM HARRIS AECOM

2777 E. Camelback Road, Suite 200 Phoenix, Arizona 85016



January 2007



ARIZONA DEPARTMENT OF TRANSPORTATION

OFFICE MEMO

INTERMODAL TRANSPORTATION DIVISION

January 17, 2007

TO: PERRY POWELL, PHOENIX CONSTRUCTION DISTRICT, E700 STEVE BEASLEY, PROJECT MANAGER, 614E TIM WOLFE, PHOENIX MAINTENANCE, PM00 MARY VIPARINA, ASSISTANT STATE ENGINEER, 611E

FROM: VINCENT LI, ROADWAY PREDESIGN, 605E

SUBJECT: DESIGN MEMORANDUM 60 MA 138.00 H686601L US 60, GRAND AVE (SR 303L TO 99TH AVE) WICKENBURG-PHOENIX HWY US 60

This memorandum is prepared pursuant to Section 3.3 of the ADOT Action Plan for Federal-Aid Highway projects. The proposed major design features for this project are described in the attached Final Design Concept Report.

Your concurrence/approval on the proposed major design features is requested.

mount

VINCENT LI, ROADWAY PREDESIGN MANAGER, 605E

Concurrence:

PERRY POWELL, PHOENIX CONSTRUCTION DISTRICT, E700

MARY VIPARINA, ASSISTANT STATE ENGINEER-ROADWAY, 611E

Concurrence:

STEVE BEASLEY, PROJECT MANAGER, 614E

Concurrence:

TIM WOLFE, PHOENIX MAINTENANCE, PM00

Approved:

1-26-07

Date

Date

Project id: 13093

3-07

cc: Environmental Planning Group, 619E

Roadway Design, 615E



-26

<u>.</u>

2

12

Final Design Concept Report

Widening of Grand Avenue to a Continuous Six-Lane Arterial Street

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ADOT CONTRACT NO. 05-26 TRACS No. 60 MA 139 H6866 01L

Prepared For:

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Prepared by:

DMJM HARRIS AECOM

2777 E. Camelback Road, Suite 200 Phoenix, Arizona 85016



January 2007



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1.0 INTRODUCTION

1.1 Forward

This Final Design Concept Report (DCR) presents the results of an investigation of alternatives for improving State Route (SR) 86 between Sandario Road and Kinney Road, Project No. 086 PM 156 H6806 01L, Federal No. STP-086-A(APA).

The project is listed in the 2010- 2014 Arizona Department of Transportation (ADOT) Five-Year Transportation Facilities Construction Program, March 2010 Board Actions, as follows:

• <u>Item #11508</u>; A programmed cost of \$22,000,000 using STP Funds and \$1,540,000 using PAG 2.6% funds for Construct roadway widening to 4 lanes in FY 2011.

The Arizona State Transportation Improvement Program (STIP) for FY 2010-2013; TIP Amendment #5 – Approved 01/28/2010, shows the following:

- \$475,000 using PAG 2.6% funds and \$5,700,000 using ASTP funds for design and construction in FY 2010.
- \$22,000,000 in FY 2011 and \$7,000,000 in FY 2012 for construction using ASTP funds.

Currently a portion of the project is programmed as "Valencia Road – Kinney Road, Construct roadway widening to 4 lanes." The programmed project limits are from Milepost (MP) 159.5 to MP 166.1. Subsequently at the initial stages of the development of this DCR, the team agreed to extend the westerly project limits by 2.62 miles and the easterly limits by 0.48 miles. The new limits begin at MP 156.88 and end at MP 166.58. The project has been renamed from SR 86, Valencia Road – Kinney Road to SR 86, Sandario Road – Kinney Road.

The purpose of this DCR is to develop and evaluate alternatives for improvement of SR 86 between Sandario Road and Kinney Road to enhance safety and traffic operational characteristics of the roadway and to meet current and future traffic needs. This Final DCR is intended to provide a long-range plan that will guide future decisions and design for improvements to this section of SR 86.

Existing SR 86 between the easterly end of this project, just east of Kinney Road, and I-19 is currently a four lane roadway. With the rapidly growing population and increasing volumes of traffic to the west of Kinney Road, the existing four lane roadway from Kinney Road to I-19 and the existing two lane roadway to the west will become increasingly congested in the near future. Capacity and safety

improvements for this segment of SR 86 will be needed to accommodate the increased traffic in coming years.

A number of governmental agencies have been involved in the study including the Federal Highway Administration (FHWA), Pima County Department of Transportation, Pima County Flood Control District, Pima County Department of Environmental Quality (DEQ), the City of Tucson, Arizona Department of Public Safety (DPS), Tucson Water Department, Drexel Heights Fire District, Arizona State Land Department, Arizona Department of Environmental Quality, U.S. Bureau of Land Management (BLM), U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Tucson Airport Authority, Central Arizona Project (CAP) several Divisions within ADOT, and various public utilities.

Figure 1-1 shows the location of the study. Figure 1-2 defines the limits of the study route, beginning at MP 156.88, just east of the intersection of SR 86 and Sandario Road, and continuing easterly to MP 166.58 east of the intersection of SR 86 and Kinney Road. The study route is located within Pima County and lies within the ADOT Tucson District.



Location Map Figure 1-1

1



1.2 Purpose and Need

SR 86 serves as a regional transportation route connecting the Tucson metropolitan area to the communities of Sells and Ajo and serves the sparsely populated areas in south-central Arizona. In recent years the Tucson urban area has started expanding to the west and SR 86 is a primary link between the expanding urbanized area and downtown Tucson. SR 86 has a functional classification of Rural Minor Arterial from its beginning at the junction of SR 85 in Why, Arizona, easterly to the Tucson urban boundary at San Joaquin Road (MP 163.4).



The functional classification is Urban Minor Arterial from San Joaquin Road easterly to Mission Road (MP 170.1). SR 86 is experiencing a steadily increasing volume of commuter traffic between the developing residential areas to the west and the employment destinations in Tucson. Large developments that are in the planning stage to the west of San Joaquin Road will accelerate the growth of traffic as they are completed and contribute commuting traffic to SR 86.

Traffic volumes along the route are increasing as the population of the area continues to increase. Areas both north and south of SR 86 are experiencing extensive residential development, and commercial development is beginning to occur along SR 86 west of Kinney Road. Large residential/commercial developments are in the planning stages on the south side of SR 86 as far west as Postvale Road (MP 157.67). Much of the traffic generated by the residential development uses SR 86 as the primary route to the Tucson employment centers.



A Wal-Mart super-store is planned for development at the northwest corner of the intersection of SR 86 and Kinney Road, which will impact traffic on SR 86 and on Kinney Road at the intersection of SR 86.

A traffic analysis showed that without improvements, the mainline level of service (LOS) of SR 86 in 2007 at peak hour was D - E east of San Joaquin Road and C - D west of San Joaquin Road. In 2030 the peak hour LOS will decline to F east of San Joaquin Road and E - F west of San Joaquin Road. See Section 2, Traffic and Crash Data.

The traffic analysis also showed that without improvements, unsignalized intersections at Sunset Boulevard, Tucson Estates Parkway, east end of Old Ajo way, and San Joaquin Road failed to meet the required LOS in 2007. In 2030 all of the intersections within the project limits will fail to meet the required LOS. See Section 2, Traffic and Crash Data.

The frequency of crashes is increasing, particularly at intersections. The crash history at the intersection of SR 86 and Camino Verde has warranted the installation of a traffic signal using federal HES funding. The signal was installed and became operational in July 2008. The signal was constructed to fit the existing 2-lane roadway on SR 86, which will alleviate the crash problems for several years. However, as the traffic volumes grow and the mainline LOS drops, the Camino



Verde intersection lane roadway.

Improvement of SR 86 to increase capacity of the mainline and intersections is necessary to provide a safe, efficient highway for both the near future and through design year 2030. SR 86 will continue to function as a rural highway for the next several years between the beginning of the study just east of Sandario Road and San Joaquin Road. From San Joaquin Road easterly through the remainder of the Project SR 86 is currently functioning as an Urban Highway.

Residential and commercial developments are in the planning stages on the south side of SR 86 between Postvale Road and San Joaquin Road that will require access to SR 86. It is likely that Continental Road and Postvale Road will be extended to the south of SR 86 by developers. Development along SR 86 that is in the planning stages indicates that prior to design year 2030 SR 86 will be functioning as a Fringe Urban highway between Postvale Road and San Joaquin Road. Therefore, the study of improvements to SR 86 will consider the study area between Postvale Road and San Joaquin Road as Fringe Urban and the study area from San Joaquin Road easterly as Urban for purposes of analyzing needs and improvement alternatives for design year 2030. The capacity analyses for design year 2030 shown in Section 2, Traffic and Crash Data, of this report identify roadway and intersection improvements necessary to provide LOS C-D in design year 2030 as required in the ADOT RDG for Urban/Fringe Urban highways.

Verde intersection will exceed its design capacity with SR 86 as a two

1.3 **Description of the Project**

Project Limits 1.3.1

The study route under consideration extends easterly from MP 156.88 (0.15 miles east of the Sandario Road intersection) to MP 166.58, (0.31-miles east of the Kinney Road intersection) a net total of 9.70 miles. Improvements being considered on SR 86 are within the existing SR 86 corridor. Table 1-1 shows the location of the study area.

TABLE 1-1 LOCATION OF STUDY AREAS

Township	Range	Sections
15 South	11 East	12 - 15, 21, 22
15 South	12 East	3 - 5, 7 - 9
14 South	12 East	34, 35, 36

The existing Right of Way width along SR 86 through the study area is presented in Table 1-2.

МР		R/W North of Existing C/L (ft)	R/W South of Existing C/L (ft)	Total R/W(ft)
156.88 159.47	to	90	160	250
159.47 159.76	to	Varies	Varies	Varies
159.76 160.15	to	110	90	200
160.15		Widens to 160	90	250
160.15 160.28	to	160	90	250
160.28 160.55	to	Align. Varies	Align. Varies	250
160.55 160.66	to	100	150	250
160.66		100	Narrows to 100	200
160.66 165.88	to	100	100	200
165.88 166.07	to	Align. Varies	Align. Varies	200
166.07 166.58	to	64	136	200

TABLE 1-2 EXISTING RIGHT OF WAY WIDTH

History of the Project Route 1.3.2

SR 86 is the primary transportation route through much of southcentral Arizona, connecting the City of Tucson with a large, sparsely populated area. The highway passes through the Tohono O'Odham Indian Reservation and the towns/communities of Three Points, Sells, Quijota and Covered Wells before tying into SR 85, which is a northsouth highway between Interstate 8 and the Mexican Border at Lukeville. During the 1890's a stage coach ran between Tucson and mines in the vicinity of Covered Wells and Why.

SR 86 was constructed in 1935 as an 18-foot wide bituminous roadway. The roadway was widened to 40-feet in the early 1990s from MP 155.09 to MP 160.55, just east of the intersection with Valencia Road. The roadway alignment was shifted 60-feet to the north from MP 155.09 to MP 159.20. The alignment was then shifted 60-feet to the south along Ryan Airfield from MP 159.20 to MP 160.14.

The roadway between Valencia Road and Kinney Road was widened to 40-feet in the late 1960s and early 1970s. The alignment was revised between approximate MP 161.3 and MP 164.4 as part of the widening to 40-feet. SR 86 was constructed on new alignment to the south of the previous roadway. Portions of the old alignment were turned back to the County and were named the Old Ajo Highway.

Since the widening to 40-feet, sections of 2-way-left-turn lanes (2WLTL), left-turn lanes and right-turn lanes have been added. In most areas the shoulder widths have been reduced to accommodate the turn lanes.

In 1980 a parallel two lane roadway was constructed on SR 86 from just west of Kinney Road easterly approximately 4-miles which improved SR 86 to a 4-lane divided roadway into Tucson.

Table 1-3 lists the various previous construction projects for SR 86 within the project limits and includes construction dates and types of construction.

	TABLE 1-3	PREVIOUS ROADWAY PROJECTS
--	------------------	---------------------------

Project No.	Begin MP	End MP	As-Built Date	Description
NRS 110-A	164.75	170.37	1935	New 18-ft. bituminous road, w/2-4'gravel shoulders
NRS 110-B	156.04	164.75	1936	New 18-ft. bituminous road, w/2-4'gravel shoulders
NS 110(52)B	150.6	165.6	1951	Seal Coat
NS 222 (60)B	156.7	170.3	1960	Seal Coat
Non S-222(61)B	160.02	163.42	1961	Fencing
S 222-903	156.8	167.1	1966	Seal Coat
S-222-506	166.05	167.15	1968	New 40' AC Road
EMP-S-222(26)	160.64	166.05	1971	New 40' AC Road
F-056-1(1)	165.88	169.94	1980	New 38' AC road; ½" ACFC overlay on exist. 40'road
F-056-1-503	155.09	160.55	1992	New 40' AC Road

Project No.	Begin MP	End MP	As-Built Date	Description
F-056-1-510	165.20	167.30 WB 169.60 EB	1996	Mill and Replace AC, Construct AR-ACFC, Revise Kinney Rd. Intersection
F-056-1-514	122	162	2000	Scour Protection
F-056-1-519	150.46	165.84	2000	AR-AC Overlay
HES-900-A- (039)A	160.53	169.50	2003	Blunt End Guard Rail Replacement
STP 086-A(010)A	164.0	164.0	2008	Signal and Turning Lanes @ Camino Verde Rd.

Purpose and Scope of the Project 1.3.3

The purpose of this study is to identify, evaluate and select improvements to SR 86 that will provide a safe, efficient highway for the duration of the design period. An implementation plan will be developed to implement the selected improvements. The following elements will be studied in developing the preferred improvements:

- Operational characteristics.
- evaluated.

Joint Project Agreements 1.3.4

The Arizona Department of Transportation and Pima County will develop a Joint Project Agreement (JPA) for improvements to Kinney Road and other local roads intersecting SR 86 where adjustments to the local roads extend outside the ADOT Right-of-Way (R/W). The JPA will address the funding responsibilities of each agency. Construction of intersections with local roads as agreed are necessary to provide functional intersections with SR 86 will be included in the construction of SR 86 improvements.

• An evaluation of the existing design features.

• An analysis of traffic volumes and crashes.

Alternatives for improving the roadway to meet design year recommendations for safety and capacity will be developed and

1.4 Project Objectives

The study team, in cooperation with the participating government agencies, established a number of project objectives at the outset of the study, together with a list of factors to be used in evaluating each of the design concept alternatives. The process involved input from the general public as well as from representatives of the various government agencies as described in the following sections.

The Scoping Process 1.4.1

The DCR for SR 86 was initiated with scoping meetings conducted with government agencies and the public.

An Agency Scoping Meeting was held on November 7, 2005, from 10:00 a.m. to 12:00 p.m. in the conference room at the ADOT Tucson District Office located at 1221 South 2nd Avenue in Tucson, Arizona. The meeting was attended by representatives of ADOT, Pima County Flood Control District, Pima County Department of Transportation, FHWA, Tucson Water Department, US Fish and Wildlife Service, US Army Corps of Engineers, Arizona Department of Public Safety, and Tucson Airport Authority.



A Public Scoping Meeting was held on November 14, 2005, from 6:00 to 8:00 p.m. at the Ryan Airfield conference room, 9698 West Ajo Highway, Tucson, Arizona. Thirty-five people attended the meeting. Twenty-seven people submitted comments either by returning the comment form provided, sending an e-mail, or by telephone.

Those in attendance indicated that SR 86 needs to be improved throughout the study corridor. Issues, concerns, and opportunities discussed at the scoping meetings generally focused upon roadway safety, access control, drainage issues, adjacent development and economic impacts to the area.

In addition, a coordination meeting was held on December 5, 2005 with ADOT District staff and representatives of Pima County and Developers of property at the junction of SR 86 and Kinney Road. Since that time, and continuing to the present time, coordination meetings have been held with ADOT District staff, ADOT Drainage Section staff, Pima County Public Works representatives, Developers' representatives and the Tucson Airport Authority.

The purpose of these meetings has been to obtain information from area residents, business people, and public agency representatives regarding the existing roadway and surrounding area in order to determine issues that needed to be addressed in preparing the DCR and environmental documentation for the project. The meetings provided an opportunity for those in attendance to describe issues and express concerns about the existing roadway characteristics as well as to suggest various improvements that could be considered during the study.

The westerly terminal of the proposed improvement of SR 86 was intended to provide improvement to SR 86 through the area that is either being developed or that appeared likely to develop within the 20year design period of the improvements.



As a result of the on-going coordination meetings with Pima County and Developers along the SR 86 corridor, the limits of the study area were extended approximately 2.1 miles to the west to include areas where residential and commercial developments are in the planning stages on the south side of SR 86. The westerly terminus of the project is now located just east of Sandario Road.

Issues, Concerns, and Opportunities 1.4.2

During the agency and public scoping meetings, the following issues, concerns, and opportunities (ICO'S) were identified.

- - _

- considered.

1. Roadway Safety and Operational ICO's: The safe flow of traffic was a major concern for both the public agencies and the general public. A strong desire was expressed for roadway improvements, especially signalization at intersections. Participants recommended consideration of the following safety and operational issues.

• Consider installing traffic signals, lighting and turn lanes, including right-turn lanes, at the following SR 86 intersections:

Aviator Lane (Main entrance to Ryan Airfield)

Valencia Road

- San Joaquin Road

Camino Verde (Signal was installed July 2008).

Tucson Estates Parkway

Sunset Blvd.

• Side roads such as Postvale Road, Valencia Road, Camino Verde, Tucson Estates Parkway and Sunset Blvd. may need realignment to reduce the skew angle at the intersection of the crossroads with SR 86.

• Improve the SR 86/Kinney Road intersection.

A four-lane divided highway is preferred, with wide enough median to add future lanes. A five-lane section should not be

• Consider turn lanes at the Ryan Airfield entrance.

Consider turn lanes at Continental Road. There are problems with large trucks making left turns.

• Consider closing or realigning the intersections of Old Ajo Highway with SR 86.

• Consider realigning the connection of Valencia Road with SR 86 to provide a larger radius on Valencia Road.

• Consider realigning SR 86 to the south between Continental Road and Valencia Road. Pilots feel SR 86 interferes with flight patterns at the airport.

Drainage dikes on the south side of SR 86 may need to be repaired or reconstructed as part of the highway improvement. Some of the existing dikes are located outside of ADOT R/W or Drainage Easements. Drainage Easements should be acquired where needed for existing dikes.

- Pima County is proposing regional drainage basins in the area that may affect the hydrology of the project area.
- It appears that storm runoff has increased in recent years, resulting in concerns with the adequacy of drainage culverts.
- The vertical and horizontal alignment of SR 86 restricts sight distance on SR 86 between San Joaquin Road and Camino Verde.
- Consider reducing the speed limit.

2. Environmental/Social/Economic ICO's:

- Connectivity of habitat areas divided by SR 86 is a concern. Consider wildlife corridors under the roadway.
- Impact to Cactus Ferriginous Pygmy Owl (CFPO) habitat should be evaluated.
- Pima pineapple cactus may be present in the area.
- Measures should be identified to control non-native grasses along the highway.
- Burrowing owls may be present in the area.
- Culverts and bridges should be surveyed for bats and swallows.
- A Section 404 permit will be required.
- The Pima County Department of Environmental Quality has provided a letter outlining the air quality and water quality permits that would apply to the project.
- Landscaping in the median would be beneficial.
- Impacts during construction, such as noise, dust and detours are a concern.
- The project should be compatible with the Ryan Airfield.
- The main entrance to Ryan Airfield may be moved. Coordinate with the Tucson Airport Authority.
- School buses use SR 86. There are concerns about rear-end collisions.
- Pima County is considering designating Kinney Road as a Scenic Highway.
- 3. Development and Access ICO'S: Access management should be implemented along SR 86.
 - Management of access by restricting the number of access points and by locating and designing permitted access points to minimize conflicts with through traffic is necessary to maintain a high level of service on the highway while accommodating increasing numbers of vehicles to and from adjacent developments. Access to adjacent properties is important and needs to be maintained.
 - Over time, increasing numbers of crossroads and turnouts intersecting the highway and the increasing volume of vehicles entering and leaving the highway will cause conflicts with

through traffic that result in loss of capacity and diminished safety. As the travel congestion increases, the level of service provided by the state highway will decrease.

- A large commercial development, including a Wal-Mart Super Center is being planned for the northwest corner of SR 86 and Kinney Road.
- The Circle K located on the south side of SR 86 near Kinney Road wants to retain direct access to SR 86.
- The self-storage development located on the south side of SR 86 west of Kinney Road now has full access to SR 86. They are concerned that a divided highway may restrict left-turn movements to and from their development. They consider full access to be critical for their operation.
- Increased development and activity at Ryan Airfield is anticipated.
- Several housing developments are under development or in the planning stages along Sheridan Road, Kinney Road, Sunset Boulevard, San Joaquin Road, Camino Verde and Valencia Road. SR 86 is a main access to these residential developments.
- Residential/commercial developments are in the planning stages along the south side of SR 86 from Postvale Road to San Joaquin Road. SR 86 will provide access to these developments.

1.4.3 Environmental Assessment Public Hearing

An Environmental Assessment (EA) Public Hearing was conducted on February 2, 2010 in the Conference Room at the Ryan Airfield at 9698 West Ajo Highway, Tucson, Arizona to present the alternative options including the Preferred Option and the No Action Option. Meeting advertisements were published in the Arizona Daily Star on January 18, 2010 and January 25, 2010 and a Spanish version of the notice was published in the La Estrella de Tucson on January 22, 2010 and January 29, 2010. In addition, meeting notification letters were mailed to property owners of record for adjacent parcels, and to project stakeholders. A total of 32 people were recorded in attendance at the public hearing, including 19 members of the public and 13 agency representatives. Informational Handouts, Comment Sheets and Speaker Registration Cards were provided to all participants.

The SR 86 Hearing began in an open house format during which attendees viewed project aerials, board graphics and spoke with study team members. The open house segment of the hearing was followed by a formal presentation. Following the presentation, members of the public were invited to provide verbal comments. Following the presentation and comment session, participants were encouraged to speak one-on-one with the court reporter as well as participate in the open house which followed.

Comments and questions submitted by the public regarding the project were collected and summarized along with ADOT responses in an appendix of the Final EA errata. A complete transcript of the presentation and verbal comments made during the hearing are also included in an appendix of the Final EA.

There were three verbal comments submitted during the hearing proceedings: one with respect to a local business impact; a question regarding impacts to Pineapple Cactus in the area and flooding issues; and a question regarding the western project limits. Additionally, two letters were submitted, and two comment sheets collected. Issues regarding impacts to businesses were conveyed to the team and addressed in the Final EA.

1.5 Characteristics of the Corridor

SR 86 is basically a 2-lane, 40-foot wide highway from the beginning of the project easterly to approximate MP 165.9, just west of the Kinney Road intersection; however, two-way-left-turn lanes have been added in two sections of the roadway, and left-turn and right-turn lanes have been added at several intersections. Just west of the Kinney Road intersection the roadway transitions to a 4-lane divided roadway. The 4-lane divided highway continues to the east of the project into the City of Tucson. The highway traverses level terrain through the study area with a maximum vertical grade of 2.16-percent. The maximum degree of horizontal curve is 1°-15'.

The land adjacent to SR 86 has numerous small, braided washes, and much of the area is within the FEMA 100-year flood plain. Through the westerly section of the study area a series of dikes has been constructed on the south side of SR 86 that channel drainage to structures under the highway. From San Joaquin Road to the east there are drainage channels that approximately parallel SR 86 on both the north and south sides of the highway.

SR 86 serves regional traffic between the sparsely populated areas to the west and the City of Tucson, and increasing numbers of commuters from residential developments on both the north and south sides of SR 86 east of San Joaquin Road. Commercial development currently consists of several relatively small businesses along the highway. Ryan Airfield is located on the north side of SR 86 at approximate MP 159.6 and is home for a number of small businesses.



There are fourteen public road intersections within the study limits. The existing roadway has been re-striped to provide right-turn lanes at several locations. The Tucson Water Treatment Plant has a right-turn lane at MP 165.04 to accommodate truck traffic into the facility. The West Ajo Baptist Church, which has a private school located on its property, generates traffic that uses a turnout located at MP 165.33. The intersection of SR 86 and Kinney Road is fully channelized and signalized.

The watershed contributing to the area immediately adjacent to SR 86 through the project area is subject to wide spread shallow sheet flow flooding (1-3 feet). A large section of SR 86 is inundated during the 100-year storm event. There are 54 existing drainage culverts and two existing bridges along SR 86 within the study limits. The breakdown of drainage culverts is as follows:

- 22 reinforced concrete box culverts (RCBC).
- 32 corrugated metal pipe (CMP) culverts.

Both bridges, eleven of the RCBC, and seven of the CMP culverts do not have adequate hydraulic capacity for the design storm.

The two bridge structures have bridge load ratings less than the AASHTO minimum of HS 20; however both bridges are currently carrying legal loads without showing any significant distress.

The SR 86 corridor, through the limits of this proposed project, is also a major utility corridor. Utilities located within, adjacent to, or across the SR 86 R/W include the following:

• Pima County Regional Wastewater Reclamation Department.

- Central Arizona Project.
- TRICO Electric Cooperative.
- Southwest Gas Corporation.
- City of Tucson, Tucson Water Department
- El Paso Natural Gas.
- Tucson Electric Power Company.
- Comcast Cable.
- Qwest.

Utility lines within the SR 86 corridor are shown in Appendix E, Existing Utility Plans.

SR 86 currently functions as a rural highway from the beginning of the project at MP 156.88 to San Joaquin Road at MP 163.4. It is anticipated, based on traffic projections and planned development, that this rural section of SR 86 will function as a Fringe Urban highway prior to design year 2030. From San Joaquin Road easterly through the end of the project at MP 166.58 SR 86 currently functions as an urban highway. The posted speed limit is 65 mph from the beginning of the project to MP 163.8 and 55 mph from MP 163.8 easterly through the end of the project.

A major retail development that will include a Wal-Mart Super Center is in the planning stages for the area on the northwest quadrant of SR 86 and Kinney Road. Additional residential/commercial developments are in the planning stages from Postvale Road on the west to San Joaquin Road.

Elevations along the route vary from approximately 2,424 feet above mean sea level near the beginning of the project to 2,595 feet at the east end of the project.

Most of the land adjacent to SR 86 from the beginning of the project to approximate MP 165 is in public ownership. Public agencies having jurisdiction over land include City of Tucson, Arizona Board of Regents, State of Arizona, Pima County and United States of America. The majority of the land adjacent to SR 86 east of MP 165 is in private ownership.

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2.0 TRAFFIC AND CRASH DATA

2.1 Traffic Analysis

A separate Traffic Analysis Report dated February 2007, has been prepared for this project, and is summarized here.

The Traffic Analysis Report evaluated the performance of SR 86 and thirteen intersections on SR 86 between Continental Road (MP 158.9) and Kinney Road (MP 166.58) based on current traffic conditions and on forecast traffic volumes for year 2030. Roadway and intersection improvements were recommended to meet the forecast demand and maintain Level of Service (LOS) criteria recommended in the ADOT Roadway Design Guidelines (RDG).

Subsequent to development of the Traffic Analysis Report the project was extended 2.02 miles to the west along SR 86 and now begins at MP 156.88, which is located just east of the intersection of Sandario Road and SR 86. The intersection of SR 86 and Sandario Road is not included in the project.

There are no major intersections or traffic generators along SR 86 between the new westerly end of the project at MP 156.88 and Continental Road. Therefore it was determined that the projected traffic volumes and the LOS calculations developed in the Traffic Analysis Report for the section of SR 86 from Continental Road to Valencia Road would apply to the section of SR 86 between the beginning of the project at MP 156.88 and Continental Road.

Postvale Road is a minor county road that intersects SR 86 at approximate MP 157.8. It serves several residential properties and has minimal traffic. The traffic volumes on Postvale Road are similar to the traffic volumes on Continental Road. Both Postvale Road and Continental Road will be channelized as minor "T" intersections. Median crossovers will be included along with left-turn lanes for traffic turning from eastbound SR 86 to northbound Postvale Road and Continental Road.

Firebird Avenue is shown as a county road that intersects SR 86 at approximate MP 158.3. However, Firebird Avenue is unimproved and carries no measurable traffic. Firebird Avenue will be treated as a turnout and no turning lanes will be provided.

Large residential/commercial developments are in the planning stages on the south side of SR 86 west of Ryan Airfield. It is anticipated that access to the developments will require extension of Postvale Road and Continental Road south of SR 86. It is likely that both of these

intersections with SR 86 will meet signalization warrants in the future as a result of the adjacent development. Modifications to these intersections, including realignment and signalization should be provided by the developers. During final design the status of adjacent development should be determined. If development is imminent agreements with the developers should be executed to provide funding of improvements by the developers.

Existing Conditions 2.1.1

The existing SR 86 roadway from the beginning of the study area, east of Sandario Road to Kinney Road is basically a 2-lane rural highway with 12-foot lanes. Existing paved shoulders are generally 8-feet wide except the shoulder width varies between 2-ft. to 4-ft. along the auxiliary lane between the entrance to the Tucson Water Treatment Plant and Sheridan Avenue and along the left turn and right turn lanes at major intersections. Shoulders were widened along the center leftturn lane from Aviator Lane to Valencia Road.

Just west of Kinney Road, SR 86 transitions from a 2-lane highway to a 4-lane divided highway that extends easterly into Tucson. Traffic at the intersection of SR 86 and Kinney Road is regulated by a traffic signal.

The intersection of SR 86 and Camino Verde was signalized in 2008. Prior to being signalized the intersection was regulated by stop signs on the minor street.

All other intersections within the study limits are regulated by stop signs on the minor street.

The project begins at MP 156.88, just east of Sandario Road, and extends easterly through the Kinney Road Intersection to MP 166.58.

The existing posted speed limits on SR 86 are:

- 65 mph from MP 156.88 to MP 163.8 near the intersection of SR 86 and San Joaquin Road.
- 55 mph from MP 163.8 to the end of project at MP 166.58.

Significant regional growth is expected along the SR 86 corridor in the suburban section just west of Tucson in the next 25 years, which will result in traffic volumes that are more than twice the current levels. Existing high traffic volumes on SR 86 are already affecting the safety of the highway, especially at some of the major intersections along the study area.

SR 86 has a functional classification as a Rural Minor Arterial from its beginning in Why, Arizona easterly to approximate MP 163.4, near the junction with San Joaquin Road. From MP 163.4 to the end of the project it is classified as an Urban Minor Arterial. Because of the expected increase in traffic volumes, the traffic analysis considers SR 86 to be a Fringe Urban Highway from the beginning of the project at MP 156.88 to San Joaquin Road. From San Joaquin Road through the end of the project the urban highway designation will be used.

Scattered residential and commercial establishments exist on either side of SR 86 between Continental Road and Kinney Road. Some of the establishments on SR 86 include:

- Valencia Road intersection.

- Blvd.
- Kinney Road.
- 86/ Kinney Road Intersection.

A Wal-Mart Center is planned adjacent to the northwest quadrant of the SR 86/Kinney Road intersection. Based on 2030 socioeconomic data from the Pima Association of Government's travel demand model, significant development, both residential and commercial, are planned along SR 86 between Continental Road and Kinney Road.

Traffic Data 2.1.2

Forty-eight hour daily vehicle classification counts were taken at three locations along SR 86 in the last week of October 2005 to obtain the number of vehicles per day (VPD);

• Ryan Airfield located on the north side of SR 86, just west of the

• A gas station/convenience store on the south side of SR 86 at the Tucson Estates Parkway intersection.

• The Tucson Water Treatment Plant on the north side of SR 86 east of the Tucson Estates Parkway intersection.

• The West Ajo Baptist Church/School, Old Town Feed & Supplies and Bishops Trailer Sales on the south side of SR 86 west of Sunset

• Ajo Kinney Super Storage on the south side of SR 86 west of

• A McDonalds Restaurant on the northeast quadrant and a convenience store/gas station on the southeast quadrant of the SR

• East of Valencia Road – 6,915 VPD.

• East of Camino Verde – 13,929 VPD.

• East of Kinney Road – 26,397 VPD.

Percentage of trucks varied between 11 and 16 percent.

K-factors ranged between 0.083 - 0.102.

SR 86; Sandario Road to Kinney Road

Daily traffic forecasts for year 2030 were obtained from the Pima Association of Government's travel demand model. The year 2007 daily traffic volumes were estimated by interpolating existing 2005 count data and the 2030 traffic forecasts. The 2007 and 2030 traffic volumes are shown in Table 2-1.

TABLE 2-1 SR 86 TRAFFIC VOLUMES BY ROADWAY SECTION AND DESIGN YEAR

Section	2007 ADT	2030 ADT
West of Valencia Road	10,734	28,950
Valencia Road to San Joaquin Road	8,000	20,483
San Joaquin Road to Camino Verde	11,104	22,628
Camino Verde to Kinney Road	15,859	38,059
East of Kinney Road	35,795	66,337

Turning movement counts were taken at the following thirteen intersections during the last week of October and the first week of November 2005 for two peak periods; 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.

- Continental Road
- Aviator Lane
- Valencia Road/Airfield Drive
- West end of Old Ajo Highway
- San Joaquin Road •
- Camino Verde •
- East end of Old Ajo Highway •
- Tucson Estates Parkway
- Entrance to Tucson Water Treatment Plant ٠
- Entrance to West Ajo Baptist Church
- Sunset Boulevard •
- Sheridan Avenue (north leg) •
- Kinney Road

Peak-hour turn movement counts revealed the following traffic patterns.

- On SR 86, the peak direction of travel in the AM peak period is eastbound
- On SR 86, the peak direction of travel in the PM period is westbound.
- Traffic volumes to the west of Valencia Road are significantly higher than east of Valencia Road indicating that a significant amount of traffic uses Valencia Road as an alternate route to SR 86.

Capacity Analysis Methodology 2.1.3

Methodologies from the Highway Capacity Manual 2000 (HCM) were applied in evaluating existing and future conditions. Synchro 6 traffic analysis software was used to evaluate the performance of intersections.

Highway Capacity Software (HCS) was used to evaluate mid-block level of service (LOS) on SR 86.

Unsignalized intersections on SR 86 were evaluated for AM and PM peak-hour periods. Table 2-2 shows LOS criteria for stop sign controlled intersections. The performance of minor approaches at each intersection was categorized into LOS ranging from "A" to "F", where LOS A indicates least delay and LOS F indicates significant delay.

Signalized intersections in the study area were evaluated for AM and PM peak-hour periods. Table 2-3 shows LOS criteria for signal controlled intersections.

	TABLE 2-2
UNSIGNALIZED	INTERSECTION LOS CRITERIA
Louis of	Augura Control Delau

Service	(seconds/vehicle)
Α	0-10
В	>10-15
С	>15-25
D	>25-35
E	>35-50
F	>50

TABLE 2-3 SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Control Delay (seconds/vehicle)
Α	0-10
В	>10-20
С	>20-35
D	>35-55
E	>55-80
F	>80

SR 86 is considered an urban / fringe urban highway for both year 2007 analyses and year 2030 analyses.

LOS Analysis for Year 2007 Traffic Volumes, 2.1.4 with No Improvements

LOS of SR 86 Mainline With No Improvements:

The ADOT RDG requires an LOS C-D or better on urban / fringe urban highways. The mid-block, year 2007 LOS for SR 86 mainline with no improvements is shown in Table 2-4.

TABLE 2-4
SR 86 MAINLINE LOS FOR 2007 WITH NO IMPROVEMENTS

Section	2007 LOS
Sandario Road to Valencia Road	D
Valencia Road to San Joaquin Road	С
San Joaquin Road to Camino Verde	D
Camino Verde to Tucson Estates Pwy.	D
Tucson Estates Pwy. to Kinney Road	E

The SR 86 mainline meets ADOT requirements of LOS C-D between Sandario Road and Tucson Estates Pwy., but does not meet ADOT requirements of LOS C-D between Tucson Estates Pwy. and Kinney Road for a fringe urban two-lane highway with the existing road configuration for 2007 traffic volumes.

LOS of SR 86 Intersections With No Improvements:

Existing roadway and traffic characteristics were coded in Synchro software. Existing signal timing data was received from the ADOT Traffic Engineering Operations Group for the SR 86/ Kinney Road intersection. LOS D is acceptable for overall intersection and individual approaches at each intersection. The LOS of each of the intersections for 2007 traffic with no improvements is shown in Table 2-6.

Unsignalized intersections at San Joaquin Road, the east end of Old Ajo Way, Tucson Estates Parkway, the entrance to Ajo Baptist Church, Sunset Blvd., and Sheridan Avenue fail to meet LOS requirements during AM or PM peak-hour periods with year 2007 traffic volumes and current intersection lane configurations. The signalized intersection at Kinney Road also fails to meet LOS requirements for 2007 traffic volumes and current intersection lane configuration. The intersection of SR 86 and Camino Verde was signalized in 2008.

Level of Service Analysis for Year 2007 Traffic 2.1.5 **Volumes with Improvements**

The SR 86 mainline roadway was evaluated for LOS with improvements to a four-lane divided highway.

The mid-block, year 2007 LOS for SR 86 mainline with improvements is shown in Table 2-5.

TABLE 2-5 SR 86 MAINLINE LOS FOR 2007 WITH IMPROVEMENTS

	2007 LOS		
Section	EB (AM/PM)	WB (AM/PM)	
Sandario Road to Valencia Road	A/A	A/A	
Valencia Road to San Joaquin Road	A/A	A/A	
San Joaquin Road to Camino Verde	A/A	A/A	
Camino Verde to Tucson Estates Pwy.	B/A	A/A	
Tucson Estates Pwy. to Kinney Road	B/A	A/A	
•			

The SR 86 mainline roadway will perform at the desired LOS C-D when improved to a four-lane divided highway.

LOS of SR 86 Intersections With Improvements:

The intersection improvements for Valencia Road, San Joaquin Road, Tucson Estates Parkway and Sunset Blvd. include signalization. Camino Verde intersection is currently signalized; however the signal

Final Design Concept Report

LOS of SR 86 Mainline With Improvements:

SR 86; Sandario Road to Kinney Road

system will be relocated and modified for the proposed 4-lane roadway. Kinney Road intersection is currently signalized and will be further improved to increase capacity. Intersections planned for signalization will have to meet signal warrants prior to installation of signals.

The unsignalized intersections at Postvale Road and Continental Road will include the following auxiliary lanes:

- Left-turn lanes for traffic turning from eastbound SR 86 to northbound on the local roads.
- Right-turn deceleration lanes for traffic turning from westbound SR 86 to northbound on the local roads.
- Acceleration lanes on the outside of the westbound roadway for traffic turning right from the local roads to westbound SR 86.

The intersection of SR 86 and the Old Ajo Highway (East) is shown as being removed. Old Ajo Highway (East) will be terminated and a culde-sac will be provided near the SR 86 R/W.

The remaining intersections within the study limits will be rightin/right-out only. The LOS of each of the intersections for 2007 traffic with improvements is shown in **Table 2-6**.

2.1.6 Level of Service Analysis for Year 2030 Traffic Volumes with No Improvements

LOS of SR 86 Mainline With No Improvements:

The ADOT RDG requires a LOS C-D for urban/fringe urban highways. The mid-block, year 2030 LOS for SR 86 mainline with no improvements is shown in **Table 2-7**.

TABLE 2-7
SR 86 MAINLINE LOS FOR 2030 WITH NO IMPROVEMENTS

Section	2030 LOS
Sandario Road to Valencia Road	F
Valencia Road to San Joaquin Road	E
San Joaquin Road to Camino Verde	F
Camino Verde to Tucson Estates Pwy.	F
Tucson Estates Pwy. to Kinney Road	F

The SR 86 mainline does not meet ADOT requirements of LOS C-D for an urban/fringe urban highway with the existing road configuration for 2030 traffic volumes. SR 86 performs at or near LOS F as a two-lane highway with year 2030 traffic volumes.

LOS of SR 86 Intersections With No Improvements:

The LOS of each of the intersections for 2030 traffic with no improvements is shown in **Table 2-8**.

All unsignalized intersections between Postvale Road and Kinney Road fail to meet LOS requirements during both the AM and PM peak-hour periods with the existing intersection configurations and 2030 traffic volume conditions. The signalized intersection at Kinney Road also

	2007 Tra	affic — No	Improveme	nts	2007 Traffic – With Improvements				
Intersection	LOS (AM/PM) Peak Hr					LOS (AM/PM) Peak Hr			
	Control	Left Through		Right	Control	Left	Through	Right	Overall I/S
Postvale Road	Stop		No Data		Stop		No	Data	
Continental Road	2	1020120	San Maria and San	and the second	Constant States	are seen to		Constant I	17 - 18 - 19 - 19 - 19 - 19 - 19 - 19 - 19
SB	Stop	C/C	-	C/A	Stop	C/C		B/B	
Aviator Lane		NEW AND S	1. WAR \$ 2. 9	1000000	Defense Beatwork	2 March 1984		No. of Concest	19. A N
SB	Stop	C/C	-	A/C	Stop	None**			
WB	No Control				No Control	None**			
EB	No Control	11			N/A	None**			
Valencia Rd./Airfield Dr.		1		NE VISE US		110110	and the second second	in the second second	A/A
SB	Stop	A/C	C/C	A/C	Signal	A/B	B/B*		,,,,
NB	Stop		D/D		Signal	B/C			
WB	No Control		0/0	0,0	Signal		A/A*		
FB	No Control				Signal		Δ/Δ		
Old Aio Highway (West)		C. Hashett		1902/00/07	Olgridi	, vir			
SB	Ston	A/C	_	R/A	Ston	None**	_		
San Joaquin Boad		7.0	-	DIA		None			Δ/Δ
SB	Ston	E/C	_	E/C	Signal	B/B			
WB	No Control	170		F/U	Signal	6/6	-		
	No Control	the second			Signal				
Camina Varda Boad	SP 96/Comin	o Vordo u		Lin 2000	Signal	AVA	NA	-	D/A
	Signal		vas signalized	1112000	Signal	D/D	D/D*	1.000	D/A
	Signal				Signal			D/A	
	Signal				Signal	D/D D/D	D/D		
	Signal				Signal	D/D	AVA A/A		
Cld Aig Llighway (East)	Signal	Interesting the second			Signal		A/A	AVA	
	Chain			A / A		Inte	rsection to be	closed	I THURSDAY AND A STREET
	Stop	F/E	-	AVA					A / A
Tucson Estates Pwy.	0			=/=	0:	5/0	D /D+	and the second second	AVA
SB	Stop		<u> </u>		Signal		B/B*		
NB	Stop	E/D	E/D	E/D	Signal	D/C	<u>B/B*</u>		
WB	No Control			-	Signal	A/A	A/A*		-
EB	No Control				Signal	A/A	A/A		
Water Treatment Plant			ll sector but	122010	1		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		
SB	Stop	D/D	-	D/D	Stop	None**	-	A/B	
W. Ajo Baptist Church				Section Contention		Sec. Sec.	10.00	15.2.1	
NB	Stop	E/D	-	E/D	Stop	None**	-	B/B	
Sunset Blvd.				DALLANDINE.	Constant Constant		and the second	N. Martin	A/A
NB	Stop	F/F	-	F/F	Signal	C/C	-	B/B	
WB	No Control				Signal	A/A	A/A		
EB	No Control				Signal		A/A	A/A	
Sheridan Avenue	ALL STRUCTURES	1.0454	的复数的现在分词	and a lot of		C Section Section	and the sector of	Dank ang the	and the second
SB	Stop	E/D	-	E/D	Stop	None**	-	B/B	
Kinney Road	Carolina pieres	1.1.1.1.1.1.1.1		CONTRACTORS OF		197219189	See States Sector	2012 354	C/B
SB	Signal	F/F	C/B*		Signal	D/D	B/B	A/A	
NB	Signal	B/B	B/B*		Signal	B/B	E/D	C/B	
WB	Signal	E/B	B/C	A/F	Signal	E/B	C/C	A/A	
EB	Signal	B/D	C/B	A/A	Signal	C/D	C/B	A/A	

* Shared through plus right-turn lane.

** Right-in/right-out Intersection.

fails to meet LOS requirements for 2030 traffic volumes and current intersection lane configuration.

2.1.7 Level of Service Analysis for Year 2030 Traffic Volumes with Improvements

LOS of SR 86 Mainline With Improvements:

The SR 86 mainline roadway was evaluated for LOS with improvements to a four-lane divided highway between Sandario Road and Sunset Blvd. From Sunset Blvd. through Kinney Road the eastbound mainline roadway will be three lanes. The westbound roadway will be three lanes through the Kinney Road intersection westerly to Sheridan Avenue. The mid-block, year 2030 LOS for the SR 86 mainline with improvements is shown in **Table 2-9**.

 TABLE 2-9

 SR 86 MAINLINE LOS FOR 2030 WITH IMPROVEMENT

	2030 LOS				
Section	EB (AM/PM)	WB (AM/PM)			
Sandario Road to Valencia Road	C/A	B/B			
Valencia Road to San Joaquin Road	B/A	A/A			
San Joaquin Road to Camino Verde	B/A	A/B			
Camino Verde to Tucson Estates Pwy.	D/B	B/C			
Tucson Estates Pwy. to Kinney Road	D/B	B/C			

The SR 86 mainline between Sandario Road and Kinney Road meets ADOT requirements of LOS C-D for an urban/fringe urban highway when improved to a four-lane divided highway between Sandario Road and Sunset Blvd. From Sunset Blvd. and Kinney Road the eastbound mainline roadway will be three lanes. The westbound roadway will be three lanes through the Kinney Road intersection westerly to Sheridan Avenue.

LOS of SR 86 Intersections With Improvements:

The ADOT Traffic Engineering Policies, Guidelines and Procedures states that in urban areas with population over 50,000, LOS D is acceptable. Since SR 86 through the limits of this project is considered to be a Fringe Urban facility the requirement for LOS D for the overall intersection will apply.

The intersection improvements for Valencia Road, San Joaquin Road, Tucson Estates Parkway and Sunset Blvd. include signalization. Camino Verde intersection is currently signalized. Kinney Road intersection is currently signalized and will be further improved to increase capacity.

The unsignalized intersections at Postvale Road and Continental Road will include the following auxiliary lanes:

• Left-turn lanes for traffic turning from eastbound SR 86 to northbound on the local roads.

Intersection	2030 Tra	affic — No	Improveme	nts	2030 Traffic – With Improvements				
	Control	LOS (AM/PM) Peak Hr.			Question	LOS (AM/PM) Peak Hr.			
	Control	Left	Through	Right	Control	Left	Through	Right	Overall I/S
Postvale Road		No E	Data				No Data		
Continental Road		and the second	Alular St. St.	he is	a. Salara	10-10-10 M	and set of the set	a territoria de la companya de la co	
SB	Stop	F/F	-	F/A	Stop	F/F		B/A	
Aviator Lane	And a state of	1	free and the second	1000			S. S. Hole and C. C.	STREET, NO.	
SB	Stop	F/F	-	A/F	Stop	None**			
WB	No Control				No Control	None**			
EB	No Control				N/A	None**			
Valencia Rd./Airfield Dr.	the second second		1	September 150	1. Shi ni	A Start		0.00 204	B/B
NB	Stop	F/F	F/F	F/F	Signal	D/C	B/B	A/A	
WB	No Control				Signal	A/B	A/B*		LANS ST. ST.
EB	No Control				Signal	A/A	C/B	A/A	
SB	Stop	A/F	F/F	A/F	Signal	A/C	C/C*		
Old Ajo Highway (West)	No the second states	N. Marka	100000000000000000000000000000000000000	Con See	S. M. Sakaraha	Manual and	- College - State	N. S. Samer	11 - 11 - 11 - 11 - 11 - 11 - 11 - 11
SB	Stop	A/E	-	C/A	Stop	None**	-	B/B	
San Joaquin Road	A Suppose S	1225723	8-0-8030-505		No. In Concerns	and the state			A/A
SB	Stop	F/F	-	F/F	Signal	C/B	-	A/A	
WB	No Control				Signal	-	A/A	A/A	
EB	No Control				Signal	A/A	A/A	-	
Camino Verde	SR 86/Camino	Verde wa	as signalized i	in 2008.	120.000			1	C/B
SB	Signal				Signal	D/C	D/C*		
NB	Signal				Signal	C/C	C/C	B/A	A 14 14 14
WB	Signal				Signal	E/C	A/A	A/A	
EB	Signal				Signal	B/C	D/C	A/A	
Old Aio Highway (East)	and an and the second			1.2.1.2		Inter	section to be	closed	
SB	Stop	F/F	-	A/A				T	· · · · · · · · · · · · · · · · · · ·
Tucson Estates Pwv.	Sec Cardinald	6576 S71 V		1/	us satsressi	1211111111	and the second		C/A
SB	Stop	F/F	F/F	F/F	Signal	E/C	D/C	A/A	
NB	Stop	F/F	F/F	F/F	Signal	D/C	D/C	A/A	
WB	No Control				Signal	A/A	Δ/Δ		
EB	No Control				Signal	A/C			
Water Treatment Plant	No Control	Real Commence			Signal	AC	DIA	AVA	
	Stop	E/E		C/C	Stop	Nono**		P/C	
W Aio Baptist Church	Siup		-		Siop	None	-	D/C	
VV. Ajo Baptist Church	Stop	E/E		c/c	Stop	Nono**		E/P	
Support Dhud	Silp		-	Г/Г	Stop	None		Г/В	D/D
Sunset Bivu.	Stop			E/E	Cignal	E/D		A/A	D/B
	Siup No Control		-		Signal		-	AVA	
	No Control				Signal				
ED Sharidan Avanua	NO CONTO	Concernance of		A	Signal	in nonterna i	D/U	AVA	
	Ctor	E/F		E/E	Oten	Non-**		D/O	and the second
JD Kinnov Dood***	Stop		and the second second		Stop	None""	St. on Charles Charles	B/C	F /D
	Cignal		C/D*	10 C - 2 Sty	Cignal	E/C	D/C	D/D	E/B
	Signal		U/B*		Signal			D/D	
	Signal		B/U"	A /	Signal		F/C	A/A	· · · · ·
	Signal				Signal		B/B	B/B	
EB	j Signal	F/D	F/C	B/A	Signal	D/C	D/B	A/A	

* Shared through plus right-turn lane.

**Right-in/Right-out Intersection.

***Kinney Road LOS Analysis With improvements is with County Road By-Pass

SR 86; Sandario Road to Kinney Road

• Right-turn deceleration lanes for traffic turning from westbound SR 86 to northbound on the local roads.

The intersection of SR 86 and the Old Ajo Highway (East) is shown as being removed. Old Ajo Highway (East) will be realigned and connected to Fred Avenue by Pima County.

The remaining intersections within the study limits will be rightin/right-out only. The LOS of each of the intersections for 2030 traffic with improvements is shown in Table 2-8. Where the highway will operate at LOS C or better the intersection is required to operate at LOS C except in urban areas with a population over 50,000 LOS D may be acceptable with the concurrence of the affected local jurisdiction.

A short acceleration lane will be needed on the outside of the eastbound roadway for traffic turning right from the West Ajo Baptist Church to eastbound SR 86.

The signalized intersections at Valencia Road, San Joaquin Road, Camino Verde, Tucson Estates Pwy. and Sunset Blvd. will function with an acceptable LOS with the lane improvements. However, individual movements at Continental Rd., Camino Verde, Tucson Estates Parkway, Sunset Blvd. and Kinney Rd. will have less than desirable LOS as shown in Table 2-8.

It will be necessary to widen eastbound SR 86 to three through lanes between Sunset Blvd. and Kinney Road, and to widen westbound SR 86 to three though lanes between Kinney Road and Sheridan Ave. The signalized intersection at Kinney Road will function at an acceptable LOS with a By-Pass road in place that is being planned by Pima County and will be required when the property on the northeast quadrant of SR 86 and Kinney Rd. is developed. The By-Pass road will begin at an intersection with Kinney Road north of SR 86 and will tie into SR 86 opposite the existing intersection of SR 86 and Camino de Oeste. It is outside the limits of this project. The schedule of construction is not known at this time.

Crash Analysis 2.2

Analysis 2.2.1

This analysis includes crash data for the period between April 1, 2001 and March 31, 2006, within the study limits of SR 86 between MP 156.88 to MP 166.58. The data was provided by the Crash Records Branch of the Traffic Engineering Section, Arizona Department of Transportation.

Figure 2-1 shows the number of crashes by milepost location. Crash rates by milepost location are depicted on Figure 2-2. Crash rates were calculated by milepost based on the number of reported crashes within each mile section and the historical traffic volumes at that location.

The crash rate for the SR 86 corridor from MP 156.88 to 166.58 is calculated to be 1.57 crashes per million vehicle miles of travel per

> FIGURE 2-1 NUMBER OF CRASHES BY MILEPOST LOCATION 2001 - 2006



FIGURE 2-2



year. This compares to a crash rate for a typical two-lane rural highway in Arizona of 0.79 crashes per million vehicle miles of travel per year.

> Figure 2-2 illustrates that there are several locations where the crash rate is above the State average for a similar kind of facility. Three of the locations, including the Ryan Airfield/Valencia Road area, the Camino Verde/Tucson Estates Parkway area, and the Kinney Road area are substantially above the average crash rate. Two of the areas include intersections that were unsignalized when the crash data was gathered. However, the Camino Verde intersection has since been signalized. The third location includes Kinney Road intersection, which is currently signalized but has high volumes of traffic on both SR 86 and Kinney Road.

A total of 310 crashes were reported within the study limits over a period of five years from April 1, 2001 to March 31, 2006. Table 2-10 shows the crash severity. The percentage of Property Damage Only (PDO), Injury and Fatal crashes to the total number of crashes reported were 56.8%, 39.4% and 3.9% respectively.

There were twelve fatal crashes within the project limits.

- end crash.
- directions.

Two hundred forty eight of the 310 crashes were collisions with other vehicles (See Table 2-11). Of the 248 multi-vehicle crashes, 208 involved either turning movements or rear-end crashes.

2.2.2

The average crash rate on SR 86 through the project limits from Sandario Road to Kinney Road is above the Arizona average for a similar facility. Crashes involving turning movements and rear-end collisions are by far the most prevalent through the project area. The concentration of crashes at intersections indicates there are inadequate

• Ten of the twelve were collisions with other vehicles.

• One was a single vehicle overturning crash.

• One was a collision with a pedestrian.

• Eight of the ten multi-vehicle fatal crashes and the one pedestrian fatal crash occurred near intersections; five were angle crashes, two were left-turn crashes and one was a rear-

• One multi-vehicle fatal crash was a sideswipe in opposite

• One multi-vehicle fatal crash was a head-on collision.

• The drivers of the vehicles causing seven of the crashes had been drinking. The drivers of the other vehicles had no apparent impairment.

Conclusions

SR 86; Sandario Road to Kinney Road

opportunities for turning vehicles with the two lane configuration of SR 86. The growth of the area and the increasing volume of traffic entering and leaving SR 86 indicate that additional capacity is needed on SR 86.

Even with increased capacity, however, it will be necessary to provide left and right turn channelization at the major intersections. Signalization of several of the intersections that are now functioning with stop signs will be necessary to assign right-of-way for vehicles entering and leaving SR 86.

TABLE 2-10 CRASH SEVERITY 4/01/01 TO 3/31/06

Location	No. of Crashes	Fatal	Injury	Prop. Dam.
MP 156.88 to MP 157.0	0	0	0	0
MP 157.0 to MP 158.0 Postvale Rd. 157.85	14	1	8	5
MP 158.0 to MP 159.0 Firebird Ave. 158.30 Continental Rd. 158.96	12	1	4	7
MP 159.0 to MP 160.0 Aviator Lane 159.6 Valencia Rd. 159.8	44	1	23	20
MP 160.0 to MP 161.0	8	0	5	3
MP 161.0 to MP 162.0 Old Ajo Hwy. 161.4	10	0	3	7
MP 162.0 to MP 163.0	8	0	4	4
MP 163.0 to MP 164.0 San Joaquin Rd. 163.4	17	1	6	10
MP 164.0 to MP 165.0 Camino Verde 164.02 Old Ajo Hwy. 164.54 Tucson Estates Pwy. 164.68	94	5	38	51
MP 165.0 to MP 166.0 S. Spencer St. 165.21 Sunset Ave. 165.49 Sheridan Ave. 165.75	29	2	10	17
MP 166.0 to MP 166.58 Kinney Rd. 166.22	74	1	21	52
Total	310	12	122	176

It is recommended that additional lanes be added to SR 86 to provide a four-lane highway with two lanes in each direction from the beginning of the project east of Sandario Rd. to Sunset Blvd.; three eastbound lanes from Sunset Blvd. through the Kinney Rd. intersection, and three westbound lanes from Sheridan Avenue through the Kinney Rd. intersection. Channelization and signalization of major intersections should be included with the roadway expansion.

TABLE 2-11
COLLISION MANNER
4/01/01 TO 3/31/06

Collision Manner 156 15	Location (MP - MP)											
	156.88 157.0	157.0 158.0	158.0- 159.0	159.0- 160.0	160.0- 161.0	161.0- 162.0	162.0- 163.0	163.0- 164.0	164.0- 165.0	165.0- 166.0	166.0- 166.58	Total
Collision/w Other Vehicle:			1. ¹⁰	an araa		N			Real Contracts			
Angle				19	1	1	1	6	46	6	16	96
 Sideswipe (opposite) 		2	1	2	No.		199 - A	- 1 - 1	3	1	6	16
 Sideswipe (same) 			1	2				1	6		4	14
Rear-End		3	2	8		4	1.55	4	19	7	25	73
Left-Turn				3	1				6	4	14	28
U-Turn		W. AND	West of States	Approved by	assertions a	1		Then a stall	3	1.0	1990 T 2 1 2	5
 Head-on 			2		1				2		1	6
Backing	Sec. 24			1		Stat Hall				1.0	STATES STATES	2
Other		1	1	1			1	1	2	and the second second second	1	8
Single Vehicle:			P									
Overturn		1	1	1	1	3	2		2	3	N DISCOURTER DATA SAME	14
 Collision w/Fixed Object 		4	1	3	1		2	1	2	4	4	22
 Collision w/Parked Veh. 		2		1								3
 Collision w/Bicyclist 			1		and the							1
 Collision w/Ped. 	Centres - 111 - 111 - 111		rear rear and a rear and a rear	Contraction of the second	THE POST OF A PROPERTY OF		and the contraction of the contr	Property of Long Control and	1	and (*) (* Sector and the	2	3
 Collision w/Wild Game 			1		2	1					1	5
 Collision w/Other Animal 							111 H H H H H H H H H H H H H H H H H H	1	an e-cranes, at all 1991.	1		2
Other		1	1	3	1		1	2	2	1	ge Statistics	12
Total	0	14	12	44	8	10	8	17	94	29	74	310

3.0 AASHTO CONTROLLING DESIGN CRITERIA

3.1 Summary

Per the November 2009 ADOT Guide For Review of The AASHTO Controlling Design Criteria on Existing ADOT Roadways, an AASHTO Controlling Design Criteria Report is no longer required to be prepared for non-NHS highways.

SR 86 is not a designated NHS highway and therefore an AASHTO Controlling Design Criteria Report was not required nor evaluated for this project.

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4.0 DESIGN CONCEPT ALTERNATIVES

4.1 Introduction

The improvement of SR 86 will provide additional capacity for the mainline roadway and intersections to meet the requirements of projected traffic in design year 2030. Improvements will be constructed within the existing corridor of SR 86 and will utilize the existing roadway to the extent feasible. Design concept alternatives will be defined, developed and evaluated to present a preferred alternative for implementation.

Major objectives of the study include providing needed capacity, improving safety, and improving operational features within the study limits.

SR 86 serves as a regional transportation corridor between the City of Tucson and the rural areas to the west, including the Tohono O'odham Indian Reservation, the Kitt Peak Observatory, and the US/Mexico border crossings at Sasabe and Lukeville, AZ. SR 86 also provides a primary connection between the City of Tucson and the developing residential areas both north and south of SR 86 easterly of San Joaquin Road.

The local road system does not provide alternative routes for traffic to use during construction of improvements. Valencia Road is an east/west arterial roadway that could be used by some of the SR 86 traffic easterly of Ryan Airfield. However, Valencia Road does not have the capacity to accommodate all of the SR 86 traffic. The following goals should be considered in the evaluation of alternatives:

- Maintain at least two through lanes of traffic during construction.
- Minimize delays to traffic through the area.
- Provide access to adjacent property during construction.

4.1.1 No-Build Alternative

The No-Build Alternative is provided for comparison purposes. It provides no improvements to the capacity, safety and operational features of the existing roadway, and involves no cost and no apparent change to the environmental features of the SR 86 corridor.

4.1.2 Evaluation Criteria

The evaluation criteria address the capacity, safety and operating characteristics of the highway, as well as concerns expressed by public agencies and the general public in scoping sessions. Roadway improvement alternatives were evaluated according to the following criteria:

- Provide peak hour LOS C-D for the SR 86 mainline from Sandario Road to Kinney Road in design year 2030.
- Provide peak hour LOS D for the overall intersection at all major intersections in design year 2030.
- Left-turn channelization on SR 86 at all major County road intersections.
- Where major County roads intersect SR 86 with a tee intersection, left-turn lanes will be provided on SR 86 for vehicles turning from SR 86 to the County road and for U-turn movements for both westbound and eastbound vehicles on SR 86.
- Provide signalization at major local road intersections east of Continental Road. Signal warrants will have to be met before signalization occurs. The intersections of SR 86 with Postvale Road and Continental Road will be channelized to accommodate left and right turns to and from both SR 86 and the local roads, but signalization will not be warranted until some time in the future.
- Restrict turning movements at minor local road intersections and at turnouts to right-in/right-out movements.
- Provide median crossovers, including auxiliary deceleration and acceleration lanes, at approximately ¹/₂-mile intervals for U-turn movements where appropriate.
- Utilize a fringe-urban median configuration in accordance with Figure 306.3 of the ADOT RDG for divided highway alternatives, except the centerline to centerline separation of roadways will be widened from 70-feet to 74-feet, which results in a median width of 50-feet. The additional median width will facilitate adding additional directional lanes in the median in the future.
- Use the existing roadway as part of the 4-lane divided highway to the extent feasible.
- Maintain access to adjacent properties.
- Minimize impact to adjacent properties.
- Minimize the additional R/W needed for the improvements.
- Retain drainage dikes adjacent to SR 86. Include repairs and reconstruction as required. Overtopping of SR 86 by storm flows has occurred in the past due to failure of dikes.
- Fix the flooding of the Kinney Rd/SR 86 intersection.

4.2 Design Concept Alternatives Studied

4.2.1 Typical Sections and Intersection Layouts

The traffic analysis for SR 86 within the project limits shows that a four-lane roadway is necessary to accommodate projected 2030 traffic volumes on the mainline roadway. Signalization of major intersections will be required to accommodate turning movements. It will also be necessary to add additional east/west through-traffic lanes at the signalized intersection of Kinney Road and SR 86 and an additional eastbound through-traffic lane at the signalized intersection of Sunset Blvd. and SR 86.

Since the easterly part of the project area is currently within the urban limits, and development is likely to continue to expand to the west. The entire project area will become urbanized within the period of time prior to design year 2030. The typical section for improvements to SR 86 will be based on the Fringe-Urban Highway Typical Section IS3 as shown in Figure 306.3 of the ADOT Roadway Design Guides (RDG) **except** the centerline to centerline separation between the eastbound and westbound roadways will be 74-feet, with a median width of 50-feet. The 50-foot wide median is being used to provide 2-feet shy distance between the median barrier and the shoulder in the future when additional through lanes are added and the inside shoulders are widened to 10-feet. Typical sections for the improvement alternatives are shown in **Appendix A**.

Intersection layouts have been developed that accommodate the turning movements identified in the traffic study. Lane configurations on SR 86 are shown including taper lengths and storage lanes for auxiliary lanes. Through lanes and turning movements for crossroads are also shown. See Appendix A.

4.2.2 Roadway Improvement Alternatives

The following alternatives have been identified for consideration to achieve the desired improvements in highway capacity, safety, and operating conditions. All of the alternatives will provide similar improvements to the ability of the highway to accommodate traffic both on the SR 86 mainline and at the intersections of SR 86 and the crossroads.

SR 86; Sandario Road to Kinney Road

Each of the design concept alternatives was developed based on the project objectives outlined in Section 1, using the design controls stipulated in Section 5. A narrative description of each design concept alternative is presented below. Plan and profile sheets for the preferred alternative are provided in Appendix B. Plan and profile sheets for other alternatives studied are shown in Appendix C.

Access to SR 86 through the local road system and from turnouts to adjacent property will be the same for all alternatives. The access points are described in Section 6, Access Management Plan.

Where existing local road connections to SR 86 are relocated, the existing roadway is to be removed and the area re-graded to approximately original ground.

Alternative A:

Alternative A consists of constructing a new 2-lane westbound roadway on the north side of the existing 2-lane roadway to provide a 4-lane divided highway for the entire length of the project. The existing roadway will be converted to carry eastbound traffic. Crossroad intersections will be improved. Signalization and turn lanes will be constructed at major intersections. Where required, local roads will be realigned at their intersection with SR 86. See Plan Sheets, Appendix C.

Alternative A begins just east of Sandario Road at MP 156.88 (Sta. 622+79.42).

SR 86 will transition from two-12-foot lanes with 8-foot shoulders to a 4-lane divided Urban / Fringe-Urban highway with a 50-foot median at MP 157.29. Where turn lanes are constructed on SR 86 the shoulder width adjacent to the turn lane can be reduced to 4-feet.

This configuration will continue from MP 157.29 to the Sunset Avenue intersection where a third eastbound lane will be added. A third westbound lane will be added at the Sheridan Avenue intersection. Three through lanes in each direction will be continued easterly through the Kinney Road Intersection to provide needed capacity through the intersection of SR 86 and Kinney Road (See Section 2.1.7 of this report). Both the eastbound and westbound roadways will transition back to two lanes just east of Kinney Road.

The new 2-lane westbound roadway will be 38-feet wide and will have a 10-foot outside shoulder, two-12-foot lanes and a 4-foot inside shoulder. The existing 40-foot roadway will be reconfigured to provide a 10-foot outside shoulder, two-12-foot lanes and a 6-foot inside shoulder. The 6-foot shoulder results from using the existing 40-foot roadway, rather than removing 2-feet of existing pavement. In areas where the existing roadway is being removed and new eastbound and

westbound roadways will be constructed the inside shoulder of both roadways will be 4-feet wide. Auxiliary lanes will be constructed at intersections.

The Drainage Report prepared for this project shows that 15-RCBCs, 7-CMPs and the two bridge structures do not have adequate capacity to carry the design volume of water. See Section 5.6 for the drainage criteria and a summary of the drainage structures.

Existing drainage culverts that are adequately sized will be extended to the north through the new westbound roadway. Where existing culverts are undersized the culverts as shown in Table 5-2 will be constructed under the new roadway. After traffic is moved to the new roadway the existing culverts will be upsized as required. Where guard rail is currently used on the south side of SR 86 because of inadequate recovery zone, the existing culverts will be extended to provide the required recovery zone, and guard rail will be removed.

A new 260-foot long bridge will be constructed on the new westbound roadway at Black Hills Wash (MP 162.1) and a new 200-foot long bridge will be constructed at Snyder Hills Wash (MP 162.3).

The existing bridges will be supplemented as follows to carry the design volumes of water.

- Black Hills Wash (MP 162.1): The existing bridge will remain and a new 130-foot long bridge will be constructed immediately to the east of the existing bridge. The channel will be widened under the new bridge.
- Snyder Hills Wash (MP 162.3): The existing bridge will remain. The wash bottom will be cleared out and excavated to the stable slope invert, which is at the approximate existing elevation of 2436-feet. Further analysis is required during final design to determine a design stable slope invert.

Construct drainage inlets in the median of the 4-lane divided highway and connect them to cross-culverts as required.

Alternative B:

Alternative B consists of constructing a new 2-lane eastbound roadway on the south side of the existing 2-lane roadway to provide a 4-lane divided highway for the entire length of the project. The existing roadway will be converted to carry westbound traffic. Crossroad intersections will be improved. Signalization and turn lanes will be constructed at major intersections. Where required, local roads will be realigned at their intersection with SR 86. See Plan Sheets, Appendix **C**.

Alternative B begins just east of Sandario Road at MP 156.88 (Sta. 622+79.42).

SR 86 will transition from 2-12-foot lanes with 8-foot shoulders to a 4lane divided Urban / Fringe-Urban Highway with a 50-foot median at MP 157.29 (Sta. 644+45.55).

This configuration will continue from approximately MP 157.29 to the Sunset Avenue intersection where a third eastbound lane will be added. A third westbound lane will be added at the Sheridan Avenue intersection. Three through lanes in each direction will be continued easterly through the Kinney Road Intersection to provide needed capacity through the intersection of SR 86 and Kinney Road (See Section 2.1.7). Both the eastbound and westbound roadways will transition back to two lanes just east of Kinney Road.

The new 2-lane eastbound roadway will be 38-feet wide and will have a 10-foot outside shoulder, two-12-foot lanes and a 4-foot inside shoulder. The existing 40-foot roadway will be reconfigured to provide a 10-foot outside shoulder, two-12-foot lanes and a 6-foot inside shoulder. The 6-foot shoulder results from using the existing 40-foot roadway, rather than removing 2-feet of existing pavement. In areas where the existing roadway is being removed and new eastbound and westbound roadways will be constructed the inside shoulder of both roadways will be 4-feet wide. Auxiliary lanes will be constructed at intersections.

The Drainage Report prepared for this project shows that 15-RCBCs, 7-CMPs and the two bridge structures do not have adequate capacity to carry the design volume of water. See Section 5.6 for the drainage criteria and a summary of the drainage structures.

Existing drainage culverts that are adequately sized will be extended to the south through the new eastbound roadway. Where existing culverts are undersized the culverts as shown in Table 5-2 will be constructed under the new roadway. After traffic is moved to the new roadway the existing culverts will be upsized as required. Where guard rail is currently used on the north side of SR 86 because of inadequate recovery zone, the existing culverts will be extended to provide the required recovery zone, and guard rail will be removed.

A new 260-foot long bridge will be constructed on the new eastbound roadway at Black Hills Wash (MP 162.1) and a new 200-foot long bridge will be constructed at Snyder Hills Wash (MP 162.3).

The existing bridges will be supplemented as follows to carry the design volumes of water.

new bridge.

• Black Hills Wash (MP 162.1): The existing bridge will remain and a new 130-foot long bridge will be constructed immediately to the east of the existing bridge. The channel will be widened under the • Snyder Hills Wash (MP 162.3): The existing bridge will remain. The wash bottom will be cleared out and excavated to the stable slope invert, which is at the approximate existing elevation of 2436-feet. Further analysis is required during final design to determine a design stable slope invert.

Construct drainage inlets in the median of the 4-lane divided highway and connect them to cross-culverts as required.

Alternative C:

A third alternative, Alternative C, was identified that essentially combines elements of both Alternatives A and B to better fit the corridor, minimize adverse impacts to adjacent properties and utilize as much of the existing drainage channels and dikes as is feasible. Alternative C will provide a 4-lane divided roadway, and will utilize the existing 2-lane roadway for one direction of travel through the majority of the length of the project. The horizontal alignment will be modified to shift the location of the new 2-lane roadway from one side of the existing roadway to the other as described in the following text and as shown on the plans (Appendix B) and typical sections (Appendix A).

Crossroad intersections will be improved. Signalization and turn lanes will be constructed at major intersections. Where required, local roads will be realigned at their intersections with SR 86. See Plan Sheets, Appendix B.

Alternative C begins just east of Sandario Road at MP 156.88 (Sta. 622+79.42).

SR 86 will transition from 2-12-foot lanes with 8-foot shoulders to a 4lane divided Urban / Fringe-Urban Highway with a 50-foot median at MP 157.29 (Sta. 644+45.55).

Existing SR 86 will be used as the westbound roadway and a new eastbound roadway will be constructed on the south side of the existing roadway from MP 157.29 to approximately MP 160.1. From MP 160.1 to MP 160.4 the horizontal alignment transitions to the north. Through the transition the existing roadway will be removed and new eastbound and westbound roadways will be constructed.

From MP 160.4 to MP 163.2 the existing 2-lane roadway will be converted to the eastbound roadway and a new westbound roadway will be constructed on the north side of the existing roadway.

Between MP 163.2 and MP 163.6 the horizontal alignment will again transition to the south with the existing roadway being removed and new eastbound and westbound roadways being constructed.

From MP 163.6 to MP 164.2 the existing 2-lane roadway will be converted to the westbound roadway and a new eastbound roadway will be constructed on the south side of the existing roadway.

At MP 164.2 the horizontal alignment will again transition to the north and the 4-lane divided roadway will be constructed approximately symmetrically to the north and south of the centerline of the existing roadway. The existing roadway will be removed and new eastbound and westbound roadways will be constructed. A third eastbound lane will be added to SR 86 at the Sunset Avenue intersection. A third westbound lane will be added at the Sheridan Avenue intersection, and three through lanes in each direction will be continued easterly through the Kinney Road Intersection to provide needed capacity through the intersection of SR 86 and Kinney Road (See Section 2.1.) Both the eastbound and westbound roadways will transition back to two lanes just east of Kinney Road.

The new 2-lane roadway, whether eastbound or westbound, will be 38feet wide and will have a 10-foot outside shoulder, two-12-foot lanes and a 4-foot inside shoulder. Where the existing roadway is being used for one direction of travel, the 40-foot roadway will be reconfigured to provide a 10-foot outside shoulder, two-12-foot lanes and a 6-foot inside shoulder. The 6-foot shoulder results from using the existing 40foot roadway, rather than removing 2-feet of existing pavement. In areas where the existing roadway is being removed and new eastbound and westbound roadways will be constructed, the inside shoulder of both roadways will be 4-feet wide. Auxiliary lanes will be constructed at intersections.

The Drainage Report prepared for this project shows that 15-RCBCs, 7-CMPs and the two bridge structures do not have adequate capacity to carry the design volume of water. See Section 5.6 for the drainage criteria and a summary of the drainage structures.

Existing drainage culverts that are adequately sized will be extended as required. RCBC and pipe culverts will be extended through the median and across the new roadway to provide the required recovery zone adjacent to the new roadway. Where new roadway construction occurs on both sides of the existing roadway, existing culverts will have to be extended on both ends. During the design phase of the project it may be necessary to make adjustments to the vertical alignment of culvert extensions to assure that they are below the structural section of the roadway.

Where guard rail is currently used on the existing roadway because of inadequate recovery zone, and the existing roadway is being used for one direction of travel, the existing culverts will be extended to provide the required recovery zone adjacent to the existing roadway, and guard rail will be removed.

Where existing culverts are undersized the culverts as shown in Table 5-2 will be constructed under the new roadway. After traffic is moved to the new roadway the existing culverts will be upsized as required and will be extended to provide the required recovery zone. Existing guard rail will be removed. A new 260-foot long bridge will be constructed on the new westbound roadway at Black Hills Wash (MP 162.1) and a new 200-foot long bridge will be constructed at Snyder Hills Wash (MP 162.3).

The existing bridges will be supplemented as follows to carry the design volumes of water.

- new bridge.
- design stable slope invert.

Construct drainage inlets in the median of the 4-lane divided highway and connect them to cross-culverts as required.

4.3 Evaluation of Alternatives

Many of the characteristics of the alternatives developed for improving SR 86 are the same for all three alternatives:

- for all alternatives.
- for all alternatives.
- alternatives.

- •
- alternatives.
- **Evaluation of Alternatives.**

• Black Hills Wash (MP 162.1): The existing bridge will remain and a new 130-foot long bridge will be constructed immediately to the east of the existing bridge. The channel will be widened under the

• Snyder Hills Wash (MP 162.3): The existing bridge will remain. The wash bottom will be cleared out and excavated to the stable slope invert, which is at the approximate elevation of 2436-feet. Further analysis is required during final design to determine a

• The LOS for mainline SR 86 and for intersections will be the same

• Turning movements at intersections and turnouts will be the same

• Signalization of major local road intersections is the same for all

Realignment and improvement of local Roads and R/W requirements for the local Roads will be similar for all alternatives.

