

SUMMARY: CONFERENCE OPINION FOR  
PROPOSED EXTENSION OF COUNTY 23RD  
AND AVENUE B, YUMA COUNTY, ARIZONA

**Date of Opinion:** July 12, 1996

**Action Agency:** Bureau of Land Management, Yuma District Office, Yuma, Arizona

**Project:** The Bureau of Land Management proposes to grant a right-of-way (ROW) to Yuma County to extend and pave County 23rd from Avenue B to Avenue 1E, and to amend a current Yuma County ROW to authorize 0.25 mile of existing paved road along Avenue B immediately south of County 23rd, and allow for another 0.25 mile of pavement south of that. The project would occur in the Yuma Desert southeast of Yuma, Arizona.

**Proposed Species Affected:** flat-tailed horned lizard, *Phrynosoma mcallii*, proposed as a threatened species

**Conference Opinion:** Non-jeopardy

**Incidental Take Statement:**

Level of take anticipated: Anticipated take resulting from the proposed action includes an estimated six flat-tailed horned lizards resulting from construction-related direct mortality and 15 lizards per year in the form of mortality due to animals killed or injured by vehicles on the newly-paved roadways. If a possible mitigation measure suggested by the Bureau is implemented, direct mortality due to construction would be reduced, while non-lethal take, due to harassment of lizards moved out of harm's way, would increase.

Reasonable and Prudent Measures: The conference opinion presents four measures for reducing incidental take associated with the proposed action. Included are a worker education program, defined construction procedures with measures to reduce adverse effects to the species and its habitat, movement of animals out-of-harm's way, and monitoring of take.

Terms and Conditions: Fourteen terms and conditions are included to implement the reasonable and prudent measures. They include a variety of measures to reduce incidental take of flat-tailed horned lizards, such as minimization of habitat disturbance and avoidance of taking individual animals (but moving animals out of harm's way when necessary), designing and constructing lizard-barrier fencing along the roadways, monitoring of construction activities by a biologist to ensure compliance with terms and conditions, education of project personnel, and reporting to the Fish and Wildlife Service on take and habitat loss resulting from the proposed project and interrelated and interdependent actions.

**Conservation Recommendations:** The Bureau should assist in the development of ecological data and population monitoring techniques for the flat-tailed horned lizard, and require compensation from Yuma County for residual impacts resulting from paving of County 23rd and Avenue B.



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In Reply Refer To:  
AESO/ES  
2-21-96-I-144

July 12, 1996

MEMORANDUM

To: District Manager, Bureau of Land Management, Yuma District Office,  
Yuma, Arizona

From: Field Supervisor

Subject: Conference Opinion for the Proposed Extensions of Avenue B and County  
23rd by Yuma County, near Yuma, Arizona

This conference opinion responds to your request for a formal conference with the Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (Act). Your request for conferencing was originally transmitted to this office by facsimile mail on February 28, 1996. The request was also sent in a memorandum dated March 12, 1996, and received by us on March 13, 1996. The proposed action includes granting of a right-of-way (ROW) by the Bureau of Land Management (Bureau) to Yuma County for paving of 1.7 miles of County 23rd east of Avenue B, to legalize unauthorized paving of 0.25 mile of Avenue B south of County 23rd and 0.3 mile of County 23rd just east of Avenue B, and to allow another 0.25 mile of pavement on Avenue B south of the unauthorized paving. At issue are impacts the proposed action may have on the flat-tailed horned lizard, *Phrynosoma mcallii*, a species proposed for listing as threatened. Individual flat-tailed horned lizards are likely to be killed, injured, or harmed as a result of construction and operation of the proposed roads. If the species were listed, such taking could only be authorized through the incidental take statement in a biological opinion or through a section 10(a)(1)(B) permit. Because some aspects of construction may not occur for at least a year, mortality due to use of the road is expected to be ongoing, and the species could be listed within a year, the Bureau requested a conference opinion from the Service. In the event the species is listed, this conference opinion could be adopted as a biological opinion, in accordance with 50 CFR 402.10(d).