Auxiliary turning lanes will be the same for all alternatives.

• Median crossovers will be the same for all alternatives.

Noise walls to mitigate noise impact to adjacent properties, if required, will be the same for all alternatives.

• Access to adjacent properties will be provided by all three

• The fringe-urban configuration with 74-foot centerline to centerline separation of roadways will be used for all alternatives.

Drainage structures including RCBC, CMP, bridges and drainage channels will be the same for all alternatives. The length of new dikes is different for each alternative and is shown in Table 4-1,

Design Evaluation Factors	Alternative A	Alternative B	
Use of Existing Roadway	Alt. A uses the existing roadway for the eastbound direction of travel from MP 157.29 to MP 165.77, which is 8.48 miles.	Alt. B uses the existing roadway for the westbound direction of travel from MP 157.29 to MP 165.77, which is 8.48 miles.	Alt. C uses the 157.29 to MP 163.6 to 164.2
Minimize Impact to Adjacent Properties	 Alt A will construct the new roadway on the north side of the existing roadway. Impact to Property – South side of SR 86: Property adjacent to the south side of the existing SR 86 roadway will not be impacted between MP 156.88 and MP 159.48 and between MP 160.14 and MP 166. Between MP 159.48 and MP 160.14 an additional 30-foot wide strip of R/W will be required on the south side of SR 86. Ryan Arifield is on the north side of SR 86. The R/W is narower through this area and additional width is required for the turning lanes at the intersection of SR 86 and Valencia Road. The property is undeveloped. Between MP 166 and MP 166.20 an additional 20-foot wide strip of R/W will be required on the south side of SR 86 for additional lanes through the Kinney Road intersection. Impact to Property – North side of SR 86: MP 156.88 to MP 159.3: An additional 74-foot wide strip of R/W would be required. However the property is undeveloped. MP 159.3 to MP 160.2: The width of additional R/W along Ryan Ariffield would vary from approximately 54-feet to approximately 74-feet. Ryan Ariffield would be severely impacted: The roadway would be closer to the existing Airfield buildings. The airport flight pattern may be affected. The loss of property would impact their parking area. The existing access road located on the Airfield property would have to be realigned and moved to the north, which would take additional ArW varying in width from 30-feet to 124-feet is required. From MP 160 to MP 164 the property is not developed. From MP 164 to MP 166 most of the adjacent property on the north side of SR 86 at approximately MP 164.2 has been removed in its entirety. The R/W line for Alternative A is located within the limits of the property where the adobe block manufacturing plant that is shown on the plan sheets on the north side of SR 86 at approximately MP 164.2 	 Alt. B will construct the new roadway on the south side of the existing roadway. Impact to Property – South side of SR 86: MP 156.88 to MP 159.3: An additional 50-foot of R/W will be required to contain the new EB roadway, the drainage dikes and the utility lines. MP 159.3 to MP 160.1: The width of additional R/W needed varies from 50-feet to approximately 124-feet. MP 160.1 to MP 160.7: The width of additional R/W needed varies from approximately 74-feet to approximately 14-feet. MP 160.7 to MP 165.9: The width of additional R/W needed varies from approximately 64-feet to 20-feet. MP 165.9 to MP 165.2: The width of additional R/W needed varies from approximately 64-feet to 20-feet. Additional drainage easements will also be required on the south side in several locations along this section of the project. Most of the adjacent property on the south side of SR 86 is undeveloped. However, a gas station/convenience store is located at approximately MP 164.6; a potable water pump station and an electric power substation are located at approximately MP 165.2; a Baptist Church and School, a feed store, several residential properties and a School, a feed store, several residential properties and a School, a feed store, several residential properties and a School, a feed store, several residential properties and a by 40-feet at culvert outlets due to increases in the size of box culverts. MP 160.0 to MP 161.4: An additional 30-foot of R/W will be required to contain utility lines along SR 86 roadway within these limits will not be impacted. MP 161.4 to MP 165.4: An additional SO-foot of R/W will be required for a drainage channel and utility lines. MP 165.4 to MP 165.4: An additional SO-foot of R/W will be required for a drainage channel and utility lines. MP 165.4 to OP 165.4: An additional R/W varying in width from 30-feet to 20-feet would be required for a drainage channel and utility lines. <td> Alt. C will cereating roadway 160. 1. From J and forth betway to the east the roadway will roadway. Impact to Prope MP 156.83 required to the utility MP 159.3 varies from from MP should be MP 160.3 Drainage property is the area or approxima MP 161.4 adjacent to MP 161.4 adjacent to MP 163.3 varies from gas station electric por store, and than for A impacted. MP 166 to MI additional wide drain at MP 166 Impact to Prope MP 156.8 However, feet where north side affected. MP 160.2 from 0' to at the outle Impact should be affected. </td>	 Alt. C will cereating roadway 160. 1. From J and forth betway to the east the roadway will roadway. Impact to Prope MP 156.83 required to the utility MP 159.3 varies from from MP should be MP 160.3 Drainage property is the area or approxima MP 161.4 adjacent to MP 161.4 adjacent to MP 163.3 varies from gas station electric por store, and than for A impacted. MP 166 to MI additional wide drain at MP 166 Impact to Prope MP 156.8 However, feet where north side affected. MP 160.2 from 0' to at the outle Impact should be affected.

TABLE 4-1, EVALUATION OF ALTERNATIVES

Alternative C

he existing roadway for one direction of travel from MP IP 160.1; from MP 160.5 to MP 163.2; and from MP .2, which is a total of 6.0 miles.

construct the new roadway on the south side of the dway from the beginning of project at MP 156.88 to MP n MP 160.1 to MP 164.2 the alignment transitions back tween the south side and the north side. From MP 164.2 ne alignment transitions to the north and a new four-lane ll be approximately symmetrical around the existing

operty – South side of SR 86:

<u>88 to MP 159.3</u>: An additional 50-foot of R/W will be to contain the new EB roadway, the drainage dikes and y lines.

<u>.3 to MP 160.36</u>: The width of additional R/W needed om 0-feet to 124-feet. Drainage easements are required P 160.1 easterly. The property is undeveloped. Impact e minimal.

<u>0.36 to MP 161.4</u>: No additional R/W is needed. e easements are needed for flood control dikes. The is undeveloped. Impact should be minimal except that of land being included in the drainage easements is mately 20 acres.

4 to MP 163.3: No additional R/W is required. Property to existing SR 86 will not be impacted.

<u>.3 to MP 166</u>: The width of additional R/W needed om 64-feet to 0-feet. The developed property includes a on/convenience store, a potable water pump station, an power substation, a Baptist Church and School, a feed d several residential properties. The taking will be less Alt. B, but the improved properties will be adversely l.

to MP 166.3: No additional R/W is needed from MP MP 166.1. From MP 166.1 to MP 166.2 the width of al R/W required is approximately 28-feet. A 20-foot inage easement is needed for the extension of a RCBC 56.3.

operty – North side of SR 86:

<u>.88 to MP 160.2</u>: No additional R/W is required. r, several drainage easements have been widened by 40re RCBC's have been enlarged. Property adjacent to the de of the existing SR 86 roadway will be minimally

<u>.2 to MP 163.5</u>: The width of additional R/W varies to 94'. Several 50' wide drainage easements are needed atlet ends of box culverts. The property is undeveloped. hould be minimal.
Design Evaluation Factors	Alternative A	Alternative B	Alternative C
Minimize Impact to Adjacent Properties (Continued)	 MP 166 to MP 166.4: A drainage easement varying in width from 85-feet to 240-feet is required from MP 166 to MP 166.2. A 30-foot wide drainage easement is required from MP 166.25 to MP 166.4. 	 utility lines. A drainage easement varying in width from 75-feet to approximately 240-feet is required from MP 165.8 to MP 166.2. A 30-foot wide drainage easement is required from MP 166.25 to MP 166.4. East of MP 164 most of the adjacent property is divided into small acreages, some of which have residential development. An adobe block manufacturing plant that is shown on the plan sheets on the north side of SR 86 at approximately MP 164.2 has been removed in its entirety. 	 <u>MP 163.5 to MP 164.1</u>: No additional R/W is required. Property adjacent to the north side of existing SR 86 will not be impacted. <u>MP 164.1 to MP 164.5</u>: The width of additional R/W varies from 50' wide to approximately 60' wide for a drainage channe and utility lines. The new R/W would cross property that was previously the site of an adobe manufacturing plant. The adobe block manufacturing plant has been removed in its entirely. <u>MP 164.5 to MP 165.8</u>: The width of additional R/W needed varies from approximately 20' to 77' which includes width for a drainage channel and utility lines. Three improved residentia properties will be impacted. One residential structure will be taken. Other properties affected are unimproved. Impact would likely be moderate. A drainage easement varying in width from 75-feet to approximately 240-feet is required from MP 165.8 to MP 166.2 to MP 166.4.
Minimize Additional R/W Needed	 Total Acres for SR 86 mainline R/W: 81.43 Total Acres for local road R/W: 12.90 Total Acres for SR 86 Mainline Drainage Easements: 36.92 Total Acres for local road Drainage Easements: 1.58 	 Total Acres for SR 86 mainline R/W: 76.35 Total Acres for local road R/W: 12.90 Total Acres for SR 86 Mainline Drainage Easements: 51.81 Total Acres for local road Drainage Easements: 1.58 	 Total Acres for SR 86 mainline R/W: 79.14 Total Acres for local road R/W: 12.90 Total Acres for SR 86 Mainline Drainage Easements: 35.03 Total Acres for local road Drainage Easements: 1.58
	Total R/W and Drainage Easements: 132.83	Total R/W and Drainage Easements: 142.64	Total R/W and Drainage Easements: 128.65
Drainage Dikes	• Approximately 13,200 lin. ft. of new dike would be required.	• Approximately 25,650 lin. ft. of new dike would be required.	• Approximately 25,550 lin. ft. of new dike would be required.
Existing Othicy Lines	 Impact on utility lines that cross SK 86 is approximately the same for Alts. A, B & C. Utility lines that are currently located within the ADOT R/W on the north side of SR 86 would have to be relocated but could be accommodated within the new R/W. Gas – MP 157 to MP 161.4 and MP 166.3 to MP 166.5. Buried telephone – (2-lines) MP 157 to MP 161.4; (1-line) MP 	 Impact on utility lines that cross SK 86 is approximately the same for Alts. A, B & C. Utility lines that are currently located within the ADOT R/W on the south side of SR 86 would have to be relocated but could be accommodated within the new R/W. Tucson Water -MP 156.88 to MP 159.6, MP 164.4 to MP 165.8, MP 165 8 to MP 166 3 and MP 166 0 to MP 166 58 	 Impact on utility lines that cross SK 80 is approximately the same for Alts. A, B & C. Following are utility lines currently located within the ADOT R/W on the south side of SR 86 that would have to be relocated but could be accommodated within the new R/W. Tucson Water -MP 156.88 to MP 159.6, MP 164.4 to MI 165.8, 165.8 to MP 166.3 and MP 166.0 to MP 166.58
	 Burled telephone - (2-Inles) MF 137 to MF 101.4, (1-Inle) MF 163.4 to MP 164.4; MP 165.4 to MP 165.7. Overhead telephone - MP 164.7 to MP 165.1; MP 165.4 to MP 	 TRICO power - MP 156.88 to MP 159.6. TV cable - MP 156.88 to MP 159.6 - located on TRICO power 	 TRICO power – MP 156.88 to MP 159.6. TV cable – MP 156.88 to MP 159.6 – located on TRICO power
	 165.9. Overhead power – MP 161.7 to MP 162.1; MP 164.4 to MP 166.58. 	 poles. Buried telephone - (2 lines) MP 164.2 to MP 164.8 and MP 166.3 to MP 166.58. 	 poles. Buried telephone - (2 lines) MP 164.2 to MP 164.8 and MP 166.3 to MP166.58.
	• Sewer line – MP 165.8 to MP 166.3 (May not have to be relocated depending on location of drainage channel.)	• Overhead telephone – MP 164.8 to MP 166.3.	• Overhead telephone – MP 164.8 to MP 166.3. Following are utility lines currently located within the ADOT BO
	Tucson water lines located within the existing R/W from MP 165.3 to MP 166.58 would have to be relocated but could be accommodated within the existing R/W on the south side of SR 86.	from approximate MP 160 to MP 161.4. Existing utilities within the existing R/W in this area would be able to remain.	 on the north side of SR 86 that would have to be relocated but could be accommodated within the new R/W. Gas – MP 160.3 to MP 161.4 and MP 166.3 to MP 166.5. Buried telephone MP 160.3 to MP 161.4 MP 162.4 to MP
	Alternative A would require new R/W on the south side of SR 86 along Ryan Airfield. Approximately 500' of 42" water line, TRICO overhead power line and TV cable would have to be relocated at	from approximate MP 164.1 to MP 165.6. Existing utilities within the existing R/W in this area would be relocated but could be accommodated within the new R/W. The existing Fiber Optic line	 Buried telephone - MP 100.3 to MP 101.4, MP 103.4 to MP 164.4 and MP 165.4 to MP 165.7. Overhead telephone - MP 161.7 to MP 162.1 and MP 165.4 to MP 165.9.

Design Evaluation Factors	Alternative A	Alternative B	Alternative C
Existing Utility Lines (con't)	 approximate MP 159.6 but could be accommodated within the new R/W. Utility lines located outside existing R/W, but within new R/W on the north side of SR 86 may have to relocate but could be accommodated within the new R/W. Tucson Water, 12" line – MP 159.5 to MP 160.0; 72" line vicinity of Tucson Estates Pkwy. (May be able to remain, depending on depth). Fiber Optic line – vicinity of Tucson Estates Pkwy. CAP Water, 96" line – vicinity of Tucson Estates Pkwy. Depth shown by potholing indicates 96" water line can remain. 	 located outside the existing R/W in the vicinity of Tucson Estates Pkwy. would be relocated but could be accommodated within the new R/W. Utility lines located outside existing R/W, but within new R/W on the south side of SR 86 may have to relocate but could be accommodated within the new R/W. Gas - MP 165.8 to MP 166.5 - May not need new R/W depending on configuration of SR 86/Kinney Road intersection improvements. 	 Overhead power - MP 161.7 to MP 16 166.58. Sewer line - MP 165.8 to MP 166.3 (relocated depending on location of drainage Utility lines located outside existing R/W, but the north side of SR 86 may have to re- accommodated within the new R/W. Tucson Water, 12" line - MP 159.5 to vicinity of Tucson Estates Pkwy. (May depending on depth). Fiber Optic line - vicinity of Tucson Estat CAP Water, 96" line - vicinity of Tucson shown by potholing indicates 96" water line
Threatened or Endangered Species	 The Pima Pineapple Cactus (PPC) is the only Federally listed threatened or endangered species within the study area. The Cactus Ferruginous Pygmy-owl (Pygmy-owl) has recently been delisted, but is being considered as a threatened or endangered species by ADOT. PPC: Need to relocate one PPC. Need to relocate or protect in place two PPC. Pygmy-owl: Disturbance to habitat components for the Pygmy-owl may vary among the three alternatives; however, the differences in impacts are expected to be minimal and are unlikely to result in a trend toward federal listing or loss of viability. 	 The Pima Pineapple Cactus (PPC) is the only Federally listed threatened or endangered species within the study area. The Cactus Ferruginous Pygmy-owl (Pygmy-owl) has recently been delisted, but is being considered as a threatened or endangered species by ADOT. PPC: Need to relocate four PPC. Need to relocate or protect in place two PPC. Pygmy-owl: Disturbance to habitat components for the Pygmy-owl may vary among the three alternatives; however, the differences in impacts are expected to be minimal and are unlikely to result in a trend toward federal listing or loss of viability. 	 The Pima Pineapple Cactus (PPC) is the threatened or endangered species within the s Ferruginous Pygmy-owl (Pygmy-owl) has rebut is being considered as a threatened or e ADOT. PPC: Need to relocate one PPC. Need to place two PPC. Pygmy-owl: Disturbance to habitat compooul may vary among the three altern differences in impacts are expected to unlikely to result in a trend toward fede viability. Formal consultation on the proposed improbetween Sandario Road and Kinney Road ha was signed by Jason M. Douglas for Stev. Supervisor for the USFWS, Arizona Ecold Office. The final consultation was sent to Division Administrator, U.S. Department of T Highway Administration with a stamped date of The biological opinion (BO) lists actions th take. The determination indicates the loss of a and 60.77 acres of habitat, as well as the alteration of 81.23 acres of habitat, comprise of the known population and extant suitable habitat comprise context.
Air Quality	• This project conforms to the State Implementation Plan (SIP) and is therefore in conformity.	• This project conforms to the State Implementation Plan (SIP) and is therefore in conformity.	 This project conforms to the State Imple and is therefore in conformity.
Constructability and Maintenance of Traffic During Construction	 The existing roadway would continue to be used for both eastbound and westbound traffic on SR 86. The new 2-lane roadway would be constructed on the north side of the existing roadway from approximately MP 157.29 to approximately MP 165.77. Roadway tapers would be constructed to transition westbound traffic from the existing roadway to the new westbound 	 The existing roadway would continue to be used for both eastbound and westbound traffic on SR 86. The new 2-lane roadway would be constructed on the south side of the existing roadway from approximately MP 157.29 to approximately MP 165.77. Roadway tapers would be constructed to transition eastbound traffic from the existing roadway to the new eastbound roadway 	 The existing roadway would continue eastbound and westbound traffic on SR 86 The new roadway will transition as follow existing roadway: From MP 157.2 to MP 160.1 the r constructed on the south side of the ex The new roadway will transition from

TABLE 4-1 EVALUATION OF ALTERNATIVES

62.1 and 164.4 to MP

(May not have to be ge channel).

ut within new R/W on relocate but could be

MP 160.0; 72" line y be able to remain,

tes Pkwy.

on Estates Pkwy. Depth ine can remain.

only Federally listed study area. The Cactus recently been delisted, endangered species by

relocate or protect in

onents for the Pygmynatives; however, the be minimal and are leral listing or loss of

provements to SR 86 as been concluded and ven L. Spangle, Field logical Services Field o Mr. Robert Hollis, ransportation, Federal of July 02, 2008.

hat the applicant must at least one to two PPC long-term temporary less than one percent abitat.

ementation Plan (SIP)

to be used for both 5 to the extent feasible. ws with respect to the

new roadway will be kisting road.

the south side of the

Alternative A	Alternative B	Alternative C
 roadway at the east end of the project, and to transition westbound traffic from the new westbound roadway back to the existing westbound lane on the existing 2-lane roadway at the west end of the project. When the new roadway is completed both westbound and eastbound traffic will be moved to the new roadway and work on existing roadway will be done. Interruptions to traffic will be minor since most construction will be done when the traffic is moved off the roadway. 	 at the west end of the project, and to transition eastbound traffic from the new eastbound roadway to the eastbound lanes of the existing divided roadway at the east end of the project. When the new roadway is completed both eastbound and westbound traffic will be moved to the new roadway and work on existing roadway will be done. Interruptions to traffic will be minor since most construction will be done when the traffic is moved off the roadway. 	 existing to the north side of existing between MP 160.1 and MP 160.5. The existing roadway will be removed and new westbound and eastbound roadways will be constructed. From MP 160.5 to MP 163.2 the new roadway will be constructed on the north side of the existing road. The new roadway will transition from the north side of existing to the south side of existing between MP 163.2 and MP 163.6. The existing roadway will be removed and new westbound and eastbound roadways will be constructed. From MP 163.6 to MP 164.2 the new roadway will be constructed on the south side of the existing road. From MP 163.6 to MP 164.2 the new roadway will be constructed on the south side of the existing road. From MP 164.2 to MP 165.8 the existing roadway will be removed and new eastbound and westbound roadways will be constructed. From MP 165.8 to MP 166.1 the tapered roadway that is constructed under the JPA between ADOT and PIMA County will be widened to complete the 4-lane divided highway. During construction of the transitions above, both eastbound and westbound traffic will be maintained on SR 86. However, traffic may be reduced to a single lane with traffic flaggers or temporary signals controlling the flow of traffic.
 SR 86 Construction = \$58,547,000 SR 86 Design = \$4,684,000 SR 86 R/W & DE = \$4,988,000 Utility Relocation = \$1,200,000 Env. Mit. = \$800,000 Local Roads = \$7,816,000 	 SR 86 Construction = \$59,643,000 SR 86 Design = \$4,771,000 SR 86 R/W & DE = \$4,058,000 Utility Relocation = \$1,200,000 Env. Mit. = \$800,000 Local Roads = \$7,816,000 	 SR 86 Construction = \$62,570,000 SR 86 Design = \$5,005,000 SR 86 R/W & DE = \$3,956,000 Utility Relocation = \$1,200,000 Env. Mit. = \$800,000 Local Roads = \$7,816,000
	Alternative A roadway at the east end of the project, and to transition westbound traffic from the new westbound roadway back to the existing westbound lane on the existing 2-lane roadway at the west end of the project. • When the new roadway is completed both westbound and eastbound traffic will be moved to the new roadway and work on existing roadway will be done. • Interruptions to traffic will be minor since most construction will be done when the traffic is moved off the roadway. • SR 86 Construction = \$58,547,000 • SR 86 Construction = \$58,547,000 • SR 86 Design = \$4,684,000 • SR 86 R/W & DE = \$4,988,000 • Utility Relocation = \$1,200,000 • Env. Mit. = \$800,000	Alternative A Alternative B roadway at the east end of the project, and to transition westbound lane on the existing 2-lane roadway back to the existing westbound lane on the existing 2-lane roadway at the west end of the project. at the west end of the project, and to transition eastbound lanes of the existing divided roadway at the east end of the project. • When the new roadway is completed both westbound and castbound traffic will be moved to the new roadway and work on existing roadway will be done. • When the new roadway is completed both eastbound and westbound traffic will be minor since most construction will be done when the traffic is moved off the roadway. • Interruptions to traffic will be minor since most construction will be done when the traffic is moved off the roadway. Interruptions to traffic will be minor since most construction will be done when the traffic is moved off the roadway. • SR 86 Construction = \$58,547,000 • SR 86 Construction = \$59,643,000 • SR 86 Design = \$4,684,000 • SR 86 Construction = \$1,200,000 • SR 86 RVW & DE = \$4,988,000 • SR 86 RVW & DE = \$4,058,000 • Utility Relocation = \$1,200,000 • Lity Relocation = \$1,200,000 • Low Mit. = \$800,000 • Env. Mit. = \$800,000

TABLE 4-1, EVALUATION OF ALTERNATIVES

4.4 Conclusions

4.4.1 Discussion

Using the evaluation of alternatives, a comparative analysis of the alternatives was made which lead to specific conclusions about the most appropriate alternative for each roadway segment. The analysis revealed that only a few evaluation factors were significant enough for determining which alternative was preferred.

The following summary of the comparative analysis describes the key factors and differences used in arriving at a conclusion for the Build vs. No-Build Alternative, and the options studied within Alternatives A, B and C.

• No Build vs. Build Alternatives

The No-Build Alternative involves no expenditure of funds and no apparent change to the environmental factors along SR 86. However, the No-Build Alternative:

- Will require continuing expenditures to rehabilitate and maintain the existing, aging roadway;
- Will not fulfill the purpose and need of improving the capacity, safety, and traffic operational characteristics of the route.

Therefore, the No-Build Alternative is not recommended.

Conclusion: The No-Build Alternative is not recommended and has been eliminated from consideration.

• Alternative A

While Alternative A meets the safety and capacity requirements for SR 86, the adverse impact on Ryan Airfield is significant. SR 86 was realigned to the south along Ryan Airfield as part of an improvement of SR 86 in the 1990's. Alternative A would move SR 86 back to the north which would impact the improvements on Ryan Airfield and would adversely affect the flight patterns. Alternative A also has an adverse impact on three improved residential properties on the north side of SR 86.

Alternative A would result in a cut slope approximately 20-feet high adjacent to the westbound roadway along Snyder Hill, which would have a negative visual impact. A total of approximately 118.4-acres of new R/W and Drainage Easement are required for Alternative A, which is less that Alternative B, but greater than Alternative C.

The length of new dikes required for Alternative A is less than the other two alternatives, but the area of drainage easement required is greater than Alternative C.

The impact on the Pima Pineapple Cactus is the same for Alternatives A and C, and less than the impact for Alternative B. Impact on Pygmy-owl habitat is similar for all alternatives.

Through traffic will be maintained on SR 86 during construction Alternative A will utilize the existing roadway more than Alternative C will during construction.

The estimated Construction Cost for Alternative A is less than either Alternative B or Alternative C. The estimated cost of R/W and Drainage Easements for Alternative A are more than either Alternative A or Alternative C; however, the total cost for Alternative A is slightly less than Alternative B and \$3.3-million less than Alternative C.

• Alternative B

Alternative B meets the safety and capacity requirements and does not have an adverse impact on Ryan Airfield. However, Alternative B has an adverse impact on several improved commercial and residential properties adjacent to the south side of SR 86.

- Alternative B has the most severe impact on the Shell station/convenience store located on the south side of SR 86 near Tucson Estates Pkwy. The gasoline island is located within the property that would be acquired for the project.
- A potable water pump station and an electric substation located on the south side of SR 86 at MP 165.2 will be partially within the required R/W.
- The Baptist Church and School, a feed store, a storage facility and residential properties will be more severely impacted by Alternative B than Alternative A or C.

Visual impacts along Snyder Hill will be less than Alternative A.

A total of approximately 128.2-acres of new R/W and Drainage Easement are required for Alternative B, which is more than the acreage required for either Alternative A or Alternative C.

The length of new dikes required for Alternative B is greater than for Alternative A and approximately the same as for Alternative C.

The impact on the Pima Pineapple Cactus is greater than the impact for Alternative A or C.

Through traffic will be maintained on SR 86 during construction Alternative A will utilize the existing roadway more than Alternative C will during construction.

The estimated construction cost for Alternative B is more than the construction cost of Alternative A and less than the construction cost of Alternative C. When R/W and Drainage Easements are added, the total cost for Alternative B is slightly more than Alternative A and approximately \$3.0-million less than Alternative C.

• Alternative C

Alternative C meets the safety and capacity requirements and does not have an adverse impact on Ryan Airfield. The impact on improved commercial and residential properties on the south side of SR 86 and on improved residential properties on the north side of SR 86 is reduced substantially but is not eliminated.

The alignment of Alternative C provides a "best fit" with respect to impacts on adjacent property through the length of the project.

A total of approximately 114.2-acres of new R/W and Drainage Easement are required for Alternative C, which is the least amount of the three alternatives.

The length of new dikes required for Alternative C is greater than for Alternative A and approximately the same as for Alternative B.

The impact on the Pima Pineapple Cactus is the same as for Alternative A and less than the impact for Alternative B.

Through traffic will be maintained on SR 86 during construction Alternative C will utilize temporary connections between the existing roadway and new construction more than Alternatives A and B will.

The estimated construction cost for Alternative C is more than for either Alternative A or Alternative B. When R/W and Drainage Easements are added the total cost for Alternative C remains more than either Alternative A or Alternative B.

The increased construction cost for Alternative C is primarily caused by the increased amount of reconstruction of the existing roadway required to shift the alignment to the north and south of the existing alignment to reduce impacts to adjacent properties.

4.4.2 Public Opinion

A Public Scoping Meeting was held on November 14, 2005 (Section 1.4.1), to provide information about the study process to the general public and to provide an opportunity to gather public input on ICOs for the proposed study. Thirty-five people attended the meeting. Those in attendance indicated that SR 86 needs to be improved throughout the study corridor. Issues, concerns, and opportunities discussed at the scoping meetings generally focused upon roadway safety, access control, drainage issues, adjacent development and economic impacts to the area. Comments received from the public were in favor of constructing a four-lane divided roadway in the study area and focused on building improvements as soon as possible.

A Public Hearing was conducted on February 2, 2010 (Section 1.4.3) to present the alternative options including the Preferred Option and the No Action Option. Comments and questions submitted by the public indicated continuing support for the project. Comments and questions along with ADOT responses are included in the Final EA errata.

4.4.3 Summary and Conclusions

Three alternative alignments have been developed and evaluated for improvement of SR 86 between Sandario Road and Kinney Road to enhance safety and traffic operational characteristics of the roadway and to meet current and future traffic needs.

- nor necessary.
- surface is maintained.

• A four-lane divided roadway is recommended throughout the study area from Sandario Road to Sunset Blvd. From Sunset Blvd. through Kinney Road the eastbound mainline roadway will be three lanes. The westbound roadway will be three lanes through the Kinney Road intersection westerly to Sheridan Avenue.

Relocation outside of the existing highway corridor is not viable,

Much of the existing roadway can be utilized if the pavement

• The project will provide a significant upgrade to the drainage facilities in the project area. Overtopping of the highway at Kinney Road, Camino Verde and the area west of Black Hills Wash will be eliminated by enlarging cross drainage structures, adding drainage channels and constructing new dikes to channelize sheet flooding.

- Acquisition of the proposed R/W will provide space for additional travel lanes in the future for traffic in excess of the 2030 design year traffic volumes.
- The biological determination indicates the loss of at least one to two Pima Pineapple Cactus and 60.77 acres of habitat, as well as the long-term temporary alteration of 81.23 acres of habitat. These comprise less than one percent of the known population and extant suitable habitat.

Conclusions:

Alternatives A and B are not recommended and are eliminated from further consideration.

Alternative C has significantly less impact on adjacent improved properties than Alternatives A and B. The cost of Alternative C is approximately 4.2% higher than Alternative A and 3.7% higher than Alternative B. The slightly higher cost is more than offset by the reduced impact on adjacent properties and the lesser amount of new R/W and Easements required. Alternative C is the preferred alternative to be carried forward for further development.

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MAJOR DESIGN FEATURES 5.0

5.1 Introduction

This section describes the major design features used to develop the alternatives for widening SR 86 from a 2-lane highway to a divided 4 -6-lane roadway. All of the alternatives meet the ADOT Design Standards in the ADOT Roadway Design Guidelines.

5.2 Design Controls

The following design controls for SR 86 were used in the development of the alternatives:

- Design Year: 2030
- Design Speed:

Roadway Type	Terrain	Design Speed
Fringe Urban Divided Hwy	Level	65 mph

The existing posted speed of SR 86 is 65 mph from the beginning of the project to MP 163.8 and 55 mph from MP 163.8 through the end of the project. As stated in Section 101.1 of the ADOT RDG, the design speed and the posted speed are independent of each other. The design speed is based on the ADOT RDG criteria for a Fringe Urban Roadway with managed access and establishes geometric parameters for the highway. The posted speed will be determined based on the operational characteristics of the highway, using the 85th percentile speed of traffic.

- Shoulder and Lane Widths: (see Typical Sections, Appendix A):
 - Travel Lane Width: 12-feet Turn Lane Width: 12-feet
 - Shoulder Width:
 - Outside Shoulder: 10-feet Inside Shoulder: 4-feet
 - Shoulder adjacent to turn lane: 4-feet
- Drainage Ditch Offset: 20-feet from edge of pavement to ditch centerline
- ADOT Standard Detail C-02.20 and ADOT • Slope Criteria: RDG Figure 306.3 (Fringe-Urban Arterial)
- Gradient:

5% Maximum (Fringe Urban Arterial, Level Terrain) 0.4% Minimum

• Maximum Superelevation: 0.06 ft/ft (Fringe Urban Hwy)

Maximum Horizontal Curve:

Design Speed	Max. Superelevation	Max. Degree of
(mph)	Rate	Curve
65	0.06 ft/ft	3° 27'

- All other roadway features are per current ADOT Roadway Design Guidelines.
- Median crossovers associated with the divided roadway alternatives are provided at major intersections. Additional median crossovers are provided where major intersections are more than 1mile apart to accommodate U-turn movements. Median crossovers are not provided at less than ¹/₂-mile spacing. Median crossovers are shown on the recommended design concept alternative plans in Appendix B. If additional access points are needed they should be consistent with the provisions noted in Section 6, Access Management Plan.
- Roadside Recovery Area: The width of the Roadside Recovery Area is 30-feet. If this width is not available a suitable barrier such as guardrail can be used. Guardrail will comply with ADOT Criteria and/or AASHTO Roadside Design Guide.

Extensions and relocations of Pima County roads as part of the improvement of SR 86 will be in accordance with Design Criteria contained in the current Pima County Roadway Design Manual.

5.3 Horizontal and Vertical Alignments

The existing horizontal and vertical alignment for SR 86 will be used as much as possible where the design criteria (as defined by the requirements of the ADOT RDG) is met for the design speeds listed in Section 5.2. There are 9 horizontal curves in the existing roadway, which comprises less than 30-percent of the total project length. The degree of curvature of all of the horizontal curves is less than the maximum degree of curvature shown in the current RDG for the design speeds. The superelevation rates of all the horizontal curves are between the minimum and maximum rates shown in the RDG.

There are 14 vertical curves on SR 86 within the study limits. The stopping sight distance of all of the vertical curves exceeds the required distance for the design speeds listed in Section 5.2 as defined by the requirements of the current RDG.

Utilizing the existing roadway in the new roadway sections is desirable for the following reasons:

- construction area.

There are no overpass structures within the project limits.

5.4 Access, Management of Access

Management of access is recommended along SR 86 to enhance traffic operations and safety as well as to preclude uncontrolled future access and random strip development. Developing an access management plan involves providing access to private and public property while simultaneously preserving the flow of traffic on the roadway system in terms of safety, capacity, and speed. Access management on SR 86 will consist of partial access control which will allow needed access to adjacent properties while protecting the function of SR 86 as a regional transportation corridor. Partial access control will be implemented as part of the reconstruction of SR 86 to four-lanes. See Section 6, Access Management Plan, for details.

5.5 Right-of-Way

The existing SR 86 R/W corridor varies in width from 200-feet to 250feet. The ownership of adjacent property is mixed, with approximately 30% owned by the USA, 25% in private ownership, 20% owned by the City of Tucson, 15% owned by the Arizona Board of Regents and 10% owned by the State of Arizona.

Additional R/W will be required for widening the highway from a 2lane roadway to a 4 - 6-lane roadway. Additional R/W will also be required where local road intersections are being realigned or relocated to better fit the wider state highway.

The desirable R/W width per ADOT standards for a fringe urban divided highway (ADOT RDG, Figure 306.3) is 90 feet from the centerline of each roadway. The centerline to centerline separation between the divided roadways has been established at 74 feet for this project to provide 2 feet shy distance between the inside shoulders and a median barrier in the future when an additional lane is added in each

Enhances maintenance of traffic during construction.

Mitigates the impact on the environment by minimizing the

Maintains access to adjoining properties.

Reduces the cost of the proposed improvements.

SR 86; Sandario Road to Kinney Road

direction in the median of the roadway, and the width of the inside shoulders are increased to 10 feet. Additional R/W width may also be required for right-turn lanes.

As a result of coordination with the Utility Owners it was has been determined by ADOT that the R/W for SR 86 will be widened enough to allow most of the utility lines that are now within the SR 86 R/W to relocate within the expanded SR 86 R/W. See Section 5.12; Utilities, Page 31.

Where new R/W is required for the realignment or relocation of local roads the width of the R/W will be in accordance with the requirements of Pima County.

Drainage Easements (DE) will be required for construction and maintenance of drainage channels, drainage dikes and outlets of RCBC.

Table 5-1 lists the County Assessor's parcel numbers and the estimated area of additional R/W and DE required for SR 86 for recommended Alternative C. Table 5-2 lists the County Assessor's parcel numbers and the estimated area of additional R/W required for local road connections

TABLE 5-1, R/W AND DE REQUIRED FOR SR 86

Parcel Number*		el Number* Owner		Aj Take	oprox. (Acres)
BK	MP	PG	and the second secon	R/W	DE
209	20	003A	AZ Board of Regents	3.59	
209	20	003B	AZ Board of Regents		.04
209	17	003B	AZ Board of Regents	3.33	
209	17	003C	AZ Board of Regents		.09
209	16	006E	City of Tucson		.05
209	16	006F	AZ Board of Regents	1.20	
209	16	006G	Tucson 738	5.49	
209	15	006E	Tucson 738 LLC	1.64	
209	15	006F	City of Tucson	1.94	
209	15	006G	Tucson 738 LLC	1.36	
209	14	001D	United States of America	5.77	
210	14	0030	United States of America	2.99	11.19
210	14	0020	City of Tucson	4.43	
210	14	001A	AZ Board of Regents	3.57	11.86
210	14	001B	City of Tucson	2.50	
210	15	0030	State of Arizona	2.06	
210	15	004A	State of Arizona	1.88	1.45
210	15	0100	United States of America	4.32	1.27
210	12	0010	United States of America	.06	
210	16	012D	United States of America	.01	
210	11	045 A	State of Arizona	4.37	.34
210	11	0490	United States of America	3.87	Land Press

Par	arcel Number* Owner		ber* Owner Ap		prox.
BK	MP	PG		R/W	DE
210	09	0720	United States of America	.01	
210	09	025N	Fidelity National Title Tr. 30226	.63	
210	09	0730	United States of America	1.43	
210	09	017A	United States of America	.54	
210	09	018A	United States of America	.55	
210	09	019A	United States of America	38	
210	09	021A	United States of America	51	
210	00	0224	Lipited States of America	17	
210	00	0674	State of Arizona	.17	1.26
210	09	0600	Lipited States of America	1 79	1.00
210	09	0090	United States of America	1.70	1.000000000
210	45	10700		2.00	
212	40	IV/B	Delores Montova & Morio Viotorio	.21	2
212	45	1080	Harvey	.29	
212	45	1100	State of Arizona	.65	-19 M
212	45	1120	State of Arizona	.60	
212	45	1130	Reay's Ranch Investors	.39	
212	48	069D	Pima County	.53	
212	48	069E	City of Tucson	4.18	
212	48	0700	United States of America	1.69	
212	48	042A	Ramirez Revocable Trust	.57	
212	48	043A	Erick M. Ramirez & Tracy M. Ramirez	.62	
212	48	045A	Juan A. & Deborah E. Valdez	.5	
212	48	045C	State of Arizona	.49	
212	48	045B	Juan A & Deborah E. Valdez	.16	
212	48	0380	Harold & Sandra Kay Schwartz	.07	
212	48	0590	Bobbi B. & Alma D. Shenk Revocable Trust	.03	
212	48	044B	West Ajo Baptist	.40	
212	48	046A	Old Town Feed & Supply LLC	.22	
212	48	047A	Mark Q. & Holly L. Waldon (50%) & Phil Galloway (50%)	.19	.82
212	48	037A	Paul Moroz	.52	
212	48	036A	Mike Car LLC	.61	
212	48	035A	Jaime C. & Maria G. Reyes	.23	
212	48	034A	Michelle Chavez	.19	
212	48	048A	Jacob F. & Carol R. Struble	.19	
212	48	049C	Michael C. Pennv	.12	
212	48	049B	Ballah Family Trust	.10	
212	48	050A	Ramirez Revocable Trust	.21	
212	48	051A	Franklin C. T. Ginn & Shew Ying Ginn	.20	and the proceeding of the
212	50	001D	Stewart Title & Trust TR 1580		.08
212	50	001F	Stewart Title & Trust TR 1580		.23
212	50	005M	Stewart Title & Trust TR 1580		1.35
212	50	005P	Stewart Title & Trust Tr 1580	05	12
212	50	0050	Donahue Schriber Bealty	.00	1 /6
212	50	005	Donahue Schriber Realty	mprodensis(/))	1.40
210	50	0001	Stowert Title & Truck TD 1590	11842.458	.00
212	00	0000	JIEWAIL IILE & IIUSLIM 1502	ROMENTS AND	.07

TABLE 5-1, R/W AND DE REQUIRED FOR SR 86

Parcel Number*		umber*	iber* Owner		Approx. Take (Acres)	
BK	MP	PG		R/W		
212	50	011A	Stewart Title & Trust TR 1580		.06	
212	50	012F	Stewart Title & Trust Tr. 1580	.83	2.36	
212	50	012G	Stewart Title & Trust TR 1580	.52		
		TOTAL A	79.14	35.03		

Parcel Number*		umber*	Owner	Local Road	Approx. Take (Acres)	
BK	MP	PG		and the second	R/W	DE
210	14	0030	United States of America	Valencia Rd.	0	
210	15	004A	State of Arizona	Old Ajo Hwy.	0.28	
210	09	0690	United States of America	Camino Verde	1.01	
210	09	067A	State of Arizona	Camino Verde	3.31	
212	48	069D	Pima County	Tucson Estates Pkwy.	1.85	
212	48	0070	United States of America	Spencer St.	1.66	
212	48	060G	Swink	Spencer St.	0.21	
212	48	060H	Celaya	Spencer St.	0.13	
212	48	047A	Waldon & Galloway	Sunset Blvd.	.44	
212	48	056B	Wilson	Sunset Blvd.	.23	
212	48	056A	United States of America	Sunset Blvd.	.21	
212	48	048A	Struble	Sunset Blvd.	.13	
212	48	0550	Grijalva	Sunset Blvd.	.50	
212	48	051A	Ginn	Sheridan Ave.	.07	
212	48	044B	West Ajo Baptist Church	Oklahoma St.	.53	
212	48	060H	Celaya	Oklahoma St.	.18	
212	48	056A	Grierson	Oklahoma St.	.25	
212	48	063B	State of Arizona	Oklahoma St.	.50	
212	48	0620	State of Arizona	Oklahoma St.	.48	
212	48	061A	Dicochea, Armida & Dicochea	Oklahoma St.	.21	
212	50	001F	Stewart Title & Trust	Kinney Rd.		1.58
212	50	005M	Stewart Title & Trust	Kinney Rd.	.09	5. J
212	50	011A	Stewart Title & Trust	Kinney Rd.	.08	
212	50	012G	Stewart Title & Trust	Kinney Rd.	.30	
212	50	012F	Stewart Title & Trust	Kinney Rd.	.23	
212	52	248D	First American Title	Kinney Rd.	.02	
	٦	TOTAL A	REA R/W AND DE - LOCAL	ROADS	12.90	1.58

*Parcel Numbers are from Pima County GIS Maps

Final Design Concept Report

TABLE 5-2, R/W REQUIRED FOR LOCAL ROAD CONNECTIONS

5.5.1 Bureau of Land Management (BLM) Concerns

The following information was contained in a letter from the BLM to Mary Frye, FHWA dated June 12, 2008.

This project area is covered by four BLM right-of-way authorizations AZA 6032, AR01697, AR01698, and AR01699. Our records show that no final Environmental Analysis (EA) was prepared for these authorizations, except for a draft EA that was furnished to BLM in 1987. There is no evidence in our records of a final EA and Finding of No Significant Impact (FONSI)/Decision Record having been provided to our office. Our office is required to review and comment on the new analysis to ensure that the new EA meets BLM's National Environmental Policy Act (NEPA) standards, and will allow our office to issue our own FONSI/Decision Record.

The proposed highway modification will require that the existing right-of-way authorizations be modified to reflect the final project built-out designs. If the proposed project is expanded to outside of the authorized right-of-way area, ADOT will be required to submit a right-of-way application to authorize those areas falling outside the existing authorized areas.

A follow-up transmittal memo from BLM to Billah Khan, ADOT Roadway Predesign, dated 10/02/2008 stated: In addition to this letter it is our understanding the ADOT project may affect Pima County Roads which have been granted and authorized to them by the BLM. Any alterations of these roads require BLM's approval and possibly additional requirements.

5.6 Coordination With ADOT Aeronautics Group & Airport Development

Existing SR 86 is within the Runway Protection Zone (RPZ) for Ryan Airfield. The FAA – Western Pacific Region is prohibiting the construction of new roads in airport RPZ. However, since SR 86 is an existing road it is anticipated the FAA will allow the construction of improvements to SR 86. The Tucson Airport Authority provided comments, by letter dated April 21, 2010, on the planned improvements to SR 86. The comments included general concurrence in issues they consider important. The letter also commented on the future acquisition of property from the Tucson Airport Authority for ADOT right-of-way for the SR 86 project. The point was made that the property in question will be part of future commercial and industrial development by the Airport Authority.

Coordination with the Tucson Airport Authority has been ongoing during the development of the DCR. The coordination should continue

			THE ALL THE COLD DIA		
Milepost	Exist. Station*	Existing Drainage Structure Size/Type	Proposed Drainage Structure Size/Type	Q 100-year 3-hour (cfs)	Comments
157.02	629+58 (Rt)	24" CMP	24" CMP	6	
157.06	631+03	5-10'x5' RCBC	9-10'x5' RCBC	2,790	
157.39	648+72 (Rt)	24" CMP	24" CMP	7	
157.41	649+52	3-8'x6' RCBC	6-8'x6' RCBC	1,762	
157.48	653+44 (Rt)	24" CMP	24" CMP	3	
157.51	654+40	3-8'x4' RCBC	6-8'x4' RCBC	1,523	
157.71	665+97 (Rt)	24" CMP	24" CMP	7	
157.74	666+91	4-8'x6' RCBC	8-8'x6' RCBC	2,996	
157.73	668+58 (Rt)	6'x3.5' Conc. Arch	6'x3.5' Conc. Arch	25	
157.99	680+78 (Rt)	24" CMP	24" CMP	4	
158.05	683+14	8-10'x4' RCBC	13-10'x4' RCBC	4,029	
158.38	701+28 (Rt)	24" CMP	24" CMP	6	
158.39	701+86	2-8'x3' RCBC	3-8'x3' RCBC	425	
158.60	712+79 (Rt)	24" CMP	24" CMP	5	
158.61	713+35	2-8'x3' RCBC	5-8'x3' RCBC	715	
158.86	726+29 (Rt)	24" CMP	24" CMP	7	
158.92	729+14	10-10'x4' RCBC	10-10'x4' RCBC	2,152	
159.05	739+48 (Rt)	24" CMP	24" CMP	6	
159.11	739+79	6'x3' RCBC	2-6'x3' RCBC	231	
159.21	744+61 (Rt)	24" CMP	24" CMP	8	
159.38	753+20	4-10'x5' RCBC	4-10'x5; RCBC	548	
159.71	770+87	2-36" CMP	2-36" CMP	39	
160.16	794+80	7-10'x5' RCBC	14-10'x5' RCBC	5.302	
160.38	803+67	2-24" CMP	2-30" or 3-24" CMP	59	
160.65	816+03 (Bt)	36"CMP	36" CMP	34	
160.70	817+02	5-10'x6' BCBC	7-10'x6' BCBC	2,666	
160.72	818+38 (Bt)	36" CMP	36" CMP	6	
161.25	855+05	3-10'x5' BCBC	6-10'x5' BCBC	1.427	
161.67	867+55 (Bt)	24" CMP	24" CMP	4	
161.65	866+88	10'x7' BCBC	6-10'x7' BCBC	6 760 as 3 culvert	3 culverts function as a system
161 75	871+75	2-10'x6' BCBC	5-10'x6' BCBC	system, including	Dike to west of 10'x7' RCBC should
161.83	876+41	2-6'x7' BCBC	4-6'x7' BCBC	splits from the	be raised to El. 2432.5.
101.00	0/0141	2007 11000		east	
162.05	890+41	4 span, 129' long Bridge	Add 130' span bridge to widen channel under existing roadway. Use 260' bridge for new roadway.	8,190 including 1,620 split from Snyder Hill	Exist. Black Hills Wash Bridge does not have hydraulic capacity for the 100yr-3hr storm. An additional bridge is recommended. Lower exist. Dike to elev. 2434.0 to allow high flow to split to west to culverts @ 866+88, 871+75 & 876+41.
162.15	893+19	36" CMP	36" CMP	28	
162.20	902+00	6-span, 199' long Bridge	Maintain and rehab. dikes. Improve Br. conveyance by excavation and erosion protection. Use 200' bridge for new roadway.	5,615 as 2-culv. & bridge system	Exist. Snyder Hill Wash Br. & culvs. will handle 4,400 cfs. 1200 cfs will go to downstream bridge.
162.48	910+43	10'x4' RCBC	10'x4' RCBC		Maintain existing culvert
162.63	918+32	10'x4' RCBC	10'x4' RCBC		Maintain existing culvert
163.41	959+93 (Lt)	18" CMP	18" CMP	4	

*Existing stationing taken from as-built plans F-056-1-503, EMP-S-222(26), F-056-1(1)

TABLE 5-3, EXISTING AND PROPOSED DRAINAGE STRUCTURES

SR 86; Sandario Road to Kinney Road

during the Design Phase. Concurrence of the SR 86 improvements with the RPZ for Ryan Airfield should be obtained early in the Design Phase.

The Tucson Airport Authority approved a Ryan Airfield Master Plan Update December 1, 2009.

The official contact for coordination of this project with the Aeronautics Division is:

> Kenneth Potts, Airport Planning Grants Manager ADOT Aeronautics Group & Airport Development 206 S. 17th Avenue Phoenix, AZ 85007 Tel: (602) 712-7597 e-mail: KPotts@azdot.gov

The official contact for coordination of this project with the Tucson Airport Authority is:

> Jordan D. Feld, CM, AICP Director of Planning **Tucson Airport Authority** 7005 S. Plumer Ave. Tucson, AZ 85756 www.tucsonairport.org e-mail: jfeld@tucsonairport.org Tel: (520) 573-5115 office Tel: (520) 573-8006 fax

5.7 Drainage

Drainage conditions have been evaluated in a separate drainage report prepared for this study, entitled: Initial Drainage Report, in support of the Design Concept Report for SR 86 (Ajo Highway), dated July 2007.

The purpose of the Drainage Report is to document the existing hydrologic analyses for SR 86 and to quantify the peak flow that will intersect SR 86. Results of the analysis will be used to determine the drainage facilities required for the SR 86 roadway improvement project.

Due to the floodplain characteristics and urbanization in the area, the design team must evaluate the impact of the roadway improvements for the 100-year storm event [Federal Emergency Management Agency (FEMA) criteria]. ADOT and the Pima County Regional Flood Control District (PCRFCD) agreed that the regional HEC-1 models developed by JE Fuller for Pima County are to be used for the drainage analysis. Therefore, ADOT concurred in analyzing the existing conditions based on the Tucson Storm Water Management rainfall distribution for the 100-year 3-hour storm.

		TADLE 3-3, EXISTING AN	D PROPOSED DRAINAGE	SINUCIUNES (C	ONTINUED)
Milepost	Exist. Station*	Existing Drainage Structure Size/Type	Proposed Drainage Structure Size/Type	Q 100-year 3-hour (cfs)	Comments
163.69	974+66	48" CMP	48" CMP	118	Upstream flow is directed under SR 86 with the realignment of Camino Verde.
164.01	991+60 (Rt)	10-10'x5' RCBC	10-10'x5' RCBC	3,093	Culvert to be replaced with Camino Verde realignment work.
164.04	992+85 (Rt)	3-30" CMP	Not required	154	Pipes are partially clogged, flows travel south to cross culvert crossing Camino Verde, south side of SR 86.
164.05	993+42	2-24" CMP	4-10'x4' RCBC	794	Both 24" pipes are clogged. Culverts are to be replaced with realignment of Camino Verde.
164.44	1014+13 (Lt)	2-26"x22" CMPA	To be removed	794	Old Ajo Hwy. intersection to be removed
165.04	1045+84 (Lt)	36" CMP	36" CMP	17	
165.34	1061+67 (Rt)	24" CMP	24" CMP	n/a	Local drain. Replace in kind if necessary.
165.44	1066+91	3-10'x4' RCBC	3-10'x4' RCBC	576	
165.67	1078+74 (Lt)	24" CMP	24" CMP	10	
165.70	1080+74 (Lt)	24" CMP	24" CMP	3	
165.80	1084+86	4-10'x4' RCBC	5-10'x4' RCBC	1,132	Construct berm at western end of box to elev. 2566.5.
166.25	1110+40 (Rt)	2-26"x22" CMPA	2-26"x22" CMPA	10	Pipes are clogged – flow overtops driveway entrance.
166.25	1110+44 (Lt)	2-24" CMP	3-10'x4' RCBC	832	Improved culvert inlet to be located on north side of McDonalds.
166.25	1110+44 (Lt)	2-24" CMP	30" CMP	17	
166.26	1112+25 (Rt)	26"x20" CMPA	26"x20" CMPA	3	
166.27	1112+50 (Lt)	26"x20" CMPA	24" CMP	7	McDonalds turnout is slightly overtopped.
166.28	1114+92	4-10'x3' RCBC	4-10'x3' RCBC	450	Improve inlet. HWEL above2585 causes breakout to west.
166.40	1117+13 (Lt)	2-36" CMP	Improve Dip	450	Turnout is overtopped and may cause SR 86 to be overtopped. Recommend turnout be eliminated when property is developed.

*Existing stationing taken from as-built plans F-056-1-503, EMP-S-222(26), F-056-1(1)

5.7.1 Existing Conditions

Generally, storm water runoff flows northwesterly towards SR 86, except that east of Camino Verde storm water runoff flows southwesterly toward SR 86; then flows westerly along SR 86 to Snyder Hills Wash and ultimately flows northwesterly. Figure 5.1, Page 29, shows the drainage basin boundaries for the project.

There are two major washes within this project: the Black Hills Wash and Snyder Hills Wash. Both washes flow northwesterly towards SR 86.

5.7.2 Existing Culverts and Bridges

There are 56 existing drainage structures along SR 86, within the study limits. The breakdown of structures is as follows: • Two bridges; Black Hills Wash bridge and Snyder Hills Wash

- bridge.

Both bridges, eleven of the RCBC, and seven of the CMP culverts do not have adequate hydraulic capacity for the design storm (See Table

PROPOSED DRAINAGE OTBUOTUDEO (OONTINUED)

• 22 concrete box culverts (RCBC). • 32 corrugated metal pipe (CMP) culverts. 5-3, Existing and Proposed Drainage Structures and the Initial Drainage Report for locations and recommended sizes or actions).

5.7.3 Hydrology and Hydraulics Methodology

Hydrology

JE Fuller developed hydrologic models for the watershed to Valencia Road and Camino Verde. The models used Pima County's storm distribution (100-year 3-hour storm event). Since the JE Fuller models stopped at Valencia Road and Camino Verde, the drainage study for this project modified JE Fuller's HEC-1 models as necessary to determine peak discharges along SR 86. The hydrology was extended to the west to Sandario Road.

The procedures utilized to develop peak discharges were determined in accordance with the ADOT Highway Drainage Design Manual – Hydrology, and the Pima County Department of Transportation and Flood Control District Hydrology Manual for Engineering Design and Flood Plain Management with Pima County, Arizona. Peak discharges for SR 86 culverts with drainage areas greater that 160 acres were estimated using the Corps of Engineers HEC-1 program. The Rational Method was used for drainage areas less than 160 acres.

• Hydraulics

Existing culverts were designed for the 25-year event, but future culvert crossings will be designed for the PCDFCD 100-year 3-hour storm event. ADOT Drainage Design agreed to use PCDFCD 100-year 3-hour storm in lieu of ADOT 50-year 24-hour storm event since they result in approximately similar results and the 100-year 3-hour storm event satisfies FEMA criteria.

The ADOT culvert program was utilized to analyze the existing capacity of the existing drainage structures and the size of proposed drainage structures. The capacity of proposed culverts was determined as the size of culvert required to pass the design discharge with a headwater 3-inches below the edge of pavement.

5.7.4 Drainage Requirements

Table 5-3 summarizes the drainage structures required for the design concept. These structures were only designed for the offsite drainage requirements. The culvert quantities do not include specific provisions for onsite culverts or special ditches. Note: The hydraulics analysis for this report is preliminary in nature. A final hydraulic study will be required for the final design. The final hydraulic study should include an analysis of impacts on the FEMA floodplain. The possible need for a Conditional Letter of Map Revision should be addressed. Median inlets will be provided as needed.

The eastern end of the project from Camino Verde Road to Kinney Road contains three existing roadside drainage channels which will be replaced. The channels have been divided into Reaches and are shown in **Table 5-4**, **Drainage Channels**.

Reach No. (Sta. to Sta.)	Q (cfs)	Bottom Width (ft)	Side Slope (h:v)
1 (1109+00 to 1093+50)	775	40	3:1
2 (1093+50 to 1084+20)	911	35	3:1
3 (1076+00 to 1067+00)	580	25	3:1
4 (1062+70 to 1045+80)	600	30	3:1
5 (1045+80 to 1027+50)	800	40	3:1
6 (1027+50 to 1014+10)	800	40	3:1
7 (1014+10 to 994+00)	800	40	3:1

Table 5-4, Drainage Channels

5.7.5 Drainage Dikes

A system of dikes has been utilized on the south side of SR 86 between the beginning of the project at MP 156.88 to approximately MP 162.8 to direct storm flows from the southeast to drainage culverts and bridges that pass the storm flows under SR 86. From MP 156.88 to Valencia Road at approximately MP 159.6 the new eastbound roadway will occupy the area of the existing dikes and new dikes will be constructed along the southerly R/W line. From approximately MP 160.1 to MP 162.8 most of the existing dikes are located outside the SR 86 R/W, and have been eroded and damaged to the extent they will be reconstructed. Drainage easements will be acquired where new dikes are needed or existing dikes are located outside the R/W or drainage easements (See **Appendix B, Concept Plans and Profiles**).



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5.8 Section 404 of the Clean Water Act

Coordination with the U.S. Army Corps of Engineers (COE) during project design will be necessary to ascertain the need for any nationwide or individual permits required under Section 404 of the Clean Water Act. Any deposition of fill material or excavation waterward of the ordinary high water mark will require a permit. Construction activities that will require permits include, but are not limited to, bridge pier construction, culvert installations, replacements, and/or extensions requiring excavation and placement of fill material, and roadway embankment widening.

Based on field review, 23 streams and washes that are crossed by the design concept alternatives have been identified as falling under COE jurisdiction. A Jurisdictional Delineation Request has been submitted to the COE for review and comments have been received. The Jurisdictional Delineation Request is currently being revised to address COE comments; after which, it will be resubmitted for approval. The following table lists the streams and washes along SR 86 within the project limits by MP (refer to plan and profile sheets in Appendices A & B) that have been identified as falling under COE jurisdiction.

TABLE 5-5 CORPS OF ENGINEERS JURISDICTIONAL STREAMS AND WASHES

Location (MP)	Description
156.9	(2) 8'x 6' CBC within Un-Named Wash
157.1	(5) 10'x 5' CBC within Un-Named Wash
157.5	(3) 8'x 6' CBC within Un-Named Wash
157.6	(3) 8'x 4' CBC within Un-Named Wash
157.8	(4) 8'x 6' CBC within Un-Named Wash
158.1	(8) 10'x 4' CBC within Un-Named Wash
158.5	(2) 8'x 3' CBC within Un-Named Wash
158.7	(2) 8'x 3' CBC within Un-Named Wash
158.9	(10) 10'x 4' CBC within Un-Named Wash
159.2	6'x 3' CBC within Un-Named Wash
159.5	(4) 10'x 5' CBC within Un-Named Wash
160.2	(7) 10'x 5' CBC within Un-Named Wash
160.7	(5) 10'x 6' CBC within Un-Named Wash
161.3	(3) 10'x 5' CBC within Un-Named Wash
161.6	10'x 7' CBC within Un-Named Wash
161.7	(2) 10'x 6' CBC within Un-Named Wash
161.8	(2) 6'x 7' CBC within Un-Named Wash

TABLE 5-5						
CORPS OF ENGINEERS						
JURISDICTIONAL STREAMS AND WASHES						

Location (MP)	Description					
162.1	Black Hills Wash 4-span Bridge					
162.3	Snyder Hill Wash 6-span Bridge					
162.4	10'x 4' CBC within Un-Named Wash					
163.7	48" CMP within Un-Named Wash					
164.0	(10)10'x 5' CBC within Un-Named Wash					
165.7	(4)10'x 4' CBC within Un-named Wash					

5.9 Maintenance of Traffic During Construction

Maintenance of traffic through the work zone is a critical element associated with any improvement of SR 86. Valencia Road is an eastwest County Arterial road that intersects SR 86 near Ryan Field and provides an alternate route easterly towards I-19 for some of the traffic that may desire an alternate route. However, the majority of the traffic that uses SR 86 will have to be accommodated on SR 86 during construction.

The construction of the improvements to SR 86 between Sandario Road and the end of the project east of the Kinney Road Intersection will be implemented in phases. See **Section 8, Implementation.**

One lane of eastbound traffic and one lane of westbound traffic will be maintained on SR 86 during construction of each phase of the improvements. Short term closures will be limited to night or weekend hours where the traffic lanes may require re-striping or other minor modifications as the work progresses. Local road intersections will remain open to the extent feasible. All closures and detours of local roads will be coordinated with Pima County.

When the new two-lane roadway is complete for each construction phase, two-way traffic will be routed onto it while improvements to the existing roadway are completed. Where the existing roadway will be removed and two new directional roadways will be constructed twoway traffic will be maintained on the existing roadway until one of the new directional roadways is complete and traffic can be routed onto the new roadway.

Detailed plans for maintenance of traffic during construction will be required for each phase of construction.

5.10 Earthwork

Existing SR 86 within the study limits is constructed on embankment through most of the project. Since the existing roadway will be incorporated into the construction of a 4-lane divided roadway, the existing line and grade of the roadway will not change appreciably when the roadway is improved. The earthwork quantities shown in **Table 5-6** include both roadway and drainage excavation, but do not include shrink or swell factors. Shrink or swell factors will not be known until the site for borrow material is selected. The geotechnical report that will be required during Final Design will provide the factors to be used.

Design Concept	Excavation	Embankment	Balance
Alternative C	CY	CY	CY
MP 156.88 to MP 166.58	122,000	398,000	-276,000

Table 5-6, Earthwork Summary, shows that approximately 300,000 CY of borrow material will be required to construct the roadway improvements. No ADOT furnished borrow source is set up for this project. Materials sources shall be as specified in the ADOT Standard Specifications for Road and Bridge Construction. Borrow material may be available from the Arizona State Land Dept. (ASLD). A stockpile of material is located on State Trust Land on the south side of W. Snyder Hill Road, north of SR 86. The material would have to be tested for suitability and the Contractor would have to enter into an agreement with ASLD.

Two new bridges will be required across major washes within the project, and several large box culverts will be required. The bridge inspection reports for the existing bridges indicate that the material upon which the bridges will be constructed is scour susceptible.

An extensive geotechnical investigation will be required during final design of the recommended alternative to provide foundation information and define the materials needed to construct the roadway improvements.

TABLE 5-6 EARTHWORK SUMMARY CUBIC YARDS [CY]

5.11 Pavement Structure

The preliminary pavement structural sections for this project were provided by the ADOT Pavement Design Section, and are:

New Roadway:

- 5-inches AC & 12-inches AB.
- 1/2-inch AR-ACFC on travel lanes (25').
- Fog and Blotter on shoulders.
- Existing Roadway:
- Mill 2.5-inches and replace with 2.5-inches AC and ¹/₂-inch AR-ACFC.

Crossroads:

• 5-inches AC & 6-inches AB.

Detours:

• 2.5-inches AC & 4-inches AB.

The preliminary pavement structural sections will be reviewed and may be revised during final design when the geotechnical investigation is complete.

5.12 Utilities

Arizona Blue Stake was contacted to get information about utility companies who have facilities along SR 86 within the project limits. The ADOT District Permit Log was also used to identify utility companies with facilities along SR 86. All known utility companies within the project limits were contacted and information was requested regarding utilities and an indication of possible conflicts with the alternative roadway improvements under study.

A meeting with utility companies/agencies located along the SR 86 corridor was held June 16, 2008 for the purpose of informing the utilities about the proposed improvement of SR 86 and to obtain information from the utilities about their existing lines and facilities with and along the ADOT R/W.

Additional meetings were held with City of Tucson Water Department, Qwest, and Central Arizona Project (CAP).

Existing utility lines are shown in Appendix E, Existing Utility Plans.

There are a significant number of utility lines along the SR 86 corridor within the project limits. It will be necessary to identify and address utility conflicts and coordinate the resolution of conflicts as early in the Design Phase as possible. As a result of coordination with the Utility Owners it was has been determined by ADOT that the R/W for SR 86 will be widened enough to allow most of the utility lines that are now within the SR 86 R/W to relocate within the expanded SR 86 R/W. Utility lines that are currently outside the SR 86 R/W, but that will be within the expanded SR 86 R/W may be accommodated within the expanded R/W or may relocate outside the expanded R/W. Specific conflicts between the utility facilities and the improvement of SR 86 will be determined through further coordination between the utility owners and ADOT during the Design Phase of the improvement of SR 86.

Some of the following information from utility companies indicates they will claim prior rights. The ADOT Right of Way Group will investigate any claims of prior rights early in the final design phase when utility conflicts are more clearly identified.

• Pima County Wastewater Management Department has several sanitary sewer lines crossing SR 86 and located within the R/W of SR 86. The contact is:

Debbie Stratton Pima County Wastewater Management 100 North Stone Avenue Tucson, AZ 85701 Phone: (520) 617-8224

The following information was received from Pima County Wastewater Management Department:

Currently, 45 days are allocated for review of initial plan submittals.

Utility tracking number U-2008-041 has been assigned to the SR 86 project.

Pima County Regional Wastewater Reclamation Department (PCRWRD) claims of prior ownership are as follows:

PCRWRD has existing public sanitary sewer conveyance facilities near Sta. 845+20 to 846+50, constructed in 2006 (Improvement Plan #G-2005-014), near the eastern boundary line of Section 7, T 15 S, R 12 E.

PCRWRD has sanitary sewer conveyance facilities near Sta. 873+90 to 875+50, constructed in 2003 (improvement plan #G-2002-104, near the center section line of Section 8, T 15 S, R 12 E.

PCRWRD has sanitary sewer conveyance facilities from Sta. 903+30 to 912+70, constructed in1977 (Improvement Plan #C-114), near the SW ¹/₄ corner of Section 4, T 15 S, R 12 E.

PCRWRD has sanitary sewers C-123 (1978) and G-86-25 (1986) from Sta. 1015+50 to 1020+40, near the south line of Section 34, T 14 S, R 12 E.

PCRWRD has sanitary sewers G-86-115 (1988) from Sta. 1026+00 to 1029+20 and Sta. 508+80 to 521+00, Tucson Estates Parkway.

PCRWRD has sanitary sewers C-123 (1978), G-2004-034 (2005), C-79+B (1973), C 143 (1978) and M-603 (1979), SR 86 (Ajo Highway) from S. Sheridan Avenue to terminus of the project, Section 36, T 14 S, R 12 E.

 The contact for City of Tucson Water Department is: Tony Tineo City of Tucson Water Department 310 West Alameda St. Tucson, AZ Mail to: P.O. Box 27210 Tucson, AZ 85726-7210

City of Tucson Water Department has a 42-inch concrete cylinder water line located on the south side of SR 86 within the ADOT SR 86 R/W from Sandario Road easterly to the old alignment of Valencia Road, across from Ryan Airfield. It conveys water from the Avra Valley Well Field east to the Martin Reservoir. This main is the single supply source for the region. The long term integrity and the ability to access this main are key concerns of Tucson Water.

The following information was received from Tucson Water:

Tucson Water recommends that if new drainage dikes and/or channels must be constructed south of Ajo Highway, that they be moved to a location even further south of the existing Ajo Highway right-of-way. This will minimize the potential negative impacts to the 42" water main including excessive fill over the 42" pipe and obstructing maintenance access to the pipe.

The pipe manufacturer, Ameron, recommends that any increase in cover over the 42" pipe be limited so that the total cover is a maximum of 10'. As-built drawings indicate that the existing cover over the pipe is approximately 3' to 8'. Therefore Tucson Water recommends that if Alternative "C" remains the recommended design, then the 42" main be potholed extensively during the DCR phase of the project to determine the feasibility of building dikes over the 42" main. Also please check that the toe of the new dikes (including subgrade prep.) should maintain at least 2' of working cover (vertical clearance) over the top of the 42" main.

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(Note: Pothole plans have been prepared and reviewed by Tucson Water. ADOT will proceed with potholing the 42" water main during the final design phase.)

The combination of new dikes and extending the culverts to the south will concentrate existing sheet flow across the 42" water main at several locations within the project limits. It may be necessary to install bank protection (riprap, concrete apron, etc.) over the 42" main to insure that the existing cover is maintained.

The drainage excavation required to extend the culvert inlets to the south may also adversely impact existing cover over the 42" main. These issues need to be addressed in the DCR. Possible unrestrained pipe joints in these areas are another reason to mitigate for scour.

Please note that the 42" main is cathodically protected (CP). Any new utilities that require CP should be coordinated with Tucson Water. The CP cabinets and power poles may have to be relocated as part of this project.

There are numerous corrosion test stations, access manholes, vaults, water meters, and fire hydrants that may have to be relocated because they are within the cut/fill limits of the project or because maintenance access has been locked by the proposed drainage dikes.

Tucson Water is limited in its ability to allow for any shutdown of the 42" transmission main. The 42" main may only be shutdown for a maximum of 8 calendar days for any one shut-down. Only two shut-downs will be allowed with a minimum of 30 days between shutdowns. Any planned shutdown of the 42" main must be scheduled with Tucson Water Operations and Maintenance Section, and it must occur during the off-peak season (October 1st to March 30th). It may not be feasible to shutdown, dewater, make connections, and repressurize the 42" main within the allowable 8 day window. This means that it may not be feasible to relocate the 42" main. If it becomes apparent during the roadway design process that the 42" main must be relocated, ADOT's design consultant may need to consult a pipeline contractor to see if there are any innovative techniques that can be used to relocate the 42" main within the allowable 8 day shutdown window. Tucson Water requires a minimum of 45 days to review and comment on any shutdown proposal. Only overnight shutdowns/connections shall be permitted for the other water main work along Ajo Highway.

Spread footings over the 42" main will not be permitted. Please insure that all new signal and utility poles maintain a minimum 5' horizontal separation from the outside face of the new pole foundation to the outside face of any new and existing water mains.

Tucson Water's Planning Section has identified the need for a new 16" water main (B-Zone) along Ajo Highway from Sandario Road to Valencia Road. There is a need for a new 12" main (C-Zone) from Camino Verde to Sheridan Road (this will replace the existing 6" main). Also, the existing 8" water main that lies in Camino Verde and crosses Ajo Highway must be replaced with a new 12" main and repositioned to match the new alignment of Camino Verde. It is anticipated that these mains will be designed by ADOT's design consultant and installed using ADOT's roadway contractor. A proposed 12" main (D-Zone) between Sheridan Road and Kinney Road will be constructed as part of Pima County DOT's Kinney/Ajo Intersection Improvement Project. This 12" main will replace the existing 6" main in order to meet increased demand by the proposed Wal-Mart at the northwest corner of Kinney Road and Ajo Highway.

Tucson Water's Planning Section has also identified the need for a new 72" water main that will cross Ajo Highway at Spencer Avenue.

Tucson Water anticipates that a root barrier will be installed with any new landscaping (trees) constructed within 10' (horizontal) of new or existing water mains. All trees shall maintain a minimum 5' horizontal separation from new and existing water mains.

It appears that the proposed drainage channel along the north Ajo Highway right-of-way (from Camino Verde to Kinney Road) may impact Central Arizona Project (CAP) and Tucson Water facilities in the area. Also, the proposed channel may be in conflict with several Tucson Water mains including a 42" transmission main. Water mains must be 3' below the bottom of lined channels and 5' below the bottom of unlined channels (or 2' below scour depth whichever is greater).

Please ensure that all existing water mains have a minimum of 2' of working cover between the bottom of the new pavement subgrade prep (6" below the bottom of pavement section) and the top of the existing water main. The water main must be relocated where this minimum working cover cannot be met.

Please make sure that all drainage structures either pass at least 1' under existing water mains, or 3.5' over the water mains.

Tucson Water sent a letter to ADOT Utilities and Railroads Section, dated August 21, 2008 in which they claimed prior rights for their 42" water line on the south side of SR 86 between Sandario Road and Valencia Road. ADOT R/W Titles Section researched the prior rights claim and determined that Tucson Water does not have prior rights. ADOT Utilities and Railroad Section sent a letter to Tucson Water dated January 7, 2009 advising Tucson Water that no prior rights exist.

• The contact for Central Arizona Project (CAP) is: Tom Fitzgerald, Land Administrator Central Arizona Project P.O. Box 43020 Phoenix, AZ 85080 Phone: (623) 869-2209 CAP has a 108-inch water line on the north side of SR 86 from approximately MP 164.4 to approximately MP 164.7. The water line approaches SR 86 along the alignment of Irvington Road and then turns to the east just north of the SR 86 R/W line. The proposed drainage channel that is part of this ADOT project will be directly over the CAP 108-inch water line. The water line also crosses under Tucson Estates Parkway north of SR 86. An overhead power line supplies power to the CAP cathodic protection rectifier.

CAP also has a 78-inch water line and steel casing pipe, a 15KV underground power conduit and low voltage conduit, and a 115KV underground electric conduit that cross SR 86 in a 100 ft. R/W west of S. Spencer Street.

CAP has fee impacts for design reviews and contractor fees for working over/in CAP R/W.

- Mike Ginn Comcast Cable 8251 N. Cortaro Road Tucson, AZ 85743
- Paul Newton Dispatch Center

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Comcast Cable has fiber optic lines along the SR 86 R/W between Sandario Road and Valencia Road. Comcast fiber optic lines also cross SR 86 at Sheridan Road. The contact is:

Phone: (520) 744-5477 or Cell (520) 906-4560

TRICO Electric Cooperative, Inc has a 3-phase primary line within the ADOT R/W approximately 5 ft. inside the south R/W line of SR 86 from Sandario Road to Valencia Road, a single-phase primary line crosses SR 86 at Postvale Road, and a 3-phase primary line crosses SR 86 at approximate MP 162.3. The contact is:

TRICO Electric Cooperative

8600 West Tangerine Road P.O. Box 930 Marana, AZ 85653-0930 Phone: (520) 740-9944, Ext. 1320

The contact for Southwest Gas is: Kelly Fleenor Southwest Gas Corporation 3401 East Gas Road Tucson, AZ 85714 Phone: (520) 794-6107

Southwest Gas has a 6-inch gas line that is located on the north side of SR 86 from Sandario Road to the westerly intersection of SR 86 and the Old Ajo Highway. The 6-inch gas line then follows along the Old Ajo Highway. Southwest Gas has several crossings of SR 86 and several 2-inch local service lines within the project limits.

There are also three regulator stations, one rectifier, many valves, and high pressure and distribution facilities. Southwest Gas will likely have direct conflicts with the proposed dike and drainage structures. The roadway widening may place the roadway in close proximity to existing above ground gas facilities. There are existing high pressure facilities on Valencia and Camino Verde that may be affected by re-alignment of portions of those roads.

Southwest Gas has several existing easements along SR 86:

An existing easement on the south side of SR 86 from Sheridan Avenue to Seymour Road including Kinney Road south of SR 86 (book 5681 page 139 and book 2596 page 141).

An easement on the east side of Sheridan Avenue (book 2596 page 141).

Southwest Gas believes there is an easement on the north side of SR 86 near Valencia Road and is currently researching this area.

Southwest Gas requires a minimum one foot separation from distribution facilities and any proposed structures and two feet separation from high pressure gas facilities. Due to seasonal demands, relocation of high pressure gas facilities is limited to April through September.

Quest has both direct burial and underground lines intermittently along SR 86 on both the north and south sides of the highway through the length of the project. (Note: Quest terminology refers to both buried and underground lines. Buried means direct burial lines; underground means lines that are generally in conduits and go through manholes.)

From the beginning of the project near Sandario Road to the vicinity of Tucson Estates Parkway, and intermittently from there to Sheridan Avenue, Qwest has lines located on the north side of SR 86 within the ADOT R/W. From approximately MP 164.1 to the end of the project at Kinney Road Qwest has lines on the south side of SR 86 within the ADOT R/W. There are numerous lines crossing SR 86.

The contact for Qwest is: Larry Lewis **Owest Communications** 333 East Wetmore Road, 3rd Floor Tucson, AZ 85705 Phone: (520) 292-8255

• The contact for El Paso Natural Gas is: Kelley Hall El Paso Natural Gas 5151 E. Broadway Blvd. Tucson, AZ 85711 Phone: (520) 663-4223

El Paso Natural Gas has a 30-inch gas line and a 26-inch gas line that cross SR 86 on a diagonal at approximate MP 163.5, approximately 600-feet east of the existing intersection of SR 86 and San Joaquin Road. The pipelines generally follow the alignment of San Joaquin Road to the north of SR 86.

The El Paso lines under SR86 have recently been reconditioned and the improvements to SR 86 should not impact them. If the SR 86 improvement plans change and relocation of the El Paso lines become necessary, El Paso will likely claim prior rights.

El Paso Natural Gas requests that they be contacted prior to any construction activities within their easement area so an El Paso Operations Field Tech can be onsite during construction.

Any other utility lines that will cross El Paso Natural Gas Lines will need at least 2 ft. of separation and will need to be placed lower in the ground than the El Paso Natural Gas pipelines.

Overhead power lines that cross El Paso Natural Gas easement will need to be a minimum of 30 ft. above grade within the easement area.

• The contact for Tucson Electric Power is: Cynthia Garcia **Tucson Electric Power** P.O. Box 711, Mailstop DB101

Tucson, AZ 85702

Tucson Electric Power (TEP) has numerous power line crossings of SR 86 between Ryan Airfield on the west and the easterly end of the SR 86 project, east of Kinney Road. An overhead power line is located inside the SR 86 R/W on the north side from approximately MP 164.5 easterly to the end of the project.

TEP has conflicts with the SR 86 roadway design and will need to relocate a majority of its pole lines. TEP will claim prior rights for its overhead lines shown on plan sheets C-7 to C-9, C-11 and C-12 except where it crosses SR 86.

TEP requests that drivable access be maintained to TEP poles, equipment and facilities. The relocation of TEP facilities such as feeder, sub-transmission and transmission lines is limited to TEP's off-peak season, October through April. TEP poles will remain in place until all other joint-use participants have transferred facilities from TEP poles. Pole bracing may be necessary depending upon the ADOT contractor's construction sequence.

For the latest TEP Electric Service Requirement and Construction Standards visit the TEP web site at http://www.tep.com/business/construction.ServRegBook.asp.

TEP has a pole and two anchors that appear to be in conflict with a new dike shown of sheet UTL 9 where TEP has prior rights. The new dike is to be designed to avoid the conflict.

TEP requests that a single-6" conduit be installed either by TEP's contractor or ADOT's contractor at the time of road construction at the following locations:

Under SR 86 on a diagonal along the alignment of W. Drexel Road from approx. Sta. 904 to 909.

959.

Under SR 86 at the proposed alignment of Camino Verde Road, approx. Sta. 995.

Under SR 86 at the intersection of Tucson Estates Parkway, approx. Sta. 1030.

TEP requests that space be provided in the new SR 86 R/W for a concrete encased duct bank for two-6" conduits along the new southerly R/W from Spencer Street to Irvington Road alignment.

Phone: (520) 918-8246, Cell (520) 906-4560

Under SR 86 at the San Joaquin Road intersection, approx. Sta.

ADOT's contractor is to be advised to contact Blue Stake a minimum of ten working days in advance to request over head protection or pole bracing.

5.13 Structures

There are two bridge structures and fourteen reinforced concrete box culverts (RCBC) within the project limits that are classified as structures because they are 20-feet or more in length. The Drainage Study has determined that the following structures do not provide the needed hydraulic capacity for the design flows.

- Str. No. 6938, MP 157.06 5-10'x5' RCBC.
- Str. No. 6939, MP 157.41 3-8'x6' RCBC.
- Str. No. 6940, MP 157.51 3-8'x4' RCBC.
- Str. No. 6941, MP 157.74 4-8'x6' RCBC.
- Str. No. 6942, MP 158.05 8-10'x4' RCBC.
- Str. No. 6945, MP 160.16 -7-10'x5' RCBC.
- Str. No. 6464, MP 160.70 5-10'x6' RCBC.
- Str. No. 6465, MP 161.25 3-10'x5' RCBC.
- Str. No. 6466, MP 161.75 2-10'x6' RCBC.
- Str. No. 1606, MP 162.05 Black Hills Wash Bridge.
- Str. No. 1607, MP 162.20 Snyder Hills Wash Bridge.
- Str. No. 6488, MP 165.80 4-10'x4' RCBC.

The existing bridges (Str. Nos. 1606 and 1607) on the existing two lane roadway that will be incorporated into the four-lane divided roadway have bridge load ratings less than the AASHTO minimum of HS20. Both bridges have sufficiency ratings of 83.36. Both bridges are currently carrying legal loads without showing any significant distress. See Structure Evaluations in Appendix D; AASHTO Controlling Design Criteria Report.

Neither of the existing bridges provides the needed hydraulic capacity for the design flows at Black Hills Wash (MP 162.05) or Snyder Hills Wash MP 162.20). Therefore, the existing bridges will be supplemented as follows to carry the design volumes of water.

- Black Hills Wash (MP 162.05): The existing bridge will remain and a new 130-foot long bridge will be constructed immediately to the east of the existing bridge. The channel will be widened under the new bridge. The existing bridge rail will be removed from the existing bridge and will be replaced with the same type of barrier used on the new bridge.
- Snyder Hills Wash (MP 162.20): The existing bridge will remain. The wash bottom will be cleared out and excavated to the stable slope invert, which is at the approximate existing elevation of

2436-feet. Further analysis is required during final design to determine a design stable slope invert.

New bridges will be required on the new two-lane roadway at Black Hills Wash and Snyder Hills Wash. A new 260-foot long bridge will be constructed on the new roadway at Black Hills Wash (MP 162.05) and a new 200-foot long bridge will be constructed on the new roadway at Snyder Hills Wash (MP 162.3).

The ten existing RCBC structures that have openings of more than 20feet and that do not have adequate hydraulic capacity will be improved by adding cells to the existing RCBC as shown in **Table 50-2**, **Section 5.7.4**, **Drainage Requirements**.

The RCBC structures will be extended across the median and the new directional roadway. The extension of the RCBC structures will provide the required recovery area and guard rail will not be required. Those RCBC structures that currently do not have adequate recovery area will be extended from the existing roadway to provide adequate recovery area and existing guard rail will be removed.

The bridge load ratings for Structure No. 1606, Black Hills Wash Bridge and Structure No. 1607, Snyder Hill Wash Bridge are less than HS 20. The Structure Evaluation Report dated 05/03/2007 states that both structures are carrying legal loads without showing any significant distress. It is planned that these two bridges will remain in place.

Both of these bridges are located within the Phase II section of this project which is currently unfunded. During Final Design these two bridges should be further evaluated to determine if the deck/superstructure needs to be rehabilitated or replaced.

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6.0 ACCESS MANAGEMENT PLAN

6.1 Introduction

The Access Management Plan presents the results of a study of access management requirements along SR 86 from MP 156.88 to MP 166.58 in Pima County and ADOT's Tucson District.

The purpose of the Access Management Plan is to:

- Document the need for access management.
- Provide a plan that identifies access management features needed to protect the safety and function of SR 86.
- Provide access between SR 86 and adjacent properties that will accommodate anticipated uses of the properties.

The Access Management Plan presents Access Control features to accomplish the above requirements.

ADOT is undertaking a Statewide Access Management Plan to develop an access classification system for the State Highways and develop a comprehensive access management manual to guide the uniform application of access management throughout the state. It is intended that the Access Management Plan for this project will comply with the ADOT Proposed Access Category System.

SR 86, through the limits of this project, is shown in the Draft State Highway Access Category Assignments, revised August 2008, as being in the Major Regional (MR) Access Category for the full length of the project.

Access Category MR is for use on rural and urban highways that are intended to provide for high speed and relatively high traffic volumes in an efficient and safe manner. They provide for interstate, interregional, intra-regional, and intercity travel needs. Direct access service to abutting land is subordinate to providing service to through traffic movements. Access to the highway may be a mix of at-grade and grade-separated intersections.

6.2 Need for Access Management

State Highways such as SR 86 that are located close to urban areas, in this instance, the City of Tucson, are intended to allow commerce to take place and the public to travel safely and efficiently, whether commuting or traveling to and from the urban area for other purposes. ADOT has established fringe-urban cross sections for suburban or emerging urban areas. Properties adjacent to transportation corridors in fringe urban areas are attractive to developers, commercial businesses and the public for development of land use activities that are dependent upon vehicular access to the corridor. Over time, increasing numbers of crossroads and turnouts intersecting the highway and the increasing volume of vehicles entering and leaving the highway will cause conflicts with through traffic that result in loss of capacity and diminished safety. As the travel congestion increases, the level of service provided by the state highway will decrease.

Management of access by restricting the number of access points and by locating and designing permitted access points to minimize conflicts with through traffic is a successful strategy for maintaining a high level of service on the highway while accommodating increasing numbers of vehicles to and from adjacent developments. The section of SR 86 within the study limits of this project is currently being proposed for improvement to a four-lane divided highway. Implementation of access management in conjunction with the added capacity provided by additional lanes will preserve the function of the highway as a safe and efficient transportation corridor.

Access rights are subject to reasonable regulation by ADOT for the protection of public health, safety, and welfare. Direct access between a property and a highway may be closed and replaced with alternative access via an access road or another public road abutting the property.

6.3 Access Management Plan

The Access Management Plan prepared and presented in this section describes the provisions necessary to manage the access to SR 86 by regulating the number, location and geometrics of access points.

6.3.1 Existing Access Management

Direct access to SR 86 is currently allowed through permit application to the ADOT District under the authority of ADOT Administrative Rule R17-3-Article 5, Highway Encroachments and Permits. R17-3-502, Applicability, lists the types of encroachments that qualify for an ADOT encroachment permit.

6.3.2 Access Control

Permit applications and granting of direct access to existing SR 86 will generally continue as currently administered. However, it is recommended that the Access Granting Criteria contained in the Draft

State Highway Access Category Assignments, revised August 2008, referenced in Section 6.1, (or the most recent versions) be implemented for the improvement of SR 86 to the extent feasible.

Access to adjacent properties will be in accordance with the current publication of the ADOT Access Category System: Characteristics and Requirements for Approach Permitting. A "Proposed" publication is now available. When adopted the approved publication is to be used. The Access Category Assignment for SR 86 within the project limits is MR as shown in Section 6.1 of this report.

Spacing of intersecting streets, roads and highways will be planned on intervals of one mile. One-half mile spacing of public roadways may be permitted to the highway when no reasonable alternative access to the general street system exists.

At-grade median crossovers will be provided at major intersections. Intermediate median crossovers will be provided as requested by the Arizona Department of Public Safety and to provide reasonable access from all directions to right-in/right-out turnouts, subject to a one-half mile minimum spacing. Eastbound and westbound traffic on SR 86 will have the opportunity to make U-turns at median crossovers as discussed in **Section 6.4**. The access control features are shown on the plans for the recommended alternative in **Appendix B**.

The Tucson Airport Authority has commented that the proposed U-turn median crossover near MP 161 should be located 200 to 300 feet to the west of the location shown on the concept plans to better align with industrial/commercial development of airport property. The improvement of SR 86 in the vicinity of MP 161 is located within the Phase II section of the project which is currently unfunded. During Final Design the location of the U-turn median crossover will be further evaluated and adjusted as appropriate.

All properties fronting on SR 86 will continue to have reasonable access to a public road. Where private access is available to a local road, the private access to SR 86 may be revoked. Where private access is permitted, turnouts will be right-in/right-out only. New private access points will be spaced no closer than ¹/₄-mile. Existing private access points that are less than ¹/₄-mile apart may be permitted if revocation would result in a property being landlocked. It is not anticipated that frontage/access roads will be constructed as part of the reconstruction of SR 86.

Coordination between ADOT and Pima County will be necessary to determine the appropriate access to accommodate unimproved properties adjacent to SR 86 when they are developed. Applications for private access onto SR 86 that are received after access control has been implemented will be subject to the above criteria. If future subdivision of adjacent properties results in frontages along SR 86 that cannot meet the minimum ¹/₄-mile spacing for private access, they may be interconnected by access roads to a common entrance onto SR 86. In these instances, the access roads will be constructed outside the SR 86 right-of-way.

6.3.5 Implementation of Access Management

Access management will be implemented utilizing the highway planning and improvement authority of ADOT and the planning and land use powers of Pima County in a cooperative partnership.

The issuance of permits, by ADOT's Tucson District for access to SR 86 will be the vehicle for implementation of partial access control under the authority of ADOT Administrative Rule R17-3-Article 5, Highway Encroachments and Permits.

The development of land necessitates the establishment of local roads and access to property. Access to roadway facilities can be regulated through the use of planning and regulatory measures including land division, subdivision regulation, and zoning regulations. The authority to implement these measures is given to the county through ARS 11-801 to 833.

Access control will be implemented as the construction to provide a four-lane divided highway is completed. Future access to SR 86 will be determined by cooperative actions of ADOT and Pima County. ADOT and the County should jointly determine the type and location of access points that will preserve the functionality of SR 86 while accommodating the needs of developers of adjacent properties.

Description of Access Control 6.4

Existing local roads and turnouts that intersect SR 86 within the project limits have been identified in the following narrative. A preliminary analysis has been made to determine access points necessary to maintain access to County roads and to adjacent properties. Extensions of several local roads will be necessary to provide access as intended to some parcels. Agreement between ADOT and Pima County will be required to implement the access control as described.

In areas where the spacing of local road intersections with left-turn lanes on SR 86 is one-mile or more apart median crossovers with leftturn pockets will be provided on SR 86 to accommodate U-turn movements. The median crossovers will be at least 1/2-mile apart.

6.4.1 Local Road Intersections

The existing local road intersections with SR 86 will be reconstructed as described below (See Intersection Lane Configurations, **Appendix A)**:

Postvale Road Intersection (MP 157.85):

Postvale Road intersects SR 86 on the north side. It is a two-lane paved County Road that serves public land and a residential subdivision.

- The existing intersection will remain and will be paved to the existing cattle guard.
- Left turn lanes will be provided on SR 86 for vehicles turning from eastbound SR 86 to northbound Postvale Road and for U-turn movements for both westbound and eastbound vehicles on SR 86.
- A right turn lane will be provided on SR 86 for vehicles turning from westbound SR 86 to northbound Postvale Road.
- Both left and right turns will be permitted from southbound Postvale Road to SR 86.



Firebird Avenue (MP 158.30):

Firebird Avenue intersects SR 86 on the north side. It is a two-lane unpaved county road that serves public land and a residential subdivision.

- Firebird Avenue will be a right-in/right-out intersection with SR 86. Auxiliary turn lanes will not be provided.
- The intersection will remain and will be paved to the existing cattle guard.





- •

Aviator Lane Intersection (MP 159.6):

Aviator Lane intersects SR 86 on the north side and is currently the primary access to Ryan Airfield. Aviator Lane is shown as a public road on the Pima County GIS Maps. A permit for the turnout was issued by ADOT (Permit #78533F).

Continental Road Intersection (MP 158.96):

Continental Road intersects SR 86 on the north side. It is a two-lane paved county road that serves the City of Tucson and private property. A solid waste transfer station is located on Continental Road.

• Left-turn lanes will be provided on SR 86 for vehicles turning from eastbound SR 86 to northbound Continental Road and for U-turn movements for both westbound and eastbound vehicles on SR 86. A left-turn lane will be provided on Continental Road for vehicles turning from southbound Continental Road to eastbound SR 86. A westbound right-turn lane will be a provided on SR 86 for traffic making a right-turn from westbound SR 86 to Continental Road. Vehicles turning right from Continental Road to westbound SR 86 will turn into the outside westbound through lane on SR 86.

• Aviator Lane will be a right-in/right-out intersection with SR 86.

- A right-turn lane will be provided on SR 86 for vehicles turning from westbound SR 86 to Aviator Lane.
- A right-turn lane will be provided on Aviator Lane for vehicles exiting Ryan Airfield and turning westbound on SR 86.



Valencia Road/Airfield Drive Intersection (MP 159.83):

Existing Valencia Road intersects SR 86 on the south side, opposite Airfield Drive, forming a four-way intersection. Valencia Road is an east-west arterial that serves the developing area south of SR 86. It is one of the major local roads intersecting SR 86 within the project limits. Airfield Drive will be the primary entrance to Ryan Airfield.

- The intersection of SR 86 and Valencia Road/Airfield Drive will remain in its current location and will be reconstructed as part of this project. Existing Valencia Road will be reconstructed by Pima County.
- The intersection of SR 86 and Valencia Road/Airfield Drive will be signalized.
- Left-turn lanes will be provided on SR 86 for westbound SR 86 traffic turning onto Valencia Road, for eastbound SR 86 traffic turning onto Airfield Drive, and for U-turn movements.
- A double left-turn lane will be provided on Valencia Road for northbound traffic on Valencia Road turning onto westbound SR 86.
- A right-turn lane will be provided on SR 86 for westbound traffic on SR 86 turning onto northbound Airfield Drive and a right-turn lane will be provided on Airfield Drive for southbound traffic on Airfield Drive turning onto westbound SR 86.
- A double right-turn lane will be provided on SR 86 for eastbound traffic on SR 86 turning onto eastbound Valencia Road and a single right-turn lane will be provided on Valencia Road for westbound traffic on Valencia Road turning onto eastbound SR 86.



The Airfield Drive connection on the north side of SR 86 will tie into the existing access road to provide access to Ryan Airfield. Airfield Drive is shown as a public road on the Pima County GIS Maps. A permit for the turnout was issued by ADOT (Permit # 47837).

Old Ajo Highway Intersection (MP 161.6) (West end):

The Old Ajo Highway intersects SR 86 on the north side. The westerly intersection of SR 86 and the Old Ajo Highway carries very little traffic, but does provide access to several parcels of land.

- The location of the intersection is being shifted approximately 400feet to the east along SR 86 to improve the alignment of Old Ajo Highway as it intersects SR 86.
- The intersection will allow right in/right out movements to and from Old Ajo Highway. Left turns will not be permitted.
- Auxiliary lanes will not be provided because of the low volume of traffic entering and leaving Old Ajo Highway.



San Joaquin Road Intersection (MP 163.42): San Joaquin Road intersects SR 86 on the north side. It is a two-lane paved county road that serves as the primary access to a large residential area located to the north of SR 86.

- movements.
- SR 86.
- SR 86.



Camino Verde Road Intersection (MP 164.1): Camino Verde Road intersects SR 86 on both the north and south sides, forming a four-way intersection. It is a two-lane paved county road that serves developing areas both to the north and south of SR 86. The Drexel Heights Fire Station is located approximately 400-feet north of SR 86 on the west side of Camino Verde Road.

The intersection of Camino Verde Road and SR 86 was signalized in 2008. The heaviest turning movements through the intersection are the westbound to southbound left turns and the corresponding northbound to eastbound right turns. Traffic movements to and from the north leg of the intersection are relatively minor.

Improvements to the Camino Verde Road Intersection as part of improving SR 86 to a 4-lane divided highway will include the following:

• The intersection of San Joaquin Road and SR 86 will be signalized. Left-turn lanes will be provided on SR 86 for vehicles turning from eastbound SR 86 to northbound San Joaquin Road and for U-turn

• A double-left turn lane will be provided on San Joaquin Road for vehicles turning from southbound San Joaquin Road to eastbound

• A right-turn lane will be provided on SR 86 for vehicles turning from westbound SR 86 to northbound San Joaquin Road.

• A right-turn lane will be provided on San Joaquin Road for vehicles turning from southbound San Joaquin Road to westbound

- The location of the intersection is being shifted approximately 200feet to the east along SR 86 to improve the alignment of Camino Verde Road as it intersects SR 86.
- Signalization of the intersection of SR 86 and Camino Verde Road will be retained; however, the signal system will be modified for 4lanes on SR 86 and relocation of the intersection.
- Double left-turn lanes will be provided on SR 86 for westbound
- traffic on SR 86 turning south to Camino Verde Road and a single left-turn lane will be provided on SR 86 for eastbound traffic on SR 86 turning north to Camino Verde Road.
- Left-turn lanes will be provided for southbound traffic on Camino Verde Road turning east to SR 86 and for northbound traffic on Camino Verde Road turning west to SR 86.
- Right-turn lanes will be provided on SR 86 for eastbound traffic on SR 86 turning south to Camino Verde Road and for westbound traffic turning north to Camino Verde Road.
- A single right-turn lane will be provided on Camino Verde Road for northbound traffic on Camino Verde Road turning east to SR 86.
- Right turns will be permitted from southbound Camino Verde Road to westbound SR 86. However, a separate right-turn lane will not be provided.
- The alignment of Camino Verde Road north of SR 86 will be • modified to eliminate the offset intersection of Camino Verde Road and Old Ajo Highway.



Old Ajo Highway Intersection (MP 164.44) (East end):

The Old Ajo Highway intersects SR 86 on the north side. Traffic volume on this section of the Old Ajo Highway is quite light. Access to properties located along the old highway is provided by Camino Verde Road.

• The Old Ajo Highway intersection with SR 86 will be removed.

• The Old Ajo Highway will be connected to existing Fred Street with a two lane AC roadway. The connecting roadway will include an intersection with W. Irvington Rd. Properties along Old Ajo Highway can access SR 86 via Camino Verde Road.



Tucson Estates Parkway Intersection (MP 164.7):

The existing configuration of Tucson Estates Parkway is a paved twolane county road that intersects SR 86 on the north side, providing access to large parcels and Tucson Water facilities.

A commercial turnout is located directly across SR 86 from the Tucson Estates Parkway Intersection. The commercial turnout serves a convenience store and provides access to SR 86 from several properties located to the south of SR 86, via dirt roads that access the paved turnout. The turnout is located on County property, and Pima County is the permit holder for the commercial turnout.

- The location of the intersection will be shifted approximately 200feet to the east along SR 86 to improve the alignment of Tucson Estates Parkway as it intersects SR 86.
- The intersection will be signalized.
- The intersection of Oklahoma Street and Tucson Estates Parkway will be closed and a cul-de-sac will be constructed on Oklahoma Street.
- In the future Tucson Estates Parkway will be extended to the south • of SR 86 to tie into a future Irvington Road alignment. Both the southerly extension of Tucson Estates Parkway and Irvington Road will be constructed by the County. The southerly leg of the intersection of Tucson Estates Parkway and SR 86 will be constructed to the southerly R/W line of SR 86 as part of this project.
- A left-turn lane will be provided for southbound traffic on Tucson Estates Parkway turning east to SR 86. Width will be provided for a future left-turn lane on Tucson Estates Parkway for northbound traffic turning west to SR 86.



- Tucson Estates Parkway.

S. Spencer Street South Side of SR 86 (MP 165.21):

Access to several private parcels is provided by S. Spencer Street, which intersects SR 86 on the south side at MP 165.3. Existing S. Spencer Street is a narrow, unpaved primitive county road with irregular width.



with Oklahoma Street.

• Left-turn lanes will be provided on SR 86 for westbound traffic on SR 86 to make U-turns, and for eastbound traffic on SR 86 turning north to Tucson Estates Parkway or for U-turns. In the future leftturns will be allowed for westbound traffic on SR 86 turning south to future Tucson Estates Parkway.

• A right-turn lane will be provided on Tucson Estates Parkway for southbound traffic on Tucson Estates Parkway turning west to SR 86. Width will be provided for a right-turn lane for northbound traffic on Tucson Estates Parkway turning east to SR 86.

Right-turn lanes will be provided for eastbound and westbound SR 86 traffic turning right to northbound and to future southbound

The intersection will be reconstructed to the ADOT R/W line and will be a right in/right out movement. S. Spencer Street will be graded and paved as a two lane county road south of SR 86 to a new intersection

Oklahoma Street will be constructed as a two lane county road from the intersection with S. Spencer Street easterly to an intersection with Sunset Blvd. New right of way will have to be acquired for part of the Oklahoma Street alignment.

The extension of S. Spencer Street and construction of Oklahoma Street between S. Spencer Street and Oklahoma Street will provide access via local roads to properties on the south side of SR 86 through the signalized intersection of Sunset Blvd. and SR 86.

The extension of S. Spencer Street and construction of Oklahoma Street between S. Spencer Street and Sunset Blvd. will be to Pima County standards. ADOT and Pima County may enter into a JPA to determine responsibility for funding and construction of the local roads.

Sunset Blvd. Intersection (MP 165.5):

Sunset Blvd. intersects SR 86 on the south side and connects with Valencia Street further to the south. It is a two-lane paved county road that serves a fairly large area that is being developed as residential property.

When SR 86 is improved the median will preclude access to a church, a school and a feed store on the south side of SR 86 for westbound SR 86 traffic. Access to those properties will be available via Sunset Blvd., Oklahoma Street and S. Spencer St. The location of the intersection is being shifted approximately 100-feet to the west along SR 86 to improve the alignment of Sunset Blvd. as it intersects SR 86.



- The intersection of SR 86 and Sunset Blvd. will be signalized. Sunset Blvd. will continue to be a "T" intersection with SR 86.
- Left-turn lanes will be provided on SR 86 for westbound traffic on SR 86 turning south to Sunset Blvd. and for U-turn movements for both eastbound and westbound traffic on SR 86.
- A right-turn lane will be provided on SR 86 for eastbound traffic on SR 86 turning south to Sunset Blvd.

• Three northbound lanes will be provided on Sunset Blvd. south of SR 86. The westerly two lanes will be for northbound traffic on Sunset Blvd. turning left to westbound SR 86. The easterly northbound lane will be for right turn traffic from northbound Sunset Blvd. to eastbound SR 86.

Sheridan Avenue Intersection (MP 165.75):

On the north side of SR 86 Sheridan Avenue is a two-lane paved County Road that provides access to residential properties located north of SR 86. It ties into Bopp Road to the north, which in turn connects to Kinney Road. Substantial numbers of residents north of SR 86, in the vicinity of Sheridan Avenue use the Kinney Road connection for access to SR 86 because the Kinney Road/SR 86 intersection has been signalized for quite some time and it is easier to make left turns through a signalized intersection than an unsignalized one.



On the south side of SR 86 Sheridan Avenue is an unimproved dirt road that provides access to residential properties located south of SR 86. It ties into Irvington Road to the south, providing another access to the residential properties.

Sheridan Avenue will remain open to SR 86 on both the north and south sides of SR 86 and will be right-in/right-out only. A median crossover will not be provided.

Kinney Road Intersection (MP 166.3):

Kinney Road is a major north-south county arterial road that provides access to large areas both north and south of SR 86. It is currently signalized. The signal system will be reconstructed and expanded to accommodate the expanded intersection as described below.

A Wal-Mart development is being planned in the northwest quadrant of the SR 86/Kinney Road intersection, which will increase the volume of traffic through the intersection substantially. Other commercial development and extensive residential development both north and south of SR 86 will further impact the capacity of the intersection.

Improvements to the SR 86/Kinney Road intersection necessary to handle design year traffic are included in this improvement to SR 86. A JPA between ADOT and Pima County will be required to identify funding responsibility for improvements needed to handle the projected traffic at the Kinney Road intersection and at other County road intersections where improvements will extend outside the ADOT R.W. Additional agreements may be required to implement improvements needed as a result of the planned development of adjacent property.



The configuration of the intersection of SR 86 and Kinney Road is based on Kinney Road being expanded to a four-lane divided roadway both north and south of SR 86. In addition, Pima County is planning a collector road that will begin at Kinney Road approximately ¹/₄-mile north of SR 86 and run easterly for approximately ¹/₂-mile and then turn to the south and tie into SR 86 at the intersection of SR 86 and Camino de Oeste. The following lane configuration of the SR 86/Kinney Road intersection will be included in the improvement of SR 86:

- eastbound and westbound.
- northbound and southbound.
- •

• SR 86 will be widened to include three through lanes both

Kinney Road will be widened to include two through lanes both

Eastbound SR 86 will include two left-turn lanes to northbound Kinney Road and one right-turn lane to southbound Kinney Road.

Westbound SR 86 will include two left-turn lanes to southbound Kinney Road and two right-turn lanes to northbound Kinney Road.

Northbound Kinney Road will include one left-turn lane to westbound SR 86 and one right-turn lane to eastbound SR 86.

Southbound Kinney Road will include two left-turn lanes to eastbound SR 86 and one right-turn lane to westbound SR 86.

6.4.2 Median Crossovers for U-Turns

Access to SR 86, in addition to access allowed at major intersections, will be limited to right-in/right-out movements at minor intersections and turnouts. This is necessary to prevent random left-turns across traffic both to and from SR 86, which, as traffic volumes increase would increase congestion and increase the likelihood of crashes because of conflicting traffic movements.

U-turns at median crossings will be permitted at major intersections. Vehicles that want to proceed left on SR 86 from a minor intersection or turnout will have to make a right-turn onto SR 86 and proceed to a median crossing where left-turns are permitted from SR 86. They can then make a U-turn to proceed in their desired direction. Likewise, vehicles that want to make a left-turn from SR 86 into a minor intersection or turnout will have to proceed past the intersection to a median crossing where left-turns are permitted, make a U-turn and go back to the location where they wish to exit SR 86 and make a rightturn.

Where a major local road forms a "T" intersection with SR 86 a leftturn storage lane will be included on SR 86 for U-turns in addition to the left-turn lane for turning into the local road.

There are sections of SR 86 within the project limits where the distance between major intersections is in excess of one-mile. Since forcing vehicles to travel more than a mile out of direction before making a Uturn may create a hardship, median crossings with left-turn deceleration lanes and storage lanes will be provided at a spacing of one-half mile to one mile along SR 86.

Median crossings for U-turns in addition to those at major intersections will be provided at the following locations:

- MP 157.35: Located approximately 0.5 miles west of Postvale Road.
- MP 161.0: Located approximately 0.6 miles west of the proposed location of the intersection of SR 86 and Old Ajo Hwy. The Old Ajo Hwy is proposed to be a right in/right out intersection.
- MP 161.8: Located approximately 0.8 miles east of the above described U-turn median crossing and approximately 0.2 miles east of the proposed location of SR 86 and Old Ajo Hwy. It would also be approximately 0.8 miles west of the next proposed location of a U-turn median crossing.

• MP 162.6: Located approximately 0.8 miles west of the intersection of SR 86 and San Joaquin Road Intersection and approximately 0.8 miles east of the U-turn median crossing to the west.

During Final Design the locations of proposed median crossovers for U-turns should be reviewed with Pima County. Adjustment of the approximate locations to accommodate access to adjacent properties being developed may be appropriate.

From San Joaquin Road easterly the major intersections where U-turns are allowed are spaced less than 1-mile apart and no additional U-turn median crossings are proposed.

6.4.3 Turnouts

Access to Unimproved Properties:

Coordination between ADOT and Pima County will be necessary to determine the appropriate access to accommodate unimproved properties adjacent to SR 86 when they are developed. Unimproved properties that abut both SR 86 and a local road should be required to develop their access to the local road rather than SR 86. Large developments that include internal road systems should be required to access SR 86 through the signalized intersections being identified herein. The internal roads in developed properties may tie directly to signalized intersections or to County roads that ultimately connect to SR 86 at signalized intersections.

Access to unimproved properties that abut SR 86 but do not abut a local road may be landlocked if access to SR 86 is denied. The access should be tied into the County Road system rather than directly to SR 86. The County may have to exercise their subdivision and zoning powers to require that access be developed through the County Road system. If access through the County Road system is impractical, direct access to SR 86 may be granted, subject to the requirement for 1/4 mile spacing between access points. Access would be right in/right out only.

Following is a listing and discussion of existing access points to SR 86, other than county roads, within the limits of the project.

(1) MP 157.21 (Sta. 640+00) (ADOT Permit 57576T);

- Unpaved turnout on south side of SR 86.
- Access to a large undeveloped parcel.
- Existing access will remain. If the parcel is developed, Pima • County and ADOT should jointly determine appropriate access.





(3) MP 159.6 (Sta. 766+20) (ADOT Permit 78533F);

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(2) MP 157.76 (Sta. 668+50) (No Permit);

Unpaved turnout on south side of SR 86.

Access to a large undeveloped parcel.

Existing access will remain. If the parcel is developed, Pima County and ADOT should jointly determine appropriate access. • The turnout should be placed under permit.

Paved turnout on north side of SR 86 into Ryan Airfield.

• Provides access to Ryan Field parking lot and emergency access to the runway and airfield facilities.

This turnout will be closed and removed. Right-in/right-out access will be provided through Aviator Lane, 200-feet to the west. Access to and from eastbound and westbound SR 86 will be through the signalized intersection at Airfield Drive, which will become the primary entrance to Ryan Airfield.



(4) MP 160.0 (Sta. 787+25);

A request has been made by the Tucson Airport Authority for a turnout to be located on the north side of SR 86 at approximate MP 160.0. The turnout would be a right-in/right-out access to the Ryan Airfield property. The location of this turnout is less than 1/4-mile from the adjacent turnout to the west. This turnout should be gated and locked so it does not become an access for the general public.

The ADOT permit log shows that the Tucson Airport Authority has a permit for a turnout at MP 160.1 that does not exist at this time.

(5) MP 160.4 (Sta. 806+50) (No Permit);

- Paved turnout with cattleguard on north side of SR 86.
- Access to a FAA non-directional beacon. The Tucson Airport Authority has asked that this access point remain.
- This access will remain. The turnout should be placed under permit.

(6) MP 161.3 (Sta. 850+00 (No Permit);

- Paved turnout on south side of SR 86.
- Access to an undeveloped parcel.
- Existing access will remain. If the parcel is developed Pima County • and ADOT should jointly determine appropriate access.
- The turnout should be placed under permit.

(7) MP 162.38 (Sta. 905+00) (Permit 78533F);

- Paved turnout on north side of SR 86.
- Access to Tucson Trap and Skeet.
- Existing access will remain as a right-in/right-out turnout. •

(8) MP 163.42 (Sta. 959+30) (No Permit);

- Unpaved turnout on south side of SR 86 opposite San Joaquin Road.
- Access to an undeveloped parcel.
- The existing turnout will be removed.

(9) MP 163.5 (Sta. 963+50) (No Permit);

- Unpaved turnout on both the north and south sides of SR 86. •
- Access to undeveloped parcel on both the north and south sides of SR 86.
- Both turnouts will be closed and removed. Access to north side of SR 86 is available from San Joaquin Road. Access to south side of SR 86 can be from an extension of San Joaquin Road to the south if the access is needed.

(10) MP 163.54 (Sta. 966+70) (No Permit)

- Unpaved turnout on both the north and south sides of SR 86.
- Access to El Paso Natural Gas lines crossing SR 86.
- Determine if turnouts are needed. If not, remove them. •
- If turnouts are needed, they should be gated and locked.
- If needed, turnouts should be placed under permits.

(11) MP 164.53 (Sta. 1019+10) (No Permit);

- Paved turnout on south side of SR 86.
- The turnout is located within County Road R/W. Irvington Road R/W extends to the SR 86 R/W.
- The turnout provides access to utilities located within the County Road R/W.
- The turnout will be closed and removed. Access to the Irvington Road corridor will be available via an extension of Tucson Estates Parkway to the south of SR 86.

(12) MP 164.63 (Sta. 1024+05) (Permit 92024TC);

- Right-turn lane and paved 40-foot commercial turnout on south side of SR 86.
- Provides access to a convenience store/gas station.
- Turnout will remain as a right-in/right-out access.



- •

- in/right out movement.



(13) MP 164.70 (Sta. 1027+80) (Permit 30674T);

• Paved commercial turnout on south side of SR 86. Provides access to a convenience store/gas station. The turnout is located within Pima County Road R/W and the permit is issued to Pima County.

• The turnout will be closed and removed.

(14) MP 165.04 (Sta. 1045+80) (Permit 47305);

• Paved commercial turnout on north side of SR 86.

Provides access to Tucson Water facility and SRP facilities.

• Existing access will be retained and will be converted to a right

• The Tucson Water Dept. currently has the ability to access their property by left-turns to and from SR 86 via Tucson Estates Parkway which abuts the westerly side of the Tucson Water Dept. property. However, CAP does not have access to the entrance on the west side of the Tucson Water Dept. property.

(15) MP 165.15 (Sta. 1051+00) (No Permit);

- Unpaved turnout on south side of SR 86.
- Provides access to Pump Station.
- Access to the Pump Station will be provided from S. Spencer Street.
- Turnout will be closed and removed.

- (16) MP 165.2 (Sta. 1054+00) (No Permit); • Paved turnout on south side of SR 86.
- Provides access to an Electric Power Substation. •
- Access is also available to properties located to the south of the
- substation via dirt roads.
- Access to SR 86 will be provided from S. Spencer Street.
- Turnout will be closed and removed.



(17) MP 165.35 (Sta. 1061+70) (Permit 57217T);

- Paved turnout on south side of SR 86.
- Access to West Ajo Baptist Church. ٠
- The existing turnout will be closed and removed. ٠
- Access to the West Ajo Baptist Church will be combined with the • access to the Old Town Feed and Supply located immediately to the east. A new right-in/right-out turnout will be constructed to provide joint access.
- A local road connection to the south of the church property, along the platted alignment of West Oklahoma Street will be constructed to provide access to Sunset Blvd. which will have a signalized intersection with SR 86. This would also be an access for the Old Town Feed and Supply. This would require a JPA between ADOT and Pima County to define the participation in the construction of the alternate access, which would likely become a county road since it would provide access to numerous private parcels.



(18) MP 165.37 (Sta. 1063+20) (Permit 47413T);

- Paved turnout on south side of SR 86.
- Provides access to Old Town Feed and Supply.
- The existing turnout will be closed and removed.
- Access to the Old Town Feed and Supply will be combined with the access to the West Ajo Baptist Church located to the west. A new right-in/right-out turnout will be constructed to provide joint access.
- A local road connection to the south of the feed store will be constructed as described for the access to the West Ajo Baptist Church discussed above.



(19) MP 165.24 (Sta. 1056+20) to MP 165.36 (Sta. 1062+80) (No Permit);

- Two private parcels on the north side of SR 86.
- Neither of these two parcels currently have physical access to a public road. The south side of the parcels is on SR 86. The north side of the parcels is on platted W. Illinois Street, but the street is not constructed. If access is not allowed to SR 86 the parcels may be landlocked.

acquired in their entirety.

(20) MP 165.42 (Sta. 1065+80) (Permit 39596T)

- It is not permitted.
- of SR 86.

(21) MP 165.54 (Sta. 1071+90) to MP 165.69 (Permit 39613T);

- parcel is unimproved.
- within the ADOT R/W.
- they have access in the future.

(22) MP 165.49 (Sta. 1069+50) to MP 165.61 (Sta. 1076+00);

Permit):

• Additional R/W requirements along these two properties will take approximately 85-foot of each of the parcels. A drainage channel will be constructed within the new ADOT R/W along the frontage of the parcels. It is recommended that both of these parcels be

• Paved turnout on north side of SR 86 (MP 165.4).

• A second turnout to the same parcel is located at Sta. 1062+40+/-.

• The turnouts provide access to a residential parcel on the north side

• Both of the turnouts will be removed. Access to this parcel will be provided via Michigan St to Sunset Blvd. when Sunset Blvd. is extended to the north of SR 86 and Michigan St. is improved. The new R/W requirements will take the residence and much of the property. The cost to modify the access should be included with the R/W negotiations for this parcel.

• The turnout provides access to three parcels on the south side of SR 86 within the above limits that front on the SR 86 R/W. They have no other access to public roads.

The two westerly parcels have residential units on them; the third

• A permit (No. 39613T) has been issued for a 10-foot turnout at MP 165.59 (Sta. 1074+00). The two residential units may be sharing the permitted turnout. However, it appears that the westerly residence also is accessing Sunset Blvd. to the west, via a dirt trail

• A 20-foot turnout will be provided on SR 86 with an access road to serve all three properties. The rights of access across adjacent parcels will have to be recorded for each of the parcels to assure

• Two parcels on the north side of SR 86 within the above limits are bounded on their south side by the SR 86 R/W and on their north side by the R/W for W. Michigan Street, which is a primitive county road. No access from SR 86 is currently provided.

• It is recommended that access to the parcels be from W. Michigan Street and that access from SR 86 be denied.

(23) MP 165.61 (Sta. 1076+00) to MP 165.74 (Sta. 1082+60) (No

• Access to two private parcels on the north side of SR 86 is provided by two turnouts located approximately 200-feet apart. The ADOT Permit Log does not show permits for either of the turnouts.

SR 86; Sandario Road to Kinney Road

Both properties abut Michigan Street on the north. The easterly property also abuts Sheridan Avenue. The properties are improved and the access appears to have been established for some time. One of the turnouts is to Heavenly Acres, an assisted living facility,

- The improvement of SR 86 will require R/W from both of these parcels.
- Access to SR 86 will be denied and that the R/W settlement include necessary costs to change the access from SR 86 to W. Michigan Street.



(24) MP 166.08 (Sta. 1099+20) (Permit 92215T);

- Thirty-foot paved commercial turnout on south side of SR 86 including a left-turn pocket for westbound traffic turning south into a storage facility.
- Provides access to a storage facility.
- The existing access point will remain and will be modified by the • improvements to SR 86.
- The left turn from westbound SR 86 to southbound into the storage facility will be retained.
- A left-turn from the storage facility to westbound SR 60 will not be permitted.

(25) MP 166.3 (Sta. 1112+30) (Permit 74095T);

- Thirty-foot paved commercial turnout on north side of SR 86, including a deceleration lane on SR 86.
- Provides access to a McDonald's restaurant. •
- The turnout will be removed and reconstructed. Right in/right out • movements will be allowed.



(26) MP 166.3 (Sta. 1112+20) (Permit 47401T);

- Thirty-foot paved commercial turnout on south side of SR 86.
- Provides access to a Circle K convenience store.
- The turnout will be removed and reconstructed. Right in/right out • movements will be allowed.

(27) MP 166.35 (Sta. 1114+00) (No Permit);

- Turnout on north side of SR 86.
- Provides access to Tiny's Bar and Grill.
- The turnout will be removed.



- - movements will be allowed.

(28 MP 166.4 (Sta. 1117+20) (Permit 71495T); • Turnout on north side of SR 86. Provides access to a large parcel on the north side of SR 86. The turnout will be removed and reconstructed. Right in/right out

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7.0 ITEMIZED COST ESTIMATES

7.1 Itemized Estimate

Detailed cost estimates have been prepared for Alternatives A, B and C. The cost estimate for the Preferred Alternative (Alternative C) is included on the following pages. It is anticipated that the project will be constructed in two segments. See Section 8.0, Implementation Plan. A detailed estimate has been developed for each Segment. The estimated cost of SR 86 improvements is shown in Table 7-1: Summary of Project Costs. The cost estimates for Alternatives A and B are in Appendix C along with the plan/profile sheets for Alternatives A and B.

Estimated Costs of Improvements to Local Roads:

This Design Concept Study includes improvements to Local Roads. The improvements include the following types of work:

- Realignment and widening of local roads that intersect SR 86 to improve geometry of the roadways for turning movements and to increase the capacity of the intersections.
- Extensions of local roads to improve access to properties that abut both SR 86 and local roads.
- Grading and paving unimproved local roads to improve access to adjacent properties.

The estimated cost for Design, R/W and Construction of each Local Road is shown in Table 7-2: Summary of Costs to Pima County for Local Roads.

The unit prices are based on recent ADOT bid results with adjustments made to reflect the project location and the difficulty of the work anticipated. See Appendix A for the preliminary structural pavement sections.

The basis for the quantity estimates and unit prices is summarized below.

Removals:

- Clearing and Grubbing (Acre).
- Removal of Structures and Obstructions (Lump Sum).
- Removal of Bridge Railing (L. Sum). •
- Removal of Structural Concrete (Cu. Yd.). •
- Removal of Asphaltic Concrete Pavement (Sq. Yd.). •
- Removal of Pipe (Lin. Ft.).
- Remove and Salvage (Guard Rail Terminals) (Each). •
- Remove and Salvage Guard Rail (Lin. Ft.).

- Remove Bituminous Pavement (Milling) (Sq. Yd).
- Saw Cutting (Lin. ft.).

Roadway Excavation:

- Roadway Excavation (Cu. Yd.).
- Drainage Excavation (Cu. Yd.).

Shrink and swell factors are not considered in the computed quantities for Roadway Excavation or Drainage Excavation.

• Dyke (Type A) (Lin. Ft.).

Borrow:

• Borrow (Cu. Yd.) Shrink and swell factors are not considered in the computed quantities for Borrow.

Aggregate Base:

• Aggregate Base, Class 2 (Cu. Yd.).

Bituminous Tack Coat:

- Bituminous Tack Coat (Ton).
- Apply Bituminous Tack Coat (Hour).

Fog Coat:

- Fog Coat (Ton).
- Blotter Material (Ton).

AC:

- Asphaltic Concrete (Ton).
- Asphalt Binder (PG 64-22) (5.25%) (Ton).
- Mineral Admixture (1%) (Ton).

AR-ACFC:

- AR-ACFC (Ton).
- Asphalt Rubber (9%) (Ton).
- Mineral Admixture (1%) (Ton).

Pipe Culvert

- Pipe Culvert (various sizes) (Lin. Ft.).
- Flared End Sections (various sized) (Each).

RCBC and Headwalls:

- Structural Concrete (Class S) (for Headwalls, RCBC) (Cu. Yd.).
- Structural Steel (Headwalls, RCBC) (Lb.).

Bridges:

- New Bridges (L. Sum).
- Bridge Modification (L. Sum).

Fencing

Seeding/Revegetation

• Seeding (Class II) (Acre).

Guardrail/Barrier

- Guardrail (Type) (Lin. Ft.).
- Guardrail Terminal (Each).
- Median Cable Barrier (Lin. Ft.).

Channel Lining

Pavement Marking

- Delineators (Type) (Each).
- Pavement Marking (Type).

Traffic Signals

- Traffic Signal (Each).

Maintenance of Traffic

AC Material Quality Incentive:

- Included as a below the line item.
- Unit Price \$3.00 per Ton.

AR-ACFC Smoothness Incentive:

- Included as a below the line item.

• F-Shape Concrete Bridge Barrier and Transition (Lin. Ft.).

• Barded Wire Fence, Type 1 (Lin. Ft.).

• Reconstruct Guard Rail End Terminal Assembly (Each).

• Shotcrete (Bank Protection for Dikes) (Sq. Yd.)

• Pavement Marker, Raised (Type) (Each).

• Remove Traffic Signals (L. Sum).

Miscellaneous Work (Signing) (L. Sum).

• Maintenance and Protection of Traffic (percent of construction cost) (L. sum) - Below the line item.

• Unit Price - \$11,000 per lane mile (new construction). • Unit Price - \$7,000 per lane mile (overlay – mill & replace).

7.2 Estimate Summary – Preferred Alternative

Estimated Cost – SR 86 (See Table 7-1):

The estimated cost of the improvement of SR 86 includes the improvement of Local Roads within the SR 86 R/W.

The estimated construction and design cost of the preferred alternative identified in this study is \$67,440,000 for mainline SR 86.

The estimated cost of R/W and Drainage Easements (DE) for mainline SR 86 for the preferred alternative is \$3,956,000.

An estimated amount of \$800,000 has been identified for Environmental Mitigation (Envir. Mit). The \$800,000 will be allocated during the Segment C2 design/construction phase.

An amount of \$1,200,000 is included for relocation of utility lines that will be attributable to ADOT. The extent of utility relocations and the responsibility for the cost of utility relocations will be determined during the design phase.

Estimated Cost to Pima County for Local Roads (See Table 7-2):

The estimated cost of the improvement of local roads outside the limits of the SR 86 R/W is shown as a cost to Pima County. The estimated cost of construction and design of local roads is \$6,864,000. The cost of R/W and Drainage Easements for the improvement of local roads is \$952,000.

There are no costs shown for Valencia Road. The cost of the intersection including the signal system and that part of Valencia Road lying within the ADOT R/W is included in the SR 86 cost estimate. Pima County will design, obtain R/W and construct the widening of Valencia Road outside the ADOT R/W for SR 86.

SR 86 SF **SR 86** Segment Begin End Length **Segment Name** Construction Design R/W No. MP MP (mlies) Costs (\$) Costs (\$) Cos Sandario Rd. to C1 156.88 163.23 42,280,000 3,382,000 6.35 1,78 San Joaquin Rd. San Joaquin Rd. C2 163.23 166.58 3.35 20,290,000 1,623,000 2,17 to Kinney Rd. **PROJECT TOTALS** 3,95 9.70 62,570,000 5,005,000

TABLE 7-2: SUMMARY OF ESTIMATED COSTS TO PIMA COUNTY FOR LOCAL ROADS

Segment No.	Local Road	Construction (\$)	Design (\$)	R/W & DE (\$)	Total (\$)
C1	Continental Rd.	92,000	7,000	None	99,000
C1	Valencia Rd.	0	0	None	0
C1	Old Ajo Hwy. (W)	97,000	8,000	27,000	132,000
Segment No. C1	Subtotal	189,000	15,000	27,000	231,000
C2	San Joaquin Rd.	201,000	16,000	None	217,000
C2	Camino Verde	1,882,000	151,000	125,000	2,158,000
C2	Tucson Estates Pkwy. (N)	435,000	35,000	180,000	650,000
C2	Spencer St.	183,000	15,000	33,000	231,000
C2	Oklahoma St.	355,000	28,000	209,000	592,000
C2	Sunset Blvd. (S)	541,000	43,000	147,000	731,000
C2	Sheridan Ave.	118,000	9,000	7,000	134,000
C2	Kinney Rd.	2,451,000	196,000	224,000	2,871,000
Segment No. C2	Subtotal	6,166,000	493,000	925,000	7,584,000
TOTAL: SEG	MENT C1 & C2	6,356,000	508,000	952,000	7,816,000

TABLE 7-1: SUMMARY OF ESTIMATED COSTS FOR SR 86

R 86 & DE sts (\$)	SR 86 Utility Relocation Costs (\$)	Envir. Mit. (\$)	Total Project Costs (\$)
5,000	200,000	0	47,647,000
1,000	1,000,000	800,000	25,884,000
6,000	1,200,000	800,000	73,531,000



7.3 Estimate of Future Maintenance Costs

An estimate of the additional future annual maintenance costs that would result from the additional roadway lane miles added to this section of SR 86 was developed for the project. The additional future annual maintenance costs for SR 86; Sandario Road to Kinney Road are estimated to be approximately \$124,411 (See **Table 7-3**).

Annual Maintenance Cost Per Lane Mile Using PeCoS Latest FY Data ¹				
Category	SR 86, Sandario Rd to Kinney Rd			
1. Paved Surfaces & Shoulders	420			
2. Roadside	230			
3. Drainage & Environmental	100			
4. Rest Areas				
5. Traffic Operations - Signal & Lighting; Signing & Striping - ITS	935			
6. Landscaping	85			
7. Winter Storms	155			
8. Emergency Response	30			
9. Miscellaneous Maintenance ²	300			
10. Support and Other Operating Expenses	1165			
11. Other Specialty Items ³				
MCL = Maintenance Cost per Lane Mile	\$3,420			
Annual Maintenance Cost of Project at PA/DCR Phase	SR 86, Sandario Rd to			
	Kinney Rd			
PW = Total Pavement Width ⁴	38			
NL = Number of 12-ft Wide Lanes	3.17			
LP = Length of Project in Miles	9.7			
PMC = Current Project Maintenance Cost	\$105,051			
Annual Maintenance Cost of Project at Beginning of Maintenance Phase	SR 86, Sandario Rd to			
	Kinney Rd			
IF = Inflation Factor ⁵	1.058			
N = Number of Years to Maintenance Phase	3			
PMCI = Project Maintenance Cost including Inflation	\$124,411			

TABLE 7-3: ESTIMATE OF FUTURE MAINTENANCE COSTS

Notes: 1- Lane mile width is 12 ft, Total maintenance lane miles = 27,722 miles Metropolitan Phoenix maintenance lane miles = 2016 miles, Other Locations = 25,706 miles

- 2- Miscellaneous maintenance include building and yard maintenance, training, material handling, vegetation control and contract considered in the maintenance cost breakdown
- 3- For Other Specialty Items, contact Central Maintenance.
- 4- Total pavement width includes the main line, ramps and shoulders.
- 5- Based on increase in maintenance costs of 76% over the last 10 years

Gray areas require manual entry NL = PW / 12 $PMC = MCL \times NL \times LP$ $PMCI = PMC \times (IF^N)$

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Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01C

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: SEGMENT C1 (SANDARIO RD TO SAN JOAQUIN RD)

ALTERNATIVE C1

Item No	item Description	Unit	Quantity	Unit Price	Amount
2010011	CLEARING AND GRUBBING	ACRE	120.4	\$1,500.00	\$180,600
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LSUM	1	\$25,000.00	\$25,000
2020005	REMOVAL OF BRIDGE RAILING	L.SUM	1	\$30,000.00	\$30,000
2020009	REMOVAL OF STRUCTURAL CONCRETE	CU.YD.	915	\$200.00	\$183,000
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	8,000	\$2.50	\$20,000
2020041	REMOVAL OF PIPE	L.FT.	411	\$25.00	\$10,275
2020057	REMOVE AND SALVAGE (GUARD RAIL TERMINALS)	EACH	28	\$300.00	\$8,400
2020072	REMOVE AND SALVAGE GUARD RAIL	L.FT.	7,050	\$5.00	\$35,250
2020084	REMOVE BITUMINOUS PAVEMENT (MILLING) (2 1/2*)	SQ.YD.	137,440	\$1.50	\$206,160
2020201	SAW CUTTING	LFT.	8,180	\$1.50	\$12,270
2030301	ROADWAY EXCAVATION	CU.YD.	5,300	\$8.00	\$42,400
2030811	DYKE (TYPE A) (C-03.10)	LFT.	24,800	\$40.00	\$992,000
2030901	BORROW	CU.YD.	300,000	\$10.00	\$3,000,000
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	70,900	\$30.00	\$2,127,000
4040111	BITUMINOUS TACK COAT	TON	179	\$450.00	\$80,550
4040116	APPLY BITUMINOUS TACK COAT	HOUR	310	\$150.00	\$46,500
4040125	FOG COAT	TON	33.5	\$500.00	\$16,750
4040163	BLOTTER MATERIAL	TON	100.4	\$40.00	\$4,016
4040264	ASPHALT BINDER (PG 64-22)	TON	3,610	\$400.00	\$1,444,000
4060026	MINERAL ADMIXTURE (FOR 3/4" MIX)	TON	652	\$90.00	\$58,680
4140040	ASPHALTIC CONCRETE FRICTION COURSE (ASPHALT- RUBBER)	TON	7,123	\$40.00	\$284,920
4140042	ASPHALT RUBBER MATERIAL (FOR AR-ACFC)	TON	641	\$600.00	\$384,600
4140044	MINERAL ADMIXTURE (FOR AR-ACFC)	TON	65	\$90.00	\$5,850
4160004	ASPHALTIC CONCRETE (3/4" MIX) (END PRODUCT) (SPECIAL MIX)	TON	68,770	\$35.00	\$2,406,950
5010011	PIPE, CORRUGATED METAL, 24"	L.FT.	184	\$75.00	\$13,800
5010017	PIPE, CORRUGATED METAL, 30"	L.FT.	504	\$95.00	\$47,880
5010025	PIPE, CORRUGATED METAL, 36"	L.FT.	96	\$120.00	\$11,520
5014030	FLARED END SECTION, 30" (C-13.25)	EACH	8	\$500.00	\$4,000
5014036	FLARED END SECTION, 36" (C-13.25)	EACH	2	\$700.00	\$1,400
6010002	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,000)	CU.YD.	16,076	\$300.00	\$4,822,800
6010508	NEW BRIDGES (BLACK HILLS & SNYDER HILLS)	L.SUM	1	\$2,655,000.00	\$2,655,000
6010601	BRIDGE MODIFICATION	L.SUM	1	\$137,000.00	\$137,000
6011130	F-SHAPE BRIDGE CONCRETE BARRIER AND TRANSITION (32 INCH)	L.FT.	656	\$90.00	\$59,040
6050003	REINFORCING STEEL (CULVERTS & HEADWALLS)	LB.	2,241,000	\$0.75	\$1,680,750
7015042	TEMPORARY PAINTED MARKING (STRIPE)	L.FT.	177,770	\$0.10	\$17,777
7030022	DELINEATOR (FLEXIBLE) (SINGLE WHITE OR SINGLE YELLOW)	EACH	132	\$40.00	\$5,280
7060001	PAVEMENT MARKER, RAISED (REFLECTIVE)	EACH	1,900	\$4.00	\$7,600
7080021	PERMANENT PAVEMENT MARKING (PAINTED) (WHITE OR YELLOW)	L.FT.	177,770	\$0.10	\$17,777
7330630	REMOVE TRAFFIC SIGNALS	L.SUM	. 1	\$25,000.00	\$25,000
733X001	TRAFFIC SIGNAL (VALENCIA RD)	EACH	1	\$250,000.00	\$250,000
8050003	SEEDING (CLASS II)	ACRE	80.3	\$3,000.00	\$240,900
9030011	BARBED WIRE FENCE, TYPE 1	LFT.	31,300	\$3.00	\$93,900
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	4,000	\$20.00	\$80,000
9050090	CONSTRUCT GUARD RAIL TERMINAL FROM SALVAGE	EACH	8	\$1,000.00	\$8,000

Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01C

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: SEGMENT C1 (SANDARIO RD TO SAN JOAQUIN RD)

ALTERNATIVE C1

9050090	CONSTRUCT GUARD RAIL TERMINAL FROM SALVAGE	EACH	8	\$1,000.00	\$8,000	
9120002	SHOTCRETE (Bank Protection for Dikes)	SQ.YD.	12,720	\$50.00	\$636,000	
9240050	MISCELLANEOUS WORK (Signing)	L.SUM	1	\$155,000.00	\$155,000	
928X001	RUMBLE STRIP (8-INCH) (MEDIAN SIDE)	L.FT.	65,500	\$0.20	\$13,100	
			ALTERNATIV	E C1 SUBTOTAL	\$22,588,695	
934XX01	MISCELLANEOUS WORK (15%)	COST	15%	T	\$3,388,304	
				SUBTOTAL	\$25,976,999	
207XX01	DUST PALLIATIVE (1%)	COST	1%		\$259,770	
209XX01	FURNISH WATER (1%)	COST	1%		\$259,770	
701XX01	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	COST	10%	Í	\$2,597,700	
810XX01	EROSION CONTROL AND POLLUTION PREVENTION (1%)	COST	1%	1	\$259,770	
924XX02	CONTRACTOR QUALITY CONTROL (2%)	COST	2%		\$519,540	
925XX01	CONSTRUCTION SURVEYING AND LAYOUT (2%)	COST	2%		\$519,540	
		ali segunali kanalari kanalari susta		SUBTOTAL	\$30,393,089	
901XX01	MOBILIZATION (10%)	COST	10%		\$3,039,309	
		erendramon annan an dea		SUBTOTAL	\$33,432,398	
	CONTINGENCIES (5%)	Cost	5%		\$1,671,620	
	CONSTRUCTION ENGINEERING	COST	15%		\$5,014,860	
407X006	AR-ACFC SMOOTHNESS INCENTIVE (OVERLAY)	LANE	12	\$7,000.00	\$82,600	
414X001	AR-ACFC SMOOTHNESS INCENTIVE	LANE	13	\$11,000.00	\$137,500	
417X002	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	TON	68,770	\$3.00	\$206,310	
951X010	INDIRECT COST ALLOCATION	COST	5.19%		\$1,735,141	
OTHER C	<u>20ST</u>				ə42,280,429	
	DESIGN	COST	8%		\$3,382,400	
	R/W Mainline (50.51 acres)	L.SUM	1	\$1,266,400.00	\$1,266,400	
	Drainage Easements (26.29 acres)	L.SUM	1	\$518,600.00	\$518,600	
	Utility Relocation	L.SUM	1	\$200,000.00	\$200,000	
				OTHER COST	\$5,367,000	
	Summa	ry				
			Sect	ion	Total	
			Alternative	ə C1	\$42,280,000	
			OTHER C	OST	\$5,367,000	
	Total Project Cost				\$47,647,000	

Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01C

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: SEGMENT C2 (SAN JOAQUIN RD TO KINNEY RD)

ALTERNATIVE C2

Item No	Item Description	Unit	Quantity	Unit Price	Amount
2010011	CLEARING AND GRUBBING	ACRE	65.1	\$1,500.00	\$97,650
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.SUM	1	\$125,000.00	\$125,000
2020009	REMOVAL OF STRUCTURAL CONCRETE	CU.YD.	139	\$200.00	\$27,800
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	77,500	\$2.50	\$193,750
2020041	REMOVAL OF PIPE	LFT.	879	\$25.00	\$21,975
2020072	REMOVE AND SALVAGE GUARD RAIL	L.FT.	550	\$10.00	\$5,500
2020084	REMOVE BITUMINOUS PAVEMENT (MILLING) (2 1/2*)	SQ.YD.	15,436	\$1.50	\$23,154
2020201	SAW CUTTING	L.FT.	7,400	\$1.50	\$11,100
2030301	ROADWAY EXCAVATION	CU.YD.	36,200	\$8.00	\$289,600
2030401	DRAINAGE EXCAVATION	CU.YD.	84,600	\$8.00	\$676,800
2030811	DYKE (TYPE A) (C-03.10)	L.FT.	750	\$25.00	\$18,750
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	75,160	\$30.00	\$2,254,800
4040111	BITUMINOUS TACK COAT	TON	131	\$450.00	\$58,950
4040116	APPLY BITUMINOUS TACK COAT	HOUR	204	\$150.00	\$30,600
4040125	FOG COAT	TON	18.5	\$500.00	\$9,250
4040163	BLOTTER MATERIAL	TON	56.4	\$40.00	\$2,256
4040264	ASPHALT BINDER (PG 64-22)	TON	2,983	\$400.00	\$1,193,200
4060026	MINERAL ADMIXTURE (FOR 3/4" MIX)	TON	538	\$90.00	\$48,420
4140040	ASPHALTIC CONCRETE FRICTION COURSE (ASPHALT- RUBBER)	TON	4,090	\$40.00	\$163,600
4140042	ASPHALT RUBBER MATERIAL (FOR AR-ACFC)	TON	368	\$600.00	\$220,800
4140044	MINERAL ADMIXTURE (FOR AR-ACFC)	TON	37	\$90.00	\$3,330
4160004	ASPHALTIC CONCRETE (3/4" MIX) (END PRODUCT) (SPECIAL MIX)	TON	56,810	\$35.00	\$1,988,350
5010011	PIPE, CORRUGATED METAL, 24°	L.FT.	254	\$75.00	\$19,050
5010025	PIPE, CORRUGATED METAL, 36"	L.FT.	440	\$120.00	\$52,800
5010035	PIPE, CORRUGATED METAL, 48"	L.FT.	110	\$150.00	\$16,500
5014024	FLARED END SECTION, 24" (C-13.25)	EACH	4	\$500.00	\$2,000
5014036	FLARED END SECTION, 36" (C-13.25)	EACH	2	\$700.00	\$1,400
6010002	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,000)	CU.YD.	3,760	\$300.00	\$1,128,000
6050003	REINFORCING STEEL (CULVERTS & HEADWALLS)	LB.	518,250	\$0.75	\$388,688
7015042	TEMPORARY PAINTED MARKING (STRIPE)	L.FT.	120,000	\$0.10	\$12,000
7030022	DELINEATOR (FLEXIBLE) (SINGLE WHITE OR SINGLE YELLOW)	EACH	50	\$40.00	\$2,000
7060001	PAVEMENT MARKER, RAISED (REFLECTIVE)	EACH	1,220	\$4.00	\$4,880
7080021	PERMANENT PAVEMENT MARKING (PAINTED) (WHITE OR YELLOW)	L.FT.	120,000	\$0.10	\$12,000
7330630	REMOVE TRAFFIC SIGNALS	LSUM	1	\$25,000.00	\$25,000
733X001	TRAFFIC SIGNALS (SAN JOAQUIN, CAMINO VERDE, TUCSON ESTATES PKWY, SUNSET, KINNEY)	EACH	5	\$250,000.00	\$1,250,000
8050003	SEEDING (CLASS II)	ACRE	37.5	\$3,000.00	\$112,500
9030011	BARBED WIRE FENCE, TYPE 1	L.FT.	8,000	\$5.00	\$40,000
9080031	CONCRETE CURB (C-05.10) (TYPE G)	L.FT.	3,450	\$20.00	\$69,000
9120002	SHOTCRETE (Bank Protection for Dikes/Channels)	SQ.YD.	1,686	\$50.00	\$84,300
9240050	MISCELLANEOUS WORK (Signing)	L.SUM	1	\$82,000.00	\$82,000
9280036	GROUND-IN RUMBLE STRIP (8 INCH)	L.FT.	29,000	\$0.20	\$5,800
			ALTERNAT	IVE C2 SUBTOTAL	\$10,772,552
934XX01	MISCELLANEOUS WORK (15%)	COST	15%		\$1,615,883
				SUBTOTAL	\$12,388,435

Arizona Department of Transportation

Itemized Estimate

Project Number: 086 PM 156 H6806 01C Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: SEGMENT C2 (SAN JOAQUIN RD TO KINNEY RD)

ALTERNATIVE C2

207XX01	DUST PALLIATIVE (1%)	COST	1%		\$123,884
209XX01	FURNISH WATER (1%)	COST	1%		\$123,884
701XX01	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	COST	10%		\$1,238,844
810XX01	EROSION CONTROL AND POLLUTION PREVENTION (1%)	COST	1%		\$123,884
924XX02	CONTRACTOR QUALITY CONTROL (2%)	COST	2%		\$247,769
925XX01	CONSTRUCTION SURVEYING AND LAYOUT (2%)	COST	2%		\$247,769
				SUBTOTAL	\$14,494,469
901XX01	MOBILIZATION (10%)	COST	10%		\$1,449,447
hore-sample a distribution of the dispersion				SUBTOTAL	\$15,943,916
	CONTINGENCIES (5%)	Cost	5%		\$797,196
	CONSTRUCTION ENGINEERING	COST	15%		\$2,391,587
407X006	AR-ACFC SMOOTHNESS INCENTIVE (OVERLAY)	LANE	1	\$7,000.00	\$9,100
414X001	AR-ACFC SMOOTHNESS INCENTIVE	LANE	14	\$11,000.00	\$150,700
417X002	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	TON	56,810	\$3.00	\$170,430
951X010	INDIRECT COST ALLOCATION	COST	5.19%	*****	\$827,489
				Alternative C2	\$20,290,418

207XX01	DUST PALLIATIVE (1%)	COST	1%		\$123,884
209XX01	FURNISH WATER (1%)	COST	1%		\$123,884
701XX01	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	COST	10%		\$1,238,844
810XX01	EROSION CONTROL AND POLLUTION PREVENTION (1%)	COST	1%		\$123,884
924XX02	CONTRACTOR QUALITY CONTROL (2%)	COST	2%		\$247,769
925XX01	CONSTRUCTION SURVEYING AND LAYOUT (2%)	COST	2%		\$247,769
				SUBTOTAL	\$14,494,469
901XX01	MOBILIZATION (10%)	COST	10%		\$1,449,447
				SUBTOTAL	\$15,943,916
	CONTINGENCIES (5%)	Cost	5%		\$797,196
	CONSTRUCTION ENGINEERING	COST	15%		\$2,391,587
407X006	AR-ACFC SMOOTHNESS INCENTIVE (OVERLAY)	LANE	1	\$7,000.00	\$9,100
414X001	AR-ACFC SMOOTHNESS INCENTIVE	LANE	14	\$11,000.00	\$150,700
417X002	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	TON	56,810	\$3.00	\$170,430
951X010	INDIRECT COST ALLOCATION	COST	5.19%		\$827,489
				Alternative C2	\$20,290,418

OTHER COST

and the second s					
	DESIGN	COST	8%		\$1,623,200
	R/W Mainline (28.63 acres)	L.SUM	1	\$1,399,800.00	\$1,399,800
	Drainage Easements (8.74 acres)	L.SUM	1	\$770,600.00	\$770,600
	Utility Relocation	L.SUM	1	\$1,000,000.00	\$1,000,000
	Environmental Mitigation	L.SUM	1	\$800,000.00	\$800,000
				OTHER COST	\$5,594,000

Summary	
Section	Total
Alternative C2	\$20,290,000
OTHER COST	\$5,594,000
Total Project Cost	\$25,884,000

Final Design Concept Report

Estimated Engineering Construction Cost

Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01C

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: C1 LOCAL ROADS

C1 LOCAL ROADS

Item No	Item Description	Unit	Quantity	Unit Price	Amount
2010011	CLEARING AND GRUBBING	ACRE	.9	\$1,500.00 \$	
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LSUM	1	\$5,000.00 \$5	
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	4,094	\$2.50	\$10,235
2030301	ROADWAY EXCAVATION	CU.YD.	800	\$8.00	\$6,400
2030901	BORROW	CU.YD.	1,100	\$10.00	\$11,000
2030961	PREPARATION OF SUBGRADE (EXISTING GROUND)	SQ.YD.	996	\$8.00	\$7,968
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	506	\$30.00	\$15,180
4040111	BITUMINOUS TACK COAT	TON	1	\$450.00	\$450
4040264	ASPHALT BINDER (PG 64-22)	TON	34	\$400.00	\$13,600
4060026	MINERAL ADMIXTURE (FOR 3/4* MIX)	TON	6	\$90.00	\$540
4160002	ASPHALTIC CONCRETE (3/4" MIX) (END PRODUCT)	TON	641	\$35.00	\$22,435
7080021	PERMANENT PAVEMENT MARKING (PAINTED) (WHITE OR YELLOW)	LFT.	3,240	\$0.10	
8050003	SEEDING (CLASS II)	ACRE	1.4	\$3,000.00	\$4,200
924X003	MISCELLANEOUS WORK (Signing)	LSUM	1	\$3,000.00	\$3,000
			C1 LOCAL ROA	ADS SUBTOTAL	\$101,682
934XX01	MISCELLANEOUS WORK (15%)	COST	15%	1	\$15,252
				SUBTOTAL	\$116,934
207XX01	DUST PALLIATIVE (1%)	COST	1%		\$1,169
209XX01	FURNISH WATER (1%)	COST	1%		\$1,169
701XX01	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	COST	10%		\$11,693
810XX01	EROSION CONTROL AND POLLUTION PREVENTION (1%)	COST	1%		\$1,169
924XX02	CONTRACTOR QUALITY CONTROL (2%)	COST	2%		\$2,339
925XX01	CONSTRUCTION SURVEYING AND LAYOUT (2%)	COST	2%		\$2,339
				SUBTOTAL	\$136,813
901XX01	MOBILIZATION (10%)	COST	10%	1	\$13,681
				SUBTOTAL	\$150,494
[CONTINGENCIES (5%)	COST	5%	1	\$7,525
	CONSTRUCTION ENGINEERING	COST	15%		\$22,574
414X001	AR-ACFC SMOOTHNESS INCENTIVE	LANE MILE	.4	\$7,500.00	\$3,000
417X002	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	TON	641	\$1.50 \$962	
951X010	INDIRECT COST ALLOCATION	COST	5.19%		\$7,811
			C1	LOCAL ROADS	\$192,366

OTHER COST

l						
Į	D	DESIGN	COST	8%		\$15,389
ĺ	P	WW C1 LOCAL ROADS (0.28 ACRES)	L.SUM	1	\$27,300.00	\$27,300
					OTHER COST	\$42,689

Summary	
Section	Tota
C1 LOCAL ROADS	\$192,00
OTHER COST	\$43,00
Total Project Cost	\$235,00

Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01L

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: C2 - SAN JOAQUIN RD TO KINNEY RD, LOCAL ROADS

C2 LOCAL ROADS

Item No	Item Description	Unit	Quantity	Unit Price	Amount
2010011	CLEARING AND GRUBBING	ACRE	13	\$1,500.00 \$1	
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LSUM	1	\$122,500.00	\$122,500
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	26,090	\$2.50	\$65,225
2030301	ROADWAY EXCAVATION	CU.YD.	14,510	\$8.00	\$116,060
2030401	DRAINAGE EXCAVATION	CU,YD.	3,900	\$8.00	\$31,200
2030901	BORROW	CU.YD.	9,800	\$10.00	\$98,000
2030961	PREPARATION OF SUBGRADE (EXISTING GROUND)	SQ.YD.	52,190	\$8.00	\$417,520
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	10,068	\$30.00	\$302,040
4040111	BITUMINOUS TACK COAT	TON	18	\$450.00	\$7,965
4040264	ASPHALT BINDER (PG 64-22)	TON	845	\$400.00	\$338,000
4060026	MINERAL ADMIXTURE (FOR 3/4" MIX)	TON	153	\$90.00	\$13,770
4160002	ASPHALTIC CONCRETE (3/4" MIX) (END PRODUCT)	TON	16,107	\$35.00	\$563,745
6010002	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,000)	CU.YD.	1,737	\$375.00	\$651,375
6050003	REINFORCING STEEL (CULVERTS & HEADWALLS)	LB.	244,799	\$0.75	\$183,599
7080021	PERMANENT PAVEMENT MARKING (PAINTED) (WHITE OR YELLOW)	L.FT.	48,808	48,808 \$0.10	
8050003	SEEDING (CLASS II)	ACRE	9	\$3,000.00	\$27,300
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	700	\$20.00	\$14,000
9050026	GUARD RAIL TERMINAL (TANGENT TYPE)	EACH	4	\$2,700.00 \$10,8	
9080031	CONCRETE CURB (C-05.10) (TYPE G)	L.FT.	2,450	\$20.00	\$49,000
9080501	CONCRETE FORD WALL	L.FT.	1,800	\$50.00 \$90,	
9120002	SHOTCRETE (CHANNEL LINING)	SQ.YD.	3,200	\$50.00 \$160	
924X003	MISCELLANEOUS WORK (Signing)	LSUM	1	\$28,500.00	\$28,500
		and a state of the second state of the	C2 LOCAL ROA	ADS SUBTOTAL	\$3,314,250
934XX01	MISCELLANEOUS WORK (15%)	COST	15%		\$497,138
				SUBTOTAL	\$3,811,388
207XX01	DUST PALLIATIVE (1%)	COST	1%	\$3	
209XX01	FURNISH WATER (1%)	COST	1%		\$38,114
701XX01	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	COST	10%		\$381,139
810XX01	EROSION CONTROL AND POLLUTION PREVENTION (1%)	COST	1%		\$38,114
924XX02	CONTRACTOR QUALITY CONTROL (2%)	COST	2%		\$76,228
925XX01	CONSTRUCTION SURVEYING AND LAYOUT (2%)	COST	2%		\$76,228
				SUBTOTAL	\$4,459,323
9012001	MOBILIZATION (10%)	COST	10%	1	\$445,932
10-8				SUBTOTAL	\$4,905,256
	CONTINGENCIES (5%)	COST	5%		\$245,263
	CONSTRUCTION ENGINEERING	COST	15%		\$735,788
417X002	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	TON	16,107	\$3.00	\$48,321
and the second se					and the second sec

OTHER COST

	and the second second			
 DESIGN	COST	8%		\$493,300
R/W C2 LOCAL ROADS (14.20 acres)	L.SUM	1	\$925,000.00	\$925,000
	and the second		OTHER COST	\$1,418,000

ummary	29. SAV	Color and Street	War and	- 90 - Ju
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Section	Total
C2 LOCAL ROADS	\$6,166,000
OTHER COST	\$1,418,000
Total Project Cost	\$7,584,000

8.0 IMPLEMENTATION PLAN

8.1 Implementation of Proposed Improvements

It is anticipated that the total improvement of SR 86 from Sandario Road (MP 156.88) to Kinney Road (MP 166.58) will be implemented in two phases to address the most urgent needs first and to make improvements that can be accomplished with available funds. The final limits of each Segment will be dependent on funding availability.

The area is becoming urbanized as development progresses from east to west along the SR 86 corridor. The proposed improvement of SR 86 is the extension of the four-lane divided roadway westerly from the end of the existing four-lane divided roadway at Kinney Road through the intersection of SR 86 and Postvale Road.

The priority of construction segments proceed from east to west along the SR 86 corridor and provide useable improvements to logical termini. The improvement of local roads adjacent to the SR 86 mainline are included with the appropriate segment. The costs for local roads outside the ADOT R/W are attributed to Pima County. See Table 8-1 and Figure 8-1.