This conference opinion was prepared using information from the following sources: your March 12, 1996, request for conferencing (Bureau 1996a); additional information provided to the Service in a May 16, 1996, memorandum (Bureau 1996b); a threatened and endangered species clearance for the project [file No. 6840/AZA 29183 (Bureau 1996c)]; road construction plans (DMJM Inc. 1995); a Bureau of Reclamation environmental assessment for the City of Yuma Landfill operation (Bureau of Reclamation 1985); informal coordination between our staffs; and our files.

It is the finding of the Service that the proposed action is not likely to jeopardize the continued existence of the flat-tailed horned lizard. No critical habitat has been proposed for the species, thus destruction or adverse modification of proposed critical habitat would not occur. Fourteen terms and conditions are described to reduce the possibility of take.

## CONSULTATION HISTORY

The Bureau, in their February 28, 1996, facsimile memorandum initiating conferencing, and in their subsequent March 12, 1996, memorandum, did not provide a biological evaluation or assessment. Information provided in these documents was inadequate for the Service to prepare a conference opinion. In particular, details of the proposed action were unclear or missing. In a memorandum dated February 29, 1996, this office requested additional information in regards to endangered species clearances, National Environmental Policy Act documents, plans and maps of the proposed action, and information on interdependent and interrelated actions. In that memorandum that Service concluded that proposed construction on County 23rd was interrelated and interdependent to construction of the City of Yuma Landfill, proposed for 640 acres in T11S, R23W, S1/2 section 4, N1/2 section 9, which is adjacent to the State Prison. Thus, information about construction, NEPA documentation, and mitigation measures for the landfill was also requested. This information was provided to the Service in a memorandum from the Bureau dated May 16, 1996. At the time the conference was initiated, 0.25 mile of the project, immediately south of County 23rd on Avenue B, had been paved by Yuma County without proper authorization (Bureau 1996a). In early March, an additional 0.3 mile of the project, on County 23rd immediately east of Avenue B, was also paved by the County without authorization (Bureau 1996b).

## CONFERENCE OPINION

### DESCRIPTION OF THE PROPOSED ACTION

Yuma County has applied for a 100-foot wide ROW to pave 2.0 miles of County 23rd from Avenue B to Avenue 1E, and has asked the Bureau to amend their current application to include 0.5 mile of paving on Avenue B, immediately south of County 23rd (Figure 1). Yuma County paved, without proper authorization, the first 0.25 mile of Avenue B south of County 23rd and 0.3 mile of County 23rd immediately east of Avenue B. The proposed ROW changes would legalize these unauthorized paving projects. Yuma County has no immediate plans to pave the additional 1.7 mile of County 23rd and 0.25 mile of Avenue B.

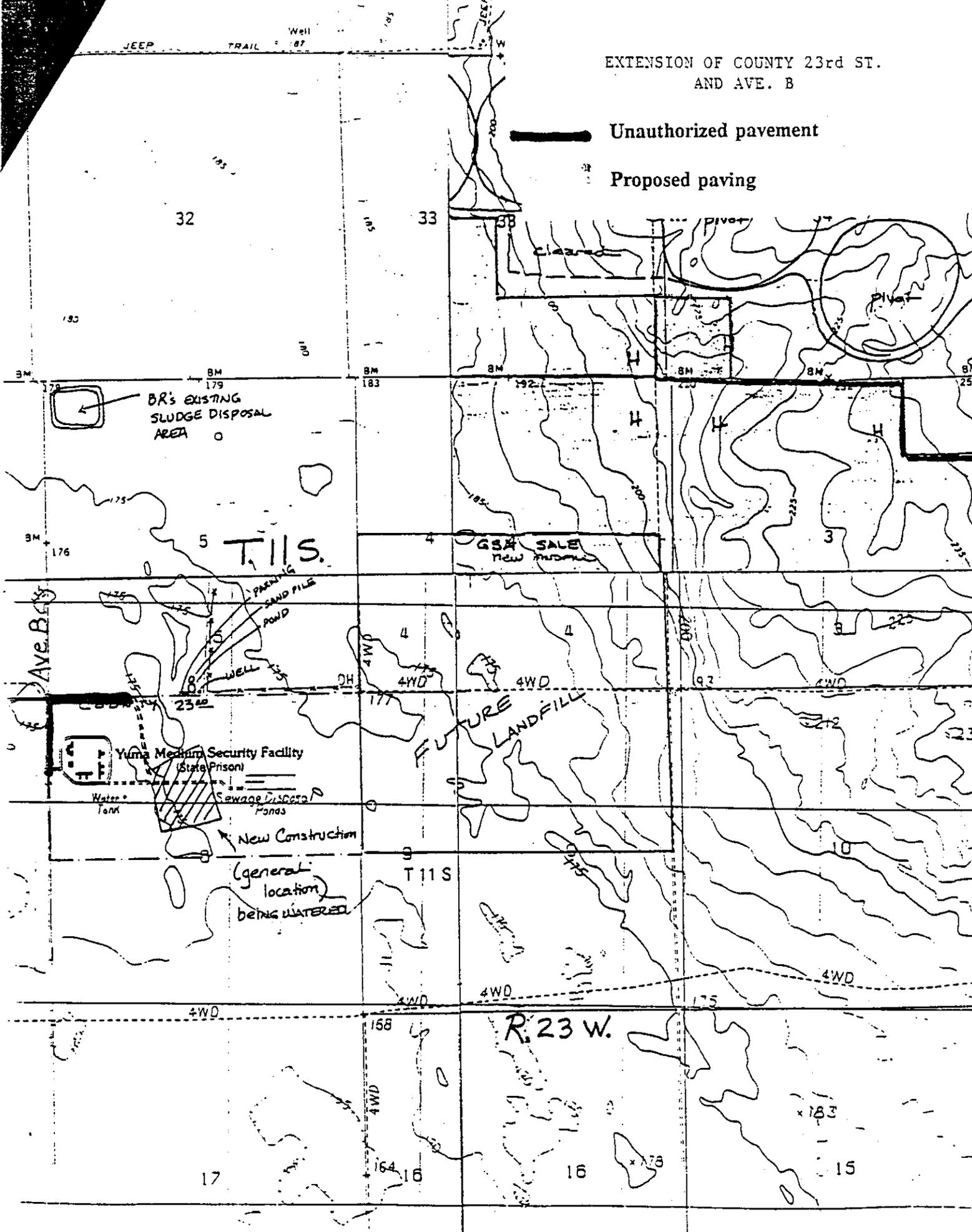
The width of the paved roadway on both Avenue B and County 23rd would be 26 feet. The road shoulder would be graded to allow flow of water off the road. Graded shoulders would extend 17 feet out from the edge of the pavement on either side of the roadway. Total width of disturbance due to construction of the pavement and road shoulder would be 60 feet. The Service anticipates that additional areas would be disturbed as a result of equipment and materials storage and staging. However, all activities would be confined to the 100-foot

FIGURE 1

EXTENSION OF COUNTY 23rd ST.  
AND AVE. B

— Unauthorized pavement

— Proposed paving



ROW. Unpaved roads exist within both the County 23rd and Avenue B ROWs. The width of these roads is estimated at 30 to 40 feet. The roadways would be maintained as needed. Shoulders would be periodically regraded.

### Proposed Mitigation Measures

The Bureau proposed the following mitigation measure to reduce the effects of the proposed action on the flat-tailed horned lizard and its habitat (Bureau 1996c):

1. An educational brochure for County and Prison employees and for the public will be developed urging the conservation of flat-tailed horned lizards. Bureau and Service employees will be made available to make presentations concerning the lizards.

The Bureau also suggested that the following mitigation measures could be considered for possible inclusion into the project (Bureau 1996a, b, and c):

1. Possible construction of lizard-proof fencing on County 23rd
2. Possible pre-construction surveys and relocation of lizards out of harm's way
3. Compensation for habitat destruction

### STATUS OF THE SPECIES

The flat-tailed horned lizard is a small, cryptically colored, phrynosomatid lizard restricted to flats and valleys in the western Sonoran Desert, including the Coachella, Borrego, and Imperial valleys in California; the Yuma Desert in extreme southwestern Yuma County, Arizona; and adjacent portions of Baja California Norte and Sonora, Mexico (Johnson and Spicer 1985). On November 29, 1993, the Service published a rule in the Federal Register proposing the flat-tailed horned lizard as a threatened species (Service 1993).