The estimated cost of each priority improvement includes design, construction and R/W costs for the SR 86 mainline and for each local road requiring construction outside the ADOT R/W. In addition, estimated costs for adjustments to utility facilities that are attributable to ADOT are shown. The cost of utility adjustments will be more closely estimated during final design. Segment C2 also includes an estimated cost of environmental mitigation.

Total Est. Cost Segment C2:

SR 86:	\$25,884,000
Local Roads:	\$7,584,000
Total Cost:	\$33,468,000

Total Est. Cost Segment C1:

SR 86:	\$47,647,000
Local Roads:	\$231,000
Total Cost:	\$47,878,000

Segment	Name and (Location)	Description	R/W and Dr. Easements (Acres)	Utility Relocation (\$)	Estimated Cost (\$)
C2	San Joaquin Rd. to Kinney Rd. (MP 163.23 to MP 166.58)	SR 86 Mainline from just west of San Joaquin Rd. to the End of Project east of Kinney Rd.	R/W & DE: 37.37	\$1,000,000	Constr.: \$20,290,000 Design: \$1,623,000 R/W & DE \$2,171,000 Env. Mit.: \$800,000
	Local Roads Outside ADOT R/W	• San Joaquin Rd. (Pima Co. Cost)	R/W: 0		Constr.: \$201,000 Design: \$16,000 R/W: 0
		Camino Verde (Pima Co. Cost)	R/W: 4.32		Constr.: \$1,882,000 Design: \$151,000 R/W: \$125,000
		Tucson Estates Pkwy. (North) (Pima Co. Cost)	R/W: 1.85		Constr.: \$435,000 Design: \$35,000 R/W: \$180,000
		Spencer St. (Pima Co. Cost)	R/W: 2.00		Constr.: \$183,000 Design: \$15,000 R/W: \$33,000
		Oklahoma St. (Pima Co. Cost)	R/W: 2.15		Constr.: \$355,000 Design: \$28,000 R/W: \$209,000
		Sunset Blvd. (Pima Co. Cost)	R/W: 1.51		Constr.: \$541,000 Design: \$43,000 R/W: \$147,000
		Sheridan Ave. (Pima Co. Cost)	R/W: 0.07		Constr.: \$118,000 Design: \$9,000 R/W: \$7,000
		Kinney Road (Pima Co. Cost)	R/W: 2.30		Constr.: \$2,451,000 Design: \$196,000 R/W: \$224,000
		TOTAL: Local Roads; SEGMENT C2	Total R/W; Local Roads – 14.20	\$1,000,000	\$7,816,000
C1	Sandario Rd. to San Joaquin Rd. (MP 156.88 to MP 163.23)	SR 86 Mainline from Begin of Project east of Sandario Rd. to just west of San Joaquin Rd.	R/W & DE: 76.80	\$200,000	Constr.: \$42,280,000 Design: \$3,382,000 R/W & DE: \$1,785,000
	Local Roads Outside ADOT R/W	Continental Rd. (Pima County Cost)	R/W: 0	1. A. 19	Constr.: \$92,000 Design: \$7,000 R/W: 0
		Valencia Rd. (Planning, design & construction by Pima Co.)	R/W: 0		Constr.:0Design:0R/W:0
		Old Ajo Hwy. (Pima Co. Cost)	R/W: 0.28		Constr.: \$97,000 Design: \$8,000 R/W: \$27,000
		TOTAL: Local Roads; SEGMENT C1	Total R/W: Local Roads – 0.28	\$200,000	\$231,000

TABLE 8-1: IMPLEMENTATION PLAN


9.0 MITIGATION MEASURES

9.1 Introduction

Provided below in Section 9.2 are the Mitigation Measures that have been provided as part of the Final Environmental Assessment submitted to FHWA April 5, 2010. A Finding of No Significant Impact was issued by the Federal Highway Administration on April 16, 2010.

Mitigation Measures

The following mitigation measures and commitments are <u>not</u> subject to change without the prior written approval of the Federal Highway Administration.

The following mitigation measures and commitments are not subject to change without the prior written

approval of the Federal Highway Administration.

Arizona Department of Transportation Design Responsibilities

- 1. During final design, the Pima County Regional Flood Control District floodplain manager will be provided an opportunity to review and comment on the design plans.
- 2. During final design, the design plans will be reviewed to verify the extent of impacts to Waters of the United States. The Arizona Department of Transportation will prepare and submit an application to the United States Army Corps of Engineers for a Clean Water Act Section 404 permit and Section 401 Water Quality Certification for the project.
- 3. No work will occur within Waters of the United States until the appropriate Clean Water Act Section 404 permit and Section 401 Water Quality Certification are obtained.
- 4. During final design, the United States Fish and Wildlife Service list of threatened, endangered, proposed, and candidate species and the Arizona Game and Fish Department Heritage Data Management System will be reviewed by a qualified biologist to determine if new species or critical habitat has been identified or any changes in listing status have occurred. The Biological Evaluation and Biological Opinion will be updated to reflect any changes.

- a United States Fish and Wildlife Service-approved conservation bank for Pima pineapple cactus. Any change in the scope of the project that may occur during final design will require a reevaluation of impacts to Pima pineapple cactus habitat.
- 6. Invasive species control will be conducted both prior to and during construction to minimize colonization of disturbed areas by non-native grasses that may degrade potential Pima pineapple cactus habitat. The Arizona Department of Transportation Natural Resources Management Section will begin invasive species control two years prior to the commencement of work on the roadway project.
- 7. During final design, the Arizona Department of Transportation will develop a project-specific Plan for Control of Noxious and Invasive Plant Species, which would address appropriate control of occurrences of invasive plant species within the right-of-way during construction. The plan will include such provisions as vehicle inspection to prevent movement of noxious and invasive species seeds to and from the work site; procedures for collection, removal, and disposal of noxious and invasive plants; and proposed methods of control, such as application of herbicides and mechanical or manual removal, to be used for each plant species at various stages of plant development.
- 8. During final design, the Arizona Department of Transportation will develop a plan for topsoil salvage in natural areas where construction disturbance will occur and invasive species are not present. In these areas, 4 to 8 inches of surface soil will be salvaged and stockpiled to be redistributed over the cut and fill slopes adjacent to the new roadway upon completion of construction. During final design, a survey by a qualified biologist will be conducted to determine the presence of invasive species in the project area. In areas where topsoil is determined to contain invasive species seed banks, topsoil will not be reused.

5. Prior to the start of construction, the Arizona Department of Transportation will acquire 60 acre-credits in

- 9. All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction will be seeded using species native to the project vicinity.
- 10. The Arizona Department of Transportation will develop a native plant salvage plan for the project during final design. Plant species protected under the Arizona Native Plant law will be avoided by construction to the extent practicable. If impacts to native plants cannot be avoided, the plants will be treated in accordance with state law. The plan will include salvaging all Pima pineapple cactus within the area of permanent disturbance and replanting them at a location approved by a qualified biologist. Any Pima pineapple cactus that are not within the area of permanent disturbance, but present within the right-of-way, will be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction.
- 11. Protected native plants within the project limits will be impacted by this project; therefore, the Arizona Department of Transportation Roadside Development Section will determine if Arizona Department of Agriculture notification is needed. If notification is needed, the Arizona Department of Transportation Roadside Development Section will send the notification at least 60 calendar days prior to the start of construction.
- 12. The Arizona Game and Fish Department will be invited by the Arizona Department of Transportation to participate in agency partnering during final design.
- 13. During final design, the Arizona Department of Transportation project manager will contact the Arizona Department of Transportation Environmental Planning Group noise coordinator to arrange for qualified personnel to review and update the noise analysis.
- 14. During final design, the Arizona Department of Transportation project manager will contact the Arizona Department of Transportation Environmental Planning Group hazardous materials coordinator (602.712.7767) to arrange for the preparation of an updated Preliminary Initial Site Assessment, lead-based paint assessment, and asbestos assessment.

- 15. During final design, the Arizona Department of Transportation Historic Preservation Team will develop and implement a data recovery plan for site AZ AA: 16.5 (ASM).
- 16. During final design, the Arizona Department of Transportation will consider extending the Option C proposed westbound outside lane into the Sandario Road/State Route 86 intersection to connect to the eastbound to northbound right-turn lane.

Arizona Department of Transportation Tucson District Responsibilities

- 1. No work will occur within Waters of the United States until the appropriate Clean Water Act Section 404 permit and Section 401 Water Quality Certification are obtained.
- 2. Prior to construction, the Arizona Department of Transportation Engineer will have the contractor review the "Environmental Protection on Arizona Department of Transportation Projects Instructions to Contractors" and review and sign the "Checklist for Environmental Compliance." The Arizona Department of Transportation Engineer will also sign the checklist and return it to the United States Army Corps of Engineers seven calendar days prior to construction.
- 3. The Arizona Department of Transportation Engineer will submit the contractors' Arizona Pollutant Discharge Elimination System Notice of Intent and the Notice of Termination to the District environmental coordinator.
- 4. The Arizona Department of Transportation Engineer will contact the Arizona Department of Transportation Environmental Planning Group biologist to schedule the preconstruction meeting on a mutually agreeable date to ensure a qualified biologist would be available to attend the meeting.
- milepost 161.8 until the Arizona Department of Transportation Environmental Planning Group informs the Engineer that data recovery has been completed in accordance with the terms and stipulations of the project's Memorandum of Agreement.

5. No work will occur within the right-of-way or proposed new right-of-way between milepost 161.3 and

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Contractor Responsibilities

- 1. No work shall occur within Waters of the United States until the appropriate Clean Water Act Section 404 permit and Section 401 Water Quality Certification are obtained.
- 2. Prior to construction, the contractor shall review the "Environmental Protection on Arizona Department of Transportation Projects Instructions to Contractors" and review and sign the "Checklist for Environmental Compliance."
- 3. The contractor shall comply with all terms, general conditions, and special conditions of the project's Clean Water Act Section 404 permit and Section 401 Water Quality Certification.
- 4. The contractor, in association with the Engineer, shall submit the Arizona Pollutant Discharge Elimination System Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality only after the Engineer has reviewed and approved the Stormwater Pollution Prevention Plan.
- 5. The contractor shall adhere to the topsoil salvage plan developed by the Arizona Department of Transportation.
- 6. All disturbed soils that shall not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.
- 7. The contractor shall adhere to the native plant salvage plan developed by the Arizona Department of Transportation.
- 8. The contractor shall avoid all flagged and/or otherwise designated sensitive resource areas within or adjacent to the project area.
- 9. If any Sonoran desert tortoises are encountered during construction, the contractor shall adhere to the Arizona Game and Fish Department's Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects (Revised October 23, 2007).
- 10. Prior to construction, the contractor shall employ a qualified biologist to present an environmental awareness program to all personnel who would be on-site, including, but not limited to, contractors,

contractors' employees, supervisors, inspectors, and subcontractors working at project locations on SR 86 in Pima County. This program shall contain, at a minimum, information concerning the biology and distribution of the Sonoran desert tortoise, legal status and occurrence in the project area, measures to avoid impacts to tortoises, and procedures to be implemented in case of desert tortoise encounters.

- developed by the Arizona Department of Transportation.
- 12. To prevent the introduction of invasive species seeds, all earth-moving and hauling equipment shall be washed at the contractor's storage facility prior to entering the construction site.
- 13. To prevent invasive species seeds from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris prior to leaving the construction site.
- properly designed engine enclosures and intake silencers will be used where appropriate. To minimize noise impacts during construction, idling equipment shall be located as far away from sensitive receivers, such as residences, as possible.
- 15. No work shall occur within the right-of-way or proposed new right-of-way between milepost 161.3 and milepost 161.8 until the Engineer informs the contractor that data recovery has been completed in accordance with the terms and stipulations of the project's Memorandum of Agreement. 16. With the exception of temporary, short-term closures (not exceeding 2 to 3 hours) of driveways, the contractor shall maintain driveway access to all businesses and residences throughout construction. If a given property has multiple driveways, at least one will remain open at all times.

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11. The contractor shall adhere to the project-specific Plan for Control of Noxious and Invasive Plant Species

14. The contractor shall ensure that all exhaust systems on equipment will be in good working order and

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Standard Specifications Included as Mitigation Measures

- 1. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 104 Scope of Work, Subsection 09 Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs (2008 Edition), "The contractor shall take sufficient precautions, considering various conditions, to prevent pollution of streams, lakes, and reservoirs with fuels, oils, bitumens, calcium chloride, fresh Portland cement concrete, raw sewage, muddy water, chemicals or other harmful materials. None of these materials shall be discharged into any channels leading to such streams, lakes or reservoirs."
- 2. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 104 Scope of Work, Subsection 09 Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs (2008 Edition), "The contractor shall give special attention to the effect of its operations upon the landscape and shall take special care to maintain natural surroundings undamaged."
- 3. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 104 Scope of Work, Subsection 08 Prevention of Air and Noise Pollution (2008 Edition), "The contractor shall control, reduce, remove or prevent air pollution in all its forms, including air contaminants, in the performance of the contractor's work." Fugitive dust generated from construction activities will be controlled in accordance with the Arizona Department of Transportation's Erosion and Pollution Control Manual for Highway Design and Construction, special provisions, and local rules or ordinances. The contractor will comply with all applicable air pollution ordinances, regulations, and orders during construction. All dust-producing surfaces will be watered or otherwise stabilized to reduce shortterm impacts associated with an increase in particulate matter attributable to construction activity.
- 4. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 104 Scope of Work, Subsection 08 Prevention of Air and Noise Pollution (2008

Edition), "The contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract. Each internal combustion engine used for any purpose on the work or related to the work shall be equipped with a muffler of a type recommended by the manufacturer."

- Construction, Section 107 Legal Relations and Responsibility to Public, Subsection 07 Sanitary, Health, and Safety Provisions (2008 Edition), "During construction operations, should material be encountered which the contractor believes to be hazardous or contaminated, the contractor shall immediately do the following: a) stop work and remove workers within the contaminated areas b) barricade the area and provide traffic control, and c) notify the Arizona Department of Transportation Engineer." The Arizona Department of Transportation Engineer will arrange for proper assessment, treatment, or disposal of those materials. Such locations will be investigated and proper action implemented prior to the continuation of work in that location.
- Construction, Section 107 Legal Relations and Responsibility to Public, Subsection 05 Archaeological Features (2008 Edition), "When archaeological, historical, or paleontological features are encountered or discovered during any activity related to the construction of the project, the contractor shall stop work immediately at that location and shall take all reasonable steps to secure the preservation of those resources and notify the Engineer." The Arizona Department of Transportation Engineer will, in turn, notify the Arizona Department of Transportation Historic Preservation Team to evaluate the significance of the resources. If human remains are encountered during any phase of the project on non-federal land, all work must stop and the Engineer will contact Arizona Department of Transportation Historic Preservation Team and the Arizona State Museum. If human remains are discovered on Bureau of Land Management property, the Bureau of Land Management Tucson Area archaeologist must be notified as well.

5. According to Arizona Department of Transportation's Standard Specifications for Road and Bridge

6. According to the Arizona Department of Transportation's Standard Specifications for Road and Bridge

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APPENDIX A TYPICAL SECTIONS INTERSECTION DETAILS

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on Minor Leg. SHERIDAN AVENUE INTERSECTION DETAIL (Not to Scale)		
	-	10' 12'
	140' Lane Taper 24' to 12' Rt	= ‡12' = ‡4'
	\rightarrow	======================================
NAME DATE RCC 04-10 SR 04-10	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION	CONCEPTUAL STUDY ONLY
	INTERSECTION LANE CONFIGURATIONS	PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING
CT NO. 086 PM 156 H6806 01L		SHEET OF





APPENDIX B CONCEPT PLANS AND PROFILES RECOMMENDED ALTERNATIVE (ALTERNATIVE C)

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Airfleid Dr Exst AC Turnout To Be Reconstructed lo Õ+ 8 i A LN MATCH SR 86 E₿ € 0 New R/W 8 081 FEDERAL 0 01 LAND 0 0 0 0 Exst Valencia Rd To Be Reconstructed By Pima Co. \cap 2480 2460 P/ 777+00.00 Elev = 2433.76 2440 1000.00'VC 2420 780 2440 2420 2400 780 781 ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION CONCEPTUAL STUDY ONLY PREL IMINARY ALTERNATIVE C STA 754+00 TO STA 781+00 MP 159.39 TO MP 159.90 NOT FOR **JACOBS** CONSTRUCTION OR RECORDING SANDARIO RD TO KINNEY RD SHEET OF <u>C-7</u>







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2550	<u>SR 86</u> Propos	<u>_NB</u> / ed_Grade		Elev 2583	.9] Elev	=2581.91			DESIGN DRAIN
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2010	PVC Elev 2	+50:00 / <u>PI 906+00.00</u> 2578.98 / <u>Flev = 2577.00</u>	PVT +50.00 Ele Elev 2577.80	# 2583.42 PVC + 30		Elev 2583.53			
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	900	,		910	Ad Elev	<i>= 2581.55</i> 91	5		920
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	66 0 (701) CURVE DATA NB Kinney Rd	NA .			M	AL MADT		



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APPENDIX C

ALTERNATIVE A:

DETAILED ESTIMATE TYPICAL SECTIONS AND CONCEPT PLANS/PROFILES

ALTERNATIVE B:

DETAILED ESTIMATE TYPICAL SECTIONS AND CONCEPT PLANS/PROFILES

Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01L

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: A

ALTERNATIVE A

Item No	Item Description	Unit	Quantity	Unit Price	Amount
2010011	CLEARING AND GRUBBING	ACRE	162	\$1,500.00	\$273,300
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LSUM	1	\$150,000.00	\$150,000
2020005	REMOVAL OF BRIDGE RAILING	L.SUM	1	\$30,000.00	\$30,000
2020009	REMOVAL OF STRUCTURAL CONCRETE	CU.YD.	1,992	\$200.00	\$398,400
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	36,060	\$2.50	\$90,150
2020041	REMOVAL OF PIPE	L.FT.	758	\$25.00	\$18,950
2020057	REMOVE AND SALVAGE (GUARD RAIL TERMINALS)	EACH	24	\$300.00	\$7,200
2020072	REMOVE AND SALVAGE GUARD RAIL	LFT.	6,550	\$5.00	\$32,750
2020084	REMOVE BITUMINOUS PAVEMENT (MILLING) (2 1/2")	SQ.YD.	204,560	\$1.50	\$306,840
2020162	REMOVE (SHOTCRETE EROSION PROTECTION)	SQ.YD.	4,008	\$10.00	\$40,060
2020201	SAW CUTTING	L.FT.	20,430	\$1.50	\$30,645
2030301	ROADWAY EXCAVATION	CU.YD.	22,000	\$8.00	\$176,000
2030305	ROCK EXCAVATION	CU.YD.	8,200	\$12.00	\$98,400
2030401	DRAINAGE EXCAVATION	CU.YD.	80,740	\$8.00	\$645,920
2030811	DYKE (TYPE A) (C-03.10)	L.FT.	13,200	\$40.00	\$528,000
2030901	BORROW	CU.YD.	400,000	\$10.00	\$4,000,000
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	113,360	\$30.00	\$3,400,800
4040111	BITUMINOUS TACK COAT	TON	282	\$450.00	\$126,900
4040116	APPLY BITUMINOUS TACK COAT	HOUR	476	\$150.00	\$71,400
4040125	FOG COAT	TON	52	\$500.00	\$25,850
4040163	BLOTTER MATERIAL	TON	155	\$40.00	\$6,200
4040264	ASPHALT BINDER (PG 64-22)	TON	5,739	\$400.00	\$2,295,600
4060026	MINERAL ADMIXTURE (FOR 3/4" MIX)	TON	1,036	\$90.00	\$93,240
4140040	ASPHALTIC CONCRETE FRICTION COURSE (ASPHALT-RUBBER)	TON	9,400	\$40.00	\$376,000
4140042	ASPHALT RUBBER MATERIAL (FOR AR-ACFC)	TON	846	\$600.00	\$507,600
4140044	MINERAL ADMIXTURE (FOR AR-ACFC)	TON	86	\$90.00	\$7,740
4160004	ASPHALTIC CONCRETE (3/4" MIX) (END PRODUCT) (SPECIAL	TON	109,312	\$35.00	\$3,825,920
	MIX)	1			
5010011	PIPE, CORRUGATED METAL, 24°	LFT.	342	\$75.00	\$25,650
5010017	PIPE, CORRUGATED METAL, 30"	LFT.	504	\$95.00	\$47,880
5010025	PIPE, CORRUGATED METAL, 36"	L.FT.	96	\$120.00	\$11,520
5010035	PIPE, CORRUGATED METAL, 48*	L.FT.	110	\$180.00	\$19,800
5014024	FLARED END SECTION, 24* (C-13.25)	EACH	4	\$500.00	\$2,000
5014030	FLARED END SECTION, 30" (C-13.25)	EACH	8	\$500.00	\$4,000
5014036	FLARED END SECTION, 36" (C-13.25)	EACH	2	\$700.00	\$1,400
6010002	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,000)	CU.YD.	19,109	\$300.00	\$5,732,700
6010508	NEW BRIDGES (BLACK HILLS & SNYDER HILLS)	L.SUM	1	\$2,655,000.00	\$2,655,000
6010601	BRIDGE MODIFICATION	L.SUM	1	\$137,000.00	\$137,000
6011130	F-SHAPE BRIDGE CONCRETE BARRIER AND TRANSITION (32	L.FT.	656	\$90.00	\$59,040
	INCH)				
6050003	REINFORCING STEEL (CULVERTS & HEADWALLS)	LB.	2,657,400	\$0.75	\$1,993,050
7015042	TEMPORARY PAINTED MARKING (STRIPE)	L.FT.	291,000	\$0.10	\$29,100
7030022	DELINEATOR (FLEXIBLE) (SINGLE WHITE OR SINGLE YELLOW)	EACH	200	\$40.00	\$8,000
7060001	PAVEMENT MARKER, RAISED (REFLECTIVE)	EACH	3,310	\$4.00	\$13,240
7080021	PERMANENT PAVEMENT MARKING (PAINTED) (WHITE OR YELLOW)	L.FT.	291,000	\$0.10	\$29,100
7330630	REMOVE TRAFFIC SIGNALS	L.SUM	1	\$50,000.00	\$50,000

Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01C

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: A

ALTERNATIVE A

\$1,500,000	\$250,000.00	6	EACH	TRAFFIC SIGNAL (VALENCIA RD, SAN JOAQUIN, CAMINO VERDE, TUCSON ESTATES, SUNSET, KINNEY)	733X001
\$313,500	\$3,000.00	105	ACRE	SEEDING (CLASS II)	8050003
\$117,900	\$3.00	39,300	LFT.	BARBED WIRE FENCE, TYPE 1	9030011
\$46,000	\$20.00	2,300	L.FT.	GUARD RAIL, W-BEAM, SINGLE FACE	9050001
\$8,000	\$1,000.00	8	EACH	CONSTRUCT GUARD RAIL TERMINAL FROM SALVAGE	9050090
\$69,000	\$20.00	3,450	L.FT.	CONCRETE CURB (C-05.10) (TYPE G)	9080031
\$540,650	\$50.00	10,813	SQ.YD.	SHOTCRETE (Bank Protection for Channels & Dikes)	9120002
\$237,000	\$237,000.00	1	L.SUM	MISCELLANEOUS WORK (Signing)	9240050
\$18,894	\$0.20	94,470	L.FT.	RUMBLE STRIP (8-INCH) (MEDIAN SIDE)	928X001
\$31,233,289	E A SUBTOTAL	ALTERNATIV			
\$4,684,993		15%	COST	MISCELLANEOUS WORK (15%)	934XX01
\$35,918,282	SUBTOTAL				
\$359,183		1%	COST	DUST PALLIATIVE (1%)	207XX01
\$359,183		1%	COST	FURNISH WATER (1%)	209XX01
\$3,591,828		10%	COST	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	701XX01
\$359,183		1%	COST	EROSION CONTROL AND POLLUTION PREVENTION (1%)	810XX01
\$718,366		2%	COST	CONTRACTOR QUALITY CONTROL (2%)	924XX02
\$718,366		2%	COST	CONSTRUCTION SURVEYING AND LAYOUT (2%)	925XX01
\$42,024,390	SUBTOTAL				
\$4,202,439		10%	COST	MOBILIZATION (10%)	901XX01
\$46,226,829	SUBTOTAL		and the second s		
\$2,311,341		5%	Cost	CONTINGENCIES (5%)	
\$6,934,024		15%	COST	CONSTRUCTION ENGINEERING	
\$123,200	\$7,000.00	18	LANE MILE	AR-ACFC SMOOTHNESS INCENTIVE	407X006
\$224,400	\$11,000.00	20	LANE MILE	AR-ACFC SMOOTHNESS INCENTIVE	41 4X001
\$327,936	\$3.00	109,312	TON	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	417X002
\$2,399,172		5.19%	COST	INDIRECT COST ALLOCATION	951X010
\$58,546,902	Alternative A		Alter and a second s		10.00-0

\$1,500,000	\$250,000.00	6	EACH	TRAFFIC SIGNAL (VALENCIA RD, SAN JOAQUIN, CAMINO VERDE, TUCSON ESTATES, SUNSET, KINNEY)	733X001
\$313,500	\$3,000.00	105	ACRE	SEEDING (CLASS II)	8050003
\$117,900	\$3.00	39,300	L.FT.	BARBED WIRE FENCE, TYPE 1	9030011
\$46,000	\$20.00	2,300	L.FT.	GUARD RAIL, W-BEAM, SINGLE FACE	9050001
\$8,000	\$1,000.00	8	EACH	CONSTRUCT GUARD RAIL TERMINAL FROM SALVAGE	9050090
\$69,000	\$20.00	3,450	L.FT.	CONCRETE CURB (C-05.10) (TYPE G)	9080031
\$540,650	\$50.00	10,813	SQ.YD.	SHOTCRETE (Bank Protection for Channels & Dikes)	9120002
\$237,000	\$237,000.00	1	L.SUM	MISCELLANEOUS WORK (Signing)	9240050
\$18,894	\$0.20	94,470	L.FT.	RUMBLE STRIP (8-INCH) (MEDIAN SIDE)	928X001
\$31,233,289	E A SUBTOTAL	ALTERNATIV		5	NAME AND ADDRESS OF
\$4,684,993		15%	COST	MISCELLANEOUS WORK (15%)	934XX01
\$35,918,282	SUBTOTAL				
\$359,183		1%	COST	DUST PALLIATIVE (1%)	207XX01
\$359,183		1%	COST	FURNISH WATER (1%)	209XX01
\$3,591,828		10%	COST	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	701XX01
\$359,183		1%	COST	EROSION CONTROL AND POLLUTION PREVENTION (1%)	310XX01
\$718,366		2%	COST	CONTRACTOR QUALITY CONTROL (2%)	924XX02
\$718,366		2%	COST	CONSTRUCTION SURVEYING AND LAYOUT (2%)	925XX01
\$42,024,390	SUBTOTAL				
\$4,202,439		10%	COST	MOBILIZATION (10%)	01XX01
\$46,226,829	SUBTOTAL				
\$2,311,341		5%	Cost	CONTINGENCIES (5%)	
\$6,934,024		15%	COST	CONSTRUCTION ENGINEERING	
\$123,200	\$7,000.00	18	LANE MILE	AR-ACFC SMOOTHNESS INCENTIVE	407X006
\$224,400	\$11,000.00	20	LANE MILE	AR-ACFC SMOOTHNESS INCENTIVE	414X001
\$327,936	\$3.00	109,312	TON	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	417X002
\$2,399,172		5.19%	COST	INDIRECT COST ALLOCATION	951X010
\$58,546,902	Alternative A		- Aire		

901XX01	MOBILIZATION (10%)

733X001	TRAFFIC SIGNAL (VALENCIA RD, SAN JOAQUIN, CAMINO VERDE, TUCSON ESTATES, SUNSET, KINNEY)	EACH	6	\$250,000.00	\$1,500,000
8050003	SEEDING (CLASS II)	ACRE	105	\$3,000.00	\$313,500
9030011	BARBED WIRE FENCE, TYPE 1	L.FT.	39,300	\$3.00	\$117,900
9050001	GUARD RAIL, W-BEAM, SINGLE FACE	L.FT.	2,300	\$20.00	\$46,000
9050090	CONSTRUCT GUARD RAIL TERMINAL FROM SALVAGE	EACH	8	\$1,000.00	\$8,000
9080031	CONCRETE CURB (C-05.10) (TYPE G)	L.FT.	3,450	\$20.00	\$69,000
9120002	SHOTCRETE (Bank Protection for Channels & Dikes)	SQ.YD.	10,813	\$50.00	\$540,650
9240050	MISCELLANEOUS WORK (Signing)	L.SUM	1	\$237,000.00	\$237,000
928X001	RUMBLE STRIP (8-INCH) (MEDIAN SIDE)	L.FT.	94,470	\$0.20	\$18,894
			ALTERNATIV	E A SUBTOTAL	\$31,233,289
934XX01	MISCELLANEOUS WORK (15%)	COST	15%	1	\$4,684,993
				SUBTOTAL	\$35,918,282
207XX01	DUST PALLIATIVE (1%)	COST	1%		\$359,183
209XX01	FURNISH WATER (1%)	COST	1%		\$359,183
701XX01	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	COST	10%		\$3,591,828
810XX01	EROSION CONTROL AND POLLUTION PREVENTION (1%)	COST	1%		\$359,183
924XX02	CONTRACTOR QUALITY CONTROL (2%)	COST	2%		\$718,366
925XX01	CONSTRUCTION SURVEYING AND LAYOUT (2%)	COST	2%		\$718,366
				SUBTOTAL	\$42,024,390
901XX01	MOBILIZATION (10%)	COST	10%		\$4,202,439
			L	SUBTOTAL	\$46,226,829
	CONTINGENCIES (5%)	Cost	5%		\$2,311,341
	CONSTRUCTION ENGINEERING	COST	15%		\$6,934,024
407X006	AR-ACFC SMOOTHNESS INCENTIVE	LANE MILE	18	\$7,000.00	\$123,200
414X001	AR-ACFC SMOOTHNESS INCENTIVE	LANE MILE	20	\$11,000.00	\$224,400
417X002	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	TON	109,312	\$3.00	\$327,936
951X010	INDIRECT COST ALLOCATION	COST	5.19%		\$2,399,172
100				Aiternative A	\$58,546,902

OTHER COST

	DESIGN	COST	8%		\$4,683,800
	R/W Mainline (81.43 acres)	L.SUM	1	\$3,420,800.00	\$3,420,800
	Drainage Easements (36.92 acres)	L.SUM	1	\$1,567,500.00	\$1,567,500
	Utility Relocation	L.SUM	1	\$1,200,000.00	\$1,200,000
	Environmental Mitigation	L.SUM	1	\$800,000.00	\$800,000
historica.				OTHER COST	\$11,672,000

Summary	
Section	Tota
Alternative A	\$58,547,000
OTHER COST	\$11,672,000
Total Project Cost	\$70,219,000







SR 86 Valencia Rd - Kinney Rd\/00CADU\/70ZCIVIL\/70ZADUN\/744ctyp0Z-A.dg



Alternative A WB Sta 1084+00 to 1098+86 (MP 165.76 to MP 166.05)

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FOR ESTIMATING PURPOSES ONLY PROJECT NO. 086

et.	Intersection Lane Configuration s for more information outside e typical section limits.									
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		SHEET	OF							
:1	NO. 086 F	NO. 086 PM 156 H6806 OIL								













CITY OF Section Line, TUCSON 0 ũ \sim Exst 4-10'x5' CBC Exfend Exst CBC Left Side Only SR 86 WB € (100) New Headwalls Exst HHH EXST SR 86 1 CH SR 86 EB MA (100) CURVE DATA Westbound SR 86 PI 751+85.90 0 0 Main Curve Δ = 9°35'16" Rt D = 0°45'00"R = 7639.44' L = 1278.36'T = 640.68' Ext = 26.82' Super = NC 2480 2460 2440 800.00'VC 2420 PI 751+00.00 Elev 2428.20 750 754 2460 2440 2420 750 754 ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION CONCEPTUAL STUDY ONLY PREL IM INARY ALTERNATIVE A STA 726+00 TO STA 754+00 MP 158.85 TO MP 159.39 NOT FOR **JACOBS** CONSTRUCTION OR RECORDING SANDARIO RD TO KINNEY RD SHEET OF <u>A-5</u>























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Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01L

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

Alternative: B

ALTERNATIVE B

Item No	Item Description	Unit	Quantity	Unit Price	Amount
2010011	CLEARING AND GRUBBING	ACRE	182	\$1,500.00	\$273,300
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LSUM	1	\$150,000.00	\$150,000
2020005	REMOVAL OF BRIDGE RAILING	L.SUM	1	\$30,000.00	\$30,000
2020009	REMOVAL OF STRUCTURAL CONCRETE	CU.YD.	1,616	\$200.00	\$323,200
2020029	REMOVAL OF ASPHALTIC CONCRETE PAVEMENT	SQ.YD.	40,105	\$2.50	\$100,262
2020041	REMOVAL OF PIPE	LFT.	758	\$25.00	\$18,950
2020057	REMOVE AND SALVAGE (GUARD RAIL TERMINALS)	EACH	24	\$300.00	\$7,200
2020072	REMOVE AND SALVAGE GUARD RAIL	L.FT.	6,550	\$5.00	\$32,750
2020084	REMOVE BITUMINOUS PAVEMENT (MILLING) (2 1/2*)	SQ.YD.	202,770	\$1.50	\$304,155
2020162	REMOVE (SHOTCRETE EROSION PROTECTION)	SQ.YD.	7,145	\$10.00	\$71,450
2020201	SAW CUTTING	L.FT.	20,760	\$1.50	\$31,140
2030301	ROADWAY EXCAVATION	CU.YD.	15,000	\$8.00	\$120,000
2030401	DRAINAGE EXCAVATION	CU.YD.	80,740	\$8.00	\$645,920
2030811	DYKE (TYPE A) (C-03.10)	L.FT.	25,650	\$40.00	\$1,026,000
2030901	BORROW	CU.YD.	400,000	\$10.00	\$4,000,000
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	117,492	\$30.00	\$3,524,760
4040111	BITUMINOUS TACK COAT	TON	282	\$450.00	\$126,945
4040116	APPLY BITUMINOUS TACK COAT	HOUR	476	\$150.00	\$71,400
4040125	FOG COAT	TON	52	\$500.00	\$25,850
4040163	BLOTTER MATERIAL	TON	155	\$40.00	\$6,216
4040264	ASPHALT BINDER (PG 64-22)	TON	5,790	\$400.00	\$2,316,000
4060028	MINERAL ADMIXTURE (FOR 3/4" MIX)	TON	1,045	\$90.00	\$94,050
4140040	ASPHALTIC CONCRETE FRICTION COURSE (ASPHALT-RUBBER)	TON	9,429	\$40.00	\$377,160
4140042	ASPHALT RUBBER MATERIAL (FOR AR-ACFC)	TON	849	\$600.00	\$509,400
4140044	MINERAL ADMIXTURE (FOR AR-ACFC)	TON	86	\$90.00	\$7,740
4160004	ASPHALTIC CONCRETE (3/4" MIX) (END PRODUCT) (SPECIAL MIX)	TON	110,285	\$35.00	\$3,859,975
5010011	PIPE, CORRUGATED METAL, 24"	L.FT.	342	\$75.00	\$25,650
5010017	PIPE, CORRUGATED METAL, 30"	L.FT.	504	\$95.00	\$47,980
5010025	PIPE, CORRUGATED METAL, 36"	LFT.	96	\$120.00	\$11,520
5010035	PIPE, CORRUGATED METAL, 48"	L.FT.	110	\$180.00	\$19,800
5014024	FLARED END SECTION, 24" (C-13.25)	EACH	4	\$500.00	\$2,000
5014030	FLARED END SECTION, 30 ^e (C-13.25)	EACH	8	\$500.00	\$4,000
5014036	FLARED END SECTION, 36" (C-13.25)	EACH	2	\$700.00	\$1,400
6010002	STRUCTURAL CONCRETE (CLASS S) (F'C = 3,000)	CU.YD.	18,905	\$300.00	\$5,671,500
6010508	NEW BRIDGES (BLACK HILLS & SNYDER HILLS)	L.SUM	1	\$2,655,000.00	\$2,655,000
6010601	BRIDGE MODIFICATION	L.SUM	1	\$137,000.00	\$137,000
6011130	F-SHAPE BRIDGE CONCRETE BARRIER AND TRANSITION (32 INCH)	L.FT.	656	\$90.00	\$59,040
6050003	REINFORCING STEEL (CULVERTS & HEADWALLS)	LB.	2,631,100	\$0.75	\$1,973,325
7015042	TEMPORARY PAINTED MARKING (STRIPE)	L.FT.	291,000	\$0.10	\$29,100
7030022	DELINEATOR (FLEXIBLE) (SINGLE WHITE OR SINGLE YELLOW)	EACH	200	\$40.00	\$8,000
7060001	PAVEMENT MARKER, RAISED (REFLECTIVE)	EACH	3,310	\$4.00	\$13,240
7080021	PERMANENT PAVEMENT MARKING (PAINTED) (WHITE OR YELLOW)	L.FT.	291,000	\$0.10	\$29,100
7330630	REMOVE TRAFFIC SIGNALS	LSUM	1	\$50,000.00	\$50,000

Arizona Department of Transportation Estimated Engineering Construction Cost

Itemized Estimate

Project Number: 086 PM 156 H6806 01C

Location: SANDARIO ROAD - KINNEY ROAD

Version: FINAL DESIGN CONCEPT REPORT

R/W Mainline (76.35 acres) Drainage Easements (51.81 acres)

Utility Relocation Environmental Mitigation

Alternative: B

ALTERNATIVE B

733X001	TRAFFIC SIGNAL (VALENCIA RD, SAN JOAQUIN, CAMINO	EACH	6	\$250,000.00	\$1,500,000
8050003	SEEDING (CLASS II)	ACRE	105	\$3.000.00	\$213 500
0000000			38 200	\$2.00	\$117.000
0050001	CHADD DAIL W DEAM SINGLE FACE		2 200	\$3.00 \$20.00	\$117,300
9050001	CONSTRUCT CHARD DAIL TERMINAL FROM SALVAGE	EACH	2,300	\$20.00	\$40,000
9030090		EACH	2.450	\$1,000.00	
9080031	CONCRETE CORB (C-05.10) (TTPE G)	L.r.I.	3,450	\$20.00	\$09,000
9120002	SHOTCHETE (Bank Protection for Channels & Dikes)	SQ.YD.	14,405	50.00	\$720,250
9240050	MISCELLANEOUS WORK (Signing)	L.SUM	1	\$237,000.00	\$237,000
928X001	RUMBLE STHIP (8-INCH) (MEDIAN SIDE)		94,470	\$0.20	\$18,894
			ALTERNATI	VE B SUBTOTAL	\$31,821,922
934XX01	MISCELLANEOUS WORK (15%)	COST	15%		\$4,773,288
				SUBTOTAL	\$36,595,211
207XX01	DUST PALLIATIVE (1%)	COST	1%		\$365,952
209XX01	FURNISH WATER (1%)	COST	1%		\$365,952
701XX01	MAINTENANCE AND PROTECTION OF TRAFFIC (10%)	COST	10%		\$3,659,521
810XX01	EROSION CONTROL AND POLLUTION PREVENTION (1%)	COST	1%		\$365,952
924XX02	CONTRACTOR QUALITY CONTROL (2%)	COST	2%		\$731,904
925XX01	CONSTRUCTION SURVEYING AND LAYOUT (2%)	COST	2%		\$731,904
				SUBTOTAL	\$42,816,397
901XX01	MOBILIZATION (10%)	COST	10%		\$4,281,640
				SUBTOTAL	\$47,098,036
	CONTINGENCIES (5%)	Cost	5%		\$2,354,902
	CONSTRUCTION ENGINEERING	COST	15%		\$7,064,705
407X006	AR-ACFC SMOOTHNESS INCENTIVE	LANE	17	\$7,000.00	\$122,150
414X001	AR-ACFC SMOOTHNESS INCENTIVE	LANE	21	\$11,000.00	\$227,700
417X002	AC (END PRODUCT) (SHRP) MATERIAL QUALITY INCENTIVE	TON	110,285	\$3.00	\$330,855
951X010	INDIRECT COST ALLOCATION	COST	5.19%		\$2,444,388
				Alternative B	\$59,642,736
OTHER	COST				
			I.		
	DESIGN	COST	8%		\$4,771,400

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	COST	8%	· · · · ·	\$4,771,400
	L.SUM	1	\$2,560,000.00	\$2,560,000
-	L.SUM	1	\$1,498,000.00	\$1,498,000
	L.SUM	1	\$1,200,000.00	\$1,200,000
	L.SUM	1	\$800,000.00	\$800,000
-	and the second second		OTHER COST	\$10,829,000

nary	
Section	Total
Alternative B	\$59,643,000
OTHER COST	\$10,829,000
Total Project Cost	\$70,472,000







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SR 86 TYPICAL SECTION 6-LANE Alternative B WB Sta 1084+00 to 1098+86 (MP 165.76 to MP 166.05)

> Note: See sheet of th



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FOR ESTIMATING PURPOSES ONLY PROJECT NO. 086 P:\w/x/14400/2000 - SR 85 Valencia Rd - Kinney Rd\700CADD\702CIVIL\702ADUN\744ctyp03-B.dgn

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	SANDARIO RD TO KINNEY RD				OF	
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NAME RCC SR	04-10 04-10 04-10	DEPARTMENT OF TRANSF MODAL TRANSPORTATION	PORTATION DIVISION	CONCEPTUAL STUDY ONLY
	04-10 STA	ALTERNATIVE B 1021+00 TO STA 10 164.57 TO MP 16	048+00 5.08	PRELIMINARY NOT FOR CONSTRUCTION
LOCATION	SANDARIO R	D TO KINNEY RD		OR RECORDING SHEET OF
T NO. 0	86 PM 156 H680	6 01L		<u>B-16</u>







(403) CURVE DATA MONTE Westbound SR 86 SEYMOUR PI 1122+17.88 Main Curve A = 1º18'40" Rt D = 0°30'00" R = 1459.16' 1125 48.99 000 L = 262.22' J = 131.11' 1 60 Ext = 0.75' Super = NC End SR 86 WB Construction Sta 1123+48.99 SADOF D N 71º36'44" E End Auxillary Lane Taper Construction SR 86 EB Sta 1126+50.08 MP 166.58 M25 \bigcirc 2620 PI 1124+13.75 Elev 2595.83 2600 2580 2560 1125 2620 2600 2580 1125 1130 ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION CONCEPTUAL STUDY ONLY 04 PREL IMINARY ALTERNATIVE B STA 1102+00 TO STA 1123+49 MP 166.09 TO MP 166.24 NOT FOR JACOBS CONSTRUCTION OR RECORDING SANDARIO RD TO KINNEY RD SHEET OF PROJECT NO. 086 PM 156 H6806 01L <u>B-19</u>

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APPENDIX D SUMMARY OF COMMENTS INITIAL DESIGN CONCEPT REPORT

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SR 86; Sandario Road to Kinney Road Initial Design Concept Report Project No. 086 PM 156 H6806 01C Response to Initial DCR Comments

- CODE A Will Comply B Consultant/Designer to Evaluate C ADOT Team to Evaluate D Study Team Recommends No Further Action

October 2008

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Section	Kevlewer	#	Pg/Sec. No.	Co	Comment	Kesponse
ADOT Mats. Pave. Des. Section	Paul Burch				No response	
ADOT Mats. Geotech. Ops. Sec.	J. J. Liu				No response	
ADOT, Maint. Grp., Natural Res. Sec.	Bruce Eilerts				No response	
ADOT Prog. & Proj. Mamt. Sec.	Hari Khanna				No response	
ADOT, Env. Planning Group	Thor Anderson				See comments from Karen Whitlock on page 22.	
ADOT, Roadside Develop.	Leroy Brady				No response	
ADOT Mats. Geotech. Des. Section	Jim Wilson				No response	
ADOT Right-of- Wav Group	Pete Mayne				No response	
ADOT Br. Des. Service	Pe-Shen Yang				No response	
ADOT AZ Trans. Res. Center	Estomih Kombe				No response	
ADOT Priority Prog.	Debbie Mayfield				No response	
ADOT Utility & RR Engr.	Bruce Vana				No response	
ADOT Photogram. & Mapping	Chong-Tai Chyan				No response	
ADOT Contr. & Snecs	Barry Crockett				No response	
ADOT Rdwy. Engr. Groun	Mary Viparina				No response	
AGs Office Transpor- tation Sec	Karen Williams				No response	
ADOT Drainage Engineer	Shajed Haque	-	NA	۷	I have observed provision for culverts under many local streets and Turn Outs were not made. Please consider provision for culverts (possibly small pipes), as needed.	Agree. Will show culverts where needed under turnouts and intersections.
ADOT Traf. HES Section	Bert Neptune				No response	
ADOT Proj. Man., SPMG	Steve Wilson	-	 	۲	Executive Summary: First paragraph 2008 – 2012 ADOT Five Year Transportation Facilities Construction Program. Add 2012.	Agree. Will add.
		2	Fg. ï	۷	Need for the Project: Paragraph 4, change funding amount from \$1600K to 4600K for STAN.	Will change amount.
		ю 	i≣ Bi A	۲	Table 1: Coordinate with Tucson District on available funding. PAG funding has increased to \$48M and may go higher based on what is needed to extend Segment 2 to Valencia Rd. Or possible Airport Rd. Project limits between Segment 1 and 2 will change based on available funding.	Will coordinate with the Tucson District and modify Segment limits accordingly.
	- - -	4	i≣ Bi	A, D	Last paragraph for Preferred Alternative: Determine prior rights and utility relocation costs for project. Include costs in project totals.	Utility Companies have been asked to provide a "ballpark" estimate of relocation costs for their facilities (Primarily where ADOT is widening R/W and impacting utility lines). The Utility Companies have been asked to substantiate any claims they have for prior rights.
		с С	Pg. 1	۲	General Comment: Mention recent ADOT TPD efforts for SR 86 Corridor. Coordinate DCR with their planning documents.	Will include reference and document the coordination.
		O	Pg. 1	۲	General Comment: Identify the need to scope future SR 86 improvements between Kinney Rd. and I-19.	Will include statement regarding need for improvements between Kinney Road and I-19 based on traffic projections for SR 86 from Kinney Rd. to the east.
		~	Pg. 1, Sec 1.1	۲	Forward: Paragraph 6, Add Central Arizona Project (CAP) to the list of governmental agencies.	Will add CAP.
		α	Pg. 4, Sec. 1.3.4	۲	Change \$1600 to \$4600 for STAN.	Will change amount.

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8 86; Sand tital Design oject No. 0 esponse tu	rrio Road to Kir Concept Repo 86 PM 156 H680 D Initial DCR C	1 ney F 7 05 010 26 010	Road C nents		CODE A Will Com B Consulta C ADOT Te D Study Te	ply nt/Designer to Evaluate am Recommends No Further Action October 2008
ection	Reviewer	#	Pg/Sec. No.	ode	Comment	Response
0T Proj. n, SPMG n't)	Steve Wilson (con't)	თ	Pg. 6, Sec. 1.4.2	<	Development and Access ICO's; Discuss the impacts of having many closely spaced driveways to the operations of the highway. Discuss the need for having Parking Area Access Lanes (PAAL's) and reciprocal access agreements in place at the time permits are issued. Discuss right-in and right-out access modifications with this project and why it is safer than having a TWLTL. See TPD's website for statistics on why a u-turn is preferred as traffic volumes increase. Need to justify changes in access with this report.	Will include reference for a need for access control in the ICO's. However, it would seem appropriate to discuss the details of access control in Section 6.0 Access Management Plan. Will add information from the TPD Benefits Brochure to Section 6.
		10	Pg. 7	۲	Traffic Analysis: Paragraphs 5, 7 and 8; Postvale Rd. intersection should be designed to convert to signalization with a minimal amount of cost. Revise paragraphs 5, 7 and 9 accordingly and change design. See Plan Sheet C-3 comments.	The current use of Postvale Rd. is quite light because it only serves a few residences. The need to improve the intersection will come from developers of property to the south, and possibly to the north of SR 86. A statement will be included advising that the likelihood of development in the area should be reviewed during final design. If development is imminent the
		F	Pg. 10/11	۲	LOS of SR 86 Intersections with Improvements: Paragraph 4, State what the LOS requirement is for signalized intersections. Minimum LOS D for turning movements and LOS C for through movements?	developer(s) should fund the improvements. The ADOT Traffic Engineering Policies, Guidelines, and Procedures states that in urban areas with population over 50,000, LOS D is acceptable. That is the LOS for the total intersection. LOS requirements will be added to the FDCR text.
		5	Pg. 10		LOS of SR 86 Intersections with Improvements: Paragraph 2, Analyze Postvale Rd./SR 86 intersection.	The project limits were extended to include the Postvale Rd. intersection after the aerial mapping and the Traffic Report for the project were completed. From field visits, traffic on Postvale Road is very light. It serves only a few residential units, and doesn't connect to any other traffic generators. At some point in the future development of the areas to the south and north of SR 86 is likely. The preferred alternative does not require any changes to the existing intersection because the new roadway would be constructed on the south side of the existing roadway. It appears that the intersection will function satisfactorily where it is now, and when development of adjacent area occurs the developers would have the responsibility of improving the intersection of Postvale Rd. and SR 86.
		13	Pg. 10	۵	LOS of SR 86 Intersections with Improvements: Clearly state which intersections met warrants for signalization. Clarify which year the warrants were met - 2007 or 2030?	Warrants for signalization are generally based on existing conditions. Conducting the warrant study during Final Design places the traffic used to determine warrants closer to the time the project will be constructed and is usually a better indication of the warranting conditions. Recommend the warrants for signalization be developed as part of Final Design.
		4	Pg. 10	٥	LOS of SR 86 Intersections with Improvements: LOS B in 2030 is shown in Table 2-8 for WB SR 86 to NB Kinney Rd. Do we need a dual right? Justify this conclusion in text of this section. Does this depend on traffic being assigned to future County road connecting Kinney Rd to Camino De Oeste Rd. There will be considerable discussion in the future on the need for a dual right at this location. Clarify assumptions made in the traffic modeling regarding the future County Rd. Same for AM peak for SB Kinney Rd. How much SB Kinney Rd. traffic was assigned to future County Rd?	The dual right turn lane is included because the ADOT Regional Traffic Engineer directed that it be used. He expressed concern with when the County would have the bypass roadway constructed. The traffic Report assigns 75% of the turning movements to the future county bypass road. This was based on an analysis and recommendations prepared by Curtis Lueck & Associates for PCDOT.
		15	Pg. 10	۵	LOS of SR 86 Intersections with Improvements: Add a right turn NB at Sunset Dr. Table 2-8 shows LOS F for this movement in the AM peak hour. There is R/W for an exclusive right turn lane.	The right turn is LOS A. The left turn is LOS F. The design concept shows a dual left turn lane already. Overall, the intersection operates at LOS D for the am peak hour. It appears additional County road connections will be needed to provide alternate routes for traffic from Sunset Blvd.
		9	Pg. 10	۵	LOS of SR 86 Intersections with Improvements: Left turns from WB SR 86 to Camino Verde Rd. is shown to be LOS E in the AM peak. Verify this is correct?	The table in the DCR agrees with the Traffic Report. The overall LOS for the intersection is C for the AM peak hour. The Traffic Report showed that additional through lanes of SR 86 – three through lanes both eastbound and westbound will improve Lt. Turn LOS to C. Capacity improvements to SR 86 will be made at a later date and is not part of the current work effort.
		17	Pg. 10	Ω	LOS of SR 86 Intersections with Improvements: Left turns from EB SR 86 to Kinney Rd. is shown to be LOS D in the AM peak. Verify this is correct?	The table in the DCR agrees with the analysis in the Traffic Report.
		18	Pg. 10	۲	LOS of SR 86 Mainline with Improvements: Paragraphs 1 and 2; Clarify that a six-lane divided highway is needed from Sunset Dr. to Kinney Rd.	Will add statement to text and will update Table 2-9.
		19	Pg. 11		LOS of SR 86 Intersections with Improvements: Last paragraph; Do the LOS's shown in Table 2-8	The note below Table 2-8 states the By-Pass road is in place.

SR 86; Sandi Initial Design Project No. 0 Response ti	ario Road to K n Concept Rep 86 PM 156 H6 o Initial DCR	Comr	Road C nents		CODE A Will Com B Consulta C ADOT Te D Study Te	ply nt/Designer to Evaluate sam to Evaluate am Recommends No Further Action
				ə		October 2008
Section	Reviewer	#	Pg/Sec. No.	Cod	Comment	Response
ADOT Proj. Man, SPMG (con't)	Steve Wilsor (con't)				assume By-Pass Rd is in place? If not, clarify this in the text.	
		50	Pg. 11	<	Figure 2-2: Add per million vehicle miles (mvm) to the Accident Rate label shown on the ordinate of Figure 2-2.	Will add to Figure 2-2.
		21	Pg. 12	۲	Conclusions: Paragraph 4; revise to read "six-lane highway with three lanes in each direction from Sunset Dr. to Kinney Rd."	Will revise text to state there will be three lanes eastbound from Sunset Dr. to Kinney Rd. and three lanes westbound from Sheridan Ave. to Kinney Rd.
		22	Pg. 13	۵	Introduction: Why isn't the 2004 AASHTO being referenced instead of 1990?	Per direction from ADOT Roadway Predesign Section, ADOT has not yet adopted a newer version of the AASHTO Policy on Geometric Design of Highways and Streets.
		53	Pg. 15	۲	Section 4.1: Paragraph 4; Clarify that Valencia Rd is a parallel route for SR 86; however, Valencia Rd. would not be adequate to handle traffic if SR 86 was closed.	Will reword text to clarify.
		24	Pg. 15	٥	Evaluation Criteria: Suggest adding compliance to ADOT's Access Management Strategy to the list of evaluation criteria.	Compliance with ADOT's Access Management Strategy will be a standard procedure and will not be considered an evaluation criterion.
		25	Pg. 15	۲	Typical Sections and Intersection Layouts: revise to read "additional through-traffic lanes at signalized intersections at Sunset Dr. and Kinney Rd."	Will revise wording to include Kinney Rd. Sunset Blvd. does not have additional through lanes.
		56	ප. 15 15	<	Typical Sections and Intersection Layouts: Explain why 74 feet from EB centerline to WB centerline is necessary. Justify why the RDG is not being followed.	Will provide the reasoning for using 74' separation between roadways in the Final DCR. Adding an additional lane in each direction in the median will require 2-12-ft lanes and 2-10-shoulders. With a 2-ft wide barrier that adds up to 46-ft., which is the median width provided by a 70-ft separation as called for in the RDG. Increasing the separation to 50-ft. provides an additional 2-ft shy distance to the barrier. The project team determined early in the study that the 50- ft median should be used on this project.
		27	Pg. 16 Pg. 16	۷ ۲	Alternative A: Paragraph 6; Explain why we are not including the AR-ACFC with the Design/Build project. Affects striping also on Alt's A, B and C. Table 4-1: Add Utility impacts to Design Evaluation	Will add reasoning for constructing all AR-ACFC after SR 86 is widened. Will contact Utility Companies and request a "ballpark"
)		Criteria and provide an evaluation for each alternative.	estimate of relocation costs for their facilities.
		58	Р. 9. 19	O	Threatened or Endangered Species: Pima Pineapple Cactus; Provide written supporting documentation from USFWS mandating the purchase of PPC habitat as a mitigation for this project. Clarify the number of PPC's to be relocated or protected.	Formal consultation on the proposed improvements to SR 86 between Sandario Road and Kinney Road has been concluded and was signed by Jason M. Douglas for Steven L. Spangle, Field Supervisor for the USFWS, Arizona Ecological Services Field Office. The final consultation was sent to Mr. Robert Hollis, Division Administrator, U.S. Department of Transportation, Federal Highway Administration with a stamped date of July 02, 2008. The formal consultation will be referenced in the Final DCR.
						The biological opinion (BO) lists actions that the applicant must take. The determination indicates the loss of at least one to two PPC and 60.77 acres of habitat, as well as the long-term temporary alteration of 81.23 acres of habitat, comprise less than one percent of the known population and extant suitable habitat.
		30	Pg. 21	٩	Summary and Conclusions: Clarify that a six-lane	Will revise text to add reference to three lanes

exit to add reference to three lanes rom Sunset Blvd. to Kinney Rd. and three ound from Sheridan Ave. to Kinney Rd. terment about adverse effect on the Pima factus habitat. The formal consultation on indicates that at least one to two PPC Section 101.1 of the ADOT RDG, the ed and the posted speed are independent at a mod way and geometric parameters for the highway. Speed will be determined based on the criteria for a Fringe Urban Roadway and geometric parameters for the highway. Speed will be determined based on the characteristics of the highway, using the ile speed of traffic to establish the posted atement relative to the establishment of a will be included.
Will revise to will revise to eastbound f lanes westb Will add stat Will add stat beterminatio determinatio determinatio determinatio determinatio design spee of each othe ADOT RDG establishes The posted spee Section 7 will Section 7 will separation the separation the section the separation the section the separation the section the separation the section the s
Summary and Conclusions: Clarify that a six-lane section is required from Sunset Dr. to Kinney Rd. Summary and Conclusions: Clarify that PPC habitat is adversely affected and that only three PPC's are actually affected. Design Controls: Why is the Design Speed less than the posted speed? Add a discussion on the proposed posted speed for different sections of highway. Access, Management of Access: See Section "7" should be revised to "8". Right-of-Way: Paragraph 3; "70" feet should be "74" feet between divided roadways.
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Pg. 21 Pg. 23 Pg. 23 Pg. 23 Pg. 23 Pg. 24 Pg
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October 2008

Section	Reviewer	#	Pg/Sec. No.	ode	Comment	Response
ADOT Proj. Man, SPMG (con't)	Steve Wilson (con't)	35	Pg. 24	D	Drainage Requirements: Discuss impacts to FEMA floodplain limits. Discuss need for Letter of Map Revision (LOMR), if applicable.	width at 76-ft. Will include statement about much of project being located in a floodplain. Will also state that ADOT may want to consider preparing a Conditional LOMR.
		36	Pg. 27	۷	Maintenance of Traffic During Construction: Paragraph 3; Section "7" should be "8".	Agree. Will change in Final DCR.
		37	Pg. 28	A, D	Utilities: Determine prior rights and utility relocation costs for project. Include costs in project totals.	Utility owners will be provided the Initial DCR and asked to review and comment. Meetings will be held with Utility owners to discuss issues. They will be asked to provide documentation for any prior rights they claim. For the FDCR the Utility owners will be asked for estimated costs of utility relocations, and the information will be included in the estimated project costs.
		88	Pg. 29	۵	Structures: Develop General Plans for the bridge structures.	Section 5.6.4 Drainage Requirements of the Initial DCR states that the hydraulic analysis for this project is preliminary. A Final Hydraulic analysis for this project for Final Design. The preliminary hydraulic analysis identifies the length of bridges required for the new roadway and the length of a supplemental bridge for Black Hills Wash. Channel improvement at the Snyder Hill Wash Bridge is also identified. The profile grade of the existing roadway is used for the preliminary analysis since the existing bridges are identified to remain. However, since a Final Hydraulic Study is needed, further refinement of the bridges for both washes would be done after the Final Design. General Plans for each bridge will be developed during final design.
		30	Pg. 30	٩	Access Management Plan: Discuss ADOT's Access Category System, Characteristics and Standards. SR 86 from Sandario Rd. to Kinney is designated as a Major Regional (MR) highway. See attached Draft Access Category System dated February 7, 2007. Same as Comment 9.	Will include discussion of ADOT's Draft Access Category System.
		40	Pg. 31	A	Local road Intersections: Redesign Postvale Rd intersection with SR 86 to accommodate future traffic demands.	As agreed in recent discussions, Postvale Rd. will be realigned by future development in the area.
		41	Pg. 32	A	Aviator Lane: Revise to right-in and right-out. No signalization.	Agree. Will change in Final DCR.
		42	Pg. 32	۷	Airfield Dr.: Airfield Dr. is to become the main entrance to Ryan Airfield. The intersection will become signalized with all movements provided.	Agree. Will change in Final DCR.
		4 43	Pg. 32 Pa. 34	۵ ک	Valencia Rd: Coordinate with Castro Engineering on new alignment of Valencia Rd. Alternate E is the preferred alignment for Valencia Rd. from the DCR being developed by PCDOT/Castro Engr. Sunset Blvd: Add right turn lane NB on Sunset	Will coordinate with Castro Engineering. SR 86 DCR will show the intersection of SR 86 and Valencia to the southerly SR 86 R/W line. Realignment of Valencia will be done by others. LOS of NB right turn is A. LOS of left turn is F. See
		45	Pg. 35	۲	Blvd. LOS F in the AM peak is not acceptable. Median Crossovers for U-Turns: Revise the proposed locations of the median crossovers at MP 161.0 and MP 161.9 based on new location of	response to Comment 15. Will revise median crossovers based on new location for intersection of SR 86 and Valencia Rd.
		46	Pg. 36	٩	Valencia Hd. Turnout at MP 159.6.: Coordinate with the Tucson District, Regional Traffic, TIAA and Castro Engineering to identify disposition of the turnout under ADOT Permit 78533F.	Will coordinate and revise as necessary.
¢		47	Ъ <u>д</u> . 39	۲	Itemized Estimate: Delete "Median Cable Barrier" from project.	Discussion with District personnel indicates the District does not want median barrier. A check with the Roadway Design Section concurs that median barrier is not required. Therefore, median barrier will not be included.
	×	48	Pg. 40	٩	Estimate Summary — Preferred Alternative: Revise Table 7-1 to extend westerly limit of Segment 2. Coordinate with Tucson District on available funding. PAG funding has increased to \$48M and may go higher based on what is needed to extend Segment 2 to Valencia Rd or possibly Airport Rd. Project limits between Segment 1 and 2 will change based on available funding. Same as comment 3.	Will revise Segment limits and estimated costs of Segments. Will get direction from District on appropriate limits of each segment. Will also discuss funding of the segments with the District.
		49	Pg. 40	۲	Estimate Summary — Preferred Alternative: Provide a breakdown of how the \$1,000,000 dollars for environmental mitigation was achieved.	The \$1,000,000 amount was estimated at the Initial DCR stage. Subsequent to that, there were e-mail discussions between Laura Nordan, Justin White, Melissa Maiefski, Steve Wilson, Danny Granillo, Billah Khan and Greg Gentsch. The amount required for environmental mitigation will reduce substantially. It

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SR 86; Sandario Road to Kinney Road Initial Design Concept Report Project No. 086 PM 156 H6806 01C Response to Initial DCR Comments

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October 2008

Section	Reviewer	#	Pg/Sec. No.	sboD	Comment	Response
ADOT Proj. Man, SPMG	Steve Wilson (con't)					will be based on an area of 60.77 acres and a cost per acre of \$5,500 per acre. However, the cost per acre
(2011)		50	Pg. 41	۲	Itemized Estimate: Add utility relocation costs to Alternative C.	could escalate over time. Will add estimated costs when obtained from the Utility owners.
		51	Pg. 44	۲	Implementation Plan: Revise plan to agree with new westerly limit for Segment 2.	Agree.
		52	Sht. TC-1 to TC-3	۲	Typical Section: Show earth dike at R/W where appropriate.	Will add the existing dikes to the typical sections. The location of the dikes will probably change to accommodate an ultimate SR 86 roadway
		53	Sht. TC 1 to TC-3	٩	Typical Section: Show fence at R/W where appropriate.	configuration. Will add.
		54	Sht. TC-2	۵	Typical Section: Why is a 6' inside shoulder proposed WB and EB at certain locations? The standard width is 4' per the RDG.	Agree that the standard inside shoulder width for a 2- lane divided highway is 4-ft., with a total directional roadway width of 38-ft. ($4'-12'-12'$ 10'). The 6-ft inside shoulder occurs where the existing 40-ft. roadway is used for one direction of travel. The existing roadway will be re-striped to 6'-12'-12'-10' = 40'. See Curt Liton comment #20 on page 18.
		55	Sht. C-1 - C-8	۵	Roadway Plan and Profile: Earthen dike is shown to have gaps which appear to let water into the R/W. Evaluate the effectiveness of proposed dike locations.	The dikes are not intended to keep water out of the R/W. They are located on the upstream side of SR 86 and are intended to direct the water to culverts under SR 86 where the water will continue to flow through the drainage area. The locations of dikes reflect the intent.
		56	Sht. C-3	٩	Roadway Plan and Profile: Realign Postvale Rd to the east to correct high skew angle at SR 86 intersection.	As agreed in recent discussions, Postvale Rd. will be realigned by future development in the area.
		57	Sht. C-7	۲	Roadway Plan and Profile: Show Airport Dr as signalized. Coordinate proposed designs with the TIAA and ADOT Regional Traffic.	Will revise Airport Drive. Will coordinate proposed designs.
		58	Sht. C-7	<	Roadway Plan and Profile: Revise Aviator Lane to right in and right out only.	Will revise Aviator Lane to right-in, right-out.
		59	Sht. C-7	۲	Roadway Plan and Profile: Coordinate with the Tucson District, Regional Traffic, TIAA and Castro Engineering to identify disposition of the turnout under ADOT Permit 78533F.	Will coordinate and revise as required.
		60	Sht. C-8	۲	Roadway Plan and Profile: Coordinate with Castro Engineering on new alignment of Valencia Rd. Alternate E is the preferred alignment for Valencia Rd. from the DCR being developed by PCDOT/Castro Engr. Same as comment 43.	Will revise to match changes in local roads related to Comments 43, 45 & 46.
		6	Sht. C-8 - C-16	۲	Roadway Plan and Profile: Show limits of fill for WB SR 86.	Cut and fill lines are shown for the roadway(s) being constructed. Where limits of fill are not shown for the WB roadway, the existing roadway is the westbound roadway and there is no widening. Through this area limits of fill are shown for the EB roadway which is being newly constructed.
		62	Sht. C-20	٩	Roadway Plan and Profile: Show access to Reay's Ranch Investor's property. Will this property be a full take?	Will show access on the plans. The turnout is called out to be reconstructed. The parcel is not a total take.
		83	Sht. C-20	۲	Roadway Plan and Profile: Identify CAP facility.	Will show on plan sheet.
		64	Sht. C-22	۵	Roadway Plan and Profile: Add right turn lane NB for Sunset Dr.	The LOS problem is with the left turn movement. See response to Comment 15.
		65	Sht. C-27	۲	Roadway Plan and Profile: Coordinate changes to access with PCDOT for Ajo/Kinney Design Build project.	Agree. Ongoing coordination will continue.
ADOT Rdwy Design Reviewer	Lev Derzhavets				No response	
ADOT, Communicat ions & Community Partnerships	Sally Stewart				No response	
ADOT So. Regional Tr. Engr.	Reza Karimvand				No response	
ADOT Traffic Design	Curt Litin		Pg. ii and 3	۷	In the "Need for the Project" section, would it be worthwhile to indicate specifically communities like Sells and/or Ajo, etc. (instead of "the sparsely populated areas in south-central Arizona"), and Rocky Point (Mexico), which I suspect are more	Will reword to add Sells and Ajo.
		N	Pg. iii	۲	significant than Sasabe (on SR 286)? The first paragraph addresses MP 157.29 to approximately 160.1, but doesn't address the	The section from MP 156.88 to MP 157.29 is a transition from the 2-lane roadway to the west to the

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Section	Reviewer	#	Pg/Sec. No.	ode	Comment	Response
ADOT Traffic Design	Curt Litin (con't)				segment of SR 86 between MP 156.88 – MP 157.21. If this segment is a transition, please indicate this.	4-lane divided roadway to the east. Will include wording to indicate the transition.
(con't)	,	m	¥ Z	۵	Why don't our study limits include the SR 86/Sandario Rd, intersection? Is there a separate project planned for this intersection?	The current study started with the westerly limits being Valencia Road. The limits were extended during the Scoping phase to include Ryan Airfield and a logical terminus was at Continental Road. Coordination with Pima County indicated that the area south of SR 86 is undergoing development from Valencia Road westerly through Postvale Road and extension of the 4-laning of SR 86 to include the near term development was included in the project.
						The improvement of SR 86 to 4-lanes to the west of Sandario Road will be necessary as the urban area expands. However, that will be done as a separate
		4	Sht. iv	۵	On sheet iv/Implementation Plan, what is the significance of Postvale Rd. since the four-lane divided roadway extends westward beyond Postvale Rd?	The significance of Postvale Road as used in the referenced text is that it is the most westerly intersection to be improved to a 4-lane divided highway as part of this section of SR 86. The west end of the Sahuarito Pass development is located ¼-mile east of Postvale Rd.
		വ	Pg. 7, Sec. 2.1.1	۲	In Existing Conditions, the first paragraph seems to indicate the section of SR 86 between Aviator Lane and Valencia Rd. has "reduced-width" shoulders (less than 8-ft., such as 2 – 4 ft.). I thought one of our projects from a couple of years ago added shoulders at three locations, including the section of SR 86 by Ryan Field. Please verify the shoulder widths on SR 86 by Ryan Field.	The existing shoulders on SR 86 along Ryan Airfield are 8-ft. wide except along the right-turn lane approaching Valencia Road. The text will be clarified.
		φ	Pg. 7, Sec. 2.1.1	۵	Will this report be amended to revise the last statement in the second paragraph under Subsection 2.1.1 (and elsewhere) to provide an update on the traffic signal at SR 86 and Camino Verde? I suspect the traffic signal installation will be complete by the time this scoping document is complete.	When the Final DCR is prepared it will be updated as necessary to reflect changes made between the time the Initial DCR was prepared and the Final DCR.
		~	Pg. 7, Sec.	A, D	What is the "posted design speed"? There are the posted speed(s) and the design speed(s), but the design speed(s), but the	The reference to posted design speed will be changed to posted speed.
					uesign speed inequality unless norm the posted speed. I think the design speed should be at least 5 MH over the intended posted speed (at least 60 MPH in the posted 65 MPH section, but at least 70 MPH in the posted 65 MPH section).	The ADOT RDG, Chapter 100, indicates that design speed and posted speed are independent of each other. Through the easterly half of the study area SR 86 is currently classified as an Urban Minor Arterial. In the early stages of the study the ADOT District and Roadway Predesign Section determined that, because of development that is currently underway and because of projections that show the traffic volumes more than doubling in the next 25-years, the entire study area should be considered as Fringe- Urban. The design speed used for the entire study area is 60 mph, which is consistent with the ADOT RDG for a Fringe Urban Highway.
÷		ω	Pg. 8, Sec.2.1.2	۵	Last Paragraph: did you verify a negligible volume of traffic travels west of Ryan Field (Valencia Rd.) instead of east of Ryan Field so airport traffic would not account for the significantly higher traffic volumes just west of Valencia Rd. as compared to the volumes just east of Valencia Rd. at the rease to the trank rank of the reasen for the different volumes on SR 86 west – as opposed to east – of Valencia Rd./Ryan Field?	Traffic counts taken as part of the SR 86 Traffic Analysis Study: Kinney Road to Continental Road, Feb. 2007, show that less than 5% of the traffic on SR 86 is in or out of the two access points to Ryan Airfield. Traffic to and from Ryan Airfield is quite light during both AM and PM peak hours. Approximately 25% of the traffic utilized Valencia Road at the SR 86/Valencia Rd. intersection.
		<u></u> თ	Pa. 8,	<	Were the existing signal timing data really received	The SR 86 Traffic Analysis Report indicates that

Ily received The SR 86 Traffic Analysis Report indicates the up" or from signal timing data was received from the "Traffi tions"? Engineering Operations Group at ADOT". The wording in the DCR text will be modified to use wording rather than "ADOT Traffic Engineering Group".	n in Table 2- The improvements were developed and analyzidue to the more as a system than individual components. SR 86, added through lanes add capacity and the turm or can't you at intersections add capacity. The percentage c improvement with each element was not determ	h as Agree with removing the median-side accelerat he lane from the Postvale Road Intersection becau s. Justify crossroad traffic volume is low and there are no em. Typically, generators along Postvale Road that will result anes. predominance of truck traffic.	At Continental Road the current crossroad traffi volume is too low to warrant a traffic signal until sometime in the future when development on th south side of SR 86 may result in extending Continental Road to the south of SR 86 and inc
Were the existing signal timing data reall from the ADOT "Traffic Engineering Grou "Baja"/"Southern Regional Traffic Operat	Are the improved levels of service showr 5 and the underlying sentence primarily or added through lane in each direction of S additional turn lanes, or something else, tell?	At the top of page 9 and elsewhere (such subsection 2.1.7 on page 10), I question proposed median-side acceleration lanes them (to my satisfaction) or eliminate the I strongly oppose left-side acceleration la	
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Pg. 8 Sec. 2.1.4	Pg. 8, Sec. 2.1.5	Pg. 9, Sec. 2.1.5	
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October 2008

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Response	the traffic volume. Recent development information for Sendaro Pass indicates a desire by the Developer to use the Continental Rd. intersection with SR 86 as an access point. This will require signalization. Therefore, the median-side acceleration lane will be removed at Continental Road also.	Recent changes to the County road system and the access to Ryan Airfield by the Tucson Airport Authority have resulted in this intersection becoming right in/right out. However, it appears there is a possibility that Valencia Rd. may be relocated to intersect SR 86 at Aviator Lane. If this happens, the Valencia Road traffic volumes will likely warrant a signal.	The SR 86 Traffic Analysis Study: Kinney Road to Continental Road included an analysis to determine additional mainline and intersection improvements needed for SR 86 to maintain a LOS of C throughout the corridor under 2030 traffic conditions. This scenario assumes that the proposed County Road by- pass of the SR 86/Kinney Road intersection to serve the proposed Wal-Mart development is in place.	To meet ADOT's preferred LOS C for this highway, EB SR 86 should be widened to 3-lanes from Camino Verde Road to Sunset Blvd., and WB SR 86 should be widened to 3-lanes from Sheridan Ave. through Camino Verde Road. Traffic signals would be needed at the same intersections as are shown in Table 2-8. Left-turns would be prohibited at all non-signalized intersections.	The statement at the bottom of page 10 will be deleted. Acceleration lanes are not included.	The Bridge Group has not commented on the replacement or retention of the Black Hills Wash Br. and Snyder Hill Wash Br.	Agree. Will add wording to the text to reflect this. The plans show U-turn lanes at tee intersections with median breaks.	There are no plans to contour the median to prevent illegal crossings.	Crossovers at minor unsignalized intersections were discussed and it was determined that the conflicts between traffic crossing the median and through traffic would be unacceptable. The U-turn crossovers were included at the request of both the ADOT District and Pima County to limit the amount of out-of-direction travel that would be required in areas where signalized intersections are more than a mile apart.	Including median crossovers at minor, unsignalized intersections with the traffic volumes projected for SR 86, is undesirable because they will encourage left turns from the crossroad onto SR 86. Discussion during the development of this report recommended
Comment		Amend the traffic study and /or modify this report after evaluating the LOS for a traffic signal at Aviator Lane. Don't "anticipate" the LOS in this report for something you should know by evaluation.	What would it take to improve the LOS for EB SR 86 to LOS C between Camino Verde and Kinney Rd.? We should explore reasonable measures to improve the LOS to C (signal timing and /or additional lanes).		Justify the proposed WB acceleration lanes (at the bottom of page 10) too.	Does Bridge Group support the retention of the existing Black Hills Wash and Snyder Hill Wash bridges? If they would eventually need to be replaced, it would be best to replace them as part of this project(s), especially relative to traffic control.	The "left-turn channelization" (addition of left-turn lanes) on SR 86 at all major County road intersections should include (and specify) u-turn lanes at tee intersections with median breaks.	Will the median be contoured to preclude vehicles from illegally crossing the median across from minor local road intersections ("right-in/right-out" intersections)?	I strongly object to installing "automatic crossovers" at half-mile intervals. We will need to work on locations for appropriate crossovers, if any would be justified, away from major intersections. Perhaps some of the minor roadway should have crossovers.	
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Pg/Sec. No.		Pg. 10, Table 2-8	Pg. 10, Table 2-9		Pg. 10, Sec. 2.1.7	Pg. 14, Sec. 3.10	Pg. 15, Sec. 4.1.2	AN	Pg. 15, Sec. 4.1.2	
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Reviewer	Curt Litin (con't)	5								
Section	ADOT Traffic Design (con't)									

turns from the crossroad onto SR 86. Discussion during the development of this report recommended making all unsignalized intersections right in/right out to prevent left turns from the crossroads onto SR 86. Wording in the text of the Final DCR will be adjusted to say that appropriate locations will be finalized during final design.	The paragraph will be reworded. The intent is to state that placement of AR-ACFC on SR 86 through the Kinney Road intersection to the end of this project at MP 166.58 will be included with the paving of SR 86 to the west. AR-ACFC will not be placed on Kinney Road. If the County wants AR-ACFC it would be included in their contract to reconstruct the intersection and the north and south legs of Kinney Road.	Agree. A statement will be added that outside shoulders adjacent to auxiliary lanes on SR 86 will be 4-ft. wide. An earlier comment by Steve Wilson (#54) questioned the 6-ft. shoulder width where the existing 40-ft. roadway is being retained. This comment pertains to the cases where turn lanes are being added to the existing 40-ft. roadway. The RDG Table
	Fourth full paragraph, addresses AR-ACFC on SR 86 west of Kinney Rd. What about the placement of AR-ACFC on the east leg of SR 86 and the north and south both) legs of Kinney Rd.?	Next to last paragraph, first column: Where the existing roadway(s) will be widened to add turn lanes, the 6-ft. and 10-ft. shoulders can be reduced to 4-ft. alongside those turn lanes.
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	Pg. 16. Sec. 4.2.2	Pg. 16, Sec. 4.2.2
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SR 86; Sandi Initial Desigr Project No. 0 Response ti	ario Road to ^k n Concept Re _k 86 PM 156 H6 o Initial DCR	Cinney Sort 806 01 Comn	Road C nents		CODE A Will Con B Consult C ADOT T D Study T	nply ant/Designer to Evaluate eam to Evaluate eam Recommends No Further Action October 2008
Section	Reviewer	#	Pg/Sec. No.	sboD	Comment	Response
ADOT Traffic Design (con't)	Curt Litin (con't)					302.4 allows the outside shoulder to be reduced to 4- ft. adjacent to a right-turn lane. The shoulder width at a left-turn lane on a divided highway is not addressed, but it seems reasonable, that where the inside shoulder is 6-ft wide, it could be reduced to 4-ft adjacent to a left-turn lane.
		21	Append. A, Intersect. Details	۲	On the intersection lane configuration drawings, show appropriate shoulder widths on the side road approaches – at least 2-ft. and possibly 4-ft. or more (each side), at least within the project limits.	Agree. Six-ft. paved shoulder widths on County roads will be shown in accordance with Pima County Standard Typical Sections.
		52	Pg. 29, Sec. 5.12	٥	On page 29, for the Snyder Hill Wash bridge, will the existing bridge rail remain or be replaced?	The existing bridge rail will be removed and a new F- shape concrete barrier will be installed.
		53	Pg. 41, Itemized Est.		Does the estimate for Item 9240050 (Miscellaneous Work (Signing)) include costs for delineators?	The estimated cost of Signing at the Concept stage is shown as a lump sum. It is based on a cost per mile for a 4-lane divided highway. The per mile cost is derived from bid prices of signing items for similar
		24	41, Itemized Est.	U	I did not see an item/estimate for ground-in rumble strips. Although it may not be appropriate to provide rumble strips throughout the entire project, I suspect there should be some rumble strips, especially on the median side, depending upon the concentration of development and side accesses and other factors (to be discussed separately). Please include the item and a quantity/estimate, at least for the median sides of the roadways.	recent projects. The Regional Traffic Engineer specifically asked that rumble strips not be used on the outside shoulders for this project because of bicycle use of the shoulders. Rumble strips will be added to the median shoulders, subject to concurrence of the Regional Traffic Engineer. If they are included, Section 7.1 of the DCR will include an entry to the effect that rumble strips are only for use on the median side shoulders.
		25	Pg. 41, Itemized Est.	A	Include in the estimate(s) an item for future use conduit for lighting/signalization, with at least a token amount.	Agree. A lump sum amount will be included for conduit for future use at minor intersections.
		56	General		Since there is an EB left-turn lane at Sandario Rd., I strongly suggest tying in the divided roadway right at Sandario Rd. (north leg intersection) and not narrowing SR 86 (east of Sandario Rd.) just to widen SR 86 immediately to the east.	If the divided roadway is carried to Sandario Rd. and tied in, it would be necessary to taper the divided lanes back to a two lane roadway to the west of Sandario Rd. A decision was made to taper the divided 4-lane roadway to a 2-lane roadway between Postvale Rd. and Sandario Rd. It is recommended that the decision be retained.
		27	Pg. 17, Sec. 4.2	۲	The DCR's plan for the culvert extensions and new culverts may be fine for Alternative C where the existing SR 86 roadway will be either the new WB or new EB roadway, but may not be as simple as identified on sheet 17 for the box culvert at MP 160.16 (transition area) or between MP 164.2 and MP 165.77 (three box culverts). I suspect the design team will formulate a plan which will work with special considerations. Are any of these existing culverts in the way of the new roadway alignments?	Will reword text to cover extending existing culverts on both sides of the existing roadway where there is new roadway construction on both sides of the existing roadway. During Final Design it may be necessary to identify adjustments to the culvert extensions to ensure they are below the structural section of the roadway. It may be less costly to build bridges or superboxes in lieu of widening/extending existing box culverts.
		58	Pg. 22, Sec. 5.2	< ,	I don't believe there will be a "center left-turn lane." The left-turn and right-turn lanes should be 12- ft.wide.	Agree. Will reword the text.
		59	Pg. 22, Sec. 5.2	A	The shoulder width alongside a right-turn lane should typically be 4-ft. wide, not 10-ft.	Agree. Will incorporate the 4 ft shoulder width adjacent to right-turn lanes.
		30	Pg. 22, Sec. 5.2	۵	Show the maximum horizontal curvature (and other design features) for a 70 mph design speed, too, in subsection 5.2.	It was determined that SR 86 through the limits of this project would be designed as a fringe-urban section. The 60 mph design speed is appropriate. In accordance with the ADOT RDG, the design speed and the posted speed are independent of each other.
		31	Pg. 27,	٥	I suspect some of the short-term closures (identified in cubeation 5.8) will be devine closures	So noted.