In Arizona, the range of this species is approximately bounded by the Gila River on the north, urban and agricultural development along the Colorado River on the west, and to the east by bajadas and relatively coarse, alluvial, granitic soils immediately west of the Gila and Butler mountains (Rorabaugh et al. 1987, Hodges 1995). In this area, most records for the species are from areas of fine, often windblown, silica sand dominated by sparse stands of white bursage (*Ambrosia dumosa*), creosote (*Larrea tridentata*), and galleta grass (*Hilaria rigida*) (Rorabaugh et al. 1987, Hodges 1995). The species shows a preference for and may be more abundant on sandy substrates as compared to desert pavement or hardpan surfaces (Muth and Fisher 1992, Rorabaugh et al. 1987), and in Arizona is most often found in areas of silica sand, rather than granitic sands and gravels (Hodges 1995).

The diet of the flat-tailed horned lizard consists primarily of ants, particularly from May to July (Parker and Pianka 1975; Turner and Medica 1982; Mark Fisher, Deep Canyon Desert Research Center, Palm Desert, California, pers. comm. 1992). The species is active primarily from mid-February to mid-November (Muth and Fisher 1992, Mayhew 1965), although some evidence exists of a late summer and fall period of dormancy in adults (Howard 1974), and juveniles may be active throughout the winter on warm days (Muth and Fisher 1992). Mean home range of telemetered flat-tailed horned lizards in Imperial County, California was 4.7 acres (Muth and Fisher 1992). Females produce one or two clutches of eggs that hatch in July and August-September (Turner and Medica 1982, Muth and Fisher 1992, Howard 1974). Flat-tailed horned lizards construct burrows in which they hibernate in winter and escape high temperatures in summer (Muth and Fisher 1992, Rorabaugh 1994). Mean cloacal temperature of active flat-tailed horned lizards in California was 37.7° C (Mayhew 1965). Maximum and minimum voluntary body temperatures are 41.0° and 29.3° C, respectively (Brattstrom 1965). Individuals become stressed when cloacal temperatures reach 45° C or more (Mayhew 1965).

The Service proposed the flat-tailed horned lizard as a threatened species because of documented and anticipated population declines and loss of habitat associated with widespread habitat loss, fragmentation, and degradation due to human activities such as agricultural and urban development, off-highway vehicle use, energy developments, construction of roads and canals, and military activities. In addition, insecticide applications in flat-tailed horned lizard habitat to control an agricultural pest may have reduced ant populations, the primary prey of the flat-tailed horned lizard (Service 1993, Bolster and Nicol 1989). In the Yuma Desert west and north of the Goldwater Range, numerous proposed or ongoing activities threaten the habitat of the flat-tailed horned lizard. Recent Federal actions include development of a desalinization sludge disposal facility, proposed development of a Yuma County Administrative Center, and ROWs for roads and utilities. Yuma Metropolitan Planning Organization has proposed a highway (the "Area Service Highway") from San Luis to Interstate 8 that would traverse County 23rd through the project area. The Federal Highways Administration is lead Federal agency for the proposed highway. Non-Federal activities are described in the "CUMULATIVE EFFECTS" section.

The Service is currently working with a number of State, Federal, and local agencies, including the Bureau, to develop a Rangeland Management Plan and conservation agreement for the flat-tailed horned lizard. The participating agencies will likely agree to manage several areas for viable populations of flat-tailed horned lizards, including a portion of the Yuma Desert. Although the management area boundaries have yet to be finalized, a portion of the Yuma Desert west of the Gila and Butler Mountains and south of Interstate 8 will probably be included in the Yuma Desert flat-tailed horned lizard management area. The project area, including County 23rd and the portion of Avenue B adjacent to the State Prison, will likely form a boundary of the Yuma Desert Management Area. If implementation of the conservation strategy removes a significant number of the threats to the species, listing of the flat-tailed horned lizard as a threatened species may not be necessary.