	5	Sec. 5.8	2	in subsection 5.8) will be daytime closures.	
	32	Pg. 28, Sec. 5.10	۵	Will there be any surface treatment – at least a fog coat – on the crossroads? I think there should be.	Where crossroads are being realigned either vertically or horizontally, they will be shown to be reconstructed with a preliminary structural section provided by ADOT Pavement Design Section or as desired by PCDOT. That structural section may be revised during Final Design. The preliminary structural section does not call for a fog coat or other treatment.
	33	Pg. 31, Sec. 6.4	A, D	Adjust sheet 31 (for the Postvale Rd. and Continental Rd. intersections) to eliminate the references to eastbound auxiliary (acceleration) lanes. (See comment 17) (Comment 11 on these numbers.).	Agree. There is some likelihood that traffic signals may be required at these intersections due to development on the south side of SR 86.
	\$	Pg. 35, Sec. 6.4.2	٥	The spacing of the crossovers needs to be assessed, per my comment 28 (Comment 18 herein). I don't think there should automatically be a median crossover at a distance of one mile – or less. I think the spacing depends upon the development. If there would not be significant development, there probably is not a real need for a median crossover between the established crossovers, most	The addition of u-turn crossovers occurred as a result of coordination meetings involving ADOT Predesign, District, Statewide Management, Regional Traffic, Pima County, and others. Providing median crossings at unsignalized intersections to the east of Ryan Airfield, where SR 86 traffic volumes are higher than to the west, will encourage left-turn movements without the benefit of traffic signals, and was

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SR 86; Sanda Initial Design Project No. 0 Response to	urio Road to Kir Concept Repo 86 PM 156 H68(2 Initial DCR C	ney F A 06 01C Somm	toad ; ients		CODE A Will Corr B Consulta C ADOT T D Study Te	ply nt/Designer to Evaluate sam to Evaluate am Recommends No Further Action October 2008
Section	Reviewer	#	Pg/Sec. No.	sboD	Comment	Response
ADOT Traffic (con't)	Curt Litin (con't)				significantly between the relocated Valencia Rd. intersection and the San Joaquin Rd. intersection. I suspect providing a median crossover at an "established intersection," such as the (west end) Old Ajo Hwy. intersection, instead of providing several median crossovers at "random locations" would be a better approach despite the relatively low traffic volume(s) on Old Ajo Hwy. It appears the box culvert extensions in the median would not adversely affect this proposal. In other words, there would be an EB right-turn lane at the Old Ajo Hwy. intersection. That intersection is slightly less than two miles from the San Joaquin Rd. intersection; two miles is probably not unreasonable, especially since there are drainages within that two-mile segment that might limit development, anyway. Despite the "urban fringe highway designation," this section of SR 86 seems to be much more rural; it has a 65 mph speed limit, too (which will probably be retained, at least west of a location a short distance west of San Joaquin Rd.). If a significant development would be responsible for providing a median crossover which would be deemed desirable at the time the developer's infrastructure encroaches on SR 86 – subject to the parameters established by the scoping document.	perceived to be undesirable. We will adjust the text to indicate that the final design team will determine the final location for the median breaks.
ADOT Tr. Design ADOT Tr. Design	Abdulkarim Rashid Abdulkarim Bashid	-	Pgs. 41, 42	۵	Cost estimate for Alternative C, Segments 1 & 2: Add quantities of signing.	Item 9240050, Miscellaneous Work (Signing) is included in the cost estimates for both Sections. At the concept stage a lump sum amount is used.
(con't)	(con't)	N	Pgs. 41, 42	£	Cost estimate for Alternative C, Segments 1 & 2: Add quantities of final pavement markings; make sure to account for the 6" wide.	Linear feet of permanent paving marking are shown. Pay item will be reviewed to make sure it is correct.
		ო	Appendix A, shts. IC-1–IC-8	A	Please indicate the types of traffic control for each intersection shown, such as signalized, stop on minor leg, etc.	Will show by note on the sheets.
		4	Sht. III, Executive Summary	A	Under Access Management Plan, far right column, third paragraph, the word "assess" should be replaced with "access".	Will correct spelling.
ADOT Tucson Dist. Engr.	Greg Gentsch				No response	
ADOT Tucson Maint. Engr.	Todd A. Emery				No response	
ADOT Tucson Dev. Coordinator	Daniel Granillo				No response	
ADOT Tucson Dev. Engr.	Daniel Williams				No response	2.
ADOT Tucson Env. Planning	Karen Whitlock	-	Pg. i (Ex. Sum)	A	Paragraph 1. The Federal Aid Number is wrong. The correct number is: STP-086-A(APA).	Agree. The Federal Aid Number you gave was confirmed with the FHWA. The number will be changed in the Final DCR.
		N	Pg. I (Ex. Sum)	Ω	Paragraph 1. This lists the project limits as 156.88 – 166.58. We need to make sure that the project limits match with what is on the technical documents. For example, the SHPO concurrence and the Biology report gives the limits as 159.9 to 166.52. In the case of both documents we need to confirm that we do not have to reconsult.	The project limits have changed several times over the course of the study, so some of the technical documents have slightly different MP limits shown. We have already addressed this issue with Matt Mallery. The existing SR 86 R/W has been surveyed everywhere and there is no new R.W. in the taper section that is being asked about here. However, the
ADOT Tucson Env. Planning (con't)	Karen Whitlock (con't)					For biology, Justin White has said that biology reports are considered to "cover" a larger area that biology reports are considered to "cover" a larger area that the MP
		c			- - - - - - - - - - - - - - - - - - -	limits in the document. Thus, nothing additional is needed. The full limits are addressed in the EA.
		ო	Pg. i (Ex. Sum)	<	Third paragraph. Should we include the Pima County DEQ as a government agency that has been involved in the study? (This is throughout the document, requesting changes throughout the document.)	Pima County DEQ sent a letter responding to the scoping meeting, addressing Air Quality. They will be added to the list of government agencies involved in the study.
		4	Pg. iii Column 3	۲	Paragraph 3; Sentence 2; assess should be spelled access.	Agree. Will be corrected.
		ы	Pg. 1, Sec. 1.1	8	Same comment as above. Project limits do not correspond to technical documents (This applies throughout the DCR, will not list again.)	See response to Karen Whitlock Comment 2, page 22.
		9	Pg. 1, Sec. 1.1	۲	 Traffic signal installed under H6722 Camino Verde intersection project. (Once again, this is the same throughout the document. Requesting 	Reference to signal to be installed will be removed and the project reference added to the Table 1-3, Previous Roadway projects. Changes will be made

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ply int/Designer to Evaluate eam to Evaluate am Recommends No Further Action October 2008	Response	throughout the report. Agree. Will add.	The ICO referred to states 'consider reducing the speed limit'. The ICO is referring to the overall project length, not just the Camino Verde intersection. The ICO will he retained as worded	Suggest changing this bullet to "Impact to CFPO habitat should be evaluated" – none of the "flutter zone" information is being used now but we need to acknowledge potential CFPO impacts because they are still evaluated as if listed according to EPG guidance.	Will re-word second sentence to say "A Section 404 permit will be required". We shouldn't get more specific because the type won't be known until final design; also, the Corps may change the criteria.	The text for the captions will be bolded to be easier to read.	The wording will be changed to indicate that the Camino Verde signal <u>was</u> constructed.	The reference to Camino Verde will be removed.	Will reword paragraph to reflect signalization of Camino Verde. Will also adjust Table 2-6 and 2-8 and text on pg. 10 to reflect signalization.	The paragraph will be reworded to reflect signalization of Camino Verde.	Figures 2-1 and 2-2 plot accident data for each mile along the length of the project. The crossroads are shown in their approximate location along the length of the project to indicate accident frequency in the vicinity of each of the crossroads. If this is too confusing we can delete the crossroad information.	The following will be added to the paragraph: "Comments received from the public were in favor of constructing a four-lane divided roadway in the study area and focused on building improvements as soon as possible."	The last bullet will be deleted.	The discussion of Camino Verde will be updated to reflect signalization.	Agree. Will delete the extra bullet.	Cost information will be obtained from the Utility owners and included in the Final DCR. The text will include a statement about fees charged by CAP for design reviews and contractor work in their R/W.	If it is decided that a utility corridor will be provided an estimated R/W cost will be included. If utilities will not be in a utility corridor, they will be asked to identify their R/W requirements that ADOT would have to pay, and that cost would be included in the estimate.	That has not yet been determined.	A paragraph will be included relative to utility issues. It will be identified separately from the ICO's that were discussed at the scoping meetings.
CODE A Will Com B Consult C ADOT T D Study Te	Comment	changes for all of the document. Add Project No.: STP 086-A(010)A MP 164.0 AS- Built Date 2007-2008 Description: Camino Verde Traffic Signal.	Par. 1, Bullet 4: The speed limit has been reduced on the approach to the Camino Verde Traffic Signal.	Environmental/Social/Economic ICO's: 2nd bullet: Take out since the Pygmy Owls have been delisted. 	 7th bullet: Either re-word or take out since we've gotten the 404 down to a non-notifying PCN. 	The yellow captions are really hard to see and read. (This is throughout the document).	Existing conditions, 2 nd paragraph; last sentence: Change will to was.	LOS of SR 86 Intersections with no Improvements: second paragraph: Take out Camino Verde since it has been signalized.	LOS of SR 86 with improvements: Take out Camino Verde since it has been signalized.	Figure 2.2; Update language to address signalized Camino Verde.	These figures need to be revised to reflect what street go with what bars or dots. This is very confusing.	Public Opinion: This paragraph needs to be expanded and dealt with more thoroughly so it doesn't appear that the issues brought up at the public meeting are not being taken seriously.	Take out last bullet that discusses the Pygmy Owl.	Camino Verde Intersection (MP 164.1): Update this section to reflect the installation of the traffic signal.	Column 3: Take out the 2^{nd} bullet below Picture. It seems to be an arbitrary bullet.	Table 1, Summary of Costs for SR 86. There are no dollars for potential utility related costs. This includes relocation for utilities with prior rights. Also Central Arizona Project (CAP) has fee impacts for design reviews, contractor fees for working over/in CAP R/W.	There is reference to new R/W acquisition, but no clarification of R/W needs for relocation and /or replacement of any existing underlying easements in current or new R/W. Identify R/W acquisition costs specific to utilities.	Paragraph 2 implies that ADOT is doing R/W acquisition with costs attributed to Pima County. Will ADOT do all R/W acquisition or will it be a cooperative effort with County performing some acquisition?	Section 1.4.2 Issues, Concerns and Opportunities: There is no reference made to issues, such as the impact to project design and construction effort and costs elated to utility conflicts throughout the length of the project. Utility impact should be considered an issue on this project and detail contained in the utility section.
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SR 86; Sanda Initial Design Project No. 00 Response to	Section	ADOT Tucson Env. Planning (con't)					÷									ADOT Utility & RR Engr.			

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Section	Reviewer	#	Pg/Sec. No	sboD	Comment	Response
ADOT Utility & RR Engr. (con't)	Debra Sykes (con't)	4	မ ရ မ	۲	Section 1.5 Characteristics of the Corridor: There is no reference to the extensive use of this corridor by the Utilities. Because this is a major corridor for utility infrastructure servicing the adjacent communities, some mention should be considered. A utility corridor may need to be considered as a part of design, whether in new or existing rights of way.	A statement identifying the corridor as being used by numerous utility owners will be included. After the review of the Initial DCR by the utility owners a more accurate statement can be made.
		Ω	Pg 17, 18	<	There is no reference to review of the affect on the project to utilities or need for R/W for the purpose of utility relocation or replacement of underlying easements. Given the scope of work for all alternatives the adverse affect on utilities and the lack of available R/W for relocation should be mentioned. The need for additional R/W due to utility relocation would affect the project costs. This would be the case even if we acquire and the utility companies who do not have prior rights have to pay for cost of new R/W. Noise walls were referenced as mitigation to property impacts. Noise walls further impact the locations where utility relocation can take place. Consideration of Utility Corridors within the project should be looked at.	Additional R/W has been shown on the plan sheets for Alternative C, the recommended alternative. This was discussed at the meeting with the utilities that was held June 16, 2008. The utility representatives were receptive to the additional area within the R/W for utility relocation or placement of additional facilities. During the design phase further coordination with each utility will be needed to identify and resolve specific conflicts.
		ω	Pg 19	۲	Design evaluation factors in the table should include an assessment of how many companies and how much impact there is to utility facilities for each alternative. This may affect alternative selection, or may show we have a lot of utility work/impact no matter what we do. I think this will likely change the R/W assessment for the project.	Utility impact for the alternatives will be addressed to the extent that the utilities indicated a preference for one alternative over another.
					The consideration of the need to design/construct some utility infrastructure as a part of the project should be considered.	
		~ ~	ဖ တ ပ	U	1. Environmental/Social/Economic This section does not include impact by utility adjustment or relocation related to drainage construction. Due to the number of drainage structures that will result in utility relocation, the project footprint should consider and be cleared for utility relocation activity. If Utility corridors become an alternative then the environmental impact of that must be considered.	Coordination with the Utility owners is underway. If ADOT provides a utility corridor the environmental documentation for the project would include the utility corridor. If the information is not available at the time the EA is finalized it can be modified later in the project development process. The R/W requirements for the project include drainage easements and those easements will be cleared in the same manner as the rest of the R/W.
g				۵	The county consideration for scenic highway designation will need to be evaluated and how on SR 86 the State Scenic highway requirements and restrictions will affect relocation and relocation costs.	At the Agency Scoping Meeting a Pima County representative indicated that Pima County is considering designating Kinney Road as a Scenic Highway. The properties adjacent to the intersection of Kinney Road and SR 86 are undergoing significant commercial development, with a Wal Mart Supercenter being planned at one quadrant and other commercial development planned at the other intersection quadrants. Any scenic designation of Kinney Road is likely to begin to the north of SR 86 and should have no affect on SR 86. Since Kinney Road is under County jurisdiction, ADOT would not be involved in the County's scenic designation.
		ω	Pg 22, 23	U	Section 5.5 Right of Way: There is no mention of underlying or adjacent utility easements, yet ADOT R/W plans reflect underlying utility easements within the project. These are not referenced in Table 5-1.	As was discussed at the meeting with COT Water on March 11, 2008, there are questions about when the ADOT R/W was established. Debra Sykes is working with ADOT R/W Titles Section to determine when the R/W was established.
		თ	Pg 24, 25	۵	Comments at each drainage structure should include if work could be a candidate for scour protection in addition to the lengthening and widening of the structure. This will help all look beyond the box a bit for conflict with utilities.	Drainage easements outside the R/W lines are shown where it is anticipated that channel work would be required. The drainage easements are being included in the environmental documentation now being processed.
				U	Given the number of drainage structures being constructed/reconstructed environmental work at these drainage areas will be extensive in total. With the number of locations that utility companies have facilities at structures, their relocation will also require some environmental work. Sharing the environmental effort between design/agency and the utility companies should be considered.	Coordination of environmental activities was discussed during the meeting that was held with utilities on June 16, 2008.
		6	Pg 28	۲	Section 5.11 Utilities: It appears records contacts are listed for the utility companies. Recommend including who the engineering design review contacts should be with each company. Were engineering reviews of the DCR done by each company? If not, that should be done. Engineering review conclusions for the DCR review should be included in the final DCR.	Per previous meeting with D. Sykes copies of the Initial DCR were sent to all utility companies. D. Sykes provided contacts for utility engineering sections.
				8	Indicators of utility easements should be included in summary for each utility.	Per previous meeting with D. Sykes, will have to get more data from the utility companies. D. Sykes

SR 86; Sand Initial Design Project No. 0 Response to	ario Road to Kir Concept Repo 86 PM 156 H68(b Initial DCR C	nney F art 06 010 Comrr	Road C nents		CODE A Will Com B Consulta C ADOT Te D Study Te	ply nt/Designer to Evaluate am to Evaluate am Recommends No Further Action October 2008
Section	Reviewer	#	Pg/Sec. No.	эboЭ	Comment	Response
ADOT Utility & RR Engr. (con't)	Debra Sykes (con't)					provided contact information. Additional information was requested when the Initial DCR was submitted to the utilities. A meeting has been held with the utility companies during which, they were asked for pertinent information. Where information identifying easements is received it will be included in the FDCR.
				o	Were installation dates, easement, or permit types of information included in the documentation received from the utility companies? Type of material for water and sewer facilities would be helpful as well. If not that should be pursued with engineering group at the utility?	This level of detail will be addressed during the design phase of the project.
		=	Pg 28	U	CAP has review and other related impact fees that will come into play. Those contact names and information should be included and costs clarified.	Per follow-up meeting, Debra will contact ADOT R/W relative to how to handle billings from CAP (and any others that may charge for reviews).
		12	Pg 28	۲	Comcast reference for cable should indicate if it is overhead, underground or both. If they have only one	Will indicate in Final DCR when information is received after review by utilities.
		13	Pg 28	۲	cable or multiple ducts would be helprul. Trico 3-phase from Sandario to Valencia involves (Sta. 630 to 775) approx. 14,500-ft. of line that may result in relocation, due to conflicts with dike construction, roadside clearance and accessibility issues. Plus 2 crossings. Have power identify for you who they have joint use on their poles and general point to point location.	Trico has provided additional information. Further coordination will be required during the design phase when specific conflicts can be identified and resolved.
		1	Pg 28	O	Southwest gas has a lot of facilities parallel to roadways, intersection improvements. Large footage or relocation work due to drainage extensions, roadway widening. There is evidence of SWG easements; some relocation work may be reimbursable.	Southwest Gas has provided additional information about the location of their lines and have indicated easements they hold. This information will be included in the Final DCR.
		15	Pg 28	U	Qwest has a lot of facilities parallel to roadways, intersection improvements. Large footage or relocation work due to drainage extensions, roadway widening. There is evidence of Qwest easements; some relocation work may be reimbursable. If records indicate multiple ducts or duct structures those should be identified by general location from point to point.	Review by utility should provide information. They have been asked to provide any easement information as it relates to ADOT R/W.
				٩	Watch spell check in report. Qwest sometimes becomes Quest. Correct as needed.	Agree. Will check and correct.
				۲	Qwest aerial lines may be joint use with power. Identify areas of joint use with others in general terms.	Will include information when it is received from the utilities.
		16	Pg 28	۲	Tucson Electric Power involves power being impacted from station 775 to 860 approx. for 8500-ft. of relocation readily visible on plans. They do go beyond but not real visible due to intensity and scale of drawings. Line in conflict with drainage work, in new roadway prism, overhead safety clearance, access or in conflict with clear zone. Have power identify for you who they have joint use on their poles and general point to point location.	TEP has provided additional information about their lines. Utility plans will show information more clearly than the screened data that was included in the Initial DCR. TEP has indicated that other utilities are located on their poles, but have not specified who they are. This will be further coordinated during the design phase.
		17	Pg 29		Utility section includes discussion regarding the evaluation of utility impact as a part of the project. Irrespective of alternative, this project will include an enormous impact to utility facilities. This will affect the cost of the project, the progression of the design and construction schedule.	So noted.
				۲	I would recommend that the report be updated with comments from the engineering representatives from the utility companies and proposed costs as can be obtained. Broad cost breakdown for prior right work, non-prior right work and split for County / State cost impact if prior rights potential.	Final DCR will include updated information. Review of Initial DCR by the utilities has provided additional information.
				O	There should also be some indication from the companies regarding the schedule impact for design and construction and funding requirements related to relocation work.	At the utility meeting, the utility companies were advised the SR 86 project would be constructed in phases with the first phase being the easterly part of the project.
	•	1	Pg 29	ح ں	Utility section should include at a minimum the types of conflicts presented by utilities (i.e. 90% of drainage extension work requires utility relocation, 4- miles of roadway results in power relocation, etc.). This will help to clarify the magnitude of impact. It may also help clarify other areas of design impact such as environmental and R/W. Then and updates to those sections of the report can be considered. If access control will be established on the highway	Agree. The meeting with utilities included requests for additional information. Information received from the utilities will be reflected in the Final DCR. Access control will limit access points along the

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Section	Reviewer	#	Pg/Sec. No.	ode	Comment	Response
ADOT Utility & RR Engr. (con't)	Debra Sykes (con't)				corridor, that determination should include the impact to utility accommodation along the corridor and compliance with ADOT/County accommodation standards.	highway. Further clarification appears to be needed relative to access to utility lines.
		0	6д З	O	Section 6.3.2 Access Control: Locations for full and partial access control should be depicted in the report and represented in the plans so that utilities and technical groups can determine design standards and impacts. ADOT accommodation policy says that parallel/longitudinal facilities cannot be accommodated inside access control. We don't have a definition for partial assess control accommodation so we need to know how that is being defined to determine affect. Will do some research on that subject.	Under the Draft Access Category System being developed, this section of SR 86 will be classified as MR. Direct access to abutting land is subordinate to providing service to through traffic movements. Available information does not specify if access to utility lines located inside the ADOT R/W can be accessed from the roadway or must be accessed from access points outside the R/W.
2				U	If FHWA money is in the project will need to consult with FHWA regarding access control. This could have an affect on R/W acquisition, utility relocation or utility corridor design.	Access control for this project will remain the same. FHWA has been involved with this project from the beginning. They have received copies of the IDCR and will receive a copy of this Summary of Comments.
		50	õ	U	Section 6.3.3 Partial access control: We don't have a definition for partial access control accommodation so we need to know how that is being defined, to determine affect. Will do some research on that subject. Ultimately need to determine affect on utilities.	Agree. The Draft Access Category System does not clarify access for utility lines.
				O	If FHWA money is in the project will need to consult with FHWA regarding access control.	Access control for this project will remain the same. FHWA has been involved with this project from the beginning. They have received copies of the IDCR and will receive a copy of this Summary of Comments.
		51	40	۲	Cost summary does not indicate potential utility related cost associated with potential need for R/W or relocation costs. Given the potential for utility corridor(s), and prior right reimbursement consider including the costs.	Information is needed from the utilities relative to costs and prior rights. They were requested to provide such information when the Initial DCR was sent for their review and comment.
		52	Appendix B		Concept Plans and Profiles; Alternative C: General Comments: Given the numerous utility facilities in the project and roadway, drainage and other design elements depicted on the plans would	
				۲	recommend; a. Increase the intensity of the utility layer to determine the extent of the utility locations and impact by project features.	Agree the utilities should be shown more clearly. Plans showing the utility lines with the roadway information screened have been prepared and will be included in an appendix of the Final DCR.
				۵	 b. May need to consider a larger scale for clarity if cadd layer change doesn't improve reviewability enough. 	The DCR involves developing concept level plans. Larger scale plans will be provided with final design plans.
				U	c. Pole locations for telephone should be clearly shown on plans similar to how power is currently shown. Where plan feature overlay pole locations use plan note to identify pole location.	Overhead utility lines are shown by symbol. Specific pole locations are shown on the pole lines that were taken from aerial survey mapping. However, the symbols are so small they can't be readily seen. The symbols will be enlarged so they can be seen on the Final DCR.
				υ	d. Is there enough information to show projected cut and fill limits along roadway in plan view?	Cut and fill lines are shown through most of the project on the outside of new roadways. Where the existing roadway is being used for one direction no cut or fill line is shown. On the west end where new roadway and new drainage dikes are shown a fill line is not shown where the fill would catch on the dike. The dikes are shown by symbol and fill lines are not shown. We will review and show as much of cut and fill lines as is practical.
14				U	e. Given the numerous utility related conflicts that likely will result in utility relocation, consideration should be given to a utility corridor approach within this roadway corridor.	Agree. That concept was discussed in the meeting with the utility owners.
				A	f. Minor typo in tracs number in plans project block, H6808, should be H6806.	Will correct typo.
	Dehra Svkes	53	Plan shts. C1-C27	υ	There are extensive numbers of potential conflicts throughout the project with: • Drainage structure/pipe extensions/dikes. - Gas, underground Telco and power underground loss of cover / or direct conflict due to structures or grading limits in drainage way. - Overhead Telco line clearance relative to equipment access and constructibility conflicts; safety clearance for future maintenance activity. - Overhead power line clearance relative to	Where possible, utility conflicts will be more completely shown after the utilities provide comments and information. However, specific conflicts will need to be handled during Final Design. The text will elaborate on the need for further coordination and definition of utility issues during Final Design.
	(con't)				equipment access and constructability conflicts; safety clearance for future maintenance activity.	

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Response	Additional utility coordination is underway and the extent of it will be better defined when comments are ecceived from the utility owners. The Final DCR will be supplemented by additional information related to utility impacts and costs. Certainly, the cost impact to ADOT will be better defined. So noted.					A gated and locked turnout will be included in the concept plans at the location of the current turnout to the perimeter road.	The planned location for the Valencia Road intersection with SR 86 is at the same location as the existing Valencia Road/Airfield Drive intersection. A gated and locked turnout will be included in the concept plans at the location of the current turnout to the non-directional beacon.
Comment	 Locations of poles elated to dikes and potential erosion issues to address. - Water lines, impacted by dike construction and fill loading, maintenance accessibility. - Roadway widening work. - Underground Gas and Telephone Beginning at 710+/ to 771 are outside pavement but in the roadway prism 804+/. to 855, and then on to 1095 are in the prism and under new roadway. Both the prism and under new roadway. Remaining R/W is congrested with existing utilities based on ADOT Utility Accommodation Policy. Remaining R/W is congrested with existing utilities or there is not conditions and the prism to accommodate relocation. - Overhead Power and Telephone: From 680-40-4/ to 755-00+/ is displaced, dike construction was problematic and costly by unit price and the foundation was applematic and no available R/W for felocation. Even if at aller poles outid be a concern related to be placed, dike construction would be a problematic and costly by unit price and claim potential. Overhead safety clearance in working configures with the roadway prism and dike; and no available R/W for relocation. Even if attempore access by utility after construction would be a concern related to affec on the dike integrity. Relocation would be a concern malable Brand, differ construction would be a concern related to the elay of the applematic and costly by unit price and claim potential. Overhead in (future roadway prism and differ and no available R/W for overhead safety clearance in working conditions would be a concern. There is no vould be a concern. The safety clearance in working condentions would be a concern. The safety clearance dimension would be a concern. - Overhead in (future roadways the problematic and in future roadways are depicted between and in future roadway sult in insufficient R/W for overhead re	No response	No response	No response	No response	Ryan Airfield has a north-south perimeter road along an existing fence within parcel 210-14-0020. Currently, access to the perimeter road is from Ajo Highway at the southeast corner of the parcel. The location is identified on the attached map. TAA is requesting a curb cut or stub out and gate be provided at this location for access from Ajo Highway to the perimeter road.	A drive that provides accesses to an FAA non- directional beacon is located at approximately the same location as the proposed Valencia Road intersection. Currently access to this road is from Ajo Highway. TAA requests that access is provided from the proposed Valencia Road stub out (located on the north side of Ajo Highway) to the existing road that provides access to the FAA non-directional beacon.
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Reviewer		Tom Deiterina	Steve Thomas	Gary Hayes, Exec. Dir.	Dick Davis	Dennis Cady, Director of Planning	
Section	& RR Engr. (con*t)	FHWA, Area Engineer	FHWA, Env. Prog. Man.	Pima Assoc. of Gov.	Regional Transpor- tation Auth. of Pima Co.	Tucson Airport Authority	

SR 86; Sand Project No. C Response t Section Airport Authority Water Water	ario Road to Kin Be PM 156 H680 Dennis Cady, Director of Planning (con't) (con't) (con't) (con't)	an na 10 00 martine	Pg/Sec. NA NA General General	ورونون (Code ک ک ک	Comment A will comp B Automp B Au	V Corbor Statuate The Exaluate The Exaluate The Exaluate The Exaluate Response Response Response Response Response the planned location for the Valencia Sa stated above, the planned location for the Valencia at Adviator Lane will be an of planned to a stated at Adviator Lane will be an of planned be a signalized intersection. The entrance to Ryan Afridied at Adviator Lane will be an of planned to a stated at Adviator Lane will be an of planned to a stated be a signalized intersection option in Comment 3. So noted Coordination with the Tucson Atriport the Aeronautics Division (Kenneth Ports) will be county and the Tucson Atriport Authority and dist county and the Tucson Atriport Authority and data atthority will continue Contact information is obtained as mentioned above. So noted Coordination with the Tucson Airport at constrated of the mortact information is obtained as mentioned above. So noted Coordination with the Tucson Airport detarance for the improvement of SR 86. So noted Coordination with the Tucson Airport detarance for the improvement of SR 86. So noted Coordination with the Tucson Airport detarance and the RAV issues are worked out. So noted Coordination with the Tucson Airport and the proper detarance for the improvement of SR 86. So noted Coordination with the Tucson Airport and detarance and the RAV issues are worked out. So noted Coordination with the Tucson Airport and attrong that offered his option in Commant 3. So noted Coordination with the Tucson Airport and detarance and Tucson Waler would send attrong the areal offered his option that the City and attrong the areal offered his option that the City and attrong the deta of the polytor and the could and attrong the areal offered his option that the City would send attrong the deta function and and the City Waler. During the meeting on the variatine. Count were and attrong the deta function and and the variation and attrong and deta out the areal seart and attrong and deta out the areal seart	
2		4	NN	ပ	In a previous email dated September 17, 2007, Tucson Water stated that the 42" main should be able to accept up to 4' of additional fill. Subsequent discussions with the pipe manufacturer, Ameron, have shown that this is not the case. Based on the installation conditions and subsequent joint repair	Widening SR 86 to the south. Heavy equipment working around the pipeline may cause problems. Per a follow-up meeting ADOT has prepared a pothole plan and submitted it to Tucson Water for their concurrence. ADOT has an on-call firm under contract that will do the potholing. The pothole information will be helpful in working with	

CODE A Will Comply B Consultant/Designer to Evaluate C ADOT Team to Evaluate D Study Team Recommends No Further Action October 20	Response	crease in Tucson Water to determine whether the 42" waterlin at the total will be relocated. The determine the hat if the determine the main. Please sufficient in sufficient in e toe of the tot ould maintain arance) over	" water main See response to Comment 4. lict be project. onflicts (under je changes in etc.). All roject datum. contal location ng), the atterial, and the atterial, and the saled by a a d that to help zing the son Water um extraction	inding the addition of whether the water line is to be disting sheet relocated would help to address the scour issues. If ations within the pipeline is relocated scour protection would likely to install bank be included with the relocation plans. The pipeline is relocated scour protection would likely impact to extend the ersely impact e issues need unrestrained with the relocation plans.	ically So noted. A determination of whether the water line quire CP to be relocated may answer a number of these ter. The CP questions. be relocated	ions, access See response to Comment 7. e hydrants they are by the by the	Illow for any These issues will have to be addressed when the condition of the 42" waterline is such that it num of 8 that the condition of the 42" waterline is such that it
3	Comment	work, Ameron recommends that any inc cover over the 42" main be limited so th cover is a maximum of 10'. As-built dra indicate that the existing cover over the approximately 3' to 8' above the top of Therefore Tucson Water recommends the Alternative "C" remains the recommends the then the 42" water main be potholed ex during the DCR phase of the project to feasibility of building dikes over the 42" be aware that as-built drawings are not themselves to accurately determine the cover and therefore to determine the free proposed dikes and their potential nega the 42" main. Also please check that th new dikes (including subgrade prep) sh at least 2' of working cover (vertical clea the top of the 42" main.	Tucson Water recommends that the 42 as well as other mains in potential confl potholed during this DCR phase of the J Potholes should be taken at potential co proposed drainage dikes/channels, larg grade, new poles, drainage structures, or potholes must be surveyed using the pr Pothole results should include the horiz (i.e. station-offset and/or northing-eastir elevation of the top of pipe, the pipe ma pipe size. Pothole reports should be se registered land surveyor. It is anticipate Tucson Water will have an opportunity ti dentify pothole locations prior to mobili pothole contractor. All potholing of Tuc facilities must be performed using vacu technology.	The combination of new dikes and externate externation of the south will concentrate externation across the 42° main at several locative project limits. It may be necessary the project limits. It may be necessary the project limits. It may be necessary that protection (riprap, concrete apron, etc) main to insure that the existing cover is Also, the drainage excavation required to the south may also advesting cover over the 42° main. These existing cover over the DCR. Possible to be addressed in the DCR. Possible upipe joints in these areas are another remitigate for scour.	Please note that the 42" main is cathod protected (CP). Any new utilities that re- should be coordinated with Tucson Wal cabinets and power poles may have to as part of this project.	There are numerous corrosion test stati manholes, vaults, water meters, and fire that may have to be relocated because within the cut/fill limits of the project or t maintenance access has been blocked proposed drainage dikes.	Tucson Water is limited in its ability to a shutdown of the 42" transmission main. main may only be shutdown for a maxin calendar days for any one shut-down.
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rio Road to Kin Concept Repo 86 PM 156 H680 Initial DCR C	Reviewer	Tony Tineo (con't)					
SR 86; Sanda Initial Design Project No. 06 Response tc	Section	City of Tucson, Water (con't)					

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SR 86; Sand Initial Design Project No. (Response t	ario Road to Ki n Concept Repc 186 PM 156 H68 o Initial DCR (nney F ort 06 010 Comr	load) ients		CODE A Will Com B Consulta C ADOT Te D Study Te	ply Int/Designer to Evaluate earn to Evaluate sam Recommends No Further Action October 2008
Section	Reviewer	#	Pg/Sec. No.	sboD	Comment	Response
City of Tucson, Tucson Water	Tony Tineo (con't)				separation from the outside face of the new pole foundation to the outside face of any new and existing water mains.	
(con 't)		Ŧ	NA	O	Tucson Water's Planning Section has identified the need for a new 16" water main (B-Zone) along Ajo Highway from Sandario Road to Valencia Road. There is a need for a new 12" main (C-Zone) from Camino Verde to Sheridan Road (this will replace the existing 6" main). Also, the existing 8" water main that lies in Camino Verde and crosses Ajo Highway must be replaced with a new 12" main and repositioned to match the new alignment of Camino Verde. It is anticipated that these mains will be designed by ADOT's design consultant and installed using ADOT's roadway contractor. A proposed 12" main (D-Zone) between Sheridan Road and Kinney Road will be constructed as part of Pima County DOT's Kinney/Ajo Intersection Improvement Project. This 12" main will replace the existing 6" main in order to meet increased demand by the proposed Wal-Mart at the northwest corner of Kinney Road wal Ajo Highway. The attached Figure 1 summarizes the new water main needs.	Since these would be new waterlines the cost responsibility would be with Tucson Water. ADOT would determine if they are willing to include the work in the roadway improvement contract. An agreement would be required between the two agencies. All of the proposed new water lines included in the Tucson Water's comments will be included in the text in Section 5.11 of the Final DCR.
		5	NA	U	Tucson Water's Planning Section has also identified the need for a new 72" water main that will cross Ajo Highway at Spencer Avenue. Please add the construction of this main (within the limits of the Ajo Highway right-of-way) to the scope of work for the future roadway designer and contractor. Please note that Tucson Water stated in a previous email dated September 17, 2007, that a future 48" main would need to be constructed across Ajo Highway at Tucson Estates Parkway. Tucson Water has recently determined that this 48" main is no longer needed. Please eliminate all references to this main in your report.	A determination will have to be made as to whether ADOT will include this work. An agreement would be required between the agencies. If a utility corridor is adopted it would include space for future water lines. ADOT would not normally construct water lines for the utility.
		13	NA	U	Tucson Water has no existing water mains nor any future plans to install water mains along Ajo Highway between Valencia Road and Camino Verde. Tucson Water recommends that ADOT and Jacobs Engineering coordinate with neighboring property owners to insure that any water facilities required for new development are coordinated through Tucson Water's New Area Development Section as soon as possible. Similarly, Tucson Water recommends that Jacobs Engineering coordinate with Stantec Consulting Inc. regarding future development in the study area and their recently completed report, "Pima County Southwest Infrastructure Plan – Final Report, May 2007". Please note that Map O-2 of the report does not correctly depict Tucson Water's proposed mains in the study area and was not reviewed by Tucson Water prior to publication.	The Developer will be responsible for bringing water to the development.
		4	NA	o	It is Tucson Water's understanding that this roadway may incorporate a significant landscaping component. Tucson Water anticipates that a root barrier will be installed with any new landscaping (trees) constructed within 10' (horizontal) of new or existing water mains. All trees shall maintain a minimum 5' horizontal separation from new and existing water mains.	The need for a root barrier for trees planted within 10' of existing water lines will be included in the text.
		ب	N	<	It appears that the proposed drainage channel along the north Ajo Highway right-of-way (from Camino Verde to Kinney Road) may impact Central Arizona Project (CAP) and Tucson Water facilities in the area. Please be aware that Tucson Water's valve maps do not show CAP canals and pipelines. It does not appear that the existing 108" CAP pipeline along the north side of Ajo Highway and the 78" CAP pipeline that crosses Ajo Highway and the 78" CAP pipeline that crosses Ajo Highway at Spencer Avenue are shown on your plans. Any impact to these facilities must be reviewed by CAP. ADOT and Jacobs Engineering should contact the CAP administrative offices directly to obtain CAP as-built information and requirements for the CAP Landuse Permit Application. Also, the proposed channel may be in conflict with several Tucson Water mains including a 42" transmission main. Water mains must be 3' below the bottom of lined channels (or 2' below scour depth whichever is greater).	CAP lines have been potholed by ADOT for this project. Issues with the drainage channel and CAP lines will be discussed in a meeting to be arranged. The clearance requirements for the drainage channel with respect to Tucson Water mains will be included in Section 5.11 of the Final DCR.
		16	N/A	۷	Please ensure that all existing water mains have a minimum of 2' of working cover between the bottom of the new pavement subgrade prep (6" below the bottom of pavement section) and the top of the	This requirement will be included in the text of the Final DCR, Section 5.11.

SR 86; Sanda Initial Design Project No. 0 Response to	rrio Road to Kir Concept Repo 86 PM 156 H68(1 Initial DCR C	nney F vrt 06 01C Comm	load) ients		CODE A Will Com B Consultar C ADOT Te D Study Te	ply nt/Designer to Evaluate am to Evaluate am Recommends No Further Action October 2008
Section	Reviewer	#	Pg/Sec. No.	oboD	Comment	Response
City of Tucson, Water	Tony Tineo (con't)				existing water main. The water main must be relocated where this minimum working cover cannot be met.	
(con't)		17 17	N/A N/A	۲ ۲	Please make sure that all drainage structures either pass at least 1' under existing water mains, or 3.5' over the water mains. Please update "Section 5.11 Utilities" on page 28 of the Initial Design Concept Report to reflect the comments contained in this letter.	This requirement will be included in the text of the Final DCR, Section 5.11. Section 5.11 of the Final DCR will be updated to include the comments as appropriate.
		19	N/A	۲	Tucson Water has reviewed the preliminary plans in the appendices of the Initial Design Concept Report. Please address the comments shown on the attached half size markups and on Figure 2. Show the size and material of all existing and proposed water mains.	The Concept Plans will be updated to address the comments. Size and material of existing and proposed water lines will be shown.
		50	N/A	O	Tucson Water anticipates that ADOT's roadway designer will submit water modification plans for the entire project limits. All new water mains must be shown in plan and profile. All water modification plans should follow the format shown on Tucson Water's sample illustrative plans (available upon request). Tucson Water anticipates that the water work will be completed using the "Tucson Water Standard Specifications and Details. 2001 Edition".	ADOT will have to concur in having their Designer include all of the waterline work. That determination would be made during final design. The FDCR will include information in the Utility Section of the DCR concerning coordination with Tucson Water during the design phase of the project.
City of Tucson DOT	Jim Glock, Director				No response	
Pima Co. DOT	Pricilla Cornelio, Director				No response	
Pima Co. DOT	Ben Goff, Dep. Director (Robert Young)		Sht. C-18	0	Clarify that the realignment of Camino Verde goes all the way to Irvington Road. We need to make sure that the offset intersection at Camino Verde/Old Ajo highway is eliminated.	The text of the report, Section 6.4.1 states that the alignment of Camino Verde will be modified to eliminate the offset intersection of Camino Verde and Old Ajo Highway. The improvement of Camino Verde and north of the intersection with SR 86 will be a determination of Pima County, since it is a County Road. A Joint Project Agreement (JPA) between ADOT and Pima County is likely to be required to define the improvements and the responsibility for implementing the improvements, including funding, the local roads that will apply to several of the local roads that will be a county of the local roads that will be a control of the improvements.
Pima Co. DOT (con't)	Ben Goff, Dep. Director (Robert Young) (con't)	N	Sht. C-19	O	Recommend that the cul-de-sac on Old Ajo Highway be eliminated and Old Ajo turned north into Fred Avenue, with a turnout to the west for Irvington Road. This would provide better circulation.	The configuration of the County Roads as a result of The improvement of SR 86 will be subject to agreements between ADOT and Pima County as indicated in the response to Comment 1 above.
		ო	Sht. C-21	۲	The Ajo Way/Tucson Estates Parkway needs to be realigned so that the south leg curves to the east to become Irvington Road. The long range plan, per the SWIP, is for this intersection to be Tucson Estates Parkway to the north and Irvington Road to the south and east.	The alignment of Tucson Estates Parkway will be modified to tie into the Irvington Road alignment. Design Criteria for the County Road will be as determined by Pima County. A determination of the responsibilities of ADOT and Pima County will be required.
Pima County Engr. Div.	Tom Nunn		Shts. 13 and 22	۷	The recommended design speed between MP 156.88 to 163.8 is less than the posted speed limit. Will there be a discussion on the new posted limits through this area and will it be less than the design speed?	As stated in Section 101.1 of the ADOT RDG, the design speed and the posted speed are independent of each other. The design speed is based on the ADOT RDG criteria for a Fringe Urban Roadway and establishes geometric parameters for the highway. The posted speed will be determined based on the operational characteristics of the highway, using the 85 th percentile speed of traffic to establish the posted speed. A statement relative to the establishment of posted speed will be included.
		2	Sht. 22	۲	Please include the recommended design criteria for the construction of the major side-street improvements (i.e., design speed, minimum radius, maximum superelevation rate).	Design criteria for local roads will be included in Section 5 of the Final DCR. The design criteria will be as determined by Pima County.
6		ю 	Sht. 24	0	Please include the design discharge quantity and the design headwater elevation for each drainage structure as well as the existing 100-Year discharge quantity. This is particularly important to reflect proposed improvements do not create adverse flooding impacts on private property. In addition, for long RCBC, skylight should be provided at midpoint or at the center of the median to provide free movement of wild animals and to allow people and equestrians to cross from one side of the road to the	Table 5-3, Section 5.6.4 of the DCR provides the 100 year 3-hour Q for offsite drainage structures. A final hydraulic study for the project will be required for final design. Existing culverts/bridges are being enlarged which will reduce the design headwater elevation. Regarding skylights in RCBC, ADOT normally fences the R/W, so pedestrian or equestrian usage would not be an issue unless it is a designated trail with fence openings. Environmental studies to this point have not
		4	Shts. TC- 1 thru TC-3	A, D	other. Identify the clear zone dimensions recommended by AASHTO for the 60 mph design speed. Due to the inverted median, it is recommended that you indicate a typical storm drain system that will be installed to prevent ponding.	indicated any need for wild animal crossings. The ADOT Roadway Design Guidelines (RDG) shows the Roadside Recovery Area Width of 30-ft. for a 60 mph design speed. If this width is not available a suitable barrier can be used such as guard rail or concrete barrier. The Roadside Recovery Area Width will be added to Section 5, Major Design Features of the Final DCR.

SR 86; Sanda Initial Design Project No. 0 Response ta	urio Road to Kin Concept Repo 86 PM 156 H680 5 Initial DCR C	iney F rt)6 01C)0mm	load cents		CODE A Will Com B Consulta C ADOT Te D Study Te	ply nt/Designer to Evaluate aam to Evaluate am Recommends No Further Action October 2008
Section	Reviewer	#	Pg/Sec. No.	ode	Comment	Response
Pima County Engr. Div. (con't)	Tom Nunn (con't)					Roadway storm drainage is not normally addressed at the design concept stage. It will be included in final design. However, we will add a statement that median inlets will be provided as needed.
	-	۵ د	Sht. TC- 18	Ο	Incorporate a horizontal alignment for Camino Verde based on a 45 mph design speed. Recommend extending the north/south tangent bearing of Camino Verde (north of Irvington) to the south of Irvington Road. Include a new access road from the Northwest Fire District Station to the realigned Camino Verde Between Irvington and SR 86. In addition, please consider proposed drainage improvements that take flow from the north side of SR 86 to the south side east of the new intersection.	Both the recommendation to extend the north/south tangent bearing of Camino Verde from the north side of Irvington to the south side of Irvington and the request to consider taking the drainage from the north side of SR 86 to the south side of SR 86 east of the new intersection of Camino Verde should be discussed in a meeting between ADOT and Pima County to clarify issues and reach consensus.
		Q	Shts. TC- 20 and TC-21	۲	Consider a cul-de-sac on Oklahoma Street that is located west of Tucson Estates Parkway. For the parcel located at the northwest corner of Oklahoma and Tucson Estates Parkway, extend the existing driveway to the relocated Tucson Estates parkway.	The cul-de-sac and extended driveway will be included in the Final DCR.
		~	Sht. TC- 21	۲	Incorporate a horizontal alignment for Irvington/Tucson Estates Parkway based on a 45 mph design speed.	The horizontal alignment will be shown connecting Irvington and Tucson Estates Parkway with a 45 mph curve. Input from the County will be needed to establish the desired configuration of the county road. A JPA may be needed to establish responsibility and participation.
		00	General	U	 General comments related to drainage include: Recommend that all training dikes be placed outside of the ultimate roadway rights-of-way to accommodate future roadway widening. 	Agree that the dikes should be located to accommodate future widening of SR 86. That may or may not require locating them outside the ADOT R/W.
				< <	 Include drainage flow arrows to indicate direction of flow along dikes. 	Will include grainage flow arrows in Final DCH. Will include typical sections of proposed dikes and
				۲	 Include typical sections of the proposed dikes and channels shown on the plans. 	channels. However, they will be conceptual only. The final configuration of these features will be determined during final design.
		ດ	General		Thanks for letting us look at this submittal, please let me know if you have any questions or want to discuss these comments.	It appears some of the comments made should be discussed in a meeting.
Pima Co. DOT, Traffic Engr.	John McManus				No response	
Pima Co. Public Works Dept.	John Bernal				No response	
Pima Co. Flood. Control District	Bill Zimmerman, Chief Hydrologist				No response	
Pima Co. Dept. of Env. Quality	Ursula Kramer	-			No response	
Pima Co. Planning Deot.	Keith Hollinger				No response	
Pima Co. Planning Dept.	Rick Ellis				No response	
Pima Co. Nat. Res., Parks &	Rafael Payan (Greg Hagen)	- , c	Sec. 5.2 Annend A		Add 12' shared pathway within ROW. This will promote alternative mode of transportation.	ADOT's policy, as stated in Section 107.1 of the current Roadway Design Guidelines (RDG), is to develop a transportation infrastructure that provides
		N		ב	TA-1. Add 12' paved pathway to each side. TA-3: Add 12' paved pathway to each side.	sale and convenient proycle access. ADUT advocates that bicyclists have the right to operate in a legal manner on all State highways including fully controlled-access highways except where specifically excluded by administrative regulation and where posted signs give notice of a prohibition. The ADOT Bicycle Policy, 2007, incorporates the AASHTO Guide for the Development of Bicycle Facilities, 1999 as the appropriate guide.
					22	ADOT roadways function as shared roadways. The roadways are open to both bicycle and motor vehicle travel. The paved shoulders on SR 86 will accommodate bicycle travel.
						Since ADOT, by policy, accommodates bicycles on the shoulders of State highways, separated pathways will not be included in the improvement of SR 86.

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Section	Reviewer	#	Pg/Sec. No.	sboD	Comment	Response
ma Co. at. Res., arks &	Rafael Payan (Greg Hagen)	ო	Sec. 3.2	۵	Were alternative modes of transportation considered?	Yes. As stated above, ADOT's policy is to accommodate bicycles on State highways.
arks & ec. Dept. ont.)	(cont.)	4	General	٥	Central Arizona Project (CAP) Trail #21 as identified in the eastern Pima County trails system master plan (EPCTSMP) crosses Ajo Hwy. on the San Joaquin Rd. Alignment. Where would be the best place to allow for this trail and cross Ajo Hwy – San Joaquin Rd. or Camino Verde Rd.?	The intersection of SR 86 and Camino Verde Road is currently signalized. The intersection of SR 86 and San Joaquin Road is planned to be signalized when SR 86 is widened to 4-lanes and signalization is warranted. Either of these two intersections would be acceptable locations for the CAP Trail #21 crossing of SR 86 since bicyclists will be able to cross SR 86 with the protection of a traffic signal.
I. of Land	Keith Hughes				No response	
. of Land jmt.	Susan Bernal	-	General	A	The following is the text of a letter sent from the BLM to Mary Frye, Federal Highway Administration.	Your letter and this Summary of Comments will be available to the ADOT Final Design Team and the ADOT Bicht-of-Way Group to advice them of required
					The Bureau of Land Management (BLM) accepts your invitation to participate as a cooperating agency on the Arizona Department of Transportation's (ADOT) State Route 86 expansion project between Sandario Road and Kinney Road in Tucson. This project area is covered by four BLM right-of-way authorizations AZA 6032, AR01699, AR01698, and AR01699. Our records show that no final Environmental Analysis (EA) was prepared for these authorizations, except for a draft EA that was furnished to BLM in 1987. There is no evidence in our records of a final EA and Finding of No Significant Impact (FONSI)/Decision Record having been provided to our office. Our office is required to review and comment on the new analysis to ensure that the new EA meets BLM's National Environmental Policy Act (NEPA) standards, and will allow our office to issue our own FONSI/Decision Record.	ADOT Right-of-Way Group to advise them of required actions. The information will also be included in the Final DCR.
					The proposed highway modification will require that the existing right-of-way authorizations be modified to reflect the final project built-out designs. If the proposed project is expanded to outside of the authorized right-of-way area, ADOT will be required to submit a right-of-way application to authorize those areas falling outside the existing authorized areas.	
					If you have any questions regarding this letter, please contact Susan Bernal, Realty specialist at 520-258-7206.	
	-	· · · · · · · · · · · · · · · · · · ·			The following comment was included in the e-mail from Susan Bernal.	
		N	General	۲	In addition to this letter it is our understanding your project may affect Pima County roads which have been granted and authorized to them by the BLM. Any alterations of these roads require BLM's approval and possibly additional requirements.	ADOT and Pima County will make a determination as to which agency acquires R/W or easements for changes or expansion of County Roads as a result of the SR 86 project. BLM requirements will be addressed at that time. The Final DCR will include vour comment.
zona ite Land pt.	Ruben Ojeda, Right-of-Way Mgr.				No response	
Army ps of Engr	Kathleen Tucker				No response	
ntral AZ iject	Paul Zellmer				No response	
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APPENDIX E EXISTING UTILITY PLANS

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FOR ESTIMATING PURPOSES ONLY PROJECT NO. 086





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APPENDIX F SUMMARY OF UTILITY COMMENTS

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R 86; Sandari itial Design C roject No. 086 esponse to	io Road to Kinn Concept Report 5 PM 156 H6806 Utility Comme	ey Ro 01C nts -	ad Initial DCR		CODE A Will Comply B Consultant/De C ADOT Team t D Study Team F	ssigner to Evaluate to Evaluate Recommends No Further Action January 2009
Utility Company/ Agency	Reviewer	#	Pg/Sec. No.	sboJ	Comment	cesponse
The Initial I held June 1((7/16/08) ar have been re	DCR was issued 6, 2008. Since tl 1d Qwest (7/23/ eviewed for the	1 Octc he Ut (08). 1 42" v	ber 2007 ar bity Coordiu The CAP fac vater transm	nd was nation] silities } uission	distributed to the Utility Companies/Agencies April 2 Meeting was held, the following have occurred. Addit have been potholed and the SR 86 utility plan set was line for Tucson Water (12/3/08).	2, 2008. A Utility Coordination Meeting was tional meetings were held with CAP updated with the information. Prior rights
dot Utility & R Engr.	Debra Sykes	-	i≣ Bd	۲	Table 1, Summary of Costs for SR 86. There are no C dollars for potential utility related costs. This includes or relocation for utilities with prior rights. Also Central in Arizona Project (CAP) has fee impacts for design reviews, contractor fees for working over/in CAP R/W.	cost information will be obtained from the Utility whers and included in the Final DCR. The text will iclude a statement about fees charged by CAP for esign reviews and contractor work in their R/W.
				<	There is reference to new R/W acquisition, but no clarification of R/W needs for relocation and /or replacement of any existing underlying easements in current or new R/W. Identify R/W acquisition costs specific to utilities.	has been decided that a utility corridor will be rovided. The estimated cost for R/W in the Final 0CR will include widening for the utility corridor. Itility comments received as a result of the review of the Initial DCR indicated that the improvement of
					νο α ο ο τ τ τ	It as from a two lane highway to a four lane ivided highway would have substantial impact to xisting utilities located within and adjacent to the R 86 corridor. Widening the roadway would require sing much of the existing R/W corridor where utility nes are now located for the expanded roadway. dditional R/W would be needed to accommodate ne roadway which would further impact utility acliities.
					₹ ₩ 0	meeting was held to which all known utility owners long the SR 86 corridor were invited. The purpose f the meeting was to: Provide information to the utilities about the proposed improvement of SR 86. Obtain information from utilities about the impact
ADOT Utility & 3R Engr. con't)	Debra Sykes (con't)					the proposed improvement would have on them. Discuss the feasibility of widening the SR 86 R/W to provide a utility corridor within the R/W in areas where multiple utility facilities need to locate within the SR 86 R/W.
					ζ 3	dditional meetings were held with some of the tility owners for further coordination.
						is a result of the impact to utility facilities that would ccur if SR 86 was widened to the extent that utility nes could not be accommodated within the SR 86 MV, ADOT will increase the width of the R/W orridor to accommodate utility facilities that are urrently located within the SR 86 R/W. The idened R/W will also accommodate some dditional utility lines in the future. However, the xtent of accommodation of future utility lines will be mited.
		N	Ъg У	O	Paragraph 2 implies that ADOT is doing R/W acquisition with costs attributed to Pima County. Will ADOT do all R/W acquisition or will it be a cooperative effort with County performing some acquisition?	hat has not yet been determined.
		n	Pg 5	۲	Section 1.4.2 Issues, Concerns and Opportunities: A There is no reference made to issues, such as the impact to project design and construction effort and costs elated to utility conflicts throughout the length di	A paragraph will be included relative to utility issues. will be identified separately from the Issues, concerns and Opportunities (ICO's) that were iscussed at the scoping meetings.

discussed at the scoping meetings.	Text will be added identifying the corridor as being used by numerous utility owners. Discussion of a utility corridor, including the determination to widen the R/W for a utility corridor, will be included in Section 4, Design Concept Alternatives of the Final DCR.	
costs elated to utility conflicts throughout the length of the project. Utility impact should be considered an issue on this project and detail contained in the utility section.	Section 1.5 Characteristics of the Corridor: There is no reference to the extensive use of this corridor by the Utilities. Because this is a major corridor for utility infrastructure servicing the adjacent communities, some mention should be considered. A utility corridor may need to be considered as a part of design, whether in new or existing rights of way.	
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r Designer to Evaluate n to Evaluate i Recommends No Further Action January 2009	Response	The R/W has been widened to include a utility corridor shown on the plan sheets for Alternative C, the recommended alternative. See response to Debra Sykes Comment 1, page 1. The additional R/W for a utility corridor is being shown as ADOT R/W. If it is acquired as ADOT R/W the utilities would be allowed on the R/W by permit and they would not gain prior rights status. During the design phase further coordination with each utility will be needed to identify and resolve specific conflicts.	The additional R/W needed for utility corridors is being shown on plans for Alternatives A and B as well as the recommended Alternative C. Estimated costs for the additional R/W for all three alternatives will also be included.	The environmental documentation for the project will include the additional R/W needed for the utility corridors. The R/W requirements for the project include drainage easements. Environmental documentation will include drainage easements in the same manner as the rest of the R/W.	At the Agency Scoping Meeting a Pima County representative indicated that Pima County is considering designating Kinney Road as a Scenic Highway. The properties adjacent to the intersection of Kinney Road and SR 86 are undergoing significant commercial development, with a Wal Mart Supercenter being planned at one quadrant and other commercial development planned at the other intersection quadrants. Any scenic designation of Kinney Road is likely to begin to the north of SR 86 and should have no affect on SR 86. Since Kinney Road is under County jurisdiction, ADOT would not be involved in the County's scenic designation.	The only area where the ADOT R/W plans indicate utility easements is on the south side of the ADOT R/W from the beginning of the project to Valencia Road. The status of the utility easement is still in question.	Debra Sykes sent an e-mail to Steve Wilson, Brad Olbert and Billah Khan dated Sept. 9, 2008, transmitting an e-mail she received that same day from Paul Chubinsky, ADOT R/W Titles Manager, that concluded that the City of Tucson Water Dept. has prior rights dating from March 9, 1967 for a R/W easement along the southeast side of the highway. It appears desirable to meet with Mr. Chubinsky to discuss his conclusion. That meeting will be scheduled.	Information has been received from other utilities relating to prior rights they have for lines outside the existing SR 86 R/W, but within the new proposed SR 86 R/W. That prior rights information will be included in Final DCR.	Drainage easements outside the R/W lines are shown where it is anticipated that channel work would be required. The drainage easements are being included in the environmental documentation now being processed.	Coordination of environmental activities was discussed during the meeting that was held with utilities on June 16,2008. The EA prepared for the SR 86 improvement will be available to the utilities, including various surveys that have been done for the EA.
CODE A Will Comply B Consultant C ADOT Tear D Study Tean	Comment	There is no reference to review of the affect on the project to utilities or need for R/W for the purpose of utility relocation or replacement of underlying easements. Given the scope of work for all alternatives the adverse affect on utilities and the lack of available R/W for relocation should be mentioned. The need for additional R/W due to utility relocation would affect the project costs. This would be the case even if we acquire and the utility companies who do not have prior rights have to pay for cost of new R/W. Noise walls were referenced as mitigation to property impacts. Noise walls further impact the location of Utility Corridors within the project should be looked at.	Design evaluation factors in the table should include an assessment of how many companies and how much impact there is to utility facilities for each alternative. This may affect alternative selection, or may show we have a lot of utility work/impact no matter what we do. I think this will likely change the R/W assessment for the project. The consideration of the need to design/construct some utility infrastructure as a part of the project	 Environmental/Social/Economic Environmental/Social/Economic This section does not include impact by utility adjustment or relocation related to drainage construction. Due to the number of drainage structures that will result in utility relocation, the project footprint should consider and be cleared for utility relocation activity. If Utility corridors become an alternative then the environmental impact of that must be considered. 	The county consideration for scenic highway designation will need to be evaluated and how on SR 86 the State Scenic highway requirements and restrictions will affect relocation and relocation costs.	Section 5.5 Right of Way: There is no mention of underlying or adjacent utility easements, yet ADOT R/W plans reflect underlying utility easements within the project. These are not referenced in Table 5-1.			Comments at each drainage structure should include if work could be a candidate for scour protection in addition to the lengthening and widening of the structure. This will help all look beyond the box a bit for conflict with utilities.	Given the number of drainage structures being constructed/reconstructed environmental work at these drainage areas will be extensive in total. With the number of locations that utility companies have facilities at structures, their relocation will also require some environmental work. Sharing the environmental effort between design/agency and the utility companies should be considered.
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SR 86; Sandari Initial Design C Project No. 086 Response to I	Utility Company/ Agency	ADOT Utility & RR Engr. (con't)								

SR 86; Sandari Initial Design C Project No. 086 Response to	lo Road to Kinn Concept Report 5 PM 156 H6806 Utility Comme	ey Ro 01C ints -	ad Initial DCR		CODE A Will Comply B Consultant/ C ADOT Tean D Study Tear	/ Designer to Evaluate n to Evaluate n Recommends No Further Action January 2009
Utility Company/ Agency	Reviewer	#	Pg/Sec. No.	sboJ	Comment	Response
ADOT Utility & RR Engr. (con't)	Debra Sykes (con't)	10	Pg 28	< .	Section 5.11 Utilities: It appears records contacts are listed for the utility companies. Recommend including who the engineering design review contacts should be with each company. Were engineering reviews of the DCR done by each company? If not, that should be done. Engineering review conclusions for the DCR review should be included in the final DCR.	Per previous meeting with D. Sykes copies of the Initial DCR were sent to all utility companies. D. Sykes provided contacts for utility engineering sections.
				A	Indicators of utility easements should be included in summary for each utility.	Information received from the utility owners relative to easements they have for their facilities will be included in the Final DCR.
				۵	Were installation dates, easement, or permit types of information included in the documentation received from the utility companies? Type of material for water and sewer facilities would be helpful as well. If not that should be pursued with engineering group at the utility?	This level of detail will be addressed during the design phase of the project.
		7	Pg 28	A	CAP has review and other related impact fees that will come into play. Those contact names and information should be included and costs clarified.	The current contact information will be included in the Final DCR. Fees charged by CAP were not addressed in the information received from CAP.
		10	Pg 28	A	Comcast reference for cable should indicate if it is overhead, underground or both. If they have only one cable or multiple ducts would be helpful.	The Utility Plans included in the Final DCR will indicate the locations of the Comcast lines. Additional information will be identified during the design phase.
		13	Pg 28	۲	Trico 3-phase from Sandario to Valencia involves (Sta. 630 to 775) approx. 14,500-ft. of line that may result in relocation, due to conflicts with dike construction, roadside clearance and accessibility issues. Plus 2 crossings. Have power identify for you who they have joint use on their poles and general point to point location.	Trico has provided additional information. They have indicated that their lines can stay in the current location between Sandario and Valencia, but the lines will have to be raised. Further coordination will be required during the design phase when specific conflicts can be identified and resolved.
		14	Pg 28	۲	Southwest Gas has a lot of facilities parallel to roadways, intersection improvements. Large footage or relocation work due to drainage extensions, roadway widening. There is evidence of SWG easements; some relocation work may be reimbursable.	Southwest Gas has provided additional information about the location of their lines and has indicated easements they hold. This information will be included in the Final DCR.
		15	Pg 28	۵	Qwest has a lot of facilities parallel to roadways, intersection improvements. Large footage or relocation work due to drainage extensions, roadway widening. There is evidence of Qwest easements; some relocation work may be reimbursable. If records indicate multiple ducts or duct structures those should be identified by general location from point to point.	Qwest lines are shown based on information received from them. Specific conflicts will be identified during the design phase and determinations will be made at that time as to whether any of the conflicts involve Qwest lines that are within their easements and whether they have prior rights.
				A	Watch spell check in report. Qwest sometimes becomes Qwest. Correct as needed.	Agree. Will check and correct.
				۲	Qwest aerial lines may be joint use with power. Identify areas of joint use with others in general terms.	Both Qwest lines and power lines are shown.
		9	Pg 28	<	Tucson Electric Power involves power being impacted from station 775 to 860 approx. for 8500-ft. of relocation readily visible on plans. They do go beyond but not real visible due to intensity and scale of drawings. Line in conflict with drainage work, in new roadway prism, overhead safety clearance, access or in conflict with clear zone. Have power identify for you who they have joint use on their poles and general point to point location.	TEP has provided additional information about their lines. Utility plans will show information more clearly than the screened data that was included in the Initial DCR. TEP has indicated that other utilities are located on their poles, but have not specified who they are. This will be further coordinated during the design phase. TEP has also provided information about where they intend to relocate lines that have to be moved. However, this is not shown on the plans. The information will be available to the designers during the design phase.
		17	Pg 29		Utility section includes discussion regarding the evaluation of utility impact as a part of the project. Irrespective of alternative, this project will include an enormous impact to utility facilities. This will affect the cost of the project, the progression of the design and construction schedule.	So noted.
			*	۲	I would recommend that the report be updated with comments from the engineering representatives from the utility companies and proposed costs as can be obtained. Broad cost breakdown for prior right work, non-prior right work and split for County / State cost impact if prior rights potential.	Final DCR will include updated information. Review of Initial DCR by the utilities has provided additional information.
				υ	There should also be some indication from the companies regarding the schedule impact for design and construction and funding requirements related to relocation work.	At the utility meeting, the utility companies were advised the SR 86 project would be constructed in phases with the first phase being the easterly part of the project.

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Cut and fill lines are shown through most of the project on the outside of new roadways. Where the existing roadway is being used for one direction no cut or fill line is shown. On the west end where new roadway and new drainage dikes are shown a fill line is not shown where the fill would catch on the dike. The dikes are shown by symbol and fill lines are not shown. We will review and show as much of cut and fill lines as is practical.	Agree. That concept was discussed in the meeting with the utility owners.	Will correct typo.
d. Is there enough information to show projected cut and fill limits along roadway in plan view?	e. Given the numerous utility related conflicts that likely will result in utility relocation, consideration should be given to a utility corridor approach within this roadway corridor.	f. Minor typo in tracs number in plans project block, H6808, should be H6806.
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January 2009	Response	Where possible, utility conflicts will be more completely identified in Section 5.11 using the information provided by the utilities. However, specific conflicts will need to be identified and handled during Final Design. The text will elaborate on the need for further coordination and definition of utility issues during the design phase.	Additional utility coordination has been done. Additional information will be included in the Final DCR.	The Final DCR will be supplemented by additional information related to utility impacts and costs.		So noted.	So noted.	So noted.	The utility tracking number will be included in the FDCR with instructions to use it on future plans and transmittals.
	Comment	 There are extensive numbers of potential conflicts throughout the project with: Drainage structure/pipe extensions/dikes. Gas, underground Telco and power underground loss of cover / or direct conflict due to structures or grading limits in drainage way. Dwerhead Telco line clearance relative to equipment access and constructibility conflicts; safety clearance for future maintenance activity. Overhead Telco line clearance relative to equipment access and constructibility conflicts; safety clearance for future maintenance activity. Locations of poles elated to dikes and potential erosion issues to address. Water lines, impacted by dike construction and fill loading, maintenance accessibility. Roadway widening work. Underground Gas and Telephone beginning at 710+/- to 777 are outside pavement but in the roadway prism 804+/- to 855, and then on to 1095 are in the prism and under new roadway. Both conditions require relocation of these facilities based on ADOT Utility Accommodation Policy. Remaining R/W is congested with existing utilities or there is not enough remaining R/W beyond the prism to accommodate relocation. Overhead Power and Telephone: From 630+00+/- to 777 are outside pavement but in the roadway prism and under new roadway. Both conditions require relocation of these facilities based on ADOT Utility Accommodate relocation. Overhead Power and Telephone: From 630+00+/- to 777 are outside pavement and the foundation existing utilities or there is not enough remaining R/W beyond the prism to accommodate relocation. Overhead Power and Telephone: From 630+00+/- to 775 act on the dike integrity. Relocation would be a concern. Maintenance access and file to a dike construction would be problematic and costly by unit price and costly by unit price and costly by unit price and cost by by unit price and cost by by unit price and conditions would be a concern. Maintenance accessing the dister const	Given the demonstration of utilities on the plans, the proposed work on the project and available R/W; I would recommend that this particular DCR include more information regarding the impact of utility relocation/accommodation.	This will be a Utility driven project and will require a different level of effort than may be what is the "norm". It may even be realistic to consider a Utility project and a Roadway construction project. This will then allow us to address the impact of costs in terms of R/W needs, utility corridor design, appropriate funding and scheduling by the Agencies and utility industry partners affected.	There is not significant difference in terms of utility impacts between the roadway alternatives. The difference will be in identifying the level of R/W, environmental, utility relocation, funding and scheduling efforts that will be required as this project moves from pre-design to design. I understand that this may be a more involved effort than a typical DCR but feel it will pay off.	I would be remiss if I did not say I appreciate the level of detail and effort put into the utility information included in the plans for this initial DCR.	Pima County Wastewater Management has received the drawings you submitted for review.	Currently, 45 days are allocated for review of the initial plan submitted. Every attempt will be made to complete the initial review, and subsequent reviews, in as short a time frame as possible.	We have assigned this project the utility tracking number U-2008-041. Please place this number conspicuously on all future plans and transmittals regarding this project. If you have questions, please call (520) 617-8224.
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	Reviewer	Con't) (con't)					Debbie Stratton		
	Utility Company/ Agency	ADOT Utility & (con't)					Pima County Regional	Wastewater Reclamation Department (PCRWRD)	

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SR 86; Sandario Road to Kinney Road Initial Design Concept Report Project No. 086 PM 156 H6806 01C Response to Utility Comments - Initial DCR

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you with copies of sewer as-builts where available as well as photos of most of the manholes and the associated ims & plan #'s. As indicated in the review letter by M. Harrington, there are several areas of concern. My review concurs with M. Harrington's. This overview does not constitute a review of this project for constructability or any possible conflicts that may become apparent when a complete set of working plans are submitted.