Further information on the range, biology, and ecology of the flat-tailed horned lizard can be found in Muth and Fisher (1992), Turner et al. (1980), Turner and Medica (1982), Rorabaugh et al. (1987), Rorabaugh (1994), Norris (1949), Hodges (1995), and Mayhew (1965).

## ENVIRONMENTAL BASELINE

### **Project Location and General Vegetation Communities:**

The project would be located in the Yuma Desert southeast of Yuma, Arizona and west of the Goldwater Range. The vegetation community in which the proposed project would be constructed is classified as the lower Colorado River Valley subdivision of Sonoran desertscrub (Turner 1982). It is the largest and most arid subdivision of Sonoran desertscrub. Dominant perennial plant species in the more xeric examples of this vegetation community, such as at the project site, include creosote, white bursage, and galleta grass (Turner 1982, Bureau 1996c).

### **Threats to Flat-tailed Horned Lizards and Their Habitat Specific to the Project Area**

A general listing of threats that have contributed to the declining status of the flat-tailed horned lizard and that ultimately triggered the proposed listing of the species as threatened is presented in the section entitled "Status of the Species". These threats are primarily human-caused factors.

Areas that would be disturbed by this project are largely already highly disturbed by the presence and use of existing dirt roads along County 23rd and Avenue B. Other nearby uses and disturbance have adversely affected plant communities and wildlife habitat. Immediately north and west of the project site are paved portions of County 23rd and Avenue B that link San Luis with the Marine Corps Air Station - Yuma and the eastern portion of Yuma. Immediately south of County 23rd and east of Avenue B is the Arizona State Medium Security Prison (Figure 1). Bureau of Reclamation maintains a sludge disposal facility, a feature of their Colorado River Salinity Control Project, approximately one mile north of the intersection of County 23rd and Avenue B. The City of Yuma has a waste water sludge disposal facility in T11S, R23W, SE1/4 section 5, immediately north of the proposed ROW along County 23rd. The waste water site was apparently graded at some time in the past, but the vegetation is recovering. Three miles to the east of the eastern boundary of the project area is the Goldwater Range where most flat-tailed horned lizard habitat in Arizona occurs. Military activities that adversely affect the species are relatively few and small in areal extent. Military activities affecting this species were the subject of a recent biological/conference opinion (Service 1996).

### Status of the Proposed Species in the Project Area:

Relative abundance of flat-tailed horned lizards has been estimated by standardized transects in which observers count flat-tailed horned lizards and their scat. Numbers of scat and lizards observed per hour has been used as an index to the species' relative abundance as follows (Bureau 1990):

High relative abundance =  $>9$  scat/hr or at least 1 *P. mcallii* observed

Medium relative abundance = 5 to  $<9$  scat/hr

Low relative abundance = 1 to  $<5$  scat/hr

Poor relative abundance or unoccupied habitat =  $<1$  scat/hr

The Flat-tailed Horned Lizard Interagency Technical Advisory Team (ITAC), comprised of biologists and land managers from a variety of State and Federal agencies, met in April, 1993, to discuss current research and the validity of this survey method. The ITAC concluded that scat counts may not provide a reliable index to the relative abundance of the flat-tailed horned lizard and should be used with great caution. The primary concern was that the assumption of a correlation between scat counts and lizard density has never been tested. Scat count data are best used in combination with lizard observations and habitat characteristics to determine the importance of an area for this species (Rorabaugh 1994). A recently developed interim survey protocol authored by the Flat-tailed Horned Lizard Conservation Team (a committee assisting in preparation of the Rangewide Plan) is currently in draft form that uses both lizard and scat counts to determine presence or apparent absence of this species.

The Service is aware of nine records for flat-tailed horned lizard within the proposed ROW for County 23rd between Avenue B and Avenue 1B. An additional 13 records for the species occur within 0.5 mile east of the eastern end of County 23rd at or near two 3.6 hectare flat-tailed horned lizard study plots monitored by Rorabaugh (1994). The Service is unaware of any flat-tailed horned lizard records in the Avenue B ROW; however, the species has been observed on both the unpaved and paved portions of Avenue B to the south and north of the proposed ROW.