SR 86; Sandario Road to Kinney Road Initial Design Concept Report Project No. 086 PM 156 H6806 01C Response to Utility Comments - Initial DCR

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January 2009

Response	When SR 86 is expanded to a four-lane divided highway the number of median crossovers will be limited to major crossroads to reduce conflict between through traffic on SR 86 and traffic entering or leaving adjacent properties. The entrance to BM/SH will remain in its present location. However, the traffic movements will be limited to right-in/right- out. Traffic turning left from SR 86 to enter the property or turning left onto SR 86 to exit the property can make U-turns at Sunset Blvd. to the east and at Tucson Estates Parkway to the west. Access to the property from local streets may be feasible since the property appears to border local streets on both the east and west sides.	The existing box culvert under the entrance to BM/SH will remain. The drainage ditch to the east of the box culvert will remain, but will be cleaned by removing debris and large brush and trees. The concept plans include the drainage ditch and the existing box culvert within new R/W to be acquired by ADOT. When this occurs ADOT will maintain all property within the R/W.	A preliminary sizing of the proposed drainage channel indicates an earthen trapezoidal channel with a bottom width of 40-ft. and 3:1 sideslopes would accommodate the anticipated flow with flow depth of approximately 3-ft. The flow line will be at approximately the same elevation as the existing natural flow line. This will match with the existing culvert under the entrance to BM/SH, which is a 5 cell, 10'X 4' concrete box culvert. The size of the channel may be adjusted if it is lined with concrete. Consideration may be given to retaining the existing ground configuration, which is a meandering drainage channel of varying width and depth. Further discussion between ADOT and CAP will be required to determine the optimum drainage	See response to CAP comment 1 above. Eastbound vehicles on SR 86 would make a U-turn at Sunset Blvd. and make a right turn into the existing entrance to BM/SH.	During the design phase of the project the ADOT Design Team will coordinate with CAP and develop construction plans that will be acceptable to both parties. Any conflicts will be addressed at that time. The existing SR 86 roadway will remain in place, and the new SR 86 roadway for the opposite direction of travel will be at approximately the same elevation.	During the design phase of the project the ADOT Design Team will coordinate with CAP and develop construction plans that will be acceptable to both parties. Any conflicts will be addressed at that time.	During the design phase of the project the ADOT Design Team will coordinate with CAP and develop construction plans that will be acceptable to both parties. Any conflicts will be addressed at that time. Based on the roadway concept plans, the minimum distance from the edge of shoulder of the westbound SR 86 roadway to the pipeline will be approximately 70-ft. The minimum distance from the cut/fill lines to the pipeline will be located outside the roadway cut/fill lines and will be positioned over the San Xavier pipeline in one location to the west of Tucson Estates Parkway. The flow line of the drainage channel will be approximately the same elevation as the existing natural flow line.	It is assumed the power line referred to is the overhead TEP power line that is parallel to the north side of existing SR 86 and is located within the existing ADOT R/W. TEP has indicated they intend to relocate this line to the south side of SR 86.	Issues with the drainage channel and CAP lines were discussed in a meeting with CAP. The primary areas of concern involve a 108" water line and a fiber optic line located approximately parallel to SR 86 on the north side of the highway between Irvington Road and Tucson Estates Parkway. They are located in property that CAP either owns or has a permanent easement for. The recommended plan
Comment	The District's entrance to Black Mountain/Snyder Hill (BM/SH) – Will it change or remain the same? Currently no agreement with Tucson to use their roadways.	Will the drainage ditch across said entrance remain the same? Who will maintain?	How deep and wide is the proposed drainage channel which is planned directly over our pipeline and communication cable? Need the ability to maintain and repair the line. Communication cable is typically only 36 inches deep.	What is the plan for eastbound vehicles entering BM/SH?	How will the Black Mountain Pipeline under Ajo Highway be protected during construction and after? How much cover will be over the pipe?	How will both the underground and overhead 115 KV power lines be protected during construction and after?	How will the pipeline from San Xavier be protected during construction and after? What will the distance from pipeline and the edge of the road be?	Will the power line along the San Xavier pipeline need to be relocated? If so, to where?	
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Reviewer	Thomas Fitzgerald, Lands Adm. (Ltr. 9/10/08)								
Utility Company/ Agency	Central Arizona Project			~			5		

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Utility Company/ Agency	Reviewer	#	Pg/Sec. No.	ode	Comment Resp	ponse
					for im includ existir	nproving SR 86 in the area of the CAP facilities des widening the ADOT R/W to the north of the ing R/W.
					There 86 thé CAP 1 and re The fi Profile currer over the Over the	e is a natural drainage channel parallel to SR nat is outside the ADOT R/W and within the utility easement. The channel would be cleared reshaped. Portions of the channel may be lined. flow line would be similar to the existing natural le. The existing CAP water line can be left in its ant location. The drainage channel would be the CAP lines in some locations. Portions of XAP Fiber Optic line will need to be relocated.
		თ	General	<	There is a national Recreational Trail identified along Comn the length of the canal. Pima County Parks and Natur Recreation has an existing agreement with the Bureau of Reclamation. Steve Anderson from the County should be consulted on impacts to the trail as Jacob a result of the widening project.	ments have been received from Pima County rral Resources, Parks and Recreation Dept. dination is underway. bs met with the Pima County Parks and eation Department (Steve Anderson). The
Central	Paul D. Zollmor, CAD		General		Depaid I have reviewed the Summary of Comments for the CD oc Coc	artment is modifying their proposed trail system ordinate crossing locations and parallel routes.
Arizona Project (con't)	Zellmer, CAP Proj. Man. (Ltr. 11/06/08)	+	Plan shts.	۲	SR 86 Sandario Road to Kinney Road project. The comments have touched on some of our concerns here at the Central Arizona Project but I need to; convey a few things. Station 1045 Alt. A & B: How many feet to the north will the new 4 – 10' x 4' CBC be located from the existing location of the 5 – 10' x 4' CBC's at Tucson Mater Acces?	Alt. A, a new CBC would be located oximately 28-ft. north of the existing CBC at the on Water Access. With Alt. B, the existing CBC
	3	N	Plan shts.	۲	Station 1027+/-: The drainage channel on the The 1 north side of SR 86 will be directly over a Central plans Arizona Project (CAP) 108 inch diameter reinforced concrete cylinder pipe (RCP) that is	CBC to be retained. 108 inch RCP pipe line is shown on the Utility s that will be included in the Final DCR.
		(ī	•	approximately 10 feet deep. The line also crosses below the Tucson Estates Parkway north of SR 86. Show the 108 inch RCP line on all drawings near this station.	-
		ო	Plan shts.	٩	Station 1027+/-: Show and/or note the overhead The o power lines in the area. This power line supplies plans the CAP cathodic protection rectifier.	overhead power lines are shown on the Utility s that will be included in the Final DCR.
		4	Plan shts.		Drawing C-21 & 24: How will access to the Black Vehic Mountain/Snyder Hill Pumping Plants be obtained past to acces if traveling eastbound on SR 86? Plants signal back to back to be obtained back to be obtained to be	cles traveling east on SR 86 will have to go the Tucson Water access, which is the current ess to the Black Mountain/Snyder Hill Pumping ts. The vehicles will then make a U-turn at the alized Sunset Drive intersection and travel west to the current access to the Black ntain/Snyder Hill Pumping Plants.
		ى ك	Plan shts.	٩	Drawing A & B-17, C-22: At approximately Station The 7 1051, the 78 inch reinforced concrete Black pipeli Mountain pipeline crosses SR 86 just west of the includ underground power lines shown on above mentioned drawings. Please identify the pipeline on the above mentioned drawings.	78 inch reinforced concrete Black Mountain line is shown on the Utility plans that will be ded in the Final DCR.
TRICO Cooperative	Paul Newton	〒	General	۲	Comments dated April 7, 2008: Trico has overhead facilities from project beginning to sta. 765+50. Our line is as indicated, "running" that w within the roadway roughly 5' from the south row. Additionally, Trico has 2 aerial crossings, one at Postvale Rd. and one at sta. 905. I don't believe that poles are represented on this initial drawing?	poles will be indicated by symbol on utility plans will be included in the Final DCR.
		N	Plan Shts. C-2 thru C-7	۵	It looks like the 'new dike' will impact our pole From locations from sta. 650 to 765+50. Is there a detail sta. 7 on the dike? If clearance is adequate, can our poles becau be along the dike toe or into the slope? 745+7 765+5 southin new right example a southin the example a southin t	of the beginning of the project to approximate 745+00 it appears the TRICO poles could be in current location, but may have to be raised tuse of the location of the new dike. From sta. -00 easterly to the Valencia Rd. R/W (sta. -50) the existing roadway alignment moves herly within the existing ADOT R/W. With the roadway to be constructed on the south side of isocated.
		ო	Typ. Sec. Shts.	٥	In looking at the 3 alternative typical section drawings, it appears that Alt. A is the only view westbound. If this indicates the taking of additional right of way, it would create great problems for us and we would favor another option. TRICG TRICG area.	native C is the recommended alternative as ussed in the Initial DCR. On the westerly end of project R/W for a utility corridor would be fed on the south side of SR 86. For the most the existing R/W is adequate to contain the 4- divided roadway from the beginning of the ct east of Sandario Road to Ryan Airfield. As ussed in response to comment 2 above. The CO lines may have to be raised through this

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						January 2009
Utility Company/ Agency	Reviewer	#	Pg/Sec. No.	sboD	Comment	Response
TRICO Connerative	Paul Newton				Comments dated July 3, 2008:	
(con't)		4	General	۵	Trico would like to be included in the 50' utility corridor proposed along the Ajo Highway right-of- way. We have sited a new substation in the area and will run double circuit overhead 5' beyond the highway r-o-w edge within the utility corridor. Our improvement will run from ADOT project beginning (sta. 622+79 to sta. 905) approx. 5.35 miles.	So noted.
		Ŋ	General	Δ	We will need to know that thru access will be provided into the utility corridor.	Specifics of access to utilities from the SR 86 roadway will be better defined when the project enters the design phase.
		۵ ۵	General	۵	Our work is scheduled for 2015. When would the 50' utility corridor be in place?	Available funding will be used to construct the improvements to SR 86 from Kinney Road westerly to approximately San Joaquin Road. The amount of funds currently available will not be adequate for the entire project. The area from Sta. 622+79 to Sta. 905, which is the area where TRICO's proposed line will be, is west of the section of SR 86 that would be constructed with available funds. Since there is no funding in the ADOT 5-year program to construct further to the west, a date for the utility corridor is not available.
		~	General	Ω	I'm attaching a .pdf showing a tentative design for this area. Overhead lines are solid, underground are dashed.	Thank you.
		ω	General		Please keep us informed on upcoming meetings.	You are on the contact list.
Southwest Gas Corp.	Kelly Fleenor	-	General	۲	The Initial Design Concept Report for SR 86 has been reviewed by Southwest Gas Corporation (Southwest). Existing Southwest facilities are not shown on the submitted plans and we are providing redlined plans for your reference only. It is difficult to determine the accuracy of our gas facilities due to the scale (1 inch = 200 feet) of the drawings provided in the Initial Design Concept Report.	The additional gas line on sheet C-7 has been added. Existing facilities will be shown by symbol on utility plans in the Final DCR. At the design concept level of development the presence of utility lines that are likely to be in conflict with roadway improvements are indicated, but specific conflicts between utility lines and the proposed roadway improvements are not identified. During the design phase specific conflicts will be identified and the design team will work with Southwest Gas Corp. to resolve conflicts.
		N	General		Southwest reviewed only the preferred Alternative C. Within the project limits Southwest has three regulator stations, one rectifier, many valves, high pressure and distribution facilities. Southwest will likely have direct conflicts with the proposed dike, drainage structures, and the close proximity of the roadway widening to existing above ground gas facilities. Also, there will be several thousand feet of 6" high pressure main under future pavement.	So noted. Specific conflicts will be identified during the design phase. ADOT will work with the utility to resolve the conflicts.
		ო	General		Southwest has existing high pressure facilities on Valencia and Camino Verde. The proposed roadway improvements re-align these roads. What will happen to the existing right-of-way? Will the existing right-of- way become a dedicated utility easement?	The existing R/W for Carmino Verde will be retained for use by utilities and for drainage facilities. The existing R/W for Valencia Rd. will not be altered by the improvement of SR 86. However, Pirma County is in the planning stages of realigning the Valencia Road connection to SR 86. Please contact Pirma County for updated information on Valencia Road.
		4	General		Southwest has several existing easements along SR 86. First there is an existing easement on the south side of SR 86 from Sheridan Avenue to Seymour Road including Kinney Road south of SR 86 (book 5681 page 139 and book 2596 page 141). Also,	ADOT's Utility and Railroad Section and the Right- of-Way Group will research Southwest Gas' claim of prior rights. Specific conflicts will be identified during the design phase of the project development. The information TRICO has provided will be included in

- -			Avenue (book 2596 page 141). Southwest believes there is an easement on the east side of Sheridan Avenue (book 2596 page 141). Southwest believes there is an easement on the north side of SR 86 near Valencia and is currently researching this area. Any relocation of gas facilities located in easements in conflict with the project will be relocated at ADOT's expense.	the Final DCR for use when specific conflicts can be identified.
	ى ا	General	At this time, Southwest is unable to provide an estimated cost per linear foot for relocation for several reasons. Southwest anticipates difficult digging conditions in this area. The depths of the proposed drainage structures including the dike have not been provided. The scale is too small to complete a thorough review of the project.	An accurate estimate specifically targeted to conflicts is recognized to be unavailable until specific conflicts can be identified. If it is determined that there are no conflicts within Southwest Gas easements, this will not be a issue.
	o ۵	General	All information is provided for reference use only and potholing and Blue Stake are suggested for best accuracy. Please be aware that Southwest requires a minimum one foot separation from distribution facilities and any proposed structures and two feet separation from high pressure gas facilities. Due to seasonal demands, relocation of high pressure gas facilities is limited to April through September. If you	This information will be included in the Final DCR.

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rige aftere	The 42 ⁻ main the 42 ⁻ main the values (at least 2 ⁻ of the top of the values	A Tucson We as well as c pointed du	N/A A Tucson Wa as vell as c	5 N/A A Tucson We as well as o

SR 86; Sandari Initial Design C Project No. 086 Response to ^I	o Road to Kinn concept Report t PM 156 H6806 Utility Comme	ley Ro 01C ints -	ad Initial DCR		CODE A Will Compl- B Consultant C ADOT Teal D Study Tean	/ Designer to Evaluate n to Evaluate 1 Recommends No Further Action
						January 2009
Utility Company/ Agency	Reviewer	#	Pg/Sec. No.	ode	Comment	Response
City of Tucson, Tucson Water (con't)	Tony Tineo (con*t)				Pothole results should include the horizontal location (i.e. station-offset and/or northing-easting), the elevation of the top of pipe, the pipe material, and the pipe size. Pothole reports should be sealed by a registered land surveyor. It is anticipated that Tucson Water will have an opportunity to help identify pothole locations prior to mobilizing the pothole contractor. All potholing of Tucson Water facilities must be performed using vacuum extraction technology.	
		ω	ΥN Ν	۲	The combination of new dikes and extending the culverts to the south will concentrate existing sheet flow across the 42" main at several locations within the project limits. It may be necessary to install bank protection (riprap, concrete apron, etc) over the 42" main to insure that the existing cover is maintained. Also, the drainage excavation required to extend the culvert inlets to the south may also adversely impact existing cover over the 42" main. These issues need to be addressed in the DCR. Possible unrestrained pipe joints in these areas are another reason to mitigate for scour.	Concerns relative to protection of the 42" water line when the dikes and drainage facilities are constructed will be included in the Final DCR.
		~	N/A	۲	Please note that the 42" main is cathodically protected (CP). Any new utilities that require CP should be coordinated with Tucson Water. The CP cabinets and power poles may have to be relocated as part of this project.	The Final DCR will include this information.
		ω	N/A	۲	There are numerous corrosion test stations, access manholes, vaults, water meters, and fire hydrants that may have to be relocated because they are within the cut/fill limits of the project or because maintenance access has been locked by the proposed drainage dikes.	The Final DCR will include this information.
		თ	N/A	۲	Tucson Water is limited in its ability to allow for any shutdown of the 42" transmission main. The 42" main may only be shutdown for a maximum of 8 calendar days for any one shut-down. Only two shut-downs will be allowed with a minimum of 30 days between shutdowns. Any planned shutdown of the 42" main must be schedulad with Tucson Water	These issues will have to be addressed when the cost responsibility has been determined. If it is determined that the condition of the 42" waterline is such that it will have to be replaced at some time anyway, some of these issues would have to be dealt with at that time.
		·····			Operations and Maintenance Section, and it must occur during the off-peak season (October 1 st to March 30 th). It may not be feasible to shutdown, dewater, make connections, and repressurize the 42" main with the allowable 8 day window. This means that it may not be feasible to relocate the 42" main. If it becomes apparent during the roadway design process that the 42" main must be relocated, then ADOT's design consultant may need to consult a process that contractor to see if there are any innovative techniques that can be used to relocate the 42" main within the allowable 8 day shutdown window. Tucson Water requires a minimum of 45 days to review and comment on any shutdown proposal. Only overnight shutdowns/connections shall be permitted for the other water main work along Ajo Highway.	The comment seems to assume that ADOT would design and construct the relocation of the waterline. It appears that would have to be addressed during negotiations. It may be desirable for Tucson Water to design and construct the new line. An agreement between ADOT and Tucson Water will be finalized during the design phase.
		9	N/A	۲	Spread footings over the 42" main will not be permitted. Please insure that all new signal and utility poles maintain a minimum 5' horizontal separation from the outside face of the new pole	The clearance requirement will be stated in the Final DCR.

				- *	foundation to the outside face of any new and existing water mains.	
	•	11 N	۲	. <u> </u>	Tucson Water's Planning Section has identified the need for a new 16" water main (B-Zone) along Ajo Hichway from Sandario Dood to Valoncia Bood	Funding and design responsibility will be determined during the design phase.
					There is a need for a new 12" main (C-Zone) from Camino Verde to Sheridan Road (this will replace the	All of the proposed new water lines included in the Tucson Water's comments will be included in the
					existing 5° main). Also, the existing 5″ water main that lies in Camino Verde and crosses Ajo Highway must be replaced with a new 12″ main and	text in Section 5.11 of the Final DCR as proposed new waterlines, but will not indicate whether Tucson Water or ADOT will have responsibility for funding
5				`	repositioned to match the new alignment of Camino Verde. It is anticipated that these mains will be	and design.
5					using ADOT's roadway contractor. A proposed 12" main (D-Zone) between Sheridan Road and Kinney Road will be constructed as part of Pima County	
				_, •	DOT's Kinney/Ajo Intersection Improvement Project. This 12" main will replace the existing 6" main in order to meet increased demand by the proposed	
					Wal-Mart at the northwest corner of Kinney Road and Ajo Highway. The attached Figure 1 summarizes the new water main needs.	
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SR 86; Sandar Initial Design (Project No. 08/ Response to	io Road to Kinn Concept Report 5 PM 156 H6806 Utility Comme	iey Ro 01C ents -	ad Initial DCR		CODE A Will Compl B Consultant C ADOT Tear D Study Tear	y /Designer to Evaluate m to Evaluate n Recommends No Further Action January 2009
Utility Company/ Agency	Reviewer	*	Pg/Sec.	əpon	Comment	Response
City of Tucson, Tucson Water (con't)	Tony Tineo (con't)	7	ANN a	0	Tucson Water's Planning Section has also identified the need for a new 72" water main that will cross Ajo Highway at Spencer Avenue. Please add the construction of this main (within the limits of the Ajo Highway right-of-way) to the scope of work for the future roadway designer and contractor. Please note that Tucson Water stated in a previous email dated September 17, 2007, that a future 48" main would need to be constructed across Ajo Highway at Tucson Estates Parkway. Tucson Water has recently determined that this 48" main is no longer in your report.	A determination will have to be made as to whether ADOT will include this work. An agreement would be required between the agencies. The utility corridor will provide space for future water lines.
		.	У VN	0	Tucson Water has no existing water mains nor any future plans to install water mains along Ajo Highway between Valencia Road and Camino Verde. Tucson Water recommends that ADOT and Jacobs Engineering coordinate with neighboring property owners to insure that any water facilities required for new development are coordinated through Tucson Water's New Area Development Section as soon as possible. Similarly, Tucson Water recommends that Jacobs Engineering coordinate with Stantec Consulting Inc. regarding future development in the study area and their recently completed report, "Pima County Southwest Infrastructure Plan – Final Report, May 2007". Please note that Map O-2 of the report does not correctly depict Tucson Water's proposed mains in the study area and was not reviewed by Tucson Water prior to publication.	The Developer will be responsible for bringing water to the development.
		4	Y N/N	<	It is Tucson Water's understanding that this roadway may incorporate a significant landscaping component. Tucson Water anticipates that a root barrier will be installed with any new landscaping (trees) constructed within 10' (horizontal) of new or existing water mains. All trees shall maintain a minimum 5' horizontal separation from new and existing water mains.	The need for a root barrier for trees planted within 10' of existing water lines will be included in the text.
		υ	Y VN	<	It appears that the proposed drainage channel along the north Ajo Highway right-of-way (from Camino Verde to Kinney Road) may impact Central Arizona Project (CAP) and Tucson Water facilities in the area. Please be aware that Tucson Water's valve maps do not show CAP canals and pipelines. It does not appear that the existing 108" CAP pipeline along the north side of Ajo Highway and the 78" CAP pipeline that crosses Ajo Highway at Spencer Avenue are shown on your plans. Any impact to these facilities must be reviewed by CAP. ADOT and Jacobs Engineering should contact the CAP administrative offices directly to obtain CAP as-built information and requirements for the CAP Landuse Permit Application. Also, the proposed channel may be in conflict with several Tucson Water mains including a 42" transmission main. Water mains must be 3' below the bottom of lined channels (or 2' below below the bottom of unlined channels (or 2' below	CAP lines have been potholed by ADOT for this project. The CAP pipelines will be shown on the utility plans that will be included in the Final DCR. See CAP comments and responses to them starting on Page 12. The clearance requirements for the drainage channel with respect to the existing Water mains will be included in Section 5.11 of the Final DCR.
		16	N/N	۲	Please ensure that all existing water mains have a minimum of 2' of working cover between the bottom of the new pavement subgrade prep (6" below the bottom of pavement section) and the top of the existing water main. The water main must be relocated where this minimum working cover cannot be met.	This requirement will be included in the text of the Final DCR, Section 5.11.
		17	/ N/A		Please make sure that all drainage structures either pass at least 1' under existing water mains, or 3.5' over the water mains.	This requirement will be included in the text of the Final DCR, Section 5.11.
		18	N/A	<u>ح</u>	Please update "Section 5.11 Utilities" on page 28 of the Initial Design Concept Report to reflect the comments contained in this letter.	Section 5.11 of the Final DCR will be updated to include the comments as appropriate.
		6	YN VN	۷	Tucson Water has reviewed the preliminary plans in the appendices of the Initial Design Concept Report. Please address the comments shown on the attached half size markups and on Figure 2. Show the size and material of all existing and proposed water mains.	The Concept Plans will be updated to address the comments. Size and material of existing and proposed water lines will be shown.
		20	N/A	0	Tucson Water anticipates that ADOT's roadway designer will submit water modification plans for the entire project limits. All new water mains must be shown in plan and profile. All water modification plans should follow the format shown on Tucson	The determination of design responsibility for the work will be made during final design. The Final DCR will include information in the Utility Section of the DCR concerning the need for coordination with Tucson Water during the design phase of the

SR 86; Sandari Initial Design C Project No. 086 Response to	lo Road to Kinn Concept Report 5 PM 156 H6806 Utility Comme	ey Ro 01C nts -	ad Initial DCR		CODE A Will Comple B Consultant C ADOT Tear D Study Tean	y Designer to Evaluate m to Evaluate n Recommends No Further Action January 2009
Utility Company/ Agency	Reviewer	#	Pg/Sec. No.	Sode	Comment	Response
City of Tucson, Tucson Water (con't)	Tony Tineo (con't)				Water's sample illustrative plans (available upon request). Tucson Water anticipates that the water work will be completed using the "Tucson Water Standard Specifications and Details, 2001 Edition".	project.
El Paso Natural Gas	Kelley Hall	+-	General	۵	ADOT plans for improving Highway 86 (Ajo Way) call for "filling" at the EPNG crossing (Sta. 965).This is fine as the lines have recently been reconditioned.	So noted.
		N	General	۵	Under the current plans, there is no need to relocate EPNG's pipelines. However, in the event that plans change and relocation of the lines becomes necessary, then EPNG would require reimbursement from ADOT for relocation costs given EPNG's prior rights.	If necessary prior rights will be investigated during the design phase when specific conflicts can be identified.
		ო	General	۲	Please contact either myself or John Bridges prior to any construction activities within EPNG's easement area so that one of us can arrange for an EPNG Operations Field Tech to be onsite during construction.	Information will be included in the Final DCR to advise the Design Team that this information should be included in the construction provisions.
		4	General	٩	Any other utility lines that will cross our pipes will need at least 2' of separation and will need to be placed lower in the ground than our pipes.	Will note in Final DCR.
		ъ	General	۲	Overhead power lines that cross our easement, if any, will need to be a minimum of 30' above grade within our easement area.	Will note in Final DCR.
Tucson Electric Power Company (TEP)	Cynthia A. Garcia	-	Plan Shts. C-7 to C-9, C-11 to C- 14, C-17	۲	Please see attached report sheets C-7 to C-9, C-11 to C-14 and C-17 to C-26 with TEP mark-ups of its electric facilities.	TEP lines will be shown as indicated on Utility Sheets in the Final DCR.
		N	General General	۷	Also, attached are TEP facility maps marked 1 through 19 showing facilities throughout your proposed design.	This information will also be used to show the TEP facilities on Utility Sheets in the Final DCR.
		e	General	۲	TEP has conflicts with the design and will need to relocate a majority of its pole lines.	Conflict information provided will be included in the Final DCR. Specific conflicts will be identified during the design phase of the project development.
		4	Plan Shts. C-7 to C-9, C-11 to C-	۲	TEP has prior rights for its overhead lines shown on attached report sheets C-7 to C-9, and C-11 to C-12, except where it crosses SR 86 (Tucson - Ajo Highway).	Prior rights information provided will be included in the Final DCR. ADOT will investigate prior rights claims during the design phase when specific conflicts can be identified.
		5	General	۵	TEP has highlighted these overhead lines on the attached TEP facility maps marked 1 through 8.	So noted.
		Q	General	٥	TEP will have its Land Management Department provide documentation at the next design submittal.	So noted.
		2	General	٢	Please maintain drivable access to TEP poles, equipment and facilities. The relocation of TEP facilities such as feeder, sub-transmission and transmission lines is limited to TEP's off-peak season, October through April. TEP poles will remain in place until all other joint-use participants have transferred facilities from TEP poles. Pole bracing may be necessary, depending upon your prime contractor's construction sequence. For the latest TEP Electric Service Requirement and Construction Standards please visit our web site at http://www.tep.com/business/construction.ServReqB ook.asp.	These requirements will be included in the Final DCR.
		00	General	۵	Please see TEP's mark-ups of attached plan sheets UTL-6, 7, 9, 10, 11, 13, 14, and 15-18 for locations of TEP mitigations.	The mitigation information will be made available to the final design team. At this time only conceptual design of the highway improvements is being done. During the design phase the conceptual design will be refined and may be modified to the extent that your mitigation measures will be modified. Further coordination between ADOT and TEP will occur before any mitigation measures should be implemented.
		თ	Util. Sht. 6	۵	TEP will relocate overhead electric at Ajo Way and Valencia Road (sheet 6).	See above response to TEP Comment 8 this page.
		10	Util. Sht. 9	۲	TEP has a pole and two anchors in conflict with new dike where TEP has prior rights (sheet 9). Can new dike be designed around pole and anchors?	During the design phase the new dike can be designed to avoid the conflict on sheet 9. This information will be available to the design team.
		÷.	Util. Sht. 10	۵	TEP will relocate overhead electric along proposed north new ROW as shown on sheet 10.	See above response to TEP Comment 8 this page.
		12	Util. Shts. 11, 13, 14, 16	U	TEP requests for 1-6" conduit to be installed by TEP contractor or ADOT's contractor at time of road construction (sheets 11, 13, 14, 16).	This request will be included in the Final DCR. Further coordination between ADOT and TEP will be required during the design phase.

						January 2009
Utility Company/ Agency	Reviewer	#	Pg/Sec. No.	ode	Comment	Response
Tucson Electric Power Company	Cynthia A. Garcia (con't)	13	Util. Shts. 15-18	٥	TEP will relocate overhead electric along proposed south new ROW from Old Ajo Highway to east end of project (sheets 15-18).	See above response to TEP Comment 8 this page.
		7	Util. Shts. 15, 16, 17	U	TEP would like provisions for a concrete encased duct bank for 2-6" conduits along south new proposed ROW from Spencer Street to Irvington Road alignment. This duct bank will accommodate TEP substation getaways for TEP's future Spencer Substation. Can space be provided in the road ROW to install this at a later date?	This request will be included in the Final DCR. Further coordination between ADOT and TEP will be required during the design phase.
		Ω	General	<	Please notify your contractor to contact Blue Stake for the location of existing overhead and underground electric facilities and to comply with Arizona Blue Stake law regarding safe approach distances to electrical facilities. Please contact Blue Stake a minimum of 10 working days in advance to request overhead protection or pole bracing. Overhead protection is billable to the contractor if TEP facilities are located outside this public agency's ROW. It is the contractor's responsibility to protect TEP facilities. If damages occur, the total cost to repair those facilities will be billable to the contractor.	Information will be included in the Final DCR.
					If you have any questions, please contact me at 918- 8246.	
Comcast	Dan Denson		Comments		No comments were received from Comcast in response to the Initial DCR that was sent. However, Comcast had earlier provided an electronic file of plans of their lines in the vicinity of SR 86. Those plans were used to show the Comcast lines on the SR 86 DCR plans.	No Response
					Mike Ginn attended the Utility Meeting that was held in the ADOT Tucson District Conference Room on June 16, 2008.	
Qwest	Larry J. Lewis		No Comments		No comments were received from Qwest in response 1 to the Initial DCR that was sent. However, Qwest had earlier provided base maps that showed their lines in the vicinity of SR 86.	No Response
					Larry Lewis attended the Utility Meeting that was held in the ADOT Tucson District Conference Room on June 16, 2008. A separate meeting was held with Qwest July 23, 2008. Minutes of that meeting were distributed to attendees.	

SR 86; Sandario Road to Kinney Road Initial Design Concept Report Project No. 086 PM 156 H6806 01C Response to Utility Comments - Initial DCR

- CODEAWill ComplyBConsultant/Designer to EvaluateCADOT Team to EvaluateDStudy Team Recommends No Further Action

APPENDIX G PRELIMINARY AASHTO CONTROLLING DESIGN CRITERIA REPORT

(Prepared October 2007 for the Initial Design Concept Report)

Final AASHTO Controlling Design Criteria not evaluated per policy change November 2009 Provided for Information Only

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(3) 10' x 5' RCB (#6465)	161.25	32.0	44.0	28.0	Yes	Yes	HS20	HS20.0	VII	STRI	ICTUR	-9		Evicting	Eviet	ina
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VIII. VERTICAL ALIGNMENT AN	D STOPPING S	IGHT DIS	STANCE:	:							N/A					
IX. HORIZONTAL ALIGNMENT, S	SUPERELEVAT	ION, AN	D STOPP	NG SIGHT D					VIII	VER1	ICAL A	LIGNMENT /	AND STOP	PING SI	GHT DI	ISTA
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X. REMARKS:						-			_	S	ee Attach	nment No. 2				
* Design Exception required.									Χ.	REMA	RKS:					_

* Design Exception required.
 ** Design exception will not be requested for shoulder width because the width will be corrected during reconstruction effort.

ROLLING DESIGN CRITERIA ARY (UNDIVIDED)

(BOU	TE: SR 86
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1			IP: 166.58
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	K = 10%, D = 51%, T	= 9%	/ 10
	K = 10%, D = 51%, T	= 9% - 7%	1,350
	R = 10%, D = 51%, T	= / 70	1,350
	Bask Osertuur		AASHTO
	Post Contruc		
ş	Clearance)	Clearance
Recommended	Daidae Domior	Existing	Recommended
Bridge	Bridge Barrier	Structural	Structural
Width (ft)	Geom. OK Struc. OK	Capacity	Capacity
TOPPING SIG	GHT DISTANCE:		

** Design exception will not be requested for shoulder width because width will be corrected during reconstruction effort.

ATTACHMENT 1 - VERTICAL CURVE INVENTORY

Project Name: SR 86, Valencia Road to Kinney Road Project Number: 086 PM 159 H6806 01C Roadway Type: Undivided Roadway (Bi-directional)

	MILE	POSI	TRAFFIC	GRADE	GRADE	CURVE	CURVE	STOPPING SIGHT	DISTANCE	SPE	ED
STATION	BEGIN	END	DIRECTION	IN	OUT	LENGTH	TYPE	AVAILABLE	AASHTO	AVAILABLE	DESIGN
			(1w, 1a or 2)	(%)	(%)	(ft)		(ft)	MINIMUM (ft)	(mph)	(mph)
606+00.	156.56	156.56	2	-0.2590	-0.2171	0	GB	ĠB	GB	GB	60
623+00.	156.81	156.96	2	-0.2171	-0.5000	800	Crest	0 *	568	0	60
643+00.	157.19	157.34	2	-0.5000	-0.1531	800	Sag	4214	571	+100	60
690+00.	158.15	158.15	2	-0.1531	-0.2839	0	GB	GB	GB	GB	60
721+00.	158.66	158.81	2	-0.2839	0.0417	800	Sag	0 *	568	0	60
733+00.	158.89	159.04	2	0.0417	-0.3923	800	Crest	+9999	568	+100	60
746+00.	159.14	159.29	2	-0.3923	0.1903	800	Sag	2886	569	+100	60
777+00.	159.72	159.87	2	0.1903	-0.1778	800	Crest	+9999	569	+100	60
810+00.	160.35	160.50	2	-0.1778	0.1940	800	Sag	3331	567	+100	60
815+00.	160.52	160.52	2	0.1940	0.1200	0	GB	GB	GB	GB	60
850+00.	161.33	161.33	2	0.1200	0.0148	0	GB	GB	GB	GB	60
875+00.	161.73	161.88	2	0.0148	0.3800	800	Sag	0 *	567	0	60
917+00.	162.53	162.68	2	0.3800	0.6000	800	Sag	+9999	569	+100	60
960+00.	163.36	163.47	2	0.6000	2.1600	600	Sag	+9999	572	+100	60
968+00.	163.49	163.64	2	2.1600	-0.2800	800	Crest	+9999	588	+100	60
977+00.	163.68	163.79	2	-0.2800	0.6293	600	Sag	842	588	75	60
990+00.	163.98	163.98	2	0.6293	0.7200	0	GB	GB	GB	GB	60
1010+00.	164.36	164.36	2	0.7200	0.8200	0	GB	GB	GB	GB	60
1040+00.	164.93	164.93	2	0.8200	0.7800	0	GB	GB	GB	GB	60
1065+00.	165.33	165.48	2	0.7800	0.5800	800	Crest	0 *	574	0	60
1086+00.	165.80	165.80	2	0.5800	0.5326	0	GB	GB	GB	GB	60
1089+58.	165.87	165.87	2	0.5326	0.4963	0	GB	GB	GB	GB	60
1097+58.	166.03	166.03	2	0.4963	0.4480	0	GB	GB	GB	GB	60
1100+70.	166.09	166.09	2	0.4480	0.3870	0	GB	ĠB	GB	GB	60
1102+00.	166.12	166.12	2	0.3870	0.6500	0	GB	GB	GB	GB	60
1103+00.	166.14	166.14	2	0.6500	0.8200	0	GB	GB	GB	GB	60
1104+00.	166.16	166.16	2	0.8200	1.0800	0	GB	GB	GB	GB	60
1107+00.	166.21	166.21	2	1.0800	0.7033	0	GB	GB	GB	GB	60
1110+00.	166.27	166.27	2	0.7033	0.7450	0	GB	GB	GB	GB	60
1112+00.	166.31	166.31	2	0.7450	0.8978	0	GB	GB	GB	GB	60
1116+00.	166.38	166.38	2	0.8978	0.8400	0	GB	GB	GB	GB	60
1128+00.	166.57	166.65	2	0.8400	1.3800	400	Sag	0 *	575	0	60

Project Name Project No:	: SR 86 086 P	6, Sanda M 156 H	rio Rd to Kinn 6806 01C	ey Rd					
	Mile	post	Su	perelevation (ft	/ft)	Degree	Of Curve	Speed	(mph)
ripi station (n)	Begin	End	AASHTO Min	Existing	AASHTO Max	Existing	AASHTO Max	Existing	Design
637+90.32	156.90	157.43	NC	-0.020	0.06	0°-15'-00.00"	4°-15'	83	60
674+05.10	157.76	157.94	0.021	0.024	0.06	0°-45'-00.00"	4°-15'	95	60
751+90.20	159.20	159.44	0.021	0.024	0.06	0°-45'-00.00"	4°-15'	95	60
764+40.74	159.50	159.62	0.021	0.024	0.06	0°-45'-00.00"	4°-15'	95	60
797+87.20	160.14	160.25	0.021	0.024	0.06	0°-45'-00.00"	4°-15'	95	60
806+29.11	160.30	160.41	0.021	0.024	0.06	0°-45'-00.00"	4°-15'	95	60
876+84.27	161.57	162.11	NC	0.020	0.06	0°-15'-00.00"	4°-15'	>100	60
992+51.08	163.88	164.19	NC	0.020	0.06	0°-30'-00.00"	4°-15'	>100	60
1028+60.34	164.58	164.85	0.032	0.048	0.06	1°-15'-00.00"	4°-15'	88	60
	-								
				-					
	_								
					l				
Meaning Of Symbols									

Notes:

Traffic Direction: 1w = One Way Traffic in Station direction 1a = One Way Traffic against Station direction 2 = Two Way Traffic

Grades are with respect to Station direction.

* Indicates design exception required.

GB indicates grade break. Stopping Sight Distance and Speed not calculated. Calculations are based on AASHTO 2001 and ADOT 2004 Roadway Design Guidelines formulas with adjustments for effective grade. NC = Normal Crown

Attachment 2 - Horizontal Curve Inventory

6940 RCB 3- 8'x4'

6941 RCB 4- 8'x6'

6942 RCB 8- 10'x4'

SR 86

SR 86

SR 86

157.51

157.74

158.05

The culvert is not at grade. Culvert barrel length ≈ 86'

The culvert is not at grade. Culvert barrel length = 86'

The culvert is not at grade. Culvert barrel length = 50'

ROADWAY ENGINEERING GROUP ROADWAY PREDESIGN SECTION

TO :	SUNIL AT BRIDGE (BRIDGE	'HALYE GROUP MANAGEMEI	IT SECTIO	DN, MD 635	B	DATE:	5/3/2007 Ederal Refi	ERENCE NO: HIGHWAY: LOCATION:	080-A WHY - TUO SANDARIO	CSON HIGHWA	TRACS NO	H5808 01C		
FROM:	BILLAH KH ROADWA	IAN, PROJEC Y PREDESIG	CT MANAG	ER			PROJECT DI	MP LIMITS: ESCRIPTION	156,9 Predssign St	TO: Ludy to Wilden SR 8	166,5			
WBJECT:		EVALUATION	REQUES	τ										
Please et	valuate the	following stru	clures per	AASHTO gu	idelines.									
		STR. NO.		BRIDGE	BRIDO	BE RAIL / BA	RRIER		AC OVERL	AY	VERTICAL	CLEARANCE	BRIDGE	BRIDGE
		AND	BRIDGE	ROADWAY		GEOM	STRUC	THICKNESS	REMOVE	REPLACE/NEW	(MINE	MUM)	LOAD	SUFFICIENCY
OUTE NO.	MILEPOST	NAME	LENGTH	WIDTH	TYPE	OK	OK	(E)OSTING)	(MINIMUM)	(MAXIMUM)	NB/EB	SB/W8	RATING	RATING
SR 86	157.06	6938 RCB	Comments:	The culver	l is not at gr	rade.	Maximum	ill height = 2						
		5- 10'x5'		Culvert ba	rel length =	86'	Structure	length = 53'						
		6939	26"	46'				4"			-		HS20	81.80
SR 86	157.41	RCB 3- 8'x6'	Comments:	The culver Culvert ba	t is at grade rei tength =	. Ma 86	ximum fill h	eight = 1'						

Maximum fill height = 2' Structure length = 26'

Maximum fill height = 3 Structure length = 35'

Maximum fill height = 4 Structure length = 87

ROADWAY ENGINEERING GROUP **ROADWAY PREDESIGN SECTION**

DATE: 5/3/2007

lease e	aluate the	following stru	ctures per	AASHTO gi	uidell nes :				
		STR. NO.		BRIDGE	ERIDG	E RAIL / BAI	RIER		
		AND	BRIDGE	ROADWAY		GEOM	BTRUC		
UTE NO.	MILEPOST	NAME	LENGTH	WIDTH	TYPE	OK	ÖK		
		1607	199'	44"	H-2-1 railing	Yes	Yes		
SR 86	162.20	Snyder Hill Wash Br	Comments:	 The structure is currently carrying leg. Deck surface has extensive fine to m. SR 86 is non-NHS, thus railing is con 					
SR 66	165.44	6487 RCB 3- 10'r4'	Comments:	The culver	t is not at gr	ade.	Maximum I Structure		
					inenengur -		On detaile		
SR 86	165.80	RCB 4- 10'x4'	Comments:	The culver Culvert ba	t is not at gra rrei length =	ade. 87'	Maximum f Structure I		
		4622		-					
SR 86	166.28	RCB 4- 10'x3'	Commenta:	The culver Culvert ba	t is not at gr rrel length =	ada. 128'	Maximum f Structure		
		×							
			Comments:						

Evaluation Completed by: Homayoon Saldi, P.E.

ROADWAY ENGINEERING GROUP ROADWAY PREDESIGN SECTION

DATE: 5/3/2007

		STR NO		BOTOGE	tapar -	OC RAIL / PA	1201512		AC OVER	AV.	VERTICAL	CIEADANCE	acence.	CHRIDAN
		AND	RONDOR	ROADWAY	Brub	LOBOM	07040	Thursday	DELOTENE		VENINAL		OPODGE	BRIDGE
	AU EDORT	MALIE	ENOTH	WIGTH	TYPE	OLCOM.	SINC	Incrude as	A BARRAN IN A	HEP-LALE/NEW	(MIR)		LOND	SUFFICIENC
	ancer dor		CLINGTIN		1116		<u> </u>	(CASTING)	Qeardiscond	(narocensum)	REPER	BOWB	ROATING	RATING
		6943				1								
SR 86	158.92	RCB	Comments:	The culves	t is not at g	rade.	Maximum I	ill height = 3	1					
		10- 10'x4'	12 C	Culvert ba	rrel length =	= 50'	Structure	length = 111	•					
		8044										1		
00 00	160.30	BCD.	0	The culum		- da	A Republication of							
3N 00	109.30	4-10-57	Commerce:	Culved be	mel leading		Structure	ionath a 45°						
		- 10 2.5		Content da	ares seasonari -	- 00	Sauctore	1011gari - 40						
		6945												
SR 86	160.16	RCB	Comments:	The cuive	t is not at g	rade.	Maximum (lill height = 3	1					
		7- 10'x5'		Culvert ba	rrel length 1	•58' S	tructure ien	gth = 78°						
		7.2			special							T		
2		6484	53	44'	stoci	Yes	Yes	2"	L				HS20	84.80
24 80	160.70	5- 10'x6'	Commenta:	Culvert ba	rreilength =	52" Ma	xamum fill h	eight = 1'						
					special			=	1.			T		
		6485	32	44	81991	Yes	Yes	3.	(<u></u>			L	HS20	84.80
SR 65	161.25	RC8 3- 10'x5'	Controents:	Cuivert ba	rreilength «	52°	ximum Till fa	eight = 1'						
		6466						-						· · ·
SR 86	161.75	RCB	Comments	The culver	t is not at o	rado.	Maximum	ill height = 2	•				ł	
		2- 10'x6'		Cuivert ba	rrel length =	= 102'	Structure	e length = 21	•					
					H-2-1	L						1		
22.72		1606	129	44'	railing	Yes	Yes	N/A	N/A	N/A	N/A	N/A	HS18 33	83,38
SR 88 1	162.05	Black Hills	Comments	1. The stru	icture is cui	rentiv cam	ring legal lo	ad w/o show	ino any alo	nificant distress				
		BALLAR		A										

FEDERAL REFERENCE NO 068-A 1RACS NO: HISBOS 01C

PAGE 1 OF 3

PAGE 2 OF 3

PAGE 3 OF 2

F	EDERAL REF	ERENCE NO:	090-A		TRACS NO:	H5806 01C		
ARRIER AC OVERLAY			VERTICAL CLEARANCE		BRIDGE	BRIDGE		
Ι.	STRUC	THICKNESS	REMOVE	REPLACE/NEW	(MONI)	MUM)	LOAD	SUFFICIENCY
	OK	(EXISTING)	(MINIMUM)	(MAXIMUM)	NB/EB	SEAVE	RATING	RATING
	Yes	N/A	N/A	N/A	NA	N/A	H\$18.33	83.36
fin	ng legal lo le to mediu ls complia	ad w/o show m map crac nt.	king any sig king. Joint p	nificant distress states are rusty.	s. Deck has di	ains.		
	Maximum f Structure Maximum f	ill height = 2 length = 32 ill height = 2						
	Structure I	ength = 43°						
	Maximum f Structure	ill height = 2 length = 43	5		a			
٦								

Date: 5/3/2007

APPENDIX A SUPPLEMENTAL WATER QUALITY INFORMATION

Wash Locations

Mask No	Mask Norra	MD	Wash Width	
wash No.	wash Name		(feet)	Estimated Area of Perm. Loss
1	Unnamed	156.9	16	Outside of project limits
2	Unnamed	156.9	1	<0.01
3	Unnamed	157.1	1	<0.01
4	Unnamed	157.1	50	0.11
5	Unnamed	157.5	2	<0.01
6	Unnamed	157.5	8	0.11
7	Unnamed	157.6	1	<0.01
8	Unnamed	157.6	5	<0.01
9	Unnamed	157.8	1	<0.01
10	Unnamed	157.8	4	0.04
11	Unnamed	157.9	1	<0.01
12	Unnamed	157.9	1	<0.01
13	Unnamed	157.9	1	<0.01
14	Unnamed	158.1	6–60	0.18
15	Unnamed	158.5	1	<0.01
16	Unnamed	158.5	6–8	0.02
17	Unnamed	158.7	1	<0.01
18	Unnamed	158.7	1–4	<0.01
19	Unnamed	158.9	1	<0.01
20	Unnamed	158.9	20	0.06
21	Unnamed	159.2	1	<0.01
22	Unnamed	159.2	3	<0.01
23	Unnamed	159.3	1	<0.01
24	Unnamed	159.5	5–30	0.06
25	Unnamed	159.8	1	<0.01
26	Unnamed	160.2	20	0.09
27	Unnamed	160.4	1	<0.01
28	Unnamed	160.7	10–30	0.12
29	Unnamed	160.7	1	<0.01
30	Unnamed	160.9	1	<0.01
31	Unnamed	161.2	1	<0.01
32	Unnamed	161.3	8–15	0.04
33	Unnamed	161.5	1	<0.01
34	Unnamed	161.6	3	0.02
35	Unnamed	161.7	5	0.01
36	Unnamed	161.8	6	0.02
37	Unnamed	161.8	1	<0.01
	Chinamou	101.0		~~.~
38	Black Hills Wash	162.1	40	0.09
39	Unnamed	162.2	1	<0.01

40	Unnamed	162.3	1	<0.01
41	Snyder Hill Wash	162.3	40	0.08
42	Unnamed	162.4	10	0.02
43	Unnamed	162.6	4	<0.01
44	Unnamed	162.7	1	<0.01
45	Unnamed	163.4	1	<0.01
46	Unnamed	163.7	2	<0.01
47	Unnamed	164	1	<0.01
48	Unnamed	164	3	<0.01
49	Unnamed	164	5	<0.01
50	Unnamed	164	90	0.19
51	Unnamed	164.8	1	<0.01
52	Unnamed	165.3	1	<0.01
53	Unnamed	164.4	20	Roadside drainage. Not jurisdictional
54	Unnamed	165.7	20	0.2
55	Unnamed	166	1	<0.01
56	Unnamed	166.1	1	<0.01
57	Unnamed	166.2	1	<0.01
58	Unnamed	166.2	1	<0.01
59	Unnamed	166.3	1	<0.01
60	Unnamed	166.3	1	<0.01
61	Unnamed	166.3	10	<0.01

NATIONWIDE PERMIT NUMBER 14

LINEAR



US Army Corps of Engineers Los Angeles District Regulatory Division/Arizona Branch

TRANSPORTATION PROJECTS

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and/or Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 401 et seq) the US Army Corps of Engineers published the "Reissuance of Nationwide Permits" in the <u>Federal Register</u> (72 FR 11092) on March 12, 2007. This Nationwide Permit is effective from March 19, 2007 to March 18, 2012 unless modified, reissued or revoked before that time. It is incumbent upon the permittee to remain informed of changes to the nationwide permits.

14. Linear Transportation Projects. Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than ½ acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than ½ acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3 acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The loss of waters of the United States exceeds 1/10 acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 27.) (Sections 10 and 404)

Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

401 Certification

303[d]-impaired waters (see Water Quality Definitions): For projects on a waterbody with an impaired reach, if the project impacts the listed waterbody within 800 meters (or ¹/₂ mile) downstream of an impaired reach to within 1600 meters (or 1 mile) upstream of an impaired reach: Individual 401 Certification.

Tributaries to 303[d]-impaired waters: For projects on a tributary to a waterbody listed as impaired, if the tributary mouth is on an impaired reach and the project impacts the tributary within 1600 meters (or 1 mile) of its mouth: Individual 401 Certification.

Outstanding Arizona Waters (a.k.a. "unique Waters") (see Water Quality Definitions): For projects on a designated Outstanding Arizona Water, if the project impacts the designated

waterbody within 800 meters (or ½ mile) downstream of a designated reach to within 1600 meters (or 1 mile) upstream of a designated reach: Individual 401 Certification.
Tributaries to Outstanding Arizona Waters: For projects on a tributary to a designated Outstanding Arizona Water, if the tributary mouth is on a designated reach and the project impacts the tributary within 1600 meters (or 1 mile) of its mouth: Individual 401 Certification.
Lake (see Water Quality Definitions): Individual 401 Certification required.
Other waters: Conditionally certified (all applicable general 401 conditions, below).
Tribal Waters: Hualapai Tribe – Individual Certification required Navajo Nation – Individual Certification required White Mountain Apache Tribe – Individual Certification required All other reservations – Contact EPA Region IX

State of Arizona 401 Water Quality Conditions

Except as noted, the following 401 General Conditions apply to all waters of the US (WUS) and all applicable NWP:

- 1. Any discharge (including runoff or seepage) occurring as a result of activities certified for the subject project shall not cause a violation of surface water quality standards for any WUS. Applicability of this condition is as defined in A.A.C. R18-11-102.
- 2. This certification does not authorize the discharge of process water, material processing residues, wastewater or other residual material to any WUS.
- 3. Activities herein certified shall be performed during periods of low flow (baseflow or less) in any watercourse or other WUS, or no flow in the case of ephemeral and intermittent waterbodies.
- 4. If activities are likely to create an erosion or sedimentation problem, operations shall cease until the problem is resolved or until reasonable control measures have been undertaken.
- 5. Erosion control, sediment control and/or bank protection measures shall be installed before construction and pre-operation activities, and shall be maintained as necessary during construction and post-construction periods to minimize channel or bank erosion, soil loss and sedimentation. Control measures shall not be constructed of uncemented or unconfined soil, or other easily transportable (by flow) materials.
- 6. The applicant is responsible for ensuring construction material and/or fill including, but not limited to: rock, gabion fill or other uncemented channel-lining materials, placed within the Ordinary High Water Mark (OHWM) of any WUS, shall not include materials that can cause or contribute to an exceedence of Arizona Water Quality Standards for Surface Waters (18, A.A.C., 11, Article 1). Any fill material washing must occur outside of the floodplain of any WUS prior to placement and the rinseate from such washing shall be contained and settled or otherwise prevented from contributing sediment or causing erosion to any WUS. Fill placed in locations subject to scour shall contain not more than ten percent (10%) on a dry weight basis of particles finer than 0.25 mm diameter (passing a No. 60 sieve).
- 7. Any dredged material is to be placed and retained in areas outside the OHWM of any WUS. Runoff from materials deposited outside the OHWM is to be settled, filtered or otherwise treated to prevent escape of pollutants (including sediment) to any WUS.
- 8. Except as otherwise allowed herein, upon completion of construction the applicant shall ensure no adverse change due to the subject project has occurred in the stability (with respect to stream geometry, erosion and sedimentation) of any WUS, including upstream and downstream from the project. If such change has occurred, the applicant shall take steps to restore the pre-project stability of any impacted segments.
- 9. Except where the activities certified herein are intended to permanently alter any WUS, all disturbed areas between the OHWM shall be restored to preconstruction conditions.

Denuded areas shall be revegetated as soon as possible with native and/or salvaged plants and seed. Vegetation should be maintained on unarmored banks and slopes to stabilize soil and prevent erosion.

- 10. Where needed to prevent erosion/sedimentation, flows unimpacted by the subject project shall be diverted around work operations, and material and equipment storage areas. Permanent and temporary access roadways, staging areas and material stockpiles shall be designed or located to allow storm flows to pass unimpeded. Except as otherwise allowed herein, when flow is present in any wash or other WUS within the project area, the applicant and any contractor will not impede, restrict, or stop the flow by any means.
- 11. Permanent and temporary pipes and culverted crossings and pads shall be adequately sized to handle expected flow and properly set with end section, splash pads, or headwalls that dissipate water energy to control erosion. Culverted and unculverted crossings and pads shall be constructed so as to accommodate the overtopping of the fill by streamflow and armored to prevent erosion of the fill.
- 12. Acceptable construction materials that will or may contact water in any WUS are: crushed stone, native fill (meeting the requirements in 401 General Condition 6) concrete, steel, plastic, or aluminum and other materials specifically approved in writing by ADEQ.
- 13. Silt laden or turbid water resulting from project activity shall be settled, filtered or otherwise treated prior to discharge to ensure no violation of Arizona Surface Water Quality Standards in any WUS.
- 14. When flow greater than described in 401 General Condition 3 above is present within the project area, all activities certified herein shall cease and construction equipment and materials easily transported by flow will be moved outside the flow area and the OHWM of any WUS. If such movement cannot be accomplished rapidly enough to prevent pollution of a WUS, measures shall be taken to prevent transport of sediment or other pollutants out of the construction area or into any WUS.
- 15. Work shall be conducted and monitored to ensure that pollution from the activities certified herein including, but not limited to: earthwork, concrete mixing and placement, detention ponds, and equipment maintenance and washing does not drain into any WUS.
- 16. If water is used for dust suppression, it shall not contain contaminants that could violate Arizona Surface Water Quality Standards of any WUS.
- 17. The applicant will erect any barriers, covers, shields and other protective devices as necessary to prevent any construction materials, equipment or contaminants/pollutants from falling, being thrown or otherwise entering any flowing WUS.
- 18. Upon completion of the activities certified herein, areas within the OHWM of all WUS at the project site shall be promptly cleared of all false work, piling, construction residues, equipment, debris or other obstructions. Any debris including, but not limited to: soil, silt, sand, rubbish, cement, bituminous material, oil or petroleum products, organic materials, tires or batteries, derived from the activities certified herein shall not be stored at any site where it may be washed into a WUS and shall be properly disposed of after completion of the work.
- 19. The applicant must designate area(s) for equipment staging and storage located where runoff from these activities cannot enter any WUS. Any equipment maintenance, washing or fueling that cannot be done offsite will be done here. Material specifically manufactured and sold as spill adsorbent/absorbent will be on hand to control small spills. All equipment and workboats shall be inspected for leaks daily and prior to use. All leaks shall be repaired immediately. All equipment and workboats will be steam cleaned prior to use in any WUS with flow.
- 20. The applicant shall have a spill containment plan onsite to ensure that pollutants are contained, removed and properly disposed of. In addition, the applicant must designate areas, located where runoff from these activities cannot enter any WUS, for chemical and

petroleum storage, and solid waste containment. All materials stored onsite will be stored in appropriate containers or packaging. Any pollutant produced by activities certified herein shall be properly disposed of in accordance with applicable regulations. A spill response kit will be maintained in this (these) area(s) to mitigate a potential spill. The kit will include material specifically manufactured and sold as spill adsorbent/absorbent including booms. The applicant will ensure that whenever there is activity on the site, that there are personnel on site trained in the proper response to spills and the use of spill response equipment.

- 21. If fully, partially or occasionally submerged structures are constructed of cast-in-place concrete instead of pre-cast concrete planks or slabs, applicant will take steps; e.g., sheet piling or temporary dams (except for NWP 33 & 15, filled cofferdams are not allowed), to prevent contact between water (instream and runoff) and the concrete until it cures and until any curing agents have evaporated or otherwise cease to be available; i.e., are no longer a pollutant threat. Where possible, construction work will be during extreme low water conditions or at a time and season that ensures all work is done in the dry.
- 22. For portions of the project utilizing potable water or groundwater for irrigation, direct runoff of irrigation water and overflows from runoff detention and/or retention areas into washes shall be limited to the extent practicable and shall not cause downstream erosion or flooding.
- 23. For portions of the project utilizing reclaimed wastewater for irrigation, direct runoff of irrigation water and overflow from retention/detention structures or storage impoundments into WUS is prohibited without the proper permits including, but not limited to, Arizona's Reclaimed Wastewater Permit and, if within the wetted area of a 25-year flood event (or within the floodplain in some cases), a AZPDES permit.
- 24. Fertilizer, herbicide and insecticide chemicals used for development of vegetated areas shall be selected based on minimum environmental impacts and approved for the intended use. Application rates printed on the product labels shall be strictly followed. Excess chemicals shall not be applied on recently treated areas and must either be stored, used elsewhere or disposed of (in any case, in accordance with all applicable regulations).

Water Quality Definitions

"303[d]-listed Impaired Waters"

These are waterbodies that as a result of the CWA 305[b] process are listed under CWA 303[d] as impaired; i.e., consistently not meeting water quality standards, and as a result merit special attention. The complete current 303[d] list of Impaired Waters is available on ADEQ's website: <u>http://www.azdeq.gov/environ/water/assessment/assess.html</u> (401 conditions herein are meant to apply to waterbodies on the current, not draft, list)

"Lake" The following are lakes which require an individual 401 certification for activities undertaken via a NWP:

A	pache County							
•	Becker Lake	Lat.: 34	° 9'	14.4"	Long .:	109°	18'	18.0"
•	Carnero Lake	Lat.: 34	6'	57.6"	Long .:	109°	31'	40.8"
•	Lyman Lake	Lat.: 34	21'	28.8"	Long .:	109°	21'	28.8"
С	ochise County							
•	Parker Canyon Lake	Lat.: 31	25	33.6"	Long .:	110°	27'	14.4"
С	oconino County							
•	Ashurst Lake	Lat.: 35	° 1' (08.4"	Long .:	111°	24'	10.8"
•	Bear Canyon Lake	Lat.: 34	24'	10.8"	Long .:	111°	0'1	0.8"
•	Blue Ridge Reservoir	Lat.: 34	33'	14.4"	Long .:	111°	11'	02.4"
•	Boot Lake	Lat.: 34	° 58'	51.6"	Long .:	111°	19'	58.8"
•	Chevelon Canyon Lake	Lat.: 34	30'	39.6"	Long .:	110°	49'	26.4"
•	Kinnikinick Lake	Lat.: 34	[°] 53'	52.8"	Long .:	111°	18'	21.6"
•	Lake Mary, Lower	Lat.: 35°	· 6' 2	21.6"	Long.:	111°	34'	19.2"
•	Lake Mary, Upper	Lat.: 35°	°4'	44.4"	Long .:	111°	31'	55.2"
•	Long Lake	Lat.: 34	[°] 46'	44.4"	Long.:	111°	12'	0.0"
•	Long Lake	Lat.: 35	0' 0	0.0"	Long.:	111°	20'	60.0"

٠	Mormon Lake	Lat.: 34° 56' 38.4"	Long.: 111° 27' 10.8"
٠	Odell Lake	Lat.: 34° 56' 02.4"	Long.: 111° 37' 51.6"
٠	Soldier Annex Lake	Lat.: 34° 47' 13.2"	Long.: 111° 13' 48.0"
٠	Soldier Lake	Lat.: 34° 47' 13.96	"Long.: 111° 13' 48.0"
٠	Steel Dam Lake	Lat.: 35° 13' 37.2"	Long.: 112° 24' 50.4"
٠	Stone Dam Lake	Lat.: 35° 13' 37.2"	Long.: 112° 24' 14.4"
٠	Stoneman Lake	Lat.: 34° 46' 44.4"	Long.: 111° 31' 04.8"
٠	Whitehorse Lake	Lat.: 35° 7' 01.2"	Long.: 112° 0' 46.8"
•	Woods Canyon Lake	Lat.: 34° 20' 06.0"	Long.: 110° 56' 34.8"
G	ila County		
٠	Roosevelt Lake	Lat.: 33° 40' 44.4"	Long.: 111° 9' 14.4"
L	a Paz County		
٠	Alamo Lake	Lat.: 34° 14' 45.6"	Long.: 113° 34' 58.8"
Μ	laricopa County		
٠	Apache Lake	Lat.: 33° 35' 31.2"	Long.: 111° 20' 31.2"
٠	Bartlett Lake	Lat.: 33° 49' 01.2"	Long.: 111° 37' 44.4"
٠	Canyon Lake	Lat.: 33° 32' 38.2"	Long.: 111° 26' 06.1"
٠	Lake Pleasant	Lat.: 33° 51' 14.4"	Long.: 112° 16' 15.6"
٠	Painted Rock Borrow Pit	Lat.: 33° 4' 58.8"	Long.: 113° 1' 19.2"
٠	Painted Rock Reservoir	Lat.: 33° 4' 15.6"	Long.: 113° 0' 28.8"
٠	Roosevelt Lake	Lat.: 33° 40' 44.4"	Long.: 111° 9' 14.4"
٠	Saguaro Lake	Lat.: 33° 34' 01.2"	Long.: 111° 32' 06.0"
Μ	lojave County		
٠	Alamo Lake	Lat.: 34° 14' 45.6"	Long.: 113° 34' 58.8"
N	avajo County		
٠	Rainbow Lake	Lat.: 34° 9' 03.6"	Long.: 109° 59' 02.4"
٠	Show Low Lake	Lat.: 34° 11' 24.0"	Long.: 109° 59' 56.4"
Pi	ima County		
•	Arivaca Lake	Lat.: 31° 31' 51.6"	Long.: 111° 15' 03.6"
Sa	anta Cruz County		
•	Arivaca Lake	Lat.: 31° 31' 51.6"	Long.: 111° 15' 03.6"
•	Patagonia Lake	Lat.: 31° 29' 31.2"	Long.: 110° 52' 01.2"
•	Peña Blanca Lake	Lat.: 31° 24' 10.8"	Long.: 111° 5' 02.4"
Y	avapai County	T	1100 001 5 4 52
•	Granite Basin Lake	Lat.: 34° 37′ 02.1″	Long.: 112° 32′ 56.5″
•	Horseshoe Reservoir	Lat.: 33° 58' 58.8"	Long.: 111° 42' 28.8"
•	Horsethiet Lake	Lat.: 34° 9' 43.2"	Long.: 112° 17′ 56.4″
•	Lake Pleasant	Lat.: 33° 51' 14.4"	Long.: 112° 16' 15.6"
•	Lynx Lake	Lat.: 34° 31' 08.4"	Long.: 112° 23' 06.0"
•	Peck's Lake	Lat.: 34° 47' 06.0"	Long.: 112° 2' 31.2"
٠	Watson Lake	Lat.: 34° 35' 16.8"	Long.: 112° 25' 04.8"

"Outstanding Arizona Waters"

ADEQ is in the process of the triennial review of surface water quality standards (18 Arizona Administrative Code 11, Art 1) and among other things, this entails an updating of the Unique Waters of the state. A definite change is the name: instead of "Unique Waters," these bodies of water shall be referred to as "Outstanding Arizona Waters." Current Water Quality Standards for Surface Waters are available on the Arizona Secretary of State website

(<u>http://azsos.gov/public_services/Title_18/18-11.pdf</u>). The following are currently classified as Unique Waters (from R18-11-112(E), Arizona Administrative Code):

Apache County

- The West Fork of the Little Colorado River, from its headwaters to Government Springs at Latitude 33° 59' 33"/Longitude 109° 27' 54".
- Lee Valley Creek, from its headwaters to confluence with Lee Valley Reservoir.
- Hay Creek, from its headwaters to its confluence with the West Fork of the Black River.
- Stinky Creek, from the White Mountain Apache Indian Reservation boundary to its confluence with the West Fork of the Black River.

Cochise County

- Cave Creek from the headwaters to the Coronado National Forest boundary.
- South Fork of Cave Creek from its headwaters to its confluence with Cave Creek.

Coconino County

- Oak Creek from its headwaters to confluence with the Verde River.
- West Fork of Oak Creek from its headwaters to confluence with Oak Creek.

Gila County

• (Proposed) Fossil Creek, from its headwaters at the confluence of Sandrock and Calf Pen Canyons above Fossil Springs to its confluence with the Verde River.

Graham County

- Bonita Creek, from the boundary of the San Carlos Indian Reservation to its confluence with the Gila River.
- Aravaipa Creek, from its confluence with Stowe Gulch at Latitude 32° 52' 10"/Longitude 110° 22' 03" to the
- downstream boundary of Aravaipa Canyon Wilderness Area at Latitude 32° 54' 23"/Longitude 110° 33' 42". Greenlee County
- Bear Wallow Creek, from its headwaters to the boundary of the San Carlos Indian Reservation.
- North Fork of Bear Wallow Creek, from its headwaters to confluence with Bear Wallow Creek.
- South Fork of Bear Wallow Creek, from its headwaters to confluence with Bear Wallow Creek.
- Snake Creek, from its headwaters to its confluence with the Black River.
- KP Creek, from its headwaters to its confluence with the Blue River.

Mohave County

• Francis Creek, from its headwaters to its confluence with Burro Creek.

Pima County

- Cienega Creek, from confluence with Gardner Canyon and Spring Water Canyon to USGS gaging station at Latitude 32° 02' 09"/Longitude 110° 40' 36".
- Buehman Canyon Creek, from its headwaters to confluence with unnamed tributary at Latitude 32° 24' 31.5"/ Longitude 110° 32' 08".
- Aravaipa Creek, from its confluence with Stowe Gulch at Latitude 32° 52' 10"/Longitude 110° 22' 03" to the downstream boundary of Aravaipa Canyon Wilderness Area at Latitude 32° 54' 23"/Longitude 110° 33' 42".

Yavapai County

- Oak Creek from its headwaters to confluence with the Verde River.
- Peoples Canyon Creek from its headwaters to confluence with the Santa Maria River.
- Burro Creek, from its headwaters to confluence with Boulder Creek.
- Francis Creek, from its headwaters to its confluence with Burro Creek.

Regional Conditions

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

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

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

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

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

excluding the Colorado River from Davis Dam downstream to the north end of Topock and downstream of Imperial Dam.

General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/ or Coastal Zone Management Act consistency for an NWP.

1. Navigation

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the US Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

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

2. Aquatic Life Movements

No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

3. Spawning Areas

Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas

Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds

No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48.

6. Suitable Material

No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes

No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments.

If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows

To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains

The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment

Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls

Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills

Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance

Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

15. Wild and Scenic Rivers

No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, US Forest Service, Bureau of Land Management, US Fish and Wildlife Service).

16. Tribal Rights

No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

17. Endangered Species

(a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work or that utilize the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. (d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the US FWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the US FWS and NMFS or their world wide Web pages at http://www.fws.gov/ and http://www.noaa.gov/fisheries.html respectively.

18. Historic Properties

(a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic resources can be sought from the State Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may

have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h–2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

19. Designated Critical Resource Waters

Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

20. Mitigation

The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

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

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

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of ½ acre, it cannot be used to authorize any project resulting in the loss of greater than ½ acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian areas to address documented water quality or habitat loss concerns. Normally, wider riparian areas to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate

compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

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

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

21.Water Quality

Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

22. Coastal Zone Management

In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

23. Regional and Case-By-Case Conditions

The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or US EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination. **24. Use of Multiple Nationwide Permits**

The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

25. Transfer of Nationwide Permit Verifications

If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transfere sign and date below."

(Transferee)

(Date)

26. Compliance Certification

Each permittee who received an NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

27. Pre-Construction Notification

(a) *Timing*. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) Forty-five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is ''no effect'' on listed species or ''no potential to cause effects'' on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);

(4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10 acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) *Form of Pre-Construction Notification:* The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring pre-construction notification and for other NWP activities requiring preconstruction notification to the district engineer that result in the loss of greater than ½-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (US FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) District Engineer's Decision: In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either:

(1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

28. Single and Complete Project

The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

Further Information

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

Definitions

<u>Best management practices (BMPs)</u>: Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

<u>Compensatory mitigation</u>: The restoration, establishment (creation), enhancement, or preservation of aquatic resources for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

<u>Currently serviceable</u>: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not
result in a gain in aquatic resource area.

<u>Ephemeral stream</u>: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

<u>Historic Property</u>: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

<u>Independent utility</u>: A test to determine what constitutes a single and complete project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

<u>Intermittent stream</u>: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

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

<u>Open water</u>: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

<u>Ordinary High Water Mark</u>. An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

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

<u>Practicable</u>: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

<u>Pre-construction notification</u>: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

<u>Preservation</u>. The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

<u>Re-establishment</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area.

<u>Rehabilitation</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

<u>Restoration</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: Re-establishment and rehabilitation.

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

<u>Riparian areas</u>: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects waterbodies with their adjacent uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 20.)

<u>Shellfish seeding</u>: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete project: The term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete project must have independent utility (see definition). For linear projects, a "single and complete project" is all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

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

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

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

<u>Stream channelization</u>: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

<u>Structure</u>: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

<u>Tidal wetland</u>: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

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

<u>Waterbody</u>: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States that, during a year with normal patterns of precipitation, has water flowing or standing above ground to the extent that an ordinary high water mark (OHWM) or other indicators of jurisdiction can be determined, as well as any wetland area (see 33 CFR 328.3(b)). If a jurisdictional wetland is adjacent—meaning bordering, contiguous, or neighboring— to a jurisdictional waterbody displaying an OHWM or other indicators of jurisdiction, that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.



United States Department of the Interior

Fish and Wildlife Service Arizona Ecological Services Field Office 2321 West Royal Palm Road, Suite 103 Phoenix, Arizona 85021-4951

In Reply Refer to: AESO/SE 22410-2008-F-0281

Mr. Robert Hollis Division Administrator U.S. Department of Transportation Federal Highway Administration 400 East Van Buren Street, Suite 410 Phoenix, Arizona 85004-0674

RE: HOP-AZ, STP-086-A(APA), TRACS No. 086 PM 156 H6806 01C, SR 86; Sandario Road to Kinney Road

Dear Mr. Hollis:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated November 13, 2007 and received by us on November 15, 2007. Further information was received on February 25, 2008. At issue are impacts that may result from the proposed improvements to State Route (SR) 86 between Sandario Road (milepost 156.9) and Kinney Road (milepost 166.5) southwest of Tucson in Pima County, Arizona. The proposed action may affect the Pima pineapple cactus (PPC) (*Coryphantha scheeri* var. *robustispina*).

This biological opinion (BO) is based on information provided in the October 17, 2007 (Arizona Department of Transportation 2007) biological evaluation (BE), the February 6, 2008 letter from you to our office, telephone conversations, and other sources of information. Literature cited in this BO is not a complete bibliography of all literature available on the species of concern, the effects from road improvement projects, the project area, or other subjects considered in this opinion. A complete administrative record of this consultation is on file at the Arizona Ecological Services Office.

CONSULTATION HISTORY

November 15, 2007: We received your request for consultation and accompanying BE.

February 25, 2008: We received supplemental information to the BE regarding your proposed conservation measures and initiated consultation.

June 16, 2008: We provided a draft biological opinion to the Federal Highway Administration and requested an extension until July 29, 2008.

July 1, 2008: We received your comments on the draft biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The applicant (Arizona Department of Transportation [ADOT]) proposes to improve State Route (SR) 86 between Sandario Road (milepost [MP] 156.9) and Kinney Road (MP 166.5) southwest of Tucson in Pima County, Arizona. Currently, SR 86 is an undivided two-lane roadway west of Kinney Road. Due to increased traffic volumes and growth in the area, the existing roadway cannot carry enough vehicles to provide a desirable traffic flow. The proposed project will provide a 4-lane divided roadway, and it will use the existing 2-lane roadway for one direction of travel throughout the majority of the length of the project. Crossroad intersections will be improved, and signals and turn lanes will be constructed at major intersections. Where required, local roads will be realigned at their intersections with SR 86.

SR 86 will transition from two 12-ft lanes with 8-ft shoulders to a 4-lane divided Fringe-Urban Highway with a 50-ft median at MP 157.3. Existing SR 86 will be used as the westbound roadway and a new castbound roadway will be constructed from MP 157.3 to approximately MP 160.1. From MP 160.1 to MP 160.4, the horizontal alignment transitions to the north. Through the transition, the existing roadway will be removed and new castbound and westbound roadways will be constructed.

From MP 160.4 to MP 163.2, the existing 2-lane roadway will be converted to the eastbound roadway and a new westbound roadway will be constructed. Between MP 163.2 and MP 163.6, the horizontal alignment will again transition to the south with the existing roadway being removed and new eastbound and westbound roadways being constructed. From MP 163.6 to MP 164.2, the existing 2-lane roadway will be converted to the westbound roadway and a new eastbound roadway will be converted to the westbound roadway and a new eastbound roadway will be converted to the westbound roadway and a new eastbound roadway will be converted.

At MP 164.2, the horizontal alignment will again transition to the north, and the 4-lane divided roadway will be constructed approximately symmetrically to the north and south of the centerline of the existing roadway. The existing roadway will be removed and new eastbound and westbound roadways will be constructed to approximately MP 165.8, where it will tie into the taper, MP 165.8 to MP 166.1, located at the westerly end of the design-build project for the improvement of the Kinney Road intersection that is planned by Pima County under a Joint Project Agreement.

A third eastbound lane will be added to SR 86 at the Sunset Boulevard intersection. A third westbound lane will be added at the Sheridan Avenue intersection, and three through lanes in each direction will be continued easterly through the Kinney Road Intersection to provide needed capacity through the intersection of SR 86 and Kinney Road. Both the eastbound and westbound roadways will transition back to two lanes just east of Kinney Road.

The new eastbound or westbound 2-lane roadway will be 38-ft wide and will have a 10-ft outside shoulder, two 12-ft lanes and a 4-ft inside shoulder. Where the existing roadway is being used for one direction of travel, the 40-ft roadway will be reconfigured to provide a 10-ft outside shoulder, two 12-ft lanes and a 6-ft inside shoulder. In areas where the existing roadway is being removed and new eastbound and westbound roadways will be constructed, the inside shoulder of both roadways will be 4 ft wide. Auxiliary lanes will be constructed at intersections.

Existing drainage culverts that are adequately sized will be extended as required. Reinforced concrete box culverts and pipe culverts will be extended through the median and across the new roadway to provide the required recovery zone adjacent to the new roadway.

Where guard rail is currently used on the existing roadway because of an inadequate recovery zone, and the existing roadway is being used for one direction of travel, the existing culverts will be extended to provide the required recovery zone adjacent to the existing roadway and the existing guard rail will be removed.

Where existing culverts are undersized, new culverts will be constructed under the new roadway. After traffic is moved to the new roadway, the existing culverts will be upsized as required and will be constructed to provide the required recovery zone. Existing guard rail will be removed.

A new 260-ft long bridge will be constructed on the new westbound roadway at Black Hills Wash (MP 162.1) and a new 200-ft long bridge will be constructed at Snyder Hills Wash (MP 162.3).

The existing bridges will be improved as follows to carry the design volumes of water:

- Black Hills Wash (MP 162.1): The existing bridge will remain and a new 130-ft long bridge will be constructed immediately to the cast of the existing bridge. The channel will be widened under the new bridge.
- Snyder Hills Wash (MP 162.3): The existing bridge will remain. The wash bottom will be cleared out and excavated to the stable slope invert, which is at the approximate existing elevation of 2,436 ft. Further analysis is required during final design to determine a design stable slope invert.

Jurisdictional waters of the U.S. will be impacted by the proposed project activities. It is anticipated that this work will be authorized under the terms and conditions of the U.S. Army Corps of Engineers Nationwide Permit No. 14 and the Section 401 Conditional Water Quality certification. More than one acre of soil will be disturbed; therefore, an Arizona Pollutant Discharge Elimination System (AZPDES) permit is required and a Storm Water Pollution Prevention Plan (SWPPP) will be prepared.

Proposed Conservation Measures

The Federal Highway Administration (FHA) and the applicant propose the following conservation measures to minimize the effects to PPC and its habitat:

- ADOT will purchase 60-acre credits in a Service-approved conservation bank for PPC, corresponding to the area of permanent disturbance to PPC habitat. Any change in the scope of the project that may occur during final design will require a re-evaluation of impacts to PPC habitat.
- Areas of temporary disturbance to PPC habitat due to construction will be rehabilitated using the following methodologies:
 - 1) Minimize colonization of disturbed areas by invasive species.
 - Invasive species control will be conducted both prior to and during construction to minimize colonization of disturbed areas by non-native grasses that may degrade potential PPC habitat. Due to the sensitivity of the project site, invasive species control will begin two years prior to the commencement of work on the roadway project. This will help minimize the number of invasive species present on the project site at the time of construction-related ground disturbance. In addition, during final design, ADOT will develop a project-specific *Plan for Control of Noxious and Invasive Plant Species*, which will address appropriate control of occurrences of invasive plant species within the right-of-way during construction. The plan will include such provisions as vehicle inspection to prevent movement of noxious and invasive species seeds to and from the work site; procedures for collection, removal, and disposal of noxious and invasive plants; and proposed methods of control, such as application of herbicides and mechanical or manual removal, to be used for each plant species at various stages in plant development.
 - 2) Preserve and use existing topsoil to preserve micronutrients and the natural seed bank.
 - Topsoil salvage will be conducted in natural areas where construction disturbance will occur and invasive species are not present. In these areas, four to eight inches of surface soil will be salvaged and stockpiled to be redistributed over the cut and fill slopes adjacent to the new roadway upon completion of construction. A preconstruction survey by a qualified biologist will be conducted to determine the presence of invasive species in the project area. In areas where topsoil is determined to contain invasive species seed banks, topsoil will not be reused.
 - 3) Maximize opportunities for growth of native vegetation.
 - Disturbed soils that will not be landscaped or otherwise permanently stabilized by construction will be seeded using species native to the project vicinity. Seeding will be aided by the application of compost and fertilizers to maximize propagation.

- 4) Salvage protected native plants.
 - A native plant salvage plan will be developed for the project during final design. Plant species protected under the Arizona Native Plant law (cactus and native trees) will be avoided by construction to the extent practicable. If impacts to native plants cannot be avoided, the plants will be treated in accordance with State law. All PPC within the area of permanent disturbance will be salvaged and replanted at a location approved by a qualified biologist. Any PPC that are not within the area of permanent disturbance, but present within the right-of-way, will be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction.
- A Storm Water Pollution Prevention Plan (SWPPP) will be developed and adhered to by all contractors and subcontractors throughout construction. The SWPPP will stipulate Best Management Practices for on-site operations designed to reduce the potential for erosion and off-site sedimentation due to construction activities.

STATUS OF THE SPECIES

Our February 3, 2006, BO for the Ocotillo Preserve Residential Subdivision (02-21-02-F-0210 and 02-21-04-F-0160) included a detailed Status of the Species for the PPC. This BO is available on our website at http://www.fws.gov/southwest/es/arizona/, under Document Library; Section 7 Biological Opinions. Herein we incorporate that status discussion by reference.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform from which to assess the effects of the action now under consultation.

For this project, we define the action area as the area within the right-of-way from MP 156.9 to MP 166.5 between Sandario Road and Kinney Road along SR 86, as well as an additional 0.25 mile on either side of the right-of-way. The 0.25-mile distance includes the area that might be indirectly affected by the proposed action (e.g. the area that may be affected by the spread of invasive plants or changes in drainage patterns). The amount of PPC habitat within this buffer is unknown.

PPC information was gathered primarily from the Arizona Game and Fish Department's Heritage Database Management System (HDMS) though a search for PPC records, and from a single-pass survey of the action area (excluding the 0.25-mile buffer) conducted by Archaeological Consulting Services, Ltd. (ACS) biologists in December 2006 and April 2007. This area was not surveyed according to full PPC protocol specifications, which recommend multiple passes. ACS biologists observed seven PPC within the action area. A total of approximately 172 acres within the action area (excluding the 0.25-mile buffer) will be directly disturbed by project construction activities. Approximately 142 of the 172 acres comprise PPC habitat. Of these 142 acres, approximately 60.77 acres will be permanently disturbed, while the remaining areas will be temporarily disturbed. At least one to two PPC fall within the construction footprint and will be directly impacted by the new pavement limits; the exact number is uncertain because of the PPC's proximity to the edge of the permanent disturbance footprint.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The proposed action will result in the direct loss of a minimum of one to two PPC situated within the construction footprint, while the other live five or six PPC found within the construction footprint are avoidable. Because protocol surveys were not conducted throughout the entire action area, it is possible some PPC plants remain undetected; these plants could be impacted by the project. Approximately 142 acres of PPC habitat occur within the construction footprint, 60.77 acres of which will be permanently disturbed through newly paved areas. The applicant proposes to off-set the direct effects to PPC and its habitat by purchasing 60 acre-credits in a Service-approved conservation bank for PPC.

Within the construction footprint, approximately 81.23 acres of PPC habitat will be temporarily disturbed by this project. New disturbance and equipment can disrupt soils and cryptobiotic crusts, which can lead to crosion and loss of soil nutrients. Soil erosion can also be promoted by the loss of perennial plants, and the spread of non-native species into a previously uninfected area can result from soil disturbance. Nearby areas already support stands of buffelgrass, and additional disturbance can facilitate its spread, as well as that of other exotic plants. This invasive grass species has the potential to alter the ecosystem of the plant community by forming monotypic stands that do not allow for the regeneration of native species and create a much heavier fuel load with higher fire intensities. This change in plant composition can lead to a permanent change in the plant community by allowing fires to burn hotter and more frequently than would occur in the natural vegetation. Certain species (like PPC) that are not fire-adapted can be lost as a result of such fires. In some cases, it has been found that desert vegetation, while fragile and easily destroyed, does have a long-term potential (probably measured in centuries) to recover from drastic disturbance (Vasek et al. 1975). Even so, it is unknown if PPC will be able to re-occupy areas after disturbance (due to invasive grasses, long-term drought, global climate change, etc.); therefore, the applicant is proposing to offset indirect effects to PPC and its habitat through the following conservation measures.

To minimize indirect effects to PPC habitat, the applicant will implement one or more rehabilitation techniques as outlined in the Conservation Measures. To minimize colonization of disturbed areas by invasive species, the applicant will begin invasive species control two years

Mr. Robert Hollis

prior to the commencement of work on the roadway project. This will help minimize the number of invasive species present on the project site at the time of construction-related ground disturbance. Additionally, during final design, the applicant will develop a project-specific *Plan for Control of Noxious and Invasive Plant Species*, which will address appropriate control of occurrences of invasive plant species within the right-of-way during construction. The plan will include such provisions as vehicle inspection to prevent movement of noxious and invasive species seeds to and from the work site; procedures for collection, removal, and disposal of noxious and invasive plants; and proposed methods of control, such as application of herbicides and mechanical or manual removal, to be used for each plant species at various stages in plant development.

The second rehabilitation technique the applicant will conduct is to preserve and use existing topsoil to preserve micronutrients and the natural seed bank. In natural areas where construction disturbance will occur and invasive species are not present, the applicant will salvage four to eight inches of topsoil and stockpile it for redistribution over the cut and fill slopes adjacent to the new roadway upon completion of construction. A preconstruction survey by a qualified biologist will be conducted to determine the presence of invasive species in the project area. In areas where topsoil is determined to contain invasive species seed banks, topsoil will not be reused.

The third rehabilitation technique the applicant will conduct is to maximize opportunities for growth of native vegetation by seeding using species native to the project vicinity in disturbed soils that will not be landscaped or otherwise permanently stabilized by construction. Seeding will be aided by the application of compost and fertilizers to maximize propagation.

Lastly, the fourth rehabilitation technique the applicant will conduct is to salvage protected native plants within the construction area. A native plant salvage plan will be developed for the project during final design. Plant species protected under the Arizona Native Plant law (cactus and native trees) will be avoided by construction to the extent practicable. If impacts to native plants cannot be avoided, the plants will be treated in accordance with State law. All PPC within the area of permanent disturbance will be salvaged and replanted at a location approved by a qualified biologist. Any PPC that are not within the area of permanent disturbance, but present within the right-of-way, will be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction.

Most of these measures will help to prevent noxious weed infestations during the time of construction and will assist in the regeneration of native vegetation within the action area. PPC and native vegetation have been able to re-occupy disturbed areas in the past (i.e., land cleared over 50 years ago for a pipeline project – see our BO on the SFPP, L.P. El Paso to Phoenix Expansion Project), so we believe the effects of disturbing the action area, while possibly long-term, are temporary. However, there is no monitoring or treatment scheduled after construction is completed, which is when noxious weeds are most likely to invade the area. Areas outside of the construction footprint but within the 0.25-mile buffer of the action area will not be directly affected, as disturbance activities will be confined to the construction footprint; however, this buffer area may be indirectly affected by the invasion of non-native weeds after construction is completed. Any PPC in these buffer areas will be subjected to the same impacts (fire and changes in plant communities) described above for PPC in the project footprint.

In terms of salvaging PPC that will be directly impacted by construction and transplanting them to a new location, we view transplanting cacti as a measure of last resort for conserving the species, with limited conservation value. Transplanted PPC have low levels of survival (especially after the first year), and past efforts to transplant individual PPC to other locations have had only limited success. Furthermore, once individuals are transplanted from a site, it is considered to be extirpated, as those individuals functioning in that habitat are irretrievably lost. As a result, transplanted individuals are not considered as functioning within the context of a self-sustaining population.

In summary, this project will result in the loss of at least one to two PPC and 60.77 acres of habitat, and the alteration (possibly temporary) of 81.23 acres of PPC habitat. Additionally, an unknown amount of PPC habitat within the 0.25-mile area surrounding the construction footprint may be affected by invasive plant species. The applicant proposes to purchase a total of 60 acrecredits from an approved PPC conservation bank to offset the direct adverse effects, in addition to implementing rehabilitation techniques to offset indirect adverse effects to PPC and its habitat.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The amount of development within the action area that may occur in the future is unknown. Pima County grew by 26.5 percent (from 666,880 to 843,746 residents) between 1990 and 2000, and is projected to reach more than 1.2 million residents by 2015 (see http://www.pagnet.org/RegionalData/Population/PopulationEstimates/tabid/582/Default.aspx). Areas within the action area and immediately adjacent to it, where suitable habitat for PPC is located, are a mix of private, State, and Federal lands. The private and State lands could become available for development in the future, with cumulative effects to PPC and continued loss and further fragmentation of PPC habitat.

CONCLUSION

After reviewing the current status of PPC, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jcopardize the continued existence of PPC. No critical habitat has been designated; therefore, none will be affected. While we remain concerned about the status of the PPC as described in this BO, we make this determination because:

- The applicant will purchase 60 acre-credits in a Service-approved conservation bank to compensate for the direct effects to PPC and its habitat, permanently protecting 60 acres of PPC habitat within the conservation bank.
- The applicant will control invasive species both prior to and during construction to minimize colonization of disturbed areas by non-native grasses that may degrade potential PPC habitat. This will include a project-specific *Plan for Control of Noxious*

and Invasive Plant Species, which will address appropriate control of occurrences of invasive plant species within the right-of-way during construction.

- The applicant will salvage four to eight inches of topsoil in natural areas where construction disturbance will occur and invasive species are not present, which will be redistributed over the cut and fill slopes adjacent to the new roadway upon completion of construction. This will preserve micronutrients and the natural seed bank within the area.
- The applicant will seed disturbed areas not permanently stabilized by construction using species native to the project vicinity. This will maximize opportunities for growth of native vegetation within the action area.
- The applicant will avoid plant species protected under the Arizona Native Plant law (cactus and native trees) to the extent practicable. If impacts to native plants cannot be avoided, the plants will be treated in accordance with State law. All PPC within the area of permanent disturbance will be salvaged and replanted at a location approved by a qualified biologist. Any PPC that are not within the area of permanent disturbance, but present within the right-of-way, will be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction. While many PPC do not survive long after transplanting, some transplanted individuals are likely to survive, and protecting plants outside the area of permanent disturbance will ensure that these individuals will not be damaged or destroyed.
- A Storm Water Pollution Prevention Plan (SWPPP) will be developed and adhered to by all contractors and subcontractors throughout construction. This will reduce the potential for crosion and off-site sedimentation due to construction activities.
- The loss of at least one to two PPC and 60.77 acres of habitat, as well as the long-term temporary alteration of 81.23 acres of habitat, comprise less than one percent of the known population and extant suitable habitat.

INCIDENTAL TAKE STATEMENT

Sections 7(b)(4) and 7(o)(2) of the ESA do not apply to listed plant species. However, protection of listed plants is provided to the extent that the ESA requires a Federal permit for removal or reduction to possession of endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law. Neither incidental take nor recovery permits are needed from us for implementation of the proposed action.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- We recommend that the PPC conservation bank credits be secured through a Notarized Credit Agreement before construction begins.
- Where possible, we recommend minimizing soil disturbance by driving over plants rather than removing and replacing top soil. Removing top soil and then replacing it can promote invasive species and soil erosion, leading to the destruction of perennial plants within the area. Many of the crushed plants, such as crossote, will resprout from the base.

In order that we are kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the proposed improvements to SR 86 between Sandario Road and Kinney Road. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded (not applicable to this consultation); (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

We appreciate your efforts to identify and minimize effects from this project. Please contact Marit Alanen at (520) 670-6150 (x234) or Jim Rorabaugh at (520) 670-6150 (x230) if you have further questions. Please refer to consultation number 22410-2008-F-0281 in future correspondence regarding this project.

Sincerely, lason M. Doughas

FOR Steven L. Spangle Field Supervisor

 cc: Federal Highway Administration, Environmental Program Manager, Phoenix, AZ (Attn: Steve Thomas)
 Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ

Arizona Department of Transportation, Biologist, Flagstaff, AZ (Attn: Justin White)

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GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS Arizona Game and Fish Department Revised October 23, 2007

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

The Sonoran population of desert tortoises occurs south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position parallel to the ground at all times, and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 40° Celsius (105° Fahrenheit) unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to one-half mile, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 40° Celsius (105° Fahrenheit), the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises*. Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- . These guidelines do not apply to the Mojave population of desert tortoises (north and west of the Colorado River). Mojave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.
- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.
- . Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

APPENDIX C SUPPLEMENTAL AIR QUALITY INFORMATION

The EPA is the lead federal agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. The EPA issued a *Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources*, 66 Federal Register 17229 (March 29, 2001). This rule was issued under the authority in Section 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline program, its national low emission vehicle standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 to 65 percent, and will reduce on-highway diesel particulate matter emissions by 87 percent, as shown in the figure below.

As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.



Unavailable Information for Project-Specific MSAT Impact Analysis

This EA includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives in this EA. Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information:

Information that is Unavailable or Incomplete

Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

1. Emissions: The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model—emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

2. Dispersion: The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The National Cooperative Highway Research Program is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

3. Exposure Levels and Health Effects: Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

APPENDIX D SUPPLEMENTAL NOISE ANALYSIS INFORMATION

Noise Policy

Under federal noise abatement regulations (23 CFR 772), noise impacts are analyzed based on the land use activity and a noise threshold for the corresponding land use category (Table). The only sensitive land use category that is present within the project area is Category B, which includes residences, motels, and parks. Under ADOT *Noise Abatement Policy*, adopted in March 2000, mitigation is considered for Category B properties if the predicted noise levels exceed the existing noise level by 15 dBA or greater.

Activity Category	Description	Threshold
А	Land on which serenity and quiet are of	57 dBA
	extraordinary significance and serve an important	(exterior)
	public need, and where the preservation of those	
	qualities is to continue to serve its intended	
	purpose. Such areas could include amphitheaters,	
	particular parks or open spaces which are	
	recognized by appropriate local officials for	
	activities requiring special qualities of serenity and	
	quiet.	
В	Residences, motels, hotels, public meeting rooms,	67 dBA
	schools, churches, libraries, hospitals, picnic areas,	(exterior)
	playgrounds, active sports areas, and parks.	
С	Developed lands, properties or activities not	72 dBA
	included in categories A and B above.	(exterior)
D	Undeveloped lands.	
E	Residences, motels, public meeting rooms, schools,	52 dBA
	churches, libraries, hospitals, and auditoriums.	(interior)

Table – Land Use Categories

Ambient noise measurements are used to establish existing ambient noise levels where current traffic levels are minimal and for model calibration. At each measurement location, readings were recorded with a Larson Davis Model 820, Type I Sound Level Meter and followed procedures specified in Section 4 of the FHWA document FHWA-PD-96-046/DOT-VNTC-FHWA-96-5, *Measurement of Highway-Related Noise* (FHWA, 1996). Measurements were taken on June 20, 2007 during the morning rush hour.

The first location is south of SR 86 and east of Kinney Road at the eastern end of the project. The meter was positioned approximately 630 feet south of SR 86 and 220 feet east of Kinney Road in the backyard of a newly constructed single-family home. An average ambient noise level of 48 dBA was recorded at this location. The second location is north of SR 86 and west of Sheridan Avenue. The meter was positioned approximately 100 feet north of the SR 86 centerline and 125 feet west of Sheridan Avenue outside a 6-foot tall block wall bordering the front yard of a single-family home that is currently

being used as an assisted living facility. An average ambient noise level of 67 dBA was recorded at this location.

The third measurement location is south of SR 86 and east of Sunset Avenue. The meter was positioned approximately 205 feet south of the SR 86 centerline and 600 feet east of Sheridan Avenue outside a chain link fence surrounding the property of a mobile home. An average ambient noise level of 58 dBA was recorded at this location. The fourth measurement location is south of SR 86 near Spencer Street. The meter was positioned approximately 278 feet south of the SR 86 centerline and adjacent Spencer Street, just west of a single-family home side yard. An average ambient noise level of 57 dBA was recorded at this location.

The fifth measurement location is north of SR 86 near Tucson Estates Parkway. The meter was positioned approximately 309 feet north of the SR 86 centerline and adjacent Tucson Estates Parkway, just west of a single-family home front yard. An average ambient noise level of 58 dBA was recorded at this location.

Receiver	Description	No	Noise level (dBA)						
	_	of	Existing No Action Prefer		Preferred				
		Units	(2007)	(2030)	Alt. (2030)				
West of Old Ajo Highway									
R1	Single Family Home	3	56	60	60				
R2	Single Family Home	5	53	57	57				
R3	Single Family Home	3	46	49	51				
	Old Ajo Highway to Tucson Estates Parkway								
R4	Mobile Home	1	47	47	51				
R5	Mobile Home	1	48	48	52				
R6	Mobile Home	2	49	50	54				
R7	Mobile Home	1	50	51	55				
R8	Single Family Home	1	50	50	55				
R9	Mobile Home	1	53	54	58				
R10	Mobile Home	1	54	54	58				
R11	Mobile Home	3	57	57	60				
R12	Mobile Home	2	57	58	61				
R13	Mobile Home	2	56	57	60				
R14	Single Family Home	1	51	52	55				
R15	Single Family Home	1	51	52	56				
R16	Single Family Home	2	55	55	59				
R17	Single Family Home	1	47	47	52				
R18	Single Family Home	1	51	52	57				
R19	Single Family Home	1	48	49	53				
R20	Single Family Home	1	46	47	51				
R21	Single Family Home	1	50	51	54				
R22	Single Family Home	1	52	52	55				
R23	Mobile Home	1	50	51	54				
Spencer Street to Sunset Avenue									
R24	Single Family Home	1	59	60	65				
R25	Single Family Home	1	54	54	58				
R26	Single Family Home	1	55	55	60				
R27	Mobile Home	1	47	48	52				
R28	Church	1	61	61	68				
R29	Single Family Home	1	55	56	61				
R30	Mobile Home	3	51	51	57				
R31	Mobile Home	1	56	57	62				
R32	Mobile Home	1	53	54	59				
R33	Mobile Home	3	54	55	60				
R34	Single Family Home	1	60	60	63				

Table – Peak Traffic Hour Noise Levels at Representative ADOT Customer Locations

Receiver	Description	No	Noise level (dBA)			
		of	Existing	No Action	Preferred	
		Units	(2007)	(2030)	Alt. (2030)	
R35	Single Family Home	1	51	51	55	
R36	Single Family Home	2	53	54	58	
Sunset Avenue to Sheridan Avenue						
R37	Single Family Home	1	51	51	56	
R38	Single Family Home	1	48	49	52	
R39	Single Family Home	1	47	48	51	
R40	Single Family Home	2	49	50	53	
R41	Single Family Home	1	48	49	51	
R42	Single Family Home	1	52	52	54	
R43	Single Family Home	1	56	56	58	
R44	Single Family Home	1	54	54	56	
R45	Single Family Home	1	57	57	60	
R46	Single Family Home	1	51	52	55	
R47	Single Family Home	1	47	48	50	
Sheridan Avenue to Kinney Road						
R48	Single Family Home	8	50	50	53	
R49	Single Family Home	5	55	56	58	
R50	Single Family Home	4	56	56	58	
R51	Single Family Home	7	52	53	55	
R52	Single Family Home	3	52	53	55	
R53	Single Family Home	3	52	53	55	
R54	Single Family Home	6	48	49	52	
R55	Single Family Home	3	49	50	52	
R56	Single Family Home	2	50	51	53	
East of Kinney Road						
R57	Single Family Home	12	56	57	58	
R58	Single Family Home	12	50	51	51	
R59	Single Family Home	10	46	48	50	
R60	Single Family Home	12	54	55	57	
R61	Single Family Home	9	46	47	47	
R62	Single Family Home	2	47	49	50	
R63	Single Family Home	1	59	62	61	















APPENDIX E Cultural Resources Consultation and Memorandum of Agreement

Cultural Resource Sites					
Site Number	Description	National Register Eligibility	Criterion	Impact/Determination	
AZ AA:16:5(ASM)	Lithic scatter	Determined eligible	D	Yes/Adverse effect	
AZ AA:16:377 (ASM)	Ajo-Tucson Hwy/Old SR 86	Determined eligible	D	Yes/No adverse effect	
AZ AA:16:466 (ASM)	Historic trash scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	
AZ AA:16:530 (ASM)	Artifact scatter	Not eligible	N/A	None/N/A	
AZ AA:16:539 (ASM)	Historic artifact scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	
AZ AA:16:540(ASM)	Historic trash scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	
AZ AA:16:541(ASM)	Historic trash scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	
AZ AA:16:542(ASM)	Historic trash scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	
AZ AA:16:543(ASM)	Historic trash scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	
AZ AA:16:544(ASM)	Historic trash scatter	Not eligible	N/A	None/N/A	
AZ AA:16:546(ASM)	Hohokam artifact scatter	Testing required to determine eligibility	N/A	Yes/Site's eligibility status is unknown; therefore, determination is pending	
AZ AA:16:547(ASM)	Historic trash scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	
AZ AA:16:548(ASM)	Hohokam artifact scatter	Testing required to determine eligibility	N/A	Yes/Site's eligibility status is unknown; therefore, determination is pending	
AZ AA:16:549(ASM)	Historic trash scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	
AZ AA:16:550(ASM)	Historic trash scatter	Not eligible	N/A	Yes/Site is not NRHP- eligible, therefore, no historic property affected	



Arizona Department of Transportation

Environmental Planning Group Phoenix, AZ 85007

1611 W. Jackson, Mail Drop EM02

Sam Elters State Engineer

Janet Napolitano Governor

Victor M. Mendez Director

August 20, 2007

Dr. David Jacobs, Compliance Specialist State Historic Preservation Office Arizona State Parks 1300 W. Washington Street Phoenix, AZ 85007

RE: ADOT Project No. 086 PM 156 H6806 01C SR 86-Sandario Road to Kinney Road (MP 156.90-166.52) Section 106 Consultation

Dear Dr. Jacobs:

The Arizona Department of Transportation (ADOT) plans to widen State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. The area of potential effect (APE) extends from Milepost (MP) 156.90 to 166.52. New right-of-way will be acquired from the Bureau of Land Management (BLM), Arizona State Land Department (ASLD), and private landowners to accommodate the improvements. Funding is being provided by the Arizona State Transportation Improvement Program. Due to the presence of federal (i.e., BLM) land, the project is considered a federal undertaking that is subject to Section 106 review. Consulting parties include ADOT, the State Historic Preservation Office (SHPO), BLM, ASLD, the Hopi Tribe, the Tohono O'odham Nation, and the Yavapai-Apache Tribe.

The scope of this project would involve widening the existing highway from two to four lanes and making road and drainage improvements. The potential improvements will be located within the existing right-of-way, but will also include additional new right-of-way of varying width.

Eighteen surveys have covered parts of the project area of potential effect (APE) (Table 1): however, they were largely conducted over 10 years ago, or covered very small areas, so the corridor was resurveyed to comply with current standards. The current right-of-way was recently surveyed (Hill and Bruder 1999) and so was not re-examined.

Four previously recorded sites are plotted within the current project area (Table 2). AZ AA:16:5(ASM) is an Archaic chipped stone scatter located near MP 161.3. The site was originally recorded in the late 1950s and apparently excavated, although no report is available. During survey of the existing SR 86 right-of-way in 1999, Hill and Bruder (1999) were unable to relocate the site, which may have been impacted by construction and extensive erosion. No evidence of the site was identified during the current survey within the proposed right-of-way, therefore it does not appear as one of the 12 sites recorded for the current project. No further work is recommended for this site.

Jacobs Project No. 086 PM 156 H6806 01C August 20, 2007 Page 2 of 4

Agency No.	Project Description	Sites1	Reference ²
1975-15.ASM	Browley Wash-Robles Junction	0	Hammack 1975b
1984-151.ASM	CAT Mountain Water Treatment Plant	0	Madsen 1984
1985-15.ASM	State Land Survey	0	Rozen 1985
1985-53.ASM	City of Tucson-CAP Water Treatment and Reservoir Storage Survey	0	Rankin and Czaplicki 1985
1985-71.ASM	State Land Survey	0	Rozen 1985
1986-109.ASM	Tucson Aqueduct Project	8	Downum et al. 1986
1986-162.ASM	State Route 86 Near Ryan Field	0	Ervin 1986
1988-197.ASM	Tucson Aqueduct Reach 6 Changes	0	Lincoln 1988
1988-217.ASM	Ajo Highway Survey	0	Slawson 1990
1989-157.ASM	CAP Southwest, Transmission Main	0	Maldonado 1989
1993-239.ASM	ADOT SR-86 Robles Pass	1	Woodall 1993
1997-151.ASM	Proposed Bridge Scour along SR 86, West of Tucson	0	Stone 1997
1998-411.ASM	State Route 86/Three Points Maintenance	0	Stone and Woodall 1998
1999-85.ASM	Three Points to Kinney Road	0	Hill and Bruder 1999
2000-36.ASM	CAVSARP Pipelines	0	Lindeman 2000
2001-504.ASM	Ajo Self Storage Survey	0	Slawson 2001
2003-1458.ASM	Sonoran Ranch Estates II	0	Stephen 2003c
SHPO-2002-135	0.5-Mile ROW on State Trust Land in Avra Valley	1	Rieder 2001

Table 1. Summary of Previous Archaeological Research Within the One-Mile Review Area.

¹Number of sites within 1 mi of current project area.

²See report for full reference information.

Table 2. Summary of Previously Recorded	Cultural Resou	rces Within the C	Dne-Mile Review Area.
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Site Number	Cultural Affiliation	Site Type	Eligibility	Reference ¹
AZ AA:16:5(ASM)	Archaic, lithic	Lithic scatter	Eligible	Hill and Bruder 1999
AZ AA:16:466(ASM)	Hohokam, Euroamerican	Artifact scatter, trash scatter	Not eligible	Harrison and Hesse 2003
AZ AA:16:530(ASM)	Hohokam	Artifact scatter	Not eligible	DeJongh and Dart 2006b
AZ AA:16:539(ASM)	Euroamerican	Trash scatter	Not eligible	DeJongh and Dart 2006a

¹ See report for full reference information.

AZ AA:16:466(ASM) is an extensive historic trash scatter with three concentrations located along San Joaquin Road where side road improvements are planned (Harrison and Hesse 2003). The artifact assemblage was comprised of mostly food and beverage containers dating between the 1910s and 1930s. Although some historic artifacts were recorded in this area during the current survey as IOs 41–43, the bulk of the site, including the concentrations, is located outside the project area. In addition, the site was recommended not eligible, so no adverse effect is anticipated. Because the site shape provided by AZSITE is so much larger than the site map drawn by the recorders, it is difficult to determine whether the three isolates recorded during the current survey fall in relation to the site boundary. No further work is recommended for this site.

AZ AA:16:530 and AA:16:539(ASM) are two sites recorded by Old Pueblo Archaeology near MP 157.7. AZ AA:16:530(ASM) is a small (4×5 m) sherd scatter located on the south side of

Jacobs Project No. 086 PM 156 H6806 01C August 20, 2007 Page 3 of 4

SR 86 that is unlikely to yield any further information (DeJongh and Dart 2006b). AZ AA:16:539(ASM) is a small (4.5×8 m) but dense scatter of historic artifacts on the north side of SR 86 (DeJongh and Dart 2006a). The artifacts represent a single dumping episode of domestic trash dating from the 1950s with no association with important persons or events. Both sites were recommended not eligible due to the apparent lack of subsurface deposits. Neither of these two sites was relocated by the current survey, suggesting that they are located further from the highway than depicted on AZSITE. No further work is recommended for these two sites.

Under contract to Jacobs, ACS surveyed the new right-of-way and prepared a report, Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road (MP 156.90–166.52), Southwest of Tucson, Pima County, Arizona by Kristin L. Fangmeier and Shawn G. Fackler dated August 7, 2007. ACS' survey identified 12 sites and 83 isolated occurrences. The 12 sites include segments of a historic road, eight historic trash scatters, two prehistoric artifact scatters, and one previously recorded historic trash scatter.

The historic road, AZ AA:16:377(ASM), which consisted of six newly recorded segments of the Ajo-Tucson/Old SR 86 Highway, has been determined eligible under Criteria A and D for its association with and potential to yield significant information about the early transportation history of Southern Arizona; however, individual segments must be evaluated for their contribution to the site's overall eligibility. Segments 1–4 appear to predate the 1935 alignment, perhaps dating as far back as the 1880s. Although they are overgrown and have been impacted by fence and utility line construction, they retain integrity of location, design, materials, and association, and are therefore recommended as contributing to the site's overall eligibility under Criterion A. Segments 5 and 6 are part of the 1935 alignment, and though well maintained, do not maintain the original paving. In addition, they have been realigned to form T-intersections with SR 86. As a result, they lack integrity of location, design, materials, and workmanship, and are recommended as noncontributing. Field documentation and archival research have mitigated potential impacts to Segments 1–4 and have exhausted the information potential of all six segments, so no additional work is recommended.

The eight historic trash scatters—AZ AA:16:540–544, 547, 549, and 550(ASM)—range in size from small scatters to larger sites with multiple surface concentrations. No features were present at any of the sites. In general, the trash represents one or more episodes of expedient trash disposal, or possibly temporary encampment associated with travelers along the Ajo–Tucson Highway. No direct association with a specific household or community could be established. Subsurface cultural material is unlikely as the trash appeared to be mostly surface dumping; mapping and in-field analysis have exhausted the sites' information potential. Therefore, they are recommended not eligible.

AZ AA:16:546 and AA:16:548(ASM) are two Hohokam artifact scatters. The assemblage at AA:16:546 is comprised of two broken vessels and four chipped stone flakes. Despite the limited nature of the assemblage, subsurface deposits may be present. AA:16:548 consists of a light, yet varied, Hohokam artifact scatter. The variety of artifacts suggests that the site may have been

Jacobs Project No. 086 PM 156 H6806 01C August 20, 2007 Page 4 of 4

multi-functional, including resource processing and lithic tool production. Although no features were noted at either site, testing is recommended to determine the presence and condition of any subsurface deposits. If present, the sites may be eligible under Criterion D for their potential to yield significant information regarding the Hohokam occupation of the area.

In addition to these 11 sites, one previously recorded site may also occur within the project area. AZ AA:16:466(ASM) was recorded as an extensive historic trash scatter with three concentrations located along San Joaquin Road where side road improvements are planned. The artifact assemblage was comprised of mostly food and beverage containers dating between the 1910s and 1930s. Although some historic artifacts were recorded in this area during the current survey—recorded as IOs 41–43—the bulk of the site is located outside the project area, and none of the concentrations was noted within the survey area. Moreover, the site was previously recommended not eligible. Therefore, no further work is recommended.

Based on the results of the survey and background research, historic properties may be impacted by the proposed undertaking. If avoidance of AZ AA:16:546 and AA:16:548(ASM) is not possible, ADOT recommends the preparation and implementation of a testing plan for determining eligibility of the sites. No further work is recommended for the other cultural resources identified as a result of this survey.

Please review the enclosed report and the information provided in this letter. If you find the report adequate and agree with ADOT's eligibility recommendations, please indicate your concurrence by signing below. ADOT will reconsult on a determination of project effect once it is known if the project will effect sites AZ AA:16:546 and AA:16:548(ASM) If you have any questions or concerns, please feel free to contact me at 602-712-6371 or email JMallery@azdot.gov.

Sincerely,

J. Matthew Mallery Historic Preservation Specialist Environmental Planning Group 1611 W. Jackson, MD EM02 Phoenix, AZ 85007

Signature for SHPO Concurrence

Date

Enclosure



Arizona Department of Transportation

Environmental Planning Group 1611 W. Jackson, MD EM02

Phoenix, Arizona 85007

Janet Napolitano Governor

Victor M. Mendez Director

August 20, 2007

Sam Elters State Engineer

Leigh Kuwanwisiwma Hopi Cultural Preservation Office P.O. Box 123 Kykotsmovi, AZ 86039

ADOT Project No. 086 PM 156 H6806 01C RE: SR 86-Sandario Road to Kinney Road (MP 156.90-166.52) Section 106 Consultation

Dear Mr. Kumanwisiwma:

The Arizona Department of Transportation (ADOT) plans to widen State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. The area of potential effect (APE) extends from Milepost (MP) 156.90 to 166.52. New right-of-way will be acquired from the Bureau of Land Management (BLM), Arizona State Land Department (ASLD), and private landowners to accommodate the improvements. Funding is being provided by the Arizona State Transportation Improvement Program. Due to the presence of federal (i.e., BLM) land, the project is considered a federal undertaking that is subject to Section 106 review. Consulting parties include ADOT, the State Historic Preservation Office (SHPO), BLM, ASLD, the Army Corps of Engineers, the Hopi Tribe, the Tohono O'odham Nation, the Pascua Yaqui Tribe, and the Yavapai-Apache Tribe.

The scope of this project would involve widening the existing highway from two to four lanes and making road and drainage improvements. The potential improvements will be located within the existing right-of-way, but will also include additional new right-of-way of varying width.

Eighteen surveys have covered parts of the project area of potential effect (APE) (Table 1); however, they were largely conducted over 10 years ago, or covered very small areas, so the corridor was resurveyed to comply with current standards. The current right-of-way was recently surveyed (Hill and Bruder 1999) and so was not re-examined.

Four previously recorded sites are plotted within the current project area (Table 2). AZ AA:16:5(ASM) is an Archaic chipped stone scatter located near MP 161.3. The site was originally recorded in the late 1950s and apparently excavated, although no report is available. During survey of the existing SR 86 right-of-way in 1999, Hill and Bruder (1999) were unable to relocate the site, which may have been impacted by construction and extensive erosion. No evidence of the site was identified during the current survey within the proposed right-of-way, therefore it does not appear as one of the 12 sites recorded for the current project. No further work is recommended for this site.
Kumanwisiwma Project No. 086 PM 156 H6806 01C August 20, 2007 Page 2 of 4

Agency No.	Project Description	Sites1	Reference ²
1975-15.ASM	Browley Wash-Robles Junction	0	Hammack 1975b
1984-151.ASM	CAT Mountain Water Treatment Plant	0	Madsen 1984
1985-15.ASM	State Land Survey	0	Rozen 1985
1985-53.ASM	City of Tucson-CAP Water Treatment and Reservoir Storage Survey	0	Rankin and Czaplicki 1985
1985-71.ASM	State Land Survey	0	Rozen 1985
1986-109.ASM	Tucson Aqueduct Project	8	Downum et al. 1986
1986-162.ASM	State Route 86 Near Ryan Field	0	Ervin 1986
1988-197.ASM	Tucson Aqueduct Reach 6 Changes	0	Lincoln 1988
1988-217.ASM	Ajo Highway Survey	0	Slawson 1990
1989-157.ASM	CAP Southwest, Transmission Main	0	Maldonado 1989
1993-239.ASM	ADOT SR-86 Robles Pass	1	Woodall 1993
1997-151.ASM	Proposed Bridge Scour along SR 86, West of Tucson	0	Stone 1997
1998-411.ASM	State Route 86/Three Points Maintenance	0	Stone and Woodall 1998
1999-85.ASM	Three Points to Kinney Road	0	Hill and Bruder 1999
2000-36.ASM	CAVSARP Pipelines	0	Lindeman 2000
2001-504.ASM	Ajo Self Storage Survey	0	Slawson 2001
2003-1458.ASM	Sonoran Ranch Estates II	0	Stephen 2003c
SHPO-2002-135	0.5-Mile ROW on State Trust Land in Avra Valley	1	Rieder 2001

Table 1. Summary of Previous Archaeological Research Within the One-Mile Review Area.

Number of sites within 1 mi of current project area.

²See report for full reference information.

Table 2. Summary of Previou	sly I	Recorded Cultura	Resources	Within	the One	-Mile Review Area.
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Site Number	Cultural Affiliation	Site Type	Eligibility	Reference1
AZ AA:16:5(ASM)	Archaic, lithic	Lithic scatter	Eligible	Hill and Bruder 1999
AZ AA:16:466(ASM)	Hohokam, Euroamerican	Artifact scatter, trash scatter	Not eligible	Harrison and Hesse 2003
AZ AA:16:530(ASM)	Hohokam	Artifact scatter	Not eligible	DeJongh and Dart 2006b
AZ AA:16:539(ASM)	Euroamerican	Trash scatter	Not eligible	DeJongh and Dart 2006a

See report for full reference information.

AZ AA:16:466(ASM) is an extensive historic trash scatter with three concentrations located along San Joaquin Road where side road improvements are planned (Harrison and Hesse 2003). The artifact assemblage was comprised of mostly food and beverage containers dating between the 1910s and 1930s. Although some historic artifacts were recorded in this area during the current survey as IOs 41–43, the bulk of the site, including the concentrations, is located outside the project area. In addition, the site was recommended not eligible, so no adverse effect is anticipated. Because the site shape provided by AZSITE is so much larger than the site map drawn by the recorders, it is difficult to determine whether the three isolates recorded during the current survey fall in relation to the site boundary. No further work is recommended for this site.

AZ AA:16:530 and AA:16:539(ASM) are two sites recorded by Old Pueblo Archaeology near MP 157.7. AZ AA:16:530(ASM) is a small (4×5 m) sherd scatter located on the south side of SR 86 that is unlikely to yield any further information (DeJongh and Dart 2006b). AZ AA:16:539(ASM) is a small (4.5×8 m) but dense scatter of historic artifacts on the north side of

Kumanwisiwma Project No. 086 PM 156 H6806 01C August 20, 2007 Page 3 of 4

SR 86 (DeJongh and Dart 2006a). The artifacts represent a single dumping episode of domestic trash dating from the 1950s with no association with important persons or events. Both sites were recommended not eligible due to the apparent lack of subsurface deposits. Neither of these two sites was relocated by the current survey, suggesting that they are located further from the highway than depicted on AZSITE. No further work is recommended for these two sites.

Under contract to Jacobs, ACS surveyed the new right-of-way and prepared a report, Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road (MP 156.90–166.52), Southwest of Tucson, Pima County, Arizona by Kristin L. Fangmeier and Shawn G. Fackler dated August 7, 2007. ACS' survey identified 12 sites and 83 isolated occurrences. The 12 sites include segments of a historic road, eight historic trash scatters, two prehistoric artifact scatters, and one previously recorded historic trash scatter.

The historic road, AZ AA:16:377(ASM), which consisted of six newly recorded segments of the Ajo-Tucson/Old SR 86 Highway, has been determined eligible under Criteria A and D for its association with and potential to yield significant information about the early transportation history of Southern Arizona; however, individual segments must be evaluated for their contribution to the site's overall eligibility. Segments 1–4 appear to predate the 1935 alignment, perhaps dating as far back as the 1880s. Although they are overgrown and have been impacted by fence and utility line construction, they retain integrity of location, design, materials, and association, and are therefore recommended as contributing to the site's overall eligibility under Criterion A. Segments 5 and 6 are part of the 1935 alignment, and though well maintained, do not maintain the original paving. In addition, they have been realigned to form T-intersections with SR 86. As a result, they lack integrity of location, design, materials, and are recommended as noncontributing. Field documentation and archival research have mitigated potential impacts to Segments 1–4 and have exhausted the information potential of all six segments, so no additional work is recommended.

The eight historic trash scatters—AZ AA:16:540–544, 547, 549, and 550(ASM)—range in size from small scatters to larger sites with multiple surface concentrations. No features were present at any of the sites. In general, the trash represents one or more episodes of expedient trash disposal, or possibly temporary encampment associated with travelers along the Ajo–Tucson Highway. No direct association with a specific household or community could be established. Subsurface cultural material is unlikely as the trash appeared to be mostly surface dumping; mapping and in-field analysis have exhausted the sites' information potential. Therefore, they are recommended not eligible.

AZ AA:16:546 and AA:16:548(ASM) are two Hohokam artifact scatters. The assemblage at AA:16:546 is comprised of two broken vessels and four chipped stone flakes. Despite the limited nature of the assemblage, subsurface deposits may be present. AA:16:548 consists of a light, yet varied, Hohokam artifact scatter. The variety of artifacts suggests that the site may have been multi-functional, including resource processing and lithic tool production. Although no features were noted at either site, testing is recommended to determine the presence and condition of any subsurface deposits. If present, the sites may be eligible under Criterion D for their potential to yield significant information regarding the Hohokam occupation of the area.

Kumanwisiwma Project No. 086 PM 156 H6806 01C August 20, 2007 Page 4 of 4

In addition to these 11 sites, one previously recorded site may also occur within the project area. AZ AA:16:466(ASM) was recorded as an extensive historic trash scatter with three concentrations located along San Joaquin Road where side road improvements are planned. The artifact assemblage was comprised of mostly food and beverage containers dating between the 1910s and 1930s. Although some historic artifacts were recorded in this area during the current survey—recorded as IOs 41–43—the bulk of the site is located outside the project area, and none of the concentrations was noted within the survey area. Moreover, the site was previously recommended not eligible. Therefore, no further work is recommended.

Based on the results of the survey and background research, historic properties may be impacted by the proposed undertaking. If avoidance of AZ AA:16:546 and AA:16:548(ASM) is not possible, ADOT recommends the preparation and implementation of a tesung plan for determining eligibility of the sites. No further work is recommended for the other cultural resources identified as a result of this survey.

Please review the enclosed report and the information provided in this letter. If you find the report adequate and agree with ADOT's eligibility recommendations, please indicate your concurrence by signing below. ADOT will reconsult on a determination of project effect once it is known if the project will effect sites AZ AA:16:546(ASM) and AZ AA:16:548(ASM). At this time, ADOT is also inquiring whether you have any concerns regarding historic properties of religious or cultural importance to your community within the project area. If you have such concerns, any information you might provide within 30 days of receipt of this letter would be consultation at a later date, ADOT would make a good faith effort to address any of the tribe's concerns. However, such consultation would not necessitate a reconsideration of this determination of project effect. If you have any questions or concerns, please feel free to contact me at 602-712-6371 or email JMallery@azdot.gov.

Sincerely,

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J. Matthew Mallery Historic Preservation Specialist Environmental Planning Group 1611 W. Jackson, MD EM02 Phoenix, AZ 85007

too Kuwenersiams for Hopi Concurrence Signature

8-28-07

Date

Enclosure



Arizona Department of Transportation

Environmental Planning Group 1611 W. Jackson, MD EM02 Phoenix, Arizona 85007

> Sam Elters State Engineer

Janet Napolitano Governor

Victor M. Mendez Director August 20, 2007

Peter Steere Joe Joaquin Cultural Affairs Office P.O. Box 837 Sells, AZ 85634

RE: ADOT Project No. 086 PM 156 H6806 01C SR 86–Sandario Road to Kinney Road (MP 156.90–166.52) Section 106 Consultation

Dear Mr. Joaquin and Mr. Steere:

The Arizona Department of Transportation (ADOT) plans to widen State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. The area of potential effect (APE) extends from Milepost (MP) 156.90 to 166.52. New right-of-way will be acquired from the Bureau of Land Management (BLM), Arizona State Land Department (ASLD), and private landowners to accommodate the improvements. Funding is being provided by the Arizona State Transportation Improvement Program. Due to the presence of federal (i.e., BLM) land, the project is considered a federal undertaking that is subject to Section 106 review. Consulting parties include ADOT, the State Historic Preservation Office (SHPO), BLM, ASLD, the Corps of Engineers, the Hopi Tribe, the Tohono O'odham Nation, the Pascua Yaqui Tribe, and the Yavapai-Apache Tribe.

The scope of this project would involve widening the existing highway from two to four lanes and making road and drainage improvements. The potential improvements will be located within the existing right-of-way, but will also include additional new right-of-way of varying width.

Eighteen surveys have covered parts of the project area of potential effect (APE) (Table 1); however, they were largely conducted over 10 years ago, or covered very small areas, so the corridor was resurveyed to comply with current standards. The current right-of-way was recently surveyed (Hill and Bruder 1999) and so was not re-examined.

Four previously recorded sites are plotted within the current project area (Table 2). AZ AA:16:5(ASM) is an Archaic chipped stone scatter located near MP 161.3. The site was originally recorded in the late 1950s and apparently excavated, although no report is available. During survey of the existing SR 86 right-of-way in 1999, Hill and Bruder (1999) were unable to relocate the site, which may have been impacted by construction and extensive erosion. No evidence of the site was identified during the current survey within the proposed right-of-way, therefore it does not appear as one of the 12 sites recorded for the current project. No further work is recommended for this site.

Joaquin and Steere Project No. 086 PM 156 H6806 01C August 20, 2007 Page 2 of 4

Agency No.	Project Description	Sites ¹	Reference ²
1975-15.ASM	Browley Wash-Robles Junction	0	Hammack 1975b
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	Storage Survey		1985
1985-71.ASM	State Land Survey	0	Rozen 1985
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1993-239.ASM	ADOT SR-86 Robles Pass	I	Woodall 1993
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SHPO-2002-135	0.5-Mile ROW on State Trust Land in Avra Valley	1	Rieder 2001

Table 1. Summary of Previous Archaeological Research Within the One-Mile Review Area.

¹Number of sites within 1 mi of current project area.

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Table 2. Summary of Previously Recorded Cultural Resources Within the One-Mile Review Are	. Summary of Previously Recorded Cultural Resources Within the One-Mile Review	v Area.
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Site Number	Cultural Affiliation	Site Type	Eligibility	Reference ¹
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AZ AA:16:466(ASM)	Hohokam,	Artifact scatter, trash	Not eligible	Harrison and Hesse 2003
	Euroamerican	scatter		
AZ AA:16:530(ASM)	Hohokam	Artifact scatter	Not eligible	DeJongh and Dart 2006b
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¹ See report for full reference information.

AZ AA:16:466(ASM) is an extensive historic trash scatter with three concentrations located along San Joaquin Road where side road improvements are planned (Harrison and Hesse 2003). The artifact assemblage was comprised of mostly food and beverage containers dating between the 1910s and 1930s. Although some historic artifacts were recorded in this area during the current survey as IOs 41–43, the bulk of the site, including the concentrations, is located outside the project area. In addition, the site was recommended not eligible, so no adverse effect is anticipated. Because the site shape provided by AZSITE is so much larger than the site map drawn by the recorders, it is difficult to determine whether the three isolates recorded during the current survey fall in relation to the site boundary. No further work is recommended for this site.

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Joaquin and Steere Project No. 086 PM 156 H6806 01C August 20, 2007 Page 3 of 4

AA:16:539(ASM) is a small $(4.5 \times 8 \text{ m})$ but dense scatter of historic artifacts on the north side of SR 86 (DeJongh and Dart 2006a). The artifacts represent a single dumping episode of domestic trash dating from the 1950s with no association with important persons or events. Both sites were recommended not eligible due to the apparent lack of subsurface deposits. Neither of these two sites was relocated by the current survey, suggesting that they are located further from the highway than depicted on AZSITE. No further work is recommended for these two sites.

Under contract to Jacobs, ACS surveyed the new right-of-way and prepared a report, Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road (MP 156.90-166.52), Southwest of Tucson, Pima County, Arizona by Kristin L. Fangmeier and Shawn G. Fackler dated August 7, 2007. ACS' survey identified 12 sites and 83 isolated occurrences. The 12 sites include segments of a historic road, eight historic trash scatters, two prehistoric artifact scatters, and one previously recorded historic trash scatter.

The historic road, AZ AA:16:377(ASM), which consisted of six newly recorded segments of the Ajo-Tucson/Old SR 86 Highway, has been determined eligible under Criteria A and D for its association with and potential to yield significant information about the early transportation history of Southern Arizona; however, individual segments must be evaluated for their contribution to the site's overall eligibility. Segments 1–4 appear to predate the 1935 alignment, perhaps dating as far back as the 1880s. Although they are overgrown and have been impacted by fence and utility line construction, they retain integrity of location, design, materials, and association, and are therefore recommended as contributing to the site's overall eligibility under Criterion A. Segments 5 and 6 are part of the 1935 alignment, and though well maintained, do not maintain the original paving. In addition, they have been realigned to form T-intersections with SR 86. As a result, they lack integrity of location, design, materials, and are recommended as noncontributing. Field documentation and archival research have mitigated potential impacts to Segments 1–4 and have exhausted the information potential of all six segments, so no additional work is recommended.

The eight historic trash scatters—AZ AA:16:540–544, 547, 549, and 550(ASM)—range in size from small scatters to larger sites with multiple surface concentrations. No features were present at any of the sites. In general, the trash represents one or more episodes of expedient trash disposal, or possibly temporary encampment associated with travelers along the Ajo–Tucson Highway. No direct association with a specific household or community could be established. Subsurface cultural material is unlikely as the trash appeared to be mostly surface dumping; mapping and in-field analysis have exhausted the sites' information potential. Therefore, they are recommended not eligible.

AZ AA:16:546 and AA:16:548(ASM) are two Hohokam artifact scatters. The assemblage at AA:16:546 is comprised of two broken vessels and four chipped stone flakes. Despite the limited nature of the assemblage, subsurface deposits may be present. AA:16:548 consists of a light, yet varied, Hohokam artifact scatter. The variety of artifacts suggests that the site may have been multi-functional, including resource processing and lithic tool production. Although no features were noted at either site, testing is recommended to determine the presence and condition of any subsurface deposits. If present, the sites may be eligible under Criterion D for their potential to yield significant information regarding the Hohokam occupation of the area.

Joaquin and Steere Project No. 086 PM 156 H6806 01C August 20, 2007 Page 4 of 4

In addition to these 11 sites, one previously recorded site may also occur within the project area. AZ AA:16:466(ASM) was recorded as an extensive historic trash scatter with three concentrations located along San Joaquin Road where side road improvements are planned. The artifact assemblage was comprised of mostly food and beverage containers dating between the 1910s and 1930s. Although some historic artifacts were recorded in this area during the current survey—recorded as IOs 41–43—the bulk of the site is located outside the project area, and none of the concentrations was noted within the survey area. Moreover, the site was previously recommended not eligible. Therefore, no further work is recommended.

Based on the results of the survey and background research, historic properties may be impacted by the proposed undertaking. If avoidance of AZ AA:16:546 and AA:16:548(ASM) is not possible, ACS recommends the preparation and implementation of a testing plan for determining eligibility of the sites. No further work is recommended for the other cultural resources identified as a result of this survey.

Please review the enclosed report and the information provided in this letter. If you find the report adequate and agree with ADOT's eligibility recommendations, please indicate your concurrence by signing below. ADOT will reconsult on a determination of project effect once it is known if the project will effect sites AZ AA:16:546(ASM) and AZ AA:16:548(ASM). At this time, ADOT is also inquiring whether you have any concerns regarding historic properties of religious or cultural importance to your community within the project area. If you have such concerns, any information you might provide within 30 days of receipt of this letter would be considered in the project planning. If your office opts to participate in cultural resource consultation at a later date, ADOT would make a good faith effort to address any of the tribe's concerns. However, such consultation would not necessitate a reconsideration of this determination of project effect. If you have any questions or concerns, please feel free to contact me at 602-712-6371 or email JMallery@azdot.gov.

Sincerely,

J. Matthew Mallery Historic Preservation Specialist Environmental Planning Group 1611 W. Jackson, MD EM02 Phoenix, AZ 85007

Signature for Tohono O'odham Concurrence

9-11-07

Date

2 US Department

of Transportation Federal Highway

Administration

ARIZONA DIVISION

May 8, 2008

400 East Van Buren Street, Spite 410 Phoenix, Arizona 35004-0674 602-379-3546

> In Reply Refer To: HOP-AZ

STP-086-A(APA) TRACS No. 086 PM 156 H6806 01C SR 86-Sandario Road to Kinney Road (MP 156.90-166.52) Continuing Section 106 Consultation Review required for NEPA Compliance "Adverse effect"

Mr. Steve Ross Arizona State Land Department 1616 West Adams Phoenix, Arizona 85007

Dear Mr. Ross:

The Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT) are planning a road-widening project along State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. As this project would employ Federal funds, it is considered an undertaking subject to Section 106 review. This project occurs on ADOT-owned right-of-way (ROW), Arizona state land administered by the Arizona State Land Department (ASLD), and ADOT casement across federal land administered by the Bureau of Land Management (BLM). A Memorandum of Understanding (MOU) between FHWA and BLM designates FHWA as the lead agency and BLM as a cooperating agency. Consulting parties for this project include FHWA, ADOT, ASLD, BLM, and the Tohono O'odham Nation.

The scope of this project would involve widening the existing highway from two to four lanes and making road and drainage improvements. New ROW and temporary construction casements (TCE) are anticipated for this project. The area of potential effect (APE) is defined as the SR 86 ROW between milepost (MP) 156.90 to 166.52, as well as any areas of new ROW and/or TCE.

Previous consultation, done under A.R.S. §41-864, identified the project APE, consulting parties, and the results of previous surveys completed to identify and evaluate historic properties within the ADOT ROW (Mallery [ADOT] to Jacobs [SHPO] August 20, 2007). To summarize, the existing ROW was most recently completely surveyed by Dames & Moore, and the results reported in "Cultural Resources Survey for the Three Points to Kinney Road Pavement Preservation Project, Pima County, Arizona" (Hill and Bruder 1999). SHPO has previously reviewed this report and found it adequate (Jacobs [SHPO] to Leonard [ADOT] July 14, 2003).

AMERICAN ECONOMY

In addition, the proposed new ROW required for the current project was surveyed by Archaeological Consulting Services, Ltd (ACS), and the results reported in "Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road (MP 156.90 - 166.52), Southwest of Tucson, Pima County, Arizona" (Fangmeier and Fackler 2007). This survey identified 12 cultural resources within the proposed new ROW. A summary of the cultural resources identified within the current project area is presented in the table below. The report was submitted to your office for review and comment on August 20, 2007.

Site Number	Description	Eligibility	Project Impacts
AZ AA:16:5(ASM)	Lithic scatter	Determined eligíble	None (site does not extend into APE)
AZ AA:16:377(ASM)	Segments of Historic State Route 86	Determined eligible (Segments 1–4 recommended contributing, Segments 5 & 6 recommended noncontributing)	None (field documentation and archival research have mitigated potential impacts to Segments 1-4 and have exhausted the information potential of all six segments)
AZ AA:16:466(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:530(ASM)	Artifact scatter	Determined ineligible	None
AZ AA:16:539(ASM)	Historic artifact scatter	Determined ineligible	None
AZ AA:16:540(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:541(ASM)	Historic trash scatter	Determined ineligible	Noné
AZ AA;16:542(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA116:543(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:544(ASM)	Historic trash seatter	Determined incligible	None
AZ AA:16:546(ASM)	Hohokam artifact seatter	Testing required to determine eligibility	Conduct testing and/or data recovery
AZ AA:16:547(ASM)	Historic trash seatter	Determined ineligible	None
AZ AA:16:548(ASM)	Hohokam artifact scatter	Testing required to determine eligibility	Conduct testing and/or data recovery
AZ AA:16:549(ASM)	Historic trash seatter	Determined incligible	None

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Z AA:16:550(ASM)	Historic trash scatter	Determined	None
		incligible	

According to the design concepts, sites AZ AA:16:546 (ASM) and AZ AA:16:548 (ASM) will he bisected by the right-of-way fence. As the eligibility of these two sites could not be determined from the survey, FHWA recommends the preparation and implementation of a testing plan to determine the sites' eligibility for the National Register of Historic Places in order to determine the project's effect on historic properties

Please review the information provided in this letter. If you agree with the eligibility recommendations and FHWA's recommendation for the implementation of an eligibility testing program, please indicate your concurrence by signing below. If you have any questions or concerns, please feel free to contact J. Matthew Mallery at 602 712 6371 or by email at Mallervauxint.gov.

Sincerely,

MARY E. FRYE

Robert E. Hollis Division Administrator

Signature for ASLD Concurrence

in 24.7 Date

3

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Federal Highway Administration

ARIZONA DIVISION

May 8, 2008

400 East Van Buren Street, Suite 410 Phoepix, Arizons 85004-0674 602-379-3646

> In Reply Refer To: HOP-AZ

STP-086-A(APA) TRACS No. 086 PM 156 H6806 01C SR 86-Sandario Road to Kinney Road (MP 156.90-166.52) Continuing Section 106 Consultation "Adverse effect"

Ms. Amy Sobeich, Archaeologist Bureau of Land Management 12661 East Broadway Tucson, Arizona 85748-7208

Dear Ms. Sobeich:

The Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT) are planning a road-widening project along State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. As this project would employ federal funds, it is considered an undertaking subject to Section 106 review. This project occurs on ADOT-owned right-of-way (ROW), Arizona state land administered by the Arizona State Land Department (ASLD), and ADOT easement across federal land administered by the Bureau of Land Management (BLM). A Memorandum of Understanding (MOU) between FHWA and BLM designates FHWA as the lead agency and BLM as a cooperating agency. Consulting parties for this project include FHWA, ADOT, ASLD, BLM, and the Tohono O'odham Nation.

The scope of this project would involve widening the existing highway from two to four lanes and making road and drainage improvements. New ROW and temporary construction easements (TCE) are anticipated for this project. The area of potential effect (APE) is defined as the SR 86 ROW between milepost (MP) 156.90 to 166.52, as well as any areas of new ROW and/or TCE.

Previous consultation, done under A.R.S. §41-864, identified the project APE, consulting parties, and the results of previous surveys completed to identify and evaluate historic properties within the ADOT ROW (Mallery [ADOT] to Jacobs [SHPO] August 20, 2007). To summarize, the existing ROW was most recently completely surveyed by Darnes & Moore, and the results reported in "Cultural Resources Survey for the Three Points to Kinney Road Pavement Preservation Project, Pima County, Arizona" (Hill and Bruder 1999). SHPO has previously reviewed this report and found it adequate (Jacobs [SHPO] to Leonard [ADOT] July 14, 2003). In addition, the proposed new ROW required for the current project was surveyed by Archaeological Consulting Services, Ltd (ACS), and the results reported in "Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road



(MP 156.90 - 166.52). Southwest of Tucson, Pima County, Arizona" (Fangmeier and Fackler 2007). This survey identified 12 cultural resources within the proposed new ROW. A summary of the cultural resources identified within the current project area is presented in the table below. The report was submitted to your office for review and comment on August 20, 2007.

Site Number	Description	Eligibility	Project Impacts
AZ AA:16:5(ASM)	Lithic scatter	Determined eligible	None (site does not extend into APE)
AZ AA:16:377(ASM)	Segments of Historic State Route 86	Determined eligible (Segments 1-4 recommended contributing, Segments 5 & 6 recommended noncontributing)	None (field documentation and archival research have mitigated potential impacts to Segments 1-4 and have exhausted the information potential of all six segments)
AZ AA:16:466(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:530(ASM)	Artifact scatter	Determined ineligible	None
AZ AA:16:539(ASM)	Historic artifact scatter	Determined ineligible	None
AZ AA:16:540(ASM)	Historic trash scatter	Determined incligible	None
AZ AA:16:541(ASM)	Historic trash scatter	Determined	None
AZ AA:16:542(ASM)	Historic trash scatter	Determined	None
AZ AA:16:543(ASM)	Historic trash scatter	Determined	None
AZ AA:16:544(ASM)	Historic trash scatter	Determined	None
AZ AA:16:546(ASM)	Hohokam artifact scatter	Testing required to determine eligibility	Conduct testing and/or data recovery
AZ AA:16:547(ASM)	Historic trash scatter	Determined incligible	None
AZ AA:16:548(ASM)	Hohokam artifact scatter	Testing required to determine eligibility	Conduct testing and/or data recovery
AZ AA:16:549(ASM)	Historic trash scatter	Determined incligible	None
AZ AA:16:550(ASM)	Historic trash scatter	Determined ineligible	None

According to the design concepts, sites AZ AA:16:546 (ASM) and AZ AA:16:548 (ASM) will be bisected by the right-of-way fence. As the eligibility of these two sites could not be determined from the survey, FHWA recommends the preparation and implementation of a testing plan to determine the sites' eligibility for the National Register of Historic Places in order to determine the project's effect on historic properties.

Please review the information provided in this letter. If you agree with the eligibility recommendations and FHWA's recommendation for the implementation of an eligibility testing program, please indicate your concurrence by signing below. If you have any questions or concerns, please feel free to contact J. Matthew Mallery at 602 712 6371 or by email at <u>JMallery@azdot.gov.</u>

Sincerely,

MARY E. FRYE

Robert E. Hollis Division Administrator

Signature for BLM Concurrence

6/26/2 Date

MFrye (005R) JMallery (EM02) MFrye:cdm

CC!



of Transportation

Federal Highway Administration

ARIZONA DIVISION

May 8, 2008

400 East Van Buren Street, Suite 410 Phoenix, Arizona 85004-0674 602-379-3646

> In Reply Refer To: HOP-AZ

STP-086-A(APA) TRACS No. 086 PM 156 H6806 01C SR 86–Sandario Road to Kinney Road (MP 156.90–166.52) Continuing Section 106 Consultation "Adverse effect"

Dr. David Jacobs, Compliance Specialist State Historic Preservation Office Arizona State Parks 1300 West Washington Street Phoenix, Arizona 85007

Dear Dr. Jacobs:

The Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT) are planning a road-widening project along State Route (SR) 86 southwest of Tueson between Sandario Road and Kinney Road. As this project would employ Federal funds, it is considered an undertaking subject to Section 106 review. This project occurs on ADOT-owned right-of-way (ROW), Arizona state land administered by the Arizona State Land Department (ASLD), and ADOT easement across federal land administered by the Bureau of Land Management (BLM). A Memorandum of Understanding (MOU) between FHWA and BLM designates FHWA as the lead agency and BLM as a cooperating agency. Consulting parties for this project include FHWA, ADOT, ASLD, BLM, and the Tohono O'odham Nation.

The scope of this project would involve widening the existing highway from two to four lanes and making road and drainage improvements. New ROW and temporary construction easements (TCE) are anticipated for this project. The area of potential effect (APE) is defined as the SR 86 ROW between milepost (MP) 156.90 to 166.52, as well as any areas of new ROW and/or TCE.

Previous consultation, done under A.R.S. §41-864, identified the project APE, consulting parties, and the results of previous surveys completed to identify and evaluate historic properties within the ADOT ROW (Mallery [ADOT] to Jacobs [SHPO] August 20, 2007). To summarize, the existing ROW was most recently completely surveyed by Dames & Moore, and the results reported in "Cultural Resources Survey for the Three Points to Kinney Road Pavement Preservation Project, Pima County, Arizona" (Hill and Bruder 1999). SHPO has previously reviewed this report and found it adequate (Jacobs [SHPO] to Leonard [ADOT] July 14, 2003).



In addition, the proposed new ROW required for the current project was surveyed by Archaeological Consulting Services, Ltd (ACS), and the results reported in "Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road (MP 156.90 – 166.52), Southwest of Tucson, Pima County, Arizona" (Fangmeier and Fackler 2007). This survey identified 12 cultural resources within the proposed new ROW. A summary of the cultural resources identified within the current project area is presented in the table below. The report was submitted to your office for review and comment on August 20, 2007.

Site Number	Description	Eligibility	Project Impacts
AZ AA:16:5(ASM)	Lithic scatter	Determined eligible	None (site does not extend into APE)
AZ AA:16:377(ASM)	Segments of Historic State Route 86	Determined eligible (Segments 1–4 recommended contributing, Segments 5 & 6 recommended noncontributing)	None (field documentation and archival research have mitigated potential impacts to Segments 1–4 and have exhausted the information potential of all six segments)
AZ AA:16:466(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:530(ASM)	Artifact scatter	Determined ineligible	None
AZ AA:16:539(ASM)	Historic artifact scatter	Determined ineligible	None
AZ AA:16:540(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:541(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:542(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:543(ASM)	Historic trash scatter	Determined incligible	None
AZ AA:16:544(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:546(ASM)	Hohokam artifact scatter	Testing required to determine eligibility	Conduct testing and/or data recovery
AZ AA:16:547(ASM)	Historic trash scatter	Determined ineligible	None
AZ AA:16:548(ASM)	Hohokam artifact scatter	Testing required to determine eligibility	Conduct testing and/or data recovery
AZ AA:16:549(ASM)	Historic trash scatter	Determined ineligible	None

AZ AA:16:550(ASM)	Historic trash scatter	Determined ineligible	None
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According to the design concepts, sites AZ AA:16:546 (ASM) and AZ AA:16:548 (ASM) will be bisected by the right-of-way fence. As the eligibility of these two sites could not be determined from the survey, FHWA recommends the preparation and implementation of a testing plan to determine the sites' eligibility for the National Register of Historic Places in order to determine the project's effect on historic properties.

Please review the information provided in this letter. If you agree with the eligibility recommendations and FHWA's recommendation for the implementation of an eligibility testing program, please indicate your concurrence by signing below. If you have any questions or concerns, please feel free to contact J. Matthew Mallery at 602 172 6371 or by email at <u>JMallery@azdot.gov</u>.

Sincerely,

Mary E.

Robert E. Hollis, Division Administrator

PIT VI N.

Signature for SHPO Concurrence

Date



U.S. Department of Transportation

Federal Highway Administration

ARIZONA DIVISION

November 3, 2008

4000 North Central Avenue, Suite 1500 Phoenix, Arizona 85012-1906 602-379-3646

> In Reply Refer To: HOP-AZ

STP-086-A(APA) TRACS No. 086 PM 156 H6806 01C SR 86; Sandario Road to Kinney Road (MP 156.90–166.52) Continuing Section 106 Consultation "Adverse effect"

Mr. Joe Joaquin Mr. Peter Steere Cultural Affairs Office P.O. Box 837 Sells, Arizona 85634

Dear Messrs. Joaquin and Steere:

The Federal Highway Administration (FHWA) is planning a road-widening project along State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. As this project would employ federal funds, it is considered an undertaking subject to Section 106 review. This project occurs on Arizona Department of Transportation (ADOT)-owned right-of-way, Arizona state land administered by the Arizona State Land Department (ASLD), an ADOT easement across federal land administered by the Bureau of Land Management (BLM), and private lands. A Memorandum of Understanding (MOU) between FHWA and BLM designates FHWA as the lead agency and BLM as a cooperating agency. Consulting parties for this project include FHWA, ADOT, ASLD, BLM, and the Tohono O'odham Nation.

Previous consultations, done under A.R.S. §41-864, identified the project APE, consulting parties, and the results of previous surveys completed to identify and evaluate historic properties within the ADOT ROW (Mallery [ADOT] to Jacobs [SHPO] August 20, 2007; Mallery [ADOT] to Jacobs [SHPO] May 6, 2008). The proposed right-of-way required for the project was previously surveyed by Archaeological Consulting Services, Ltd (ACS), and the results reported in "Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road (MP 156.90–166.52), Southwest of Tucson, Pima County, Arizona" (Fangmeier and Fackler 2007), and the results of the survey and site management recommendations were discussed in the previous consultation letters. These previous letters also indicated that additional rights-of-way and temporary construction easements may be needed. These additional areas were recently identified, and occur on ASLD, BLM, and private land.

AMERICAN ECONOMY The newly identified additional rights-of-way were surveyed by ACS on September 28–29, 2008 and at the request of ADOT (Mr. Mallery), an addendum report of findings was prepared (Schilling and Fackler 2008); a copy of this addendum report is enclosed for your review. The addendum survey recorded one additional road segment (RS 7) of the historic Ajo–Tucson Highway/SR 86 (AZ AA:16:377[ASM]) and 14 isolated occurrences; two previously recorded sites (AA:16:5 and AA:16:530) were projected to occur within the new rights-of-way, but were not relocated (Table 1). The site has been determined eligible under Criteria A and D by SHPO; however, the newly recorded road segment (RS 7) for AA:16:377 is recommended as not contributing to the overall eligibility of the site to the State and National Registers because it is an in-use, continually maintained access road to the current SR 86 highway. Its original 1930s-era design, materials, and workmanship have been altered and replaced, and its proximity to the current highway and nearby construction has impacted its feeling and setting. It does not embody significant attributes or qualities as a road. Therefore, no further work is recommended for this road segment.

AZ AA:16:5(ASM), an Archaic period artifact scatter originally recorded in 1957, was plotted by AZSITE within the project area, but no surface remains were visible; the previous ACS survey (Fangmeier and Fackler 2007) also did not observe surface remains in the project area. This could be explained by the construction/realignment of SR 86, and vegetation and erosion disturbances. However, despite the surface disturbances and lack of surface artifacts, the possibility for subsurface deposits and features is unknown. The SHPO determined that the site was eligible under Criterion D, most likely because it represented a surface-to-near-surface Archaic period site in the Tucson Basin. Due to the eligibility and the information potential of this site, data testing is recommended within the site boundaries in the proposed project area in order to determine if significant cultural deposits remain. This management recommendation updates the earlier recommendation for the site provided by ACS (Fangmeier and Fackler 2007), who recommended no additional work; however, because more of the site area has been examined and the new area has a better chance of containing subsurface deposits, testing is warranted.

AZ AA:16:530(ASM) was first recorded in 2006 as a small (4×5 m) artifact scatter of approximately 85 widely dispersed sherds; no other artifact types were present. The ACS survey for the additional rights-of-way did not relocate the sherd scatter, possibly due to the heavy vegetation in some areas and by erosion; alternatively, the site could have been slightly misplotted and does not occur within the proposed right-of-way. However, the original recorders recommended the site as not eligible, and given the site description, this seems to be a reasonable eligibility recommendation. Therefore, because the site is recommended as not eligible, no adverse impacts will occur and no further work is required.

Please review the information provided in this letter. If you agree with the eligibility recommendations and FHWA's recommendation for the implementation of a data testing program for AZ AA:16:5(ASM), please indicate your concurrence by signing below. If you have any questions or concerns, please feel free to contact J. Matthew Mallery at ADOT (928-779-7595) or <u>JMallery@azdot.gov</u>.

Table 1. Site Eligibility an	d Management I	Recommendations.
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Site Number (AZASM)	Description	Land Jurisdiction	Site Eligibility	Project Impacts
AA:16:5	Archaic period artifact scatter	State Land	Determined eligible under Criterion D by SHPO	Adverse effect; data testing to determine if subsurface cultural deposits and features remain in the project area.
AA:16:377	Segment of Historic Ajo-Tucson/SR 86 Highway (RS 7)	State Land	Determined eligible under Criteria A, D by SHPO, but RS 7 recommended as not contributing	No adverse effect; field documentation and archival research have mitigated potential impacts to RS 7, no further work required.
AA:16:530	Ceramic period sherd scatter (small)	Private	Recommended as not eligible	No adverse effect; no further work required.

Sincerely,

Mary E. Fry

Robert E. Hollis Division Administrator

Enclosure

Signature for Tohono O'odham Nation Concurrence

11-26-08

Date



U.S. Department of Transportation

Federal Highway Administration

ARIZONA DIVISION

March 9, 2009

4000 North Central Avenue, Suite 1500 Phoenix, Arizona 85012-1906 602-379-3646

In Reply Refer To: HOP-AZ

STP-086-A(APA) TRACS No. 086 PM 156 H6806 01C SR 86; Sandario Road to Kinney Road (MP 156.90–166.52) Continuing Section 106 Consultation "Adverse effect"

Mr. Joe Joaquin Mr. Peter Steere Cultural Affairs Office P.O. Box 837 Sells, Arizona 85634

Dear Mr. Joaquin and Mr. Steere:

The Federal Highway Administration (FHWA) is planning a road-widening project along State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. As this project would employ federal funds, it is considered an undertaking subject to Section 106 review. This project occurs on Arizona Department of Transportation (ADOT)-owned right-of-way, Arizona state land administered by the Arizona State Land Department (ASLD), an ADOT easement across federal land administered by the Bureau of Land Management (BLM), and private lands. A Memorandum of Understanding (MOU) between FHWA and BLM designates FHWA as the lead agency and BLM as a cooperating agency. Consulting parties for this project include FHWA, ADOT, ASLD, BLM, and the Tohono O'odham Nation.

Previous consultations, done under A.R.S. §41-864, identified the project APE, consulting parties, and the results of previous surveys completed to identify and evaluate historic properties within the ADOT ROW (Mallery [ADOT] to Jacobs [SHPO] August 20, 2007; Mallery [ADOT] to Jacobs [SHPO] May 6, 2008). The proposed right-of-way required for the project was previously surveyed by Archaeological Consulting Services, Ltd (ACS), and the results reported in "Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road (MP 156.90–166.52), Southwest of Tucson, Pima County, Arizona" (Fangmeier and Fackler 2007), and the results of the survey and site management recommendations were discussed in the previous consultation letters. These previous letters also indicated that additional rights-of-way and temporary construction easements may be needed. These additional areas were recently identified, and occur on ASLD, BLM, and private land.

The newly identified additional rights-of-way were surveyed by ACS on September 28–29, 2008 and at the request of ADOT (Mr. Mallery), an addendum report of findings was prepared (Schilling and Fackler 2008); a copy of this addendum report is attached for your review. The



addendum survey recorded one additional road segment (RS 7) of the historic Ajo-Tucson Highway/SR 86 (AZ AA:16:377[ASM]) and 14 isolated occurrences; two previously recorded sites (AA:16:5 and AA:16:530) were projected to occur within the new rights-of-way, but were not relocated (Table 1). The ACS report originally recommended the newly recorded road segment (RS 7) for AA:16:377 as not contributing to the overall eligibility of the site however upon further discussion with SHPO, FHWA has determined RS 7 remains in use as a road, does contribute to the eligibility of the site because it embodies the character of a 1930s roadway (no shoulders) and as a result maintains its character. Travelers along the current highway can "witness the remnants of the old" highway as they drive by. FHWA and SHPO agree that the loss of approximately 200 ft of this roadway for planned construction is "minimal and not significant". In keeping with the *Interim Procedures for Treatment of Historic Roads* (FHWA, ADOT, SHPO November 2002), FHWA recommends RS 7 as eligible under criterion 'd' for its potential to yield important information about the development of Arizona's roadways. However, field documentation and archival research have exhausted the data potential of the segment and no further work is recommended for RS 7.

AZ AA:16:5(ASM), an Archaic period artifact scatter originally recorded in 1957, was plotted by AZSITE within the project area, but no surface remains were visible; the previous ACS survey (Fangmeier and Fackler 2007) also did not observe surface remains in the project area. This could be explained by the construction/realignment of SR 86, and vegetation and erosion disturbances. However, despite the surface disturbances and lack of surface artifacts, the possibility for subsurface deposits and features is unknown. The SHPO determined that the site was eligible under Criterion D, most likely because it represented a surface-to-near-surface Archaic period site in the Tucson Basin. Due to the eligibility and the information potential of this site, data testing is recommended within the site boundaries in the proposed project area in order to determine if significant cultural deposits remain. This management recommendation updates the earlier recommendation for the site provided by ACS (Fangmeier and Fackler 2007), who recommended no additional work; however, because more of the site area has been examined and the new area has a better chance of containing subsurface deposits, testing is warranted.

AZ AA:16:530(ASM) was first recorded in 2006 as a small (4×5 m) artifact scatter of approximately 85 widely dispersed sherds; no other artifact types were present. The ACS survey for the additional rights-of-way did not relocate the sherd scatter, possibly due to the heavy vegetation in some areas and by erosion; alternatively, the site could have been slightly misplotted and does not occur within the proposed right-of-way. However, the original recorders recommended the site as not eligible, and given the site description, this seems to be a reasonable eligibility recommendation. Therefore, because the site is recommended as not eligible, no adverse impacts will occur and no further work is required.

Please review the information provided in this letter. If you agree with the eligibility recommendations and FHWA's recommendation for the implementation of a data testing program for AZ AA:16:5(ASM), please indicate your concurrence by signing below. If you have any questions or concerns, please feel free to contact J. Matthew Mallery at ADOT (928-779-7595) or JMallery@azdot.gov.

Site Number (AZASM)	Description	Land Jurisdiction	Site Eligibility	Project Impacts
AA:16:5	Archaic period artifact scatter	State Land	Determined eligible under Criterion D by SHPO	Adverse effect; data testing to determine if subsurface cultural deposits and features remain in the project area.
AA:16:377	Segment of Historic Ajo-Tucson/SR 86 Highway (RS 7)	State Land	Determined eligible under Criteria A, D by SHPO; RS 7 recommended as contributing	Adverse effect; field documentation and archival research have mitigated potential impacts to RS 7, no further work required.
AA:16:530	Ceramic period sherd scatter (small)	Private	Recommended as not eligible	No adverse effect; no further work required.

Table 1. Site	Eligibility	and Management	Recommendations.
14010 11 0100	~~~~~	and the Berry Area	

Sincerely,

Mary E Fry

Robert E. Hollis Division Administrator

JUL - 6 2009

Signature for Tohono O'odham Nation Concurrence

6-28-09

Date



U.S. Department of Transportation

Federal Highway Administration

ARIZONA DIVISION

March 9, 2009

4000 North Central Avenue, Suite 1500 Phoenix, Arizona 85012-1906 602-379-3646

In Reply Refer To: HOP-AZ

STP-086-A(APA) TRACS No. 086 PM 156 H6806 01C SR 86; Sandario Road to Kinney Road (MP 156.90–166.52) Continuing Section 106 Consultation "Adverse effect"

Mr. Joe Joaquin Mr. Peter Steere Cultural Affairs Office P.O. Box 837 Sells, Arizona 85634

Dear Mr. Joaquin and Mr. Steere:

The Federal Highway Administration (FHWA) is planning a road-widening project along State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. As this project would employ federal funds, it is considered an undertaking subject to Section 106 review. This project occurs on Arizona Department of Transportation (ADOT)-owned right-of-way, Arizona state land administered by the Arizona State Land Department (ASLD), an ADOT easement across federal land administered by the Bureau of Land Management (BLM), and private lands. A Memorandum of Understanding (MOU) between FHWA and BLM designates FHWA as the lead agency and BLM as a cooperating agency. Consulting parties for this project include FHWA, ADOT, ASLD, BLM, and the Tohono O'odham Nation.

Previous consultations, done under A.R.S. §41-864, identified the project APE, consulting parties, and the results of previous surveys completed to identify and evaluate historic properties within the ADOT ROW (Mallery [ADOT] to Jacobs [SHPO] August 20, 2007; Mallery [ADOT] to Jacobs [SHPO] May 6, 2008). The proposed right-of-way required for the project was previously surveyed by Archaeological Consulting Services, Ltd (ACS), and the results reported in "Cultural Resources Survey of New Right-of-Way Along State Route 86 Between Sandario Road and Kinney Road (MP 156.90–166.52), Southwest of Tucson, Pima County, Arizona" (Fangmeier and Fackler 2007), and the results of the survey and site management recommendations were discussed in the previous consultation letters. These previous letters also indicated that additional rights-of-way and temporary construction easements may be needed. These additional areas were recently identified, and occur on ASLD, BLM, and private land.

The newly identified additional rights-of-way were surveyed by ACS on September 28–29, 2008 and at the request of ADOT (Mr. Mallery), an addendum report of findings was prepared (Schilling and Fackler 2008); a copy of this addendum report is attached for your review. The



Section 106 consultation was previously initiated by FHWA with other consulting parties; however, at the time of previous consultation, Corps involvement had not been determined. A recent change in the scope of work for the project may result in the need for an individual Clean Water Act permit from the Corps, and therefore, this letter describes the proposed undertaking and the area of potential effects (APE); provides information on previous cultural resources investigations, National Register of Historic Places (NRHP) eligibility recommendations, and project effect findings; and invites Corps participation as a consulting party. This letter further seeks Corps concurrence with our NRHP eligibility recommendations, project effect determination, and with the need for a Memorandum of Agreement (MOA).

The scope of this project would involve widening the existing highway from two to four lanes and making roadway and drainage improvements. New ADOT ROW would be acquired from private land owners, the City of Tucson, and Pima County. New ADOT easement would be acquired from ASLD, BLM, and Reclamation. The APE for the preferred alternative is defined as the existing and proposed new ROW and easement along SR 86 between milepost (MP) 156.90 and MP 166.60 (the previous limits were MP 156.90-166.52). More recently, the scope of work was revised to include the following additional components: widening of Kinney Road and adding additional lanes within the existing ROW; adding culverts along Kinney Road within the existing ROW; constructing an open drainage channel along Kinney Road; and constructing an open drainage channel along SR 86 on private land adjacent to the north side of the existing ROW.

Most of the APE has been subjected to cultural resources survey. The existing SR 86 ROW and easement between MP 156.90 and MP 165.15 was previously surveyed by Dames & Moore, and the results are presented in "Cultural Resources Survey for the Three Points to Kinney Pavement Preservation Project, Pima County, Arizona" (Hill & Bruder 1999). SHPO has previously reviewed this report and found it adequate (Jacobs [SHPO] to Leonard [ADOT] July 14, 2003). The existing ROW and easement between MP 165.15 and MP 166.60 was previously surveyed by Archaeological Research Services, Inc. (ARS), and the results are presented in "Cultural Resources Survey of a 4.4 Mile Segment of State Route 86 Right-of-Way Southwest of Tucson, Eastern Pima County, Arizona" (Woodall 1993). SHPO previously accepted ARS' report (Johnson [SHPO] to Rosenberg [ADOT] April 5, 1994).

Most of the new ROW and easement proposed for this project was more recently surveyed by Archaeological Consulting Services, Ltd. (ACS), the results of which are presented in two separate reports. These are: "Cultural Resources Survey of New Right-of-Way along State Route 86 Between Sandiaro Road and Kinney Road (MP 156.90-166.52), Southwest of Tucson, Pima County, Arizona" (Fangmeier & Fackler 2007) and "Addendum Report: Cultural Resources Survey of New Right-of-Way Parcels Along State Route 86 Between Sandiaro Road and Kinney Road (MP 156.90-166.52), Southwest of Tucson, Pima County, Arizona" (Schilling & Fackler 2007) and "Addendum Report: Cultural Resources Survey of New Right-of-Way Parcels Along State Route 86 Between Sandiaro Road and Kinney Road (MP 156.90-166.52), Southwest of Tucson, Pima County, Arizona" (Schilling & Fackler 2008). Both reports are enclosed for your review. New ROW and easements associated with the recently added work along Kinney Road and the drainage channel construction would require additional cultural resources survey, which has not been completed at this time.

Fifteen cultural resource sites have been identified within the APE. FHWA is providing the following table that indicates the land jurisdiction of each site, offers eligibility status, indicates project effect, and offers recommendations for treatment at each site.

Site #*	Description	Land Jurisdiction	NRHP Eligibility Status	Project Effect	Treatment Recommendation
5	Lithic scatter	ASLD	Eligible, Criterion D	Adverse affect	Conduct Phase I data recovery
377	Seven segments of Historic SR 86	ADOT (1 & 2), City of Tucson (3 & 4), BLM (5), ASLD (6 & 7)	Eligible, Criterion D. (1-4, and 7 contributing, 5 & 6 non- contributing)	All segments affected; no adverse affect	Field documentation and archival research have mitigated potential impacts to Segments 1-4 and 7.
466	Historic trash scatter	BLM & ASLD	Not eligible	Impacts, no historic properties affected	No further work
530	Artifact scatter	Private / ADOT	Not eligible	No historic properties affected	No further work
539	Historic artifact scatter	Private / ADOT	Not eligible	Impacts, no historic properties affected	No further work
540	Historic trash scatter	Private / ADOT	Not eligible	Impacts, no historic properties affected	No further work
541	Historic trash scatter	Private / ADOT	Not eligible	Impacts, no historic properties affected	No further work
542	Historic trash scatter	ASLD	Not eligible	Impacts, no historic properties affected	No further work
543	Historic trash scatter	BLM	Not eligible	Impacts, no historic properties affected	No further work
544	Historic trash scatter	Pima County, COT	Not eligible	No historic properties affected	No further work
546	Hohokam artifact scatter	ASLD	Testing required to evaluate eligibility	Impacts, effect unknown	Avoid or conduct NRHP eligibility testing
547	Historic trash scatter	BLM	Not eligible	Impacts, no historic properties affected	No further work
548	Hohokam artifact scatter	ASLD	Testing required to evaluate eligibility	Impacts, effect unknown	Avoid or conduct NRHP eligibility testing
549	Historic trash scatter	ASLD	Not eligible	Impacts, no historic properties affected	No further work
550	Historic trash scatter	BLM	Not eligible	Impacts, no historic properties affected	No further work

*All site numbers are ASM numbers preceded by AZ AA:16:

According to the 2002 Interim Agreement on the Procedures for the Treatment of Historic Roads between FHWA, SHPO, and ADOT, AZ AA:16:377 (ASM) / SR 86 is eligible for inclusion in the NRHP as a whole under Criterion D, for its potential to yield important information on the development of Arizona's highways. The Interim Agreement supersedes all previous eligibility recommendations. Segments 1, 2, 3, 4, and 7 are recommended to be contributing components to the eligibility of SR 86. However, ACS' field documentation and archival research (Fangmeier & Fackler 2007; Schilling & Fackler 2008) have exhausted the research potential of these segments.

AZ AA:16:5 (ASM) would be adversely affected by the project and therefore FHWA has determined that a finding of "adverse effect" is appropriate for this undertaking. FHWA recommends that an MOA be prepared to resolve the adverse effects the project would have on historic properties. It is further recommended that a testing plan be prepared to guide NRHP-eligibility testing activities at AZ AA:16:546 (ASM) and AZ AA:16:548 (ASM) and a data recovery work plan be prepared to guide phase I data recovery activities at AZ AA:16:5 (ASM).

Please review the information provided in this letter. If you agree with FHWA's eligibility recommendations, recommendations for additional survey for the work on Kinney Road and the construction of the drainage channel, finding of "adverse effect," and recommendation for preparing a MOA and testing and data recovery plan to resolve any adverse effects the project would have on historic properties, please indicate your concurrence by signing below. FHWA will continue Section 106 consultation with results of the survey that will be conducted for work on Kinney Road and the construction of the drainage channel. If you have any questions or concerns, please feel free to contact J. Matthew Mallery, ADOT Historic Preservation Specialist, at (928) 779-7595 or email at <u>JMallery@azdot.gov</u>.

Sincerely yours,

MARY E. FRYE Robert E. Hollis Division Administrator

Signature for Corps Concurrence

0 JUNE 2009

Enclosure

cc:

Amy Holmes (with enclosure), U.S. Army Corps of Engineers Los Angeles District, P.O. Box 532711, Los Angeles, California 90053, ATTN: CESPL-PD-RN Mary Frye Matt Mallery (F500) MFrye:cdm



Federal Highway Administration

ARIZONA DIVISION

May 4, 2009

4000 North Central Avenue, Suite 1500 Phoenix, Arizona 85012-3500 (602) 379-3646

> In Reply Refer To: HOP-AZ

STP-086-A(APA) TRACS No. 086 PM 156 H6806 01C SR 86; Sandario Road to Kinney Road Continuing Section 106 Consultation "adverse effect" RE: SHPO 2007-1440

Dr. David Jacobs, Compliance Specialist State Historic Preservation Office Arizona State Parks 1300 West Washington Street Phoenix, Arizona 85007

Dear Dr. Jacobs:

The Arizona Department of Transportation (ADOT) and the Federal Highway Administration (FHWA) are planning a road-widening project along State Route (SR) 86 southwest of Tucson between Sandario Road and Kinney Road. As this project would employ federal funds, it is considered an undertaking subject to Section 106 review. This project occurs on ADOT-owned right-of-way (ROW), City of Tucson land, Pima County land, Arizona State Trust land administered by the Arizona State Land Department (ASLD), federal land administered by the Bureau of Land Management (BLM) and the Bureau of Reclamation (Reclamation), and private land. A Memorandum of Understanding (MOU) between FHWA and BLM designates FHWA as the lead agency and BLM as a cooperating agency. Consulting parties for this project consist of FHWA, ADOT, the City of Tucson, Pima County, ASLD, BLM, Reclamation, the Hopi Tribe, the Pascua Yaqui Tribe, the Yavapai-Apache Nation, and the Tohono O'odham Nation.

Section 106 consultation was previously initiated by FHWA; however, it has come to FHWA's attention that several land-managing agencies and consulting parties were unintentionally omitted. The purpose of this letter is to clarify the land ownership and consulting parties for this project; to present an updated description of the area of potential effects (APE); to consolidate the results of previous surveys within the APE; to present a concise table of all cultural resource sites identified within the APE with their National Register of Historic Places (NRHP) eligibility status and project effects; and to recommend that a Memorandum of Agreement (MOA) be prepared to resolve any adverse effects the project would have on historic properties.



The scope of this project would involve widening the existing highway from two to four lanes and making roadway and drainage improvements. New ADOT ROW would be acquired from private land owners, the City of Tucson, and Pima County. New ADOT easement would be acquired from ASLD, BLM, and Reclamation. The APE for the preferred alternative is defined as the existing and proposed new ROW and easement along SR 86 between milepost (MP) 156.90 and MP 166.60 (the previous limits were MP 156.90-166.52).

The entire APE has been subjected to cultural resources survey. Previous consultation indicated that the entire existing SR 86 ROW and easement had been surveyed by Dames & Moore. Dames & Moore surveyed the existing SR 86 ROW and easement between MP 156.90 and MP 165.15 and the results are presented in "Cultural Resources Survey for the Three Points to Kinney Pavement Preservation Project, Pima County, Arizona" (Hill & Bruder 1999). However, the remaining existing ROW and easement between MP 165.15 and MP 166.60 was surveyed by Archaeological Research Services, Inc. (ARS), and the results are presented in "Cultural Resources Survey of a 4.4 Mile Segment of State Route 86 Right-of-Way Southwest of Tucson, Eastern Pima County, Arizona" (Woodall 1993). SHPO previously accepted ARS' report (Johnson [SHPO] to Rosenberg [ADOT] April 5, 1994).

The new ROW and easement proposed for this project was recently surveyed by Archaeological Consulting Services, Ltd. (ACS), the results of which are presented in two separate reports. These are "Cultural Resources Survey of New Right-of-Way along State Route 86 Between Sandiaro Road and Kinney Road (MP 156.90-166.52), Southwest of Tucson, Pima County, Arizona" (Fangmeier & Fackler 2007) and "Addendum Report: Cultural Resources Survey of New Right-of-Way Parcels Along State Route 86 Between Sandiaro Road and Kinney Road (MP 156.90-166.52), Southwest of Tucson, Pima County, Arizona" (Schilling & Fackler 2008). Both reports were provided to your office during previous Section 106 consultation.

Fifteen cultural resource sites have been identified within the APE. Recently, it has come to FHWA's attention that in previous consultation the land ownership presented for some of these sites was in error, and that the eligibility of some sites was not clear. Therefore, FHWA is providing the following table that indicates the land jurisdiction of each site, offers eligibility status, indicates project effect, and offers recommendations for treatment at each site.

Site #*	Description	Land Jurisdiction	NRHP Eligibility Status	Project Effect	Treatment Recommendation
5	Lithic scatter	ASLD	Eligible, Criterion D	Adverse affect	Conduct Phase I data recovery
377	Seven segments of Historic SR 86	ADOT (1 & 2), City of Tucson (3 & 4), BLM (5), ASLD (6 & 7)	Eligible, Criterion D. (1-4, and 7 contributing, 5 & 6 non- contributing)	All segments affected; no adverse affect	Field documentation and archival research have mitigated potential impacts to Segments 1-4 and 7.
466	Historic trash scatter	BLM & ASLD	Not eligible	Impacts, no historic properties affected	No further work
530	Artifact scatter	Private / ADOT	Not eligible	No historic properties affected	No further work

Site #*	Description	Land Jurisdiction	NRHP Eligibility Status	Project Effect	Treatment Recommendation
539	Historic artifact scatter	Private / ADOT	Not eligible	Impacts, no historic properties affected	No further work
540	Historic trash scatter	Private / ADOT	Not eligible	Impacts, no historic properties affected	No further work
541	Historic trash scatter	Private / ADOT	Not eligible	Impacts, no historic properties affected	No further work
542	Historic trash scatter	ASLD	Not eligible	Impacts, no historic properties affected	No further work
543	Historic trash scatter	BLM	Not eligible	Impacts, no historic properties affected	No further work
544	Historic trash scatter	Pima County, COT	Not eligible	No historic properties affected	No further work
546	Hohokam artifact scatter	ASLD	Testing required to evaluate eligibility	Impacts, effect unknown	Avoid or conduct NRHP eligibility testing
547	Historic trash scatter	BLM	Not eligible	Impacts, no historic properties affected	No further work
548	Hohokam artifact scatter	ASLD	Testing required to evaluate eligibility	Impacts, effect unknown	Avoid or conduct NRHP eligibility testing
549	Historic trash scatter	ASLD	Not eligible	Impacts, no historic properties affected	No further work
550	Historic trash scatter	BLM	Not eligible	Impacts, no historic properties affected	No further work

*All site numbers are ASM numbers preceded by AZ AA:16:

Previously, FHWA indicated that AZ AA:16:377 (ASM) / SR 86 is eligible for inclusion in the NRHP under Criteria A and D. However, according to the 2002 Interim Agreement on the Procedures for the Treatment of Historic Roads between FHWA, SHPO, and ADOT, SR 86 is eligible as a whole under Criterion D only, for its potential to yield important information on the development of Arizona's highways. The Interim Agreement supersedes all previous eligibility recommendations, and SR 86 is eligible only under Criterion D. Segments 1, 2, 3, 4, and 7 are recommended to be contributing components to the eligibility of SR 86. However, ACS' field documentation and archival research (Fangmeier & Fackler 2007; Schilling & Fackler 2008) have exhausted the research potential of these segments.

As indicated in previous consultation, AZ AA:16:5 (ASM) would be adversely affected by the project and therefore FHWA has determined that a finding of "adverse effect" is appropriate for this undertaking. FHWA recommends that an MOA be prepared to resolve the adverse effects the project would have on historic properties. It is further recommended that a testing plan be prepared to guide NRHP-eligibility testing activities at AZ AA:16:546 (ASM) and AZ AA:16:548 (ASM) and a data recovery work plan be prepared to guide phase I data recovery activities at AZ AA:16:5 (ASM).

Please review the information provided in this letter. If you agree with the eligibility recommendations and FHWA's recommendation for preparing a MOA and testing and data recovery plan to resolve any adverse effects the project would have on historic properties, please indicate your concurrence by signing below. If you have any questions or concerns, please feel free to contact J.Matthew Mallery at (928) 779-7595 or email at JMallery@azdot.gov.

Sincerely yours,

CRobert E. Hollis Division Administrator

Signature for SHPO Concurrence

Bm

Date

MEMORANDUM OF AGREEMENT

AMONG

FEDERAL HIGHWAY ADMINISTRATION ARIZONA STATE HISTORIC PRESERVATION OFFICE ARIZONA DEPARTMENT OF TRANSPORTATION THE BUREAU OF LAND MANAGEMENT ARIZONA STATE LAND DEPARTMENT THE CITY OF TUCSON PIMA COUNTY THE ARIZONA STATE MUSEUM THE U.S. ARMY CORPS OF ENGINEERS THE HOPI TRIBE THE PASCUA YAQUI TRIBE THE PASCUA YAQUI TRIBE THE YAVAPAI APACHE NATION AND THE TOHONO O'ODHAM NATION

REGARDING THE ROADWAY WIDENING PROJECT ALONG STATE ROUTE 86, BETWEEN SANDARIO ROAD AND KINNEY ROAD; MILEPOSTS 156.90 TO 166.60 FEDERAL AID NO. STP-086-A(APA) TRACS NO. 086 PM 156 H6806 01C PIMA COUNTY, ARIZONA

WHEREAS, the Federal Highway Administration (FHWA) proposes to reconstruct and widen State Route (SR) 86 between Sandario Road and Kinney Road, a federally funded project in Pima County, Arizona (hereafter referred to as "the Project"); and

WHEREAS, the area of potential effects (APE) for the Project is defined as the existing SR 86 roadway right-of-way (ROW) between mileposts (MP) 156.90 and 166.60 and new ROW/easements as well as areas beyond those limits where historic properties could be affected by visual, auditory, or atmospheric intrusions; and

WHEREAS, project construction will occur on private land, land owned by the Arizona Department of Transportation (ADOT), the City of Tucson (COT), and Pima County, ADOT easement across State Trust land administered by the Arizona State Land Department (ASLD), and public lands administered by the U.S. Bureau of Land Management (BLM); ADOT, acting as agent for FHWA, has participated in consultation; and

WHEREAS, the FHWA, in consultation with the Arizona State Historic Preservation Office (SHPO), has determined that, pursuant to 36 CFR 800.2(a)(2) and 36 CFR 800.4(c), archaeological site AZ AA:16:5 (ASM) is eligible for inclusion in the National Register of Historic Places (NRHP) under Criterion D and archaeological sites AZ AA:16:546 (ASM) and AZ AA:16:548 (ASM) should be tested to determine their eligibility for inclusion in the NRHP under Criterion D; and

Page 1 of 11

WHEREAS, the FHWA, in consultation with the SHPO, has determined pursuant to 36 CFR 800.5(a) that the Project will have an adverse effect upon the historic property AZ AA:16:5 (ASM) and potentially eligible properties AZ AA:16:546 (ASM) and AZ AA:16:548 (ASM), all located on State Trust land; and

WHEREAS, a Clean Water Act Section 404 permit is required, and the US Army Corps of Engineers (USACE) is authorized to enter this Agreement to carry out its Section 106 responsibilities; and

WHEREAS, the FHWA is the lead Federal agency for this undertaking and has participated in consultation with ADOT, the SHPO, COT, Pima County, ASLD, BLM, the Arizona State Museum (ASM), the USACE, the Hopi Tribe, the Yavapai Apache Nation, the Pascua Yaqui Tribe, the Tohono O'odham Nation and the Advisory Council on Historic Preservation (the "Council") in accordance with Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470f) as revised in 2004 and its implementing regulations (36 CFR §800) to resolve the possible adverse effects of the Project on historic properties; and

WHEREAS, ADOT, acting as agent for FHWA has participated in consultation and has been invited to be a signatory to this Memorandum of Agreement (Agreement); and

WHEREAS, BLM has been designated as a cooperating agency under a Memorandum of Understanding for this project, BLM has participated in consultation, and has been invited to be a signatory to this Agreement; and

WHEREAS, the Indian Tribes that may attach religious or cultural importance to affected properties have been consulted [pursuant to 36 CFR § 800.2 (c)(2)(ii)(A-F)], and the Hopi Tribe, the Pascua Yaqui Tribe, the Yavapai Apache Nation, and the Tohono O'odham Nation have been invited to be concurring parties in this Agreement; and

WHEREAS, the FHWA has notified the Council of the adverse effect and invited the Council's participation in the Project, pursuant to 36 CFR 800.6(a)(1), and the Council has declined to participate in further consultation; and

WHEREAS, SHPO is authorized to enter into this agreement in order to fulfill its role of advising and assisting Federal agencies in carrying out their Section 106 responsibilities under the following federal statutes: Sections 101 and 106 of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470f, and pursuant to 36 CFR Part 800, regulations implementing Section 106, at 800.2 (c)(1)(i) and 800.6(b); and

WHEREAS, SHPO is authorized to advise and assist federal and state agencies in carrying out their historic preservation responsibilities and cooperate with these agencies under A.R.S. §41-511.04(d)(4); and

WHEREAS, by their signature all parties agree that the regulations specified in the ADOT document, "ADOT Standard Specifications for Road and Bridge Construction" (Section 104.12, 2008) will account for the cultural resources in potential material sources used in project construction; and

Page 2 of 11

WHEREAS, an agreement regarding the treatment and disposition of human remains, associated funerary objects, sacred objects and objects of cultural patrimony would be developed for ASM for city, county, state and private land, pursuant to A.R.S. § 41-844 and 41-865; and

WHEREAS, Human Remains, Associated/Unassociated Funerary Objects, Sacred Objects and Objects of Cultural Patrimony recovered will be treated in accordance with the Native American Graves and Protection Repatriation Act (NAGPRA) (25 U.S.C. 3001 *et seq.*) for federal land; and

WHEREAS, the data recovery necessitated by the Project, located on state land, must be permitted by the ASM pursuant to A.R.S. § 41-842; and

WHEREAS, any data recovery necessitated by the Project, located on federal land, must be permitted through an ARPA permit in accordance with Section 4.b; and

NOW, THEREFORE, all parties agree that upon FHWA's decision to proceed with the Project, FHWA shall ensure that the following stipulations are implemented in order to take into account the effects of the Project on historic properties, and that these stipulations shall govern the Project and all of its parts until this Agreement expires or is terminated.

Stipulations

FHWA will ensure that the following measures are carried out.

1) Development of NRHP Eligibility Testing and Data Recovery Work Plans ("Work Plans")

Work Plans will be submitted by the FHWA to all parties to this Agreement for 30 calendar days' review. The Work Plans will be consistent with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716 et seq.), which include the Secretary of the Interior's Standards for Archeological Documentation. Unless any signatory or concurring party objects to a Work Plan within 30 calendar days after receipt of the Work Plan, the FHWA shall ensure that they are implemented prior to construction.

2) The Work Plans will specify:

a) The properties or portions of properties where testing or data recovery will be carried out. Also, the data recovery Work Plan will specify any property or portion of property that would be destroyed or altered without treatment;

b) The results of previous research relevant to the project, the research questions to be addressed through data recovery, with an explanation of their relevance and importance;

c) The field and laboratory analysis methods to be used, with an explanation of their relevance to the research questions;

d) The methods to be used in analysis, data management, and dissemination of data to the professional community and the public, including a proposed schedule for project tasks, including a schedule for the submission of draft and final reports to consulting parties;

e) The proposed disposition and curation of all recovered materials and records, which will meet the standards set forth in 36 CFR 79 for recovered materials and records deriving from data recovery on Federal lands and A.R.S. § 41-844 for State lands;

f) Procedures for monitoring, evaluating, and treating discoveries of unexpected or newly identified properties during construction of the Project, including consultation with other parties;

g) A protocol for the treatment of human remains, in the event that such remains are discovered, describing methods and procedures for the recovery, analysis, treatment, and disposition of human remains, associated funerary objects, and objects of cultural patrimony. This protocol will reflect concerns and/or conditions identified as a result of consultations among parties to this Agreement.

h) The minimum requirements for the content of the Data Recovery Report.

3) Review and comment on the Work Plans

a) The FHWA will review and subsequently submit a Work Plan concurrently to all consulting parties for review. All consulting parties have 30 calendar days from receipt to review to provide comments to FHWA. All comments will be submitted in writing with copies provided to the other consulting parties. Lack of response within this review period is taken as concurrence with the Work Plans.

b) If revisions to a Work Plan are made, all consulting parties have 20 calendar days from receipt to review the revisions and provide comments to FHWA. Lack of response within this review period will be taken as concurrence with the revised Work Plan.

c) Once a Work Plan is determined adequate by all consulting parties (with SHPO concurrence), FHWA shall issue authorization to proceed with the implementation of the Work Plan, subject to obtaining all necessary permits.

d) Final drafts of all Work Plans will be provided to all consulting parties.

4) Review and Comment on Preliminary Report of Findings

- a) Upon completion of fieldwork, the institution, firm, or consultant responsible for the work will prepare and submit a brief preliminary report of findings. This report shall be submitted within 14 days of the completion of fieldwork for testing and within 30 day of the completion of fieldwork for data recovery.
- b) The preliminary report of findings shall contain, at a minimum:

- 1. Discussion of the methods and treatments applied to each property with an assessment of the degree to which these methods and treatments followed the direction provided by the Work Plan
- 2. Topographic site plans for the properties depicting all features and treatment areas
- 3. General description of recovered artifacts and other data classes, including features excavated or sampled
- 4. An assessment of the accomplishment of goals established in the Work Plan
- 5. Discussion of further analyses to be conducted for the data recovery report, including any proposed changes in methods or levels of effort from those proposed in the Work Plan
- 5) Review and Comment on Data Recovery Report

a) Within 180 days following completion of research, analysis, and synthesis of data collected during fieldwork, the institution, firm, or consultant responsible for the work will prepare a Data Recovery Report incorporating all appropriate data analyses and interpretations.

b) The Data Recovery Report will follow the minimum requirements of the Work Plan as set forth in Stipulation 2 (h).

c) Upon receipt of the Data Recovery Report, the FHWA will review and subsequently submit such documents concurrently to all consulting parties for review. All consulting parties will have 30 calendar days from receipt to review and provide comments to FHWA. All comments shall be in writing with copies provided to the other consulting parties. Lack of response within this review period will be taken as concurrence with the Data Recovery Report.

d) If revisions to the Data Recovery Report are made, all consulting parties have 20 calendar days from receipt to review the revisions and provide comments to FHWA. Lack of response within this review period will be taken as concurrence with the revised Data Recovery Report.

6) Standards for Monitoring and Data Recovery

All historic preservation work carried out pursuant to this Agreement shall be carried out by or under the supervision of a person, or persons, meeting at a minimum the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-44739).

7) Curation

All materials and records resulting from the data recovery program conducted within the Project area shall be curated as follows:

- a) For materials located on city, county, state or private land, curation shall take place in accordance with standards outlined in A.R.S. § 41-844, and guidelines generated by ASM. The repository for materials will be ASM. Materials subject to repatriation under A.R.S. § 41-844 and A.R.S. § 41-865 shall be maintained in accordance with the burial agreement.
- b) Archaeological resources excavated or removed from federal land will be preserved by a suitable university, museum, or other scientific or educational institution (ARPA, Section 4.b.3). (If objects are collected from BLM lands, they will also be stored at ASM, which is a repository that meets ARPA requirements). Resources having religious or cultural importance shall be maintained in accordance with the burial agreement until any specified analyses, as determined following the consultation with the appropriate Indian tribes and individuals, are complete and the resources are returned.

8) Additional Inventory Survey

FHWA, in consultation with all parties to this agreement, shall ensure that new inventory surveys of additional rights-of-way, temporary construction easements, and any staging or use areas will include recommendations of eligibility that are made in accordance with 36 CFR § 800.4 for all cultural resources. Should any signatory to this Agreement disagree with FHWA regarding eligibility, the SHPO shall be consulted and resolution sought within 20 calendar days. If the FHWA and SHPO disagree on eligibility, FHWA shall request a formal determination from the Keeper of the National Register.

9) Dispute Resolution

Should any signatory to this Agreement object within the amount of review time stipulated in this Agreement to any plan or report provided for review or to any aspect of this undertaking related to historic preservation issues, FHWA shall consult with the objecting party to resolve the objection. The objection must be identified specifically and the reasons for the objection documented in writing. If the objection cannot be resolved, FHWA shall:

- a) Forward all documentation relevant to the dispute to the Advisory Council in accordance with 36 CFR 800.2(b)(2). Any comment provided by the Advisory Council, and all comments from the signatories to this Agreement, will be taken into account by FHWA in reaching a final decision regarding the dispute.
- b) If the Council does not provide any comments regarding the dispute within 30 days after receipt of adequate documentation, FWHA may render a decision regarding the dispute. In reaching its decision, FHWA will take into account all written comments regarding the dispute from the signatories to the Agreement.
- c) FHWA will notify all signatories of its decision in writing before implementing that portion of the undertaking subject to dispute under this stipulation. FHWA's decision will be a final agency decision.
It is the responsibility of the FWHA to carry out all other actions subject to the terms of this Agreement that are not the subject of the dispute.

10) Discoveries

If potential historic or prehistoric archaeological materials or properties or human remains are discovered after construction begins, the person in charge of the construction shall require construction to immediately cease within the area of the discovery, take steps to protect the discovery, and promptly report the discovery to the ADOT Historic Preservation Specialist, representing FHWA. The ADOT Historic Preservation Specialist, representing FHWA shall notify and consult with appropriate agencies.

- a) If the discovery is on city, county, state or private land and appears to involve human remains or remains as defined in ASM rules implementing A.R.S. § 41-844 and 41-865, the Director of ASM shall be notified. In consultation with the Director, ADOT, on behalf of FHWA, and the person in charge of construction shall ensure that the discovery is treated according to the burial agreement.
- b) If the discovery involves graves or human remains as defined in NAGPRA 43 CFR 10.2(d.1-4), the Federal Land Manager (the BLM) shall also be informed. In consultation with the BLM and ADOT the person in charge of construction shall immediately take steps to secure and maintain preservation of the discovery. The BLM and ADOT shall ensure that the discovery is treated according to the burial agreement.
- c) If human remains are not involved, and the discovery is located on city, county or state land, ADOT, on behalf of FHWA, shall notify ASM as required under A.R.S. § 41-844. ADOT, on behalf of FHWA in consultation with the Director and SHPO, if appropriate, shall determine if the Work Plan previously approved by ASM according to Stipulation 2 is appropriate to the nature of the discovery. If appropriate, the Work Plan shall be implemented by ADOT, on behalf of FHWA. If the Work Plan is not appropriate to the discovery, FHWA shall ensure that an alternate plan for the resolution of adverse effect is developed and circulated to the consulting parties, who will have 48 hours to review and comment upon the alternate plan. FHWA shall consider the resulting comments, and shall implement the alternate plan once a project specific permit has been issued.
- d) If human remains are not involved and the discovery is located on private land, ADOT, on behalf of FHWA, shall evaluate the discovery, and SHPO shall be notified as appropriate. The ADOT Historic Preservation Specialist, on behalf of FHWA, shall determine if the Work Plan previously approved according to Stipulation 2 is appropriate to the nature of the discovery. If appropriate, the Work Plan shall be implemented by ADOT, on behalf of FHWA. If the Work Plan is not appropriate to the discovery, FHWA shall ensure that an alternate plan for the resolution of adverse effect is developed and circulated to the consulting parties, who will have 48 hours to review and comment upon the alternate plan. FHWA shall consider the resulting

comments, and shall implement the alternate plan once a project specific permit has been issued.

e) If the discovery is located on federal land, ADOT, on behalf of FHWA, shall determine if the discovery classifies as an "archaeological resource" as defined in Section 3.1 of ARPA, and contact the BLM as appropriate.

11) Amendments

In accordance with 36 CFR 800.6(c)(7), if any signatory determines that the terms of this Agreement will not or cannot be carried out or that an amendment to its terms is needed, that party shall immediately notify FHWA and request an amendment. The proposed amendment shall be submitted in draft form with the request. The signatories to this Agreement will consult to review and consider such amendment. The amendment will be effective on the date a copy signed by all of the original signatories. FHWA shall file any amendments with the Council and provide notice to the concurring parties.

12) Termination

Any signatory may terminate the Agreement by providing 30 day written notification to the other signatories. During this 30 day period, the signatories may consult to seek agreement on amendments or other actions that would avoid termination pursuant to 36 CFR §800.6 (b). In the event an agreement on amendments or other actions cannot be reached within the 30 day time frame, termination shall be effective on the 31^{st} day. Subsequent to termination, the FHWA will notify the signatories within 30 days whether it will initiate consultation to execute an Agreement with the signatories under 36 CFR 800.6(c)(1) or request the comments of the Council under 36 CFR 800.7(a) and proceed accordingly.

13) Equal Opportunity/Non-Discrimination

As is applicable to the signatories and/or the consulting parties, and to this Project, the signatories and consulting parties agree to comply with Chapter 9, Title 41, Arizona Revised Statutes (Civil Rights), Arizona Executive Order 99-4 and any other federal or state laws relating to equal opportunity and non-discrimination, including the Americans with Disabilities Act.

14) Records

As is applicable to the signatories and/or the consulting parties, and to this Project, all books, accounts, reports, files and other records relating to this Agreement shall be subject, at all reasonable times, to inspection and audit by the State for five years after the termination of this Agreement, pursuant to A.R.S. et seq. 35-214, 35-215 and 41-2548.

15) Conflict of Interest

This Agreement is subject to cancellation by the State under A.R.S. et seq. 38-511 if a person significantly involved in the Agreement on behalf of the State is an employee or consultant of the contractor at any time while the Agreement or any extension of the Agreement is in effect.

16) Non-Availability of Funds

This Agreement shall be subject to available funding, and nothing in this Agreement shall bind the State, Tribal, or Federal agencies to expenditures in excess of funds authorized and appropriated for the purposes outlined in this Agreement.

17) Fulfillment of Terms

In the event the FHWA or ADOT cannot carry out the terms of this agreement, the FHWA will comply with 36 CFR §800.3 through 800.6.

18) There shall be an annual meeting among FHWA, SHPO, ADOT, ASLD, BLM, COT, the USACE, and Pima County to review the effectiveness and application of this Agreement, to be held on or near the anniversary date of the execution of this agreement.

This agreement shall be null and void if its terms are not carried out within ten (10) years from the date of its execution, unless the signatories agree in writing to an extension for carrying out its terms.

Execution of this Agreement by the signatories and its subsequent filing with the Council is evidence that the Federal Highway Administration has afforded the Advisory Council on Historic Preservation an opportunity to comment on the SR 86, Sandario Road to Kinney Road project and its effects on historic properties, and that the Federal Highway Administration has taken into account the effects of the undertaking on historic properties.

SIGNATORIES

FEDERAL HIGHWAY ADMINISTRATION	
By	Date
Title	
ARIZONA STATE HISTORIC PRESERVATION OFFICER	
By	Date
Title US BUREAU OF LAND MANAGEMENT	
By	Date

Memorandum of Agreement SR 86, Data Recovery at AZ AA:16:5 (ASM); Testing at AZ AA:16:546 (ASM) and AZ AA:16:548 (ASM)

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Title	_
ARIZONA STATE LAND DEPARTMENT	
Ву	_ Date
Title	_
CITY OF TUCSON	
By	_ Date
Title	_
PIMA COUNTY	
By	Date
Title	_
U.S. ARMY CORPS OF ENGINEERS	
By	Date
Title	
INVITED SIGNATORIES	
ARIZONA DEPARTMENT OF TRANSPORTATIO	DN
By	Date
Title Environmental Planning Group Manager	

CONCURRING PARTIES

ARIZONA STATE MUSEUM	
By	Date
Title	-
THE HOPI TRIBE	
By	Date
Title	-
THE PASCUA YAQUI TRIBE	
By	Date
Title	_
THE YAVAPAI APACHE NATION	
By	_ Date
Title	_
TOHONO O'ODHAM NATION	
By	Date
Title	

Page 11 of 11

CONCURRING PARTIES

ARIZONA STATE MUSEUM	
By Jath Aunder	Date 11 124-7
Title DIRECTOR	1
THE HOPI TRIBE	
By	Date
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THE PASCUA YAQUI TRIBE	
Ву	Date
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THE YAVAPAI APACHE NATION	
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TOHONO O'ODHAM NATION	
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Page 11 of 11

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ARIZONA STATE LAND DEPARTMENT	
By	Date
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CITY OF TUCSON	
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U.S. ARMY CORPS OF ENGINEERS	
By Date	
Title	
ARIZONA DEPARTMENT OF TRANSPORTATION	
By Thos Uncluson	Date 10/22/09

Title Environmental Planning Group Manager

US B	UREAU	OF	LAND	MANA	GEMENT
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INVITED SIGNATORIES

ARIZONA DEPARTMENT OF TRANSPORTATION luck By

Date 10/22

Title Environmental Planning Group Manager

US BUREAU OF LAND MANAGEMENT

By	Date
Title	
ARIZONA STATE LAND DEPARTMENT	
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CITY OF TUCSON By Joth Maby Title Historic Preservation Office	Date <u>12-3-09</u>
PIMA COUNTY	
By	Date
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U.S. ARMY CORPS OF ENGINEERS	
By	Date
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ARIZONA DEPARTMENT OF TRANSPORTATI By	ON Date_ <u>10/22/09</u>
Title Environmental Planning Group Manager	

US BUREAU OF LAND MANAGEMENT

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INVITED SIGNATORIES		
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Ву	_	Date
Title Environmental Planning Group Manager		

APPENDIX F Agency Correspondence



U.S. Department of Transportation

Federal Highway Administration

ARIZONA DIVISION

May 28, 2008

400 East Van Buren Street, Suite 410 Phoenix, Arizona 85004-0674 602-379-3646

> In Reply Refer To: HOP-AZ

STP-086-A(APA) 086 PM 156 H6806 01L SR 86: Sandario Road to Kinney Road Participating and Cooperating Agency Request

Ms. Cindy Lester, Chief Arizona Section Regulatory Branch US Army Corps of Engineers 3636 North Central Avenue, Suite 900 Phoenix, Arizona 85012-1939

ATTN: Kathleen Tucker

Dear Ms. Tucker:

The Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT) have initiated an Environmental Assessment (EA) for proposed improvements to State Route (SR) 86 between Sandario Road and Kinney Road. The project area is located in Pima County southwest of Tucson on SR 86, beginning just east of Sandario Road at milepost (MP) 156.6 and ending at MP 166.6, just east of Kinney Road. The purpose of the project, as currently defined, is to increase the roadway capacity to accommodate existing and future traffic volumes.

Your agency has been identified as an agency that may have an interest in the project due to the presence of and anticipated impacts within waters of the US in the project area that are regulated under Section 404 of the Clean Water Act. With this letter, we extend your agency an invitation to become a participating and cooperating agency with the FHWA in the development of the EA for the subject project. This designation does not imply that your agency either supports the proposal or has any special expertise with respect to evaluation of the project. Your agency's involvement will consist of participating in, reviewing, and concurring with the evaluation of issues under your jurisdiction: it will not involve direct analysis or writing during EA preparation. To assist our interagency cooperation, we will invite you to progress meetings and will consult with you on any relevant technical studies.

Pursuant to Section 6002 of SAFETEA-LU, participating and cooperating agencies are responsible to identify, as early as practicable, any issues of concern regarding the project's potential environmental or socioeconomic impacts that could substantially delay or prevent an agency from granting a permit or other approval that is needed for the project. We suggest that

AMERICAN ECONOMY your agency's role in the development of the above project should include the following as they relate to your area of expertise:

- 1) Provide meaningful and early input on defining the purpose and need, determining the range of alternatives to be considered, and the methodologies and level of detail required in alternatives analysis.
- 2) Participate in coordination meetings and joint field reviews as appropriate.
- 3) Timely review and comment on the pre-draft or pre-final environmental documents to reflect the views and concerns of your agency on the adequacy of the document, alternatives considered, and the anticipated impacts and mitigation.

Please respond to FHWA in writing with an acceptance or denial of the invitation prior to June 20, 2008. This response should state your reason for declining the invitation. Pursuant to SAFETEA-LU Section 6002, any federal agency that chooses to decline the invitation must specifically state that your agency:

- Has no jurisdiction or authority with respect to the project;
- · Has no expertise or information relevant to the project; and
- Does not intend to submit comments on the project.

If you have any questions or would like to discuss in more detail the project or our agencies' respective roles and responsibilities during the preparation of this EA, please contact Mary Frye, FHWA Arizona Division Office Environmental Coordinator, at 602-382-8979.

Thank you for your cooperation and interest in this project.



Robert E. Hollis Division Administrator

Enclosures:

cc: Mary Frye Karen Whitlock (T100) MFrye:cdm

United States Department of the Interior



BUREAU OF LAND MANAGEMENT Tucson Field Office 12661 East Broadway Boulevard Tucson, Arizona 85748-7208 www.blm.gov/az/

June 12, 2008

In Reply Refer To: 2821 (AZ-420) AZA 06032, AZAR0 01697, AZAR0 01698, AZAR0 01699

Ms. Mary Frye Federal Highway Administration 400 East Van Buren Street, Suite 410 Phoenix, Arizona 85004-0674

Dear Ms. Frye:

The Bureau of Land Management (BLM) accepts your invitation to participate as a cooperating agency on the Arizona Department of Transportation's (ADOT) State Route 86 expansion project between Sandario Road and Kinney Road in Tucson. This project area is covered by four BLM right-of-way authorizations AZA 6032, AR01697, AR01698, and AR01699. Our records show that no final Environmental Analysis (EA) was prepared for these authorizations, except for a draft EA that was furnished to BLM in 1987. There is no evidence in our records of a final EA and Finding of No Significant Impact (FONSI)/Decision Record having been provided to our office. Our office is required to review and comment on the new analysis to ensure that the new EA meets BLM's National Environmental Policy Act (NEPA) standards, and will allow our office to issue our own FONSI/Decision Record.

The proposed highway modification will require that the existing right-of-way authorizations be modified to reflect the final project built-out designs. If the proposed project is expanded to outside of the authorized right-of-way area, ADOT will be required to submit a right-of-way application to authorize those areas falling outside the existing authorized areas.

If you have any questions regarding this letter, please contact Susan Bernal, Realty Specialist, at 520-258-7206.

Sincerely,

Brian B. B.

Field Office Manager



U.S. Department of Transportation

Federal Highway Administration

ARIZONA DIVISION

August 24, 2009

4000 North Central Avenue, Suite 1500 Phoenix, Arizona 85012-3500 602-379-3646 602-382-8998 http://www.fhwa.dot.gov/azdiv/index.htm

> In Reply Refer To: 086-A(APA) HOP-AZ

STP-086-A(APA) 086 PM 156 H6806 01C SR 86: Sandario Road to Kinney Road Sole Source Aquifer Review

Ms. Jamelya Curtis Environmental Protection Agency Region 9 Ground Water Office, WTR-9 75 Hawthorne Street San Francisco, California 94105

Dear Ms. Curtis:

The Arizona Department of Transportation (ADOT) in conjunction with the Federal Highway Administration (FHWA) is proposing roadway improvements of State Route (SR) 86 between' Sandario Road and Kinney Road within Pima County. The project extends from milepost (MP) 156.9 to MP 166.6, and is located southwest of the City of Tucson (see enclosed Figures 1 and 2). The project is located within the limits of the Upper Santa Cruz and Avra Basin Sole Source Aquifer.

Due to increased traffic volumes and growth in the area, the existing two-lane facility does not provide sufficient capacity to adequately handle existing or projected traffic volumes. The purpose of this project is to address the needs by providing adequate capacity for current and projected traffic volumes, manage access and improve turning movements at intersections to reduce the potential for vehicle conflicts, and enlarge existing drainage structures to address overtopping conditions during major storm events.

The scope of work for the project consists of the following:

• Retain the existing SR 86 roadway to provide two lanes for one direction of travel and reconfigure to provide a 10-foot-wide outside shoulder, two 12-foot-wide travel lanes, and a 6-foot-wide inside shoulder from MP 156.9 to MP 164.3



- Construct a new two-lane roadway parallel to the existing roadway to provide two lanes for the opposite direction of travel consisting of a 10-foot-wide outside shoulder, two 12-foot-wide travel lanes, and a 4-foot inside shoulder from MP 156.9 to MP 164.3
- Remove the existing SR 86 roadway between the two new travel lancs from MP 164.3 to the end of the project limits. The reconstructed eastbound and westbound lanes would consist of a 10-foot-wide outside shoulder, two 12-foot-wide travel lanes, and a 6-foot-wide shoulder
- Construct a 50-foot-wide graded median between the easthound and westbound roadways
- Construct a third SR 86 eastbound lane at the Sunset Boulevard intersection to provide three through-lanes of travel from Sunset Boulevard to Kinney Road
- Add traffic signals, and right- and left-turn lanes at intersections and modify intersections to match proposed improvements on SR 86
- Construct drainage inlets in the median and connect to cross-culverts as required
- Enlarge and extend existing culverts to adequately convey runoff for the 100-year storm event
- Construct a new bridge on the existing SR 86 roadway at Black Wash (MP 162.1) adjacent to the existing hridge and a new 260-foot-long bridge on the new roadway at Black Wash
- Excavate and regrade the wash bottom at Snyder Hill Wash (MP 162.3)
- Construct a 199-foot-long bridge on the new roadway at Snyder Hill Wash

The project area is located on easements managed by the Arizona State Land Department, the Bureau of Land Management, and the City of Tucson as well as right-of-way (ROW) on privately owned parcels. A total of 124 acres of new casement and ROW are anticipated for this project. Construction for this project has not been programmed. It is anticipated that construction would be performed in two phases with each phase estimated to take approximately 14 months to construct.

In accordance with the November 2002 U.S. Environmental Protection Agency (EPA)/FHWA Memorandum of Understanding (MOU), a Section 1424(e) review pertaining to the Safe Drinking Water Act will be required by the EPA as the proposed project is within the Upper Santa Cruz and Avra Basin Sole Source Aquifer.

In accordance with the MOU, this letter serves to notify the EPA of this project. If you have any questions about this project, please contact Mary Frye at 602-382-8979. Thank you for your assistance.

Sincerely,

MARY E. FRYE

Robert E. Hollis Division Administrator

Enclosures: cc: MFrye, Billah Kahn (605E), Dee Phan (EM02) MFrye:cdm

SR 86: Sandario Road to Kinney Road Project Area Water Quality Summary

The Arizona Department of Transportation (ADOT) in conjunction with the Federal Highway Administration (FHWA) is proposing roadway improvements of State Route (SR) 86 between Sandario Road and Kinney Road within Pima County. The project extends from milepost (MP) 156.9 to MP 166.6, and is located southwest of the City of Tucson.

Due to increased traffic volumes and growth in the area, the existing two-lane facility does not provide sufficient capacity to adequately handle existing or projected traffic volumes. The purpose of this project is to address the needs by providing adequate capacity for current and projected traffic volumes, manage access and improve turning movements at intersections to reduce the potential for vehicle conflicts, and enlarge existing drainage structures to address overtopping conditions during major storm events.

The project limits of the proposed SR 86 improvements are located within the Upper Santa Cruz and Avra Basin Sole Source Aquifer. The United States Geological Survey (USGS) water quality report Water Quality in the Central Arizona Basins, Arizona 1995-98 (USGS 2000) indicates that the four major influences on ground-water quality include geohydrology, dissolution of evaporates and other minerals, irrigation of agricultural and urban lands, and agricultural and urban fertilizer and pesticide use (USGS 2000). As adjacent land uses within the project limits remain relatively undeveloped and do not include agriculture, current known influences on ground-water quality in the project area are minimal and related primarily to polluted stormwater runoff containing volatile organic compounds (VOCs). These VOCs include petroleum hydrocarbon compounds (gasoline and oil) that have heen linked to ground-water quality degradation in Arizona (Marsh, 1994). Sources of these compounds typically include vehicles traveling on roadways or on other impervious surfaces. Impervious surfaces within the project limits include paved surfaces such as SR 86, driveways, and parking lots. Other manmade impervious surfaces in the area include rooftops on residential and commercial buildings. These surfaces contribute to accelerated stormwater runoff since they replace the native ground and vegetation that would otherwise absorb more water though percolation. As a result, VOCs from paved surfaces are more quickly carried from the vicinity versus allowing for slow percolation into groundwater. In addition to accelerating runoff, the addition of roadway surfaces can result in higher levels of VOCs, presuming there would be an associated increase in the volume of traffic.

The improvements to SR 86 would include adding impervious surfaces for two travel lanes as well as a graded median between the eastbound and westbound roadways. A third eastbound lane would be constructed at the Sunset Boulevard intersection and Sheridan Avenue intersection to provide three through-lanes in each direction of travel from Sheridan Avenue to Kinney Road.

Improvements would also include:

- Widening of existing culverts and bridges
- Construction of new bridges to retain the existing washes at Black Wash and Snyder Hill
 Wash
- Excavation of sediment from Snyder Hill Wash
- Extension and enlargement of existing culverts (and construction of new culverts)
- Reconstruction of dikes
- Diversion of drainage at the Kinney Road intersection southeast across SR 86
- Placement of roadway embankment material

These proposed improvements would not directly impact the aquifer but would improve the traffic conditions. The addition of lanes would result in reduced vehicular congestion in the area, minimized vehicle conflicts, and reduced idling times for vehicles; thereby limiting the opportunity for additional VOCs on SR 86.

It is therefore concluded that the SR 86 improvements proposed with this project would result in negligible impacts to the Upper Santa Cruz and Avra Basin Sole Source Aquifer.



Source: Arizona Department of Transportation

Figure 1. State Location Map

STP-086-A(APA) 086 PM 156 H6806 01C SR 86: Sandario Road to Kinney Road



From: Curtis.Jamelya@epamail.epa.gov [mailto:Curtis.Jamelya@epamail.epa.gov]
Sent: Wednesday, November 04, 2009 5:34 PM
To: mary.frye@dot.gov
Cc: Dee Phan
Subject: RE: SSA Review Request: 086-A(APA) SR-86: Sandario Road to Kinney Road

Good Afternoon:

Thank you for your response below. Based on the information you've provided, it appears that it is unlikely that the proposed project will adversely affect the Upper Santa Cruz & Avra Basin aquifer. If you have any questions, please feel free to contact me. Have a great day.

Jamelya Curtis Ground Water Office U.S. Environmental Protection Agency Region IX 75 Hawthorne Street (WTR-9) San Francisco, CA 94105-3901

phone: 415.972.3529 fax: 415.947.3549 email: curtis.jamelya@epa.gov

 From:
 <mary.frye@dot.gov>

 To:
 Jamelya Curtis/R9/USEPA/US@EPA

 Cc:
 <DPhan@azdot.gov>

 Date:
 09/25/2009 09:19 AM

 Subject:
 RE: SSA Review Request: 086-A(APA) SR-86: Sandario Road to Kinney Road

Good morning Ms. Curtis,

I apologize for the delay in getting back to you. I just returned from vacation and am still catching up...

Please let me know if the following information answers your question:

Storm water runoff in the project area generally flows from the foothills of the Sierrita Mountains northwesterly towards SR 86. Drainage runoff along SR 86 east of Camino Verde flows southwesterly from Snyder Hill on the north side of SR 86, crosses under SR 86, where it turns westward to intersect the northwesterly flows of the area. Flows throughout the remainder of the project cross northwesterly under SR 86 through pipes, culverts, and bridge openings. The small washes that the SR 86 crossings outfall into east of Snyder Hill Wash and Black Wash ultimately drain to these major washes. Snyder Hill Wash and Black Wash then drain to Brawley Wash, which drains northwest to Los Robles Wash, then into the Santa Cruz River, which ultimately drains into the Gila River.

With the addition of new lanes, some of the roadway runoff would drain into the median and into proposed median inlets, into cross-culverts below the roadway, and discharge into the smaller washes that connect to Black Wash and Snyder Hill Wash. The greatest changes in runoff related to the project would be extending and increasing the size of the drainage structures to

accommodate the 100-year flood. Otherwise, drainage patterns and flow velocities would not be impacted, and increases in flow volumes from added roadway surface would be insignificant.

If you need additional information please do not hesitate to ask.

Thanks,

Mary Frye Environmental Program Manager FHWA, Arizona Division 602-382-8979 (office) 602-319-6815 9cell)

From: Curtis.Jamelya@epamail.epa.gov [mailto:Curtis.Jamelya@epamail.epa.gov]
Sent: Thursday, September 10, 2009 4:45 PM
To: Frye, Mary (FHWA)
Subject: SSA Review Request: 086-A(APA) SR-86: Sandario Road to Kinney Road

Good Afternoon Ms. Frye:

Thank you for notifying EPA of the joint roadway improvement project planned by Arizona Department of Transportation (ADOT) and Federal Highway Administration (FHWA). I have reviewed your request per Section 1424(e) of the Safe Drinking Water Act. Your August 24, 2009 letter indicates that the project will include the construction of drainage inlets which will connect to cross-culverts, as well as the enlargement and extension of existing culverts. Could you please provide a description of where will the drainage that flows through these culverts will go?

Jamelya Curtis Ground Water Office U.S. Environmental Protection Agency Region IX 75 Hawthorne Street (WTR-9) San Francisco, CA 94105-3901

phone: 415.972.3529 fax: 415.947.3549 email: curtis.jamelya@epa.gov

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DEPARTMENT OF ENVIRONMENTAL QUALITY 150 West Congress Street Tucson, Arizona 85701-1317

Ursula Kramer Director

(520) 740-3340 FAX (520) 882-7709

October 20, 2005

Laura N. Gerbis, Environmental Planner Jacobs Civil Inc. 875 West Elliot Road, Suite 201 Tempe, AZ 85284

RE: SR 86, Valencia Road to Kinney Road Study, TRACS No. 086 PM 159 H6806 01L

Dear Ms. Gerbis:

Thank you for inviting Pima County Department of Environmental Quality (PDEQ) to attend the Agency Scoping Meeting for the SR 86, Valencia Road to Kinney Road Study. PDEQ will not be in attendance, but submit the following comments and suggestions regarding the SR 86, Valencia Road to Kinney Road Study project. The project activities that PDEQ permits and enforces are:

1. Air Quality Activity Operating Permit

Pima County Code (P.C.C.) Title 17 requires Air Quality Activity Operating Permits for Road Construction, Trenching and Landclearing/Earthmoving over threshold amounts. A permit must be obtained prior to starting the activity.

2. Fugitive Emissions

Measures must be in place to control fugitive dust generated at the project. Dust control is required twenty-four hours a day, seven days a week, and includes a 20% opacity standard.

P.C.C. Title 17 applies to your project 17.16 Emission Limiting Standards Article II. Visible Emission Standard Article V. Emissions from New and Existing Portable Sources

Visit our website at: www.deq.pima.gov

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Letter to Ms. Gerbis RE: SR 86, Valencia Road to Kinney Road Project October 20, 2005 Page Two

3. Arizona Pollutant Discharge Elimination System

Based on the scope of the proposed activity, coverage under the Arizona Pollutant Discharge Elimination System (AZPDES) Construction General Permit may be necessary. If so, a Notice of Intent must be submitted to the Arizona Department of Environmental Quality (ADEQ) and a Storm Water Pollution Prevention Plan (SWPPP) must be developed. A description of the AZPDES storm-water construction program may be found at: http://www.azdeq.gov/environ/water/permits/stormwater.html#const.

4. Asbestos/NESHAP (National Emissions Standards for Hazardous Air Pollutants)

Bridges are classified as "NESHAP Facilities" and abutments, piers, tube culverts, and underground foundations are "Facility Components" and therefore will require compliance with Title 40, Part 61, Subpart M, of the Code of Federal Regulations National Emissions Standards for Asbestos. If your project requires demolition or renovation of these structures, you will be required to submit a NESHAP Notification at least ten working days prior to starting demolition or renovation and obtain a PDEQ Asbestos Removal/Demolition Permit.

Pima County Code Title 17 is available for your reference on our WEBSITE at: WWW.DEQ.PIMA.GOV. If you have questions regarding permits and compliance, you may contact Business Assistance at (520) 740-3340. Once again, thank you for the opportunity to comment.

Sincerely,

Usula Kromer

Ursula Kramer Director

Tucson Airport Authority 7005 South Plumer Avenue Tucson, Arizona 85706 Telephone 520-573-8100 Fax 520-573-8008 www.tucsonairport.org



Roland C. Cook, P.E. Project Engineer Jacobs Civil, Inc. 875 W. Elliot, Suite 201 Tempe AZ 85284 December 10, 2005

Mr. Cook,

Thank you for the minutes of the November 30 meeting at Ryan Airfield regarding SR 86, which I received today.

I note one discrepancy in the transcript on Page 4. The comment regarding access to Ryan Airfield did not recommend one point of ingress/egress. The gentleman was questioning the need for 2 curb cuts immediately next to one another in the vicinity of Aviator Lane.

Eliminating one of Ryan's curb cuts near Aviator Lane would require modifications to the airport layout. This would of course have a cost, but would be a manageable change. Removing all but one access to Ryan Airfield, on the other hand, would pose significant problems. Specifically, it would entail difficulty with hosting large numbers of visitors during special events, maintaining acceptable access on and off the airport in the event of accidents or road maintenance, and prompt emergency access both for response vehicles and air ambulance. Additionally, eliminating direct access at Aviator Lane would likely force the relocation or closure of the airport restaurant. Alternately, eliminating direct access at Airfield Drive would create very awkward traffic flow for most of the airport, including most future development.

Please correct your minutes to reflect the comment as conveyed.

The Tucson Airport Authority appreciated the opportunity to host the meeting for this important project. We believe that these roadway improvements will have significant payoffs for our community and its visitors. Please do not hesitate to use me as a resource at any time.

Sincerely,

Scott R. Driver Director of Ryan Airfield

Drexel Heights Fire District

5030 S. Camino Verde, Tucson, Arizona 85735 Voice: (520) 883-4341 Fax: (520) 883-3314 www.drexelfire.net

Station 1 5030 S. Camino Verde

Station 2 6340 S. Mark Road

Station 3 5960 S. Cardinal Ave.

Station 4 3255 S. Kinney Road

Communications 6950 S. Beehive (520) 883-4330

Board of Directors Ron Greil, Chair Robert Bishman, Clerk James Bertrand Laura Dailey Jayne Stepnoski

Fire Chief Douglas E. Chappell

Assistant Chief Gary Lee Bynum

December 14, 2005

Mr. Roland C. Cook, P.E. Jacobs Civil Inc. 875 W. Elliot Suite 201 Tempe, AZ 85284

Re: SR 86, Valencia Road to Kinney Road

Dear Mr. Cook:

I apologize for not attending the meeting on November 7, 2005. I noted that you had an incorrect address listed for the Drexel Heights Fire District so that may be why we are not receiving notices.

Please change the address for Drexel Heights Fire District to as follows:

Douglas Chappell, Fire Chief Drexel Heights Fire District 5030 S. Camino Verde Tucson, AZ 85735 (520) 883-4341 (520) 883-3314 Fax DChappell@drexelfire.net

Thank you for assistance in this matter. Are there any further meetings scheduled? If so let me know and we will endeavor to have someone in attendance.

Sincerely. Chappellu ouglas E. **Fire Chief**

THE STATE OF ARIZONA



GAME AND FISH DEPARTMENT

2221 WEST GREENWAY ROAD PHOENIX, AZ 85023-4399 (602) 942-3000 • AZGFD.GOV GOVERNOR JANET NAPOLITANO COMMISSIONERS CHAIRMAN, MICHAEL M. GOLIGHTLY, FLAGSTAFF WILLIAM H. MCLEAN, GOLD CANYON BOB HERNBRODE, TUCSON JENNIFER L. MARTIN, PHOENIX JOE MELTON, YUMA DIRECTOR DUANE L. SHROUFE DEPUTY DIRECTOR STEVE K. FERRELL



April 23, 2007

Ms. Johnida Martin Archaeological Consulting Services, Ltd. 424 W. Broadway Rd. Tempe, AZ 85282

Re: Review of SR 86: Valencia Road to Kinney Road. TRAC No.: 086 PM 159 H6806 01C

Dear Ms. Martin:

The Arizona Game and Fish Department (Department) has reviewed your request, dated March 29, 2007, regarding the study of potential improvements to State Route (SR) 86 between Sandario Road and Kinney Road. There are federally listed species, specifically Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), within close proximity of the project. Any direct or indirect impacts to sensitive species due to project activities need to be considered. Therefore, we recommend that you and/or the project proponent contact the US Fish and Wildlife Service for consultation purposes. In addition, the Department offers the following general comments, based on the information provided:

- Identify wildlife crossing areas. Design culverts and bridges to accommodate the upstream and upland movement of fish and wildlife (bottom surface of structure should be flush with ground i.e. no drop-offs or plunge pools). Identify structure shape and size needs as well as consider noise, temperature, light, and moisture requirements of species of animals that may use the structure.
- Identify whether wildlife species use the existing culverts and/or bridges for roosting or nesting. To minimize wildlife impacts, consider conducting project activities outside the breeding/maternity season (breeding seasons for birds and bats usually occur spring summer). In addition, examine the crevices of the structures for the presence of bats prior to any activities. If bats are present, project activities should be conducted during nighttime hours, if possible, when the fewest number of bats will be roosting. A roost has been identified within close proximity to the road.
- Staging areas should be located in previously disturbed sites, where possible, and kept as small as possible. Implement erosion and drainage control measures during the project to prevent introduction of sediment-laden runoff into surface waters and to prevent impacts to surface water quality. Stabilize exposed soils, particularly on slopes, with vegetation as soon as possible to prevent excess erosion.

Arizona Pioneer Award for Quality 2005 Recipient Ms. Johnida Martin April 23, 2007 Page 2

- Minimize the potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes) that may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). Wash all equipment utilized in the project activities before use at the site and after leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245), please see the Arizona Department of Agriculture website for restricted plants http://www.azda.gov/PSD/quarantine5.htm.
- Coordinate any plant salvage efforts with the Arizona Department of Agriculture, in accordance with the Arizona Native Plant Law. In addition, the applicable land management agencies should be consulted regarding guidelines for revegetation efforts.

The Department would appreciate the opportunity to provide an evaluation of impacts to wildlife or wildlife habitats associated with project activities occurring in the subject area, when specific details become available. Please visit our website for additional guidelines at http://www.azgfd.gov/hgis/guidelines.aspx. If you have any questions regarding this letter, please contact me at (602) 789-3606.

Sincerely,

Ginger L. Ritter Project Evaluation Specialist

GLR:gr

Attachment

AGFD #M07-04042911



U.S. Department of Transportation

Federal Highway Administration

ARIZONA DIVISION

November 13, 2007

400 East Van Buren Street, Suite 410 Phoenix, Arizona 85004-0674 602-379-3646

> In Reply Refer To: HOP-AZ

STP-086-A(APA) ADOT Project No. 086 PM 156 H6806 01C SR 86: Sandario Road to Kinney Road Request for Formal Consultation

Mr. Steve Spangle, Field Supervisor U.S. Fish and Wildlife Service Arizona Ecological Services Office 2321 West Royal Palm Road, Suite 103 Phoenix, Arizona 85021

Dear Mr. Spangle:

The Arizona Department of Transportation (ADOT) in conjunction with the Federal Highway Administration, as the lead agency, have begun a study of potential improvements to State Route (SR) 86 between Sandario Road (milepost [MP] 156.9) and Kinney Road (MP 166.5) southwest of Tucson in Pima County, Arizona.

The enclosed Biological Evaluation (BE) describes the proposed project and addresses the current Pima County list of threatened, endangered, proposed and candidate species. The Pima pineapple cactus *(Coryphantha scheeri* var. *robustispina)* was evaluated in detail due to the presence of suitable habitat and several Pima pineapple cacti within the project area. ADOT has informally discussed this project with U.S. Fish and Wildlife Service representative Marit Alanen at a meeting on November 7th, 2005.

The BE concluded that the proposed project may affect, and is likely to adversely affect, the Pima pineapple cactus and its habitat. Therefore, I am requesting formal consultation for the Pima pineapple cactus. Please call Steve Thomas at 602-382-8976, or Justin White at 928-779-7528 if you have any questions. Thank you for your cooperation.

Sincerely,

STEPHEN D. THOMAS

Robert E. Hollis Division Administrator

Enclosure cc: SThomas, Justin White (F-500) SDThomas:cdm

MOVING THE

ECONOMY



of Transportation

Federal Highway Administration

ARIZONA DIVISION

February 6, 2008

400 East Van Buren Street, Suite 410 Phoenix, Arizona 85004-0674 602-379-3646

> In Reply Refer To: HOP-AZ

STP-086-A(APA) TRACS No. 086 PM 156 H6806 01C SR 86; Sandario Road to Kinney Road

Mr. Steve Spangle US Fish and Wildlife Service Arizona Ecological Services Office 2321 West Royal Palm Road, Suite 103 Phoenix, Arizona 85021-4951

Dear Mr. Spangle:

The Arizona Department of Transportation (ADOT), in conjunction with the Federal Highway Administration (FHWA), as the lead federal agency, is proposing to improve State Route (SR) 86 in Pima County between Sandario Road (milepost [MP] 156.9) and Kinney Road (MP 166.5), west of Tucson. Within the project limits, the existing SR 86 is a two-lane roadway. The proposed action for improving SR-86 consists of building a four-lane divided roadway, including construction of new lanes, realignment of local roads at their intersection with SR 86, extension of culverts, construction of new culverts where existing structures are inadequately sized, and the construction of a new, 200-foot long bridge over Snyder Hills Wash (MP 162.3).

The Biological Evaluation for the project concluded that the project is likely to adversely affect the Pima pineapple cactus (*Coryphantha scheeri* var *robustospina*) and its habitat. As such, Section 7 consultation with your office was initiated on November 13, 2007. Justin White, an ADOT biologist, has also been working with Marit Alenin to develop appropriate conservation measures for the Pima pineapple cactus (PPC).

As mitigation for the anticipated impacts to Pima pineapple cactus habitat, ADOT is proposing to provide for replacement habitat. The area of permanent disturbance to PPC habitat is estimated to be 60.77 acres under the proposed action. This area accounts for the total acreage where permanent loss of PPC habitat would occur, i.e. new paved areas. ADOT is proposing to mitigate permanent impacts to PPC habitat through the purchase of 60.77 acres of habitat in a US Fish and Wildlife Service-approved PPC conservation bank. Any change in the scope of the project that may occur during final design would require a re-evaluation of impacts to PPC habitat. If necessary, additional consultation with your office would be undertaken at that time. Similarly, if the proposed action is not the alternative selected, ADOT will re-evaluate impacts and continue consultation with your office.

Areas of temporary disturbance to PPC habitat due to construction of the Preferred Alternative would be rehabilitated using the following methodologies to (1) minimize colonization of



disturbed areas by invasive species, (2) preserve and utilize existing topsoil to preserve micronutrients and natural seed bank, (3) maximize opportunities for growth of native vegetation, and (4) salvage protected native plants. These methodologies are described further in the following paragraphs.

- (1) Invasive species control would be conducted both prior to and during construction to minimize colonization of disturbed areas by non-native grasses that may degrade potential PPC habitat. Due to the sensitivity of the project site, invasive species control would begin two years prior to the commencement of work on the roadway project. This would help minimize the number of invasive species present on the project site at the time of construction-related ground disturbance. In addition, during final design, ADOT would develop a project-specific *Plan for Control of Noxious and Invasive Plant Species*. This plan would address appropriate control of occurrences of invasive plant species within the right-of-way during construction. The plan would include such provisions as vehicle inspection to prevent movement of noxious and invasive plants; and proposed methods of control, such as application of herbicides and mechanical or manual removal, to be used for each plant species at various stages plant development.
- (2) Topsoil salvage would be conducted in natural areas where construction disturbance would occur and invasive species are not present. In these areas, 4 to 8 inches of surface soil would be salvaged and stockpiled to be redistributed over the cut and fill slopes adjacent to the new roadway upon completion of construction. A preconstruction survey by a qualified biologist would be conducted to determine the presence of invasive species in the project area. In areas where topsoil is determined to contain invasive species seed banks, topsoil would not be reused.
- (3) Disturbed soils that would not be landscaped or otherwise permanently stabilized by construction would be seeded using species native to the project vicinity. Seeding would be aided by the application of compost and fertilizers to maximize propagation.
- (4) A native plant salvage plan would be developed for the project during final design. Plant species protected under the Arizona Native Plant law (cactus and native trees) would be avoided by construction to the extent practicable. If impacts to native plants cannot be avoided, the plants would be treated in accordance with state law. All PPC within the area of permanent disturbance would be salvaged and replanted at a location approved by a qualified biologist. Any PPC that are not within the area of permanent disturbance, but present within the right-of-way, would be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction.

In addition to the above controls, a Storm Water Pollution Prevention Plan (SWPPP) would be developed and adhered to by all contractors and subcontractors throughout construction. The SWPPP would stipulate Best Management Practices for on-site operations designed to reduce the potential for erosion and off-site sedimentation due to construction activities.

FHWA is requesting that US Fish and Wildlife Service proceed with completing the Biological Opinion for the project. If you have any questions, please call Steve Thomas, FHWA Environmental Program Manager, at 602-382-8976; or Justin White, ADOT Biologist, at 928-779-7528. Thank you for your cooperation.

_Sincerely,

STEPHEN D. THOMAS

Robert E. Hollis Division Administrator

cc: SThomas MFrye JWhite (F-500) KWhitlock (T-100) SDThomas:cdm

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



In Reply Refer to:

AESO/SE 22410-2008-F-0281

June 16, 2008

Mr. Robert Hollis Division Administator U.S. Department of Transportation Federal Highway Administration 400 East Van Buren Street, Suite 410 Phoenix, Arizona 85004-0674

RE: HOP-AZ, STP-086-A(APA), TRACS No. 086 PM 156 H6806 01C, SR 86; Sandario Road to Kinney Road

Dear Mr. Hollis:

Enclosed please find our DRAFT biological opinion (BO) regarding effects of the improvements to State Route (SR) 86 between Sandario Road (milepost 156.9) and Kinney Road (milepost 166.5) southwest of Tucson in Pima County, Arizona, on the endangered Pima pineapple cactus (PPC) (*Coryphantha scheeri* var. *robustispina*), pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). You determined that the proposed action is likely to adversely affect the PPC.

We are forwarding the draft of this BO for your review. Please let us know of any errors or omissions in the project description, any factual errors in other portions of the document, and any concerns that you believe should be addressed by July 11, 2008. We encourage you to coordinate the review of the document with the Arizona Game and Fish Department.

We appreciate your cooperation throughout this consultation. Please contact Marit Alanen (520) 670-6150 (x 234) or Jim Rorabaugh (520) 670-6150 (x 230) of my staff for further assistance. Please refer to consultation number 22410-2008-F-0281 in future correspondence concerning this project.

Sincerely,

/s/ Jason Douglas for Steven L. Spangle Field Supervisor

Attachment

cc: Federal Highway Administration, Environmental Program Manager, Phoenix, AZ (Attn: Steve Thomas) (w/enclosure)
 Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ (w/enclosure)

Arizona Department of Transportation, Biologist, Flagstaff, AZ (Attn: Justin White) (w/enclosure)

W:\DraftBO\Marit\SR86 Sandario Road\SR86 Sandario Road Improvements cover letter.doc

TELECON

Jacobs

		Date: March 14, 2008
то:	Project File	,
FROM:	Meredith de Carbonnel	
SUBJECT:	SR 86, Valencia Road to Kinney Road TRACS No.: 086 PM 159 H6806 01C Telecon with Bureau of Land Management (BLM) Tu	iscon

SUMMARY:

On March 14, 2008, I spoke with Francisco Mendoza of BLM Tucson Field Office regarding the BLM Visual Resource Management (VRM) objectives within the project of the above-referenced project. Mr. Mendoza informed me that the area is listed as VRM Class III and that a roadway widening would be consistent with the objectives of this class.

Mr. Mendoza asked if the project would provide sidewalks adjacent to SR 86 in this section. He informed me that this area has conceptual designs for provision of sidewalks and that as the area around SR 86 becomes more urbanized, pedestrian movement will be become more and more of an issue. I let him know that his comments would be recorded as part of the project.