One-hour "section searches" were conducted in 1985 within all sections adjacent to the proposed ROW (Rorabaugh et al. 1987). Section searches consisted of one-hour walks along a triangular route through a section (one square mile area) in which observers counted all horned lizards and horned lizard scat. Results from these surveys and data from the study plots near the eastern end of the proposed County 23rd ROW are presented in Table 1.

**Table 1: Results of section searches and monitoring of study plots near the proposed County 23rd and Avenue B ROWs**

Section	Section Search <sup>1</sup>		Study Plots <sup>2</sup>	
	#lizards /hr	#scat/hr	mean lizards/hr	mean #scat/hr (May-June)
T11S R23W S3	0	43	0	30
T11S R23W S4	0	40		
T11S R23W S5	0	3		
T11S R23W S6	0	4		
T11S R23W S7	0	4		
T11S R23W S8	0	3		
T11S R23W S9	0	26		
T11S R23W S10	0	21	0.03	42
T11S R23W S17	1	5		
T11S R23W S18	0	0		

<sup>1</sup>From Rorabaugh et al. (1987)

<sup>2</sup>From Rorabaugh (1994)

Locality records indicate the species occurs throughout the project area. The information in Table 1 supports this finding as well. Using scat counts from section searches and the study plots to estimate flat-tailed horned lizard abundance is problematic, as already discussed. However, these data show consistently high scat counts along the eastern half of the proposed County 23rd ROW (sections 4 and 9) and in adjacent sections to the east (sections 3 and 10). Scat counts in these eastern sections were well above the mean (13.2 scat/hr) registered by Rorabaugh et al. (1987) for the Yuma Desert. These areas are also comparatively undisturbed and the substrate appears more sandy or windblown in these eastern sections. Flat-tailed horned lizards are associated with and may be more abundant in areas with moderate amounts of windblown sand (Muth and Fisher 1992, Rorabaugh et al. 1987). Thus, flat-tailed horned lizards may be more abundant in sections 3, 4, 9, and 10, as compared to the western portions of the project area.

#### EFFECTS OF THE PROPOSED ACTION

"'Effects of the action' refers 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" (50 CFR 402.02). "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" (50 CFR 402.02). The purpose of paving County 23rd is to provide improved access to the

proposed City of Yuma Landfill and Cheyenne Unit of the State Prison. The purpose of paving Avenue B is also to provide access to the State Prison. Thus, the landfill and State Prison are parts of larger actions that include the proposed action, and are interdependent and interrelated to the proposed action. In accordance with 50 CFR 402.02, the effects of those actions must also be considered herein.

### **Effects of Road Construction on Habitat**

Some habitat disturbance and loss will occur as a result of road construction and equipment/materials storage and staging areas. If road construction occurs directly over the existing unpaved roadways, these effects will be minimized. The Service estimates that the paved roadway will be 20 to 30 feet wider than the existing roads. Thus, strips of habitat measuring approximately 25 feet by 2.0 miles along County 23rd (6.1 acres) and 25 feet by 0.5 mile (1.5 acres) along Avenue B would be lost. Approximately 1.7 acres of habitat loss has already occurred in the project due to unauthorized activities by Yuma County. The Service estimates that an additional 0.5 acre of disturbance would occur as a result of equipment/materials storage and staging. Habitat loss due to road construction would be permanent. Staging and storage areas would slowly recover. Recovery would be more rapid if the area is not cleared and shrubs are crushed rather than excavated. Crushed shrubs often resprout from the base.

### **Mortality and Injury of Flat-tailed Horned Lizards During Construction, Operation, and Maintenance of the Road**

Flat-tailed horned lizards are known to occur in the project areas and would be subject to mortality or injury during construction. Animals could be crushed by vehicles or equipment while in their underground, shallow burrows, or while on the surface. Flat-tailed horned lizards often freeze, rather than flee, when approached. Thus, they are especially susceptible to crushing by vehicles or equipment.

Limited information exists to quantify densities of flat-tailed horned lizards; however, estimates have ranged from .06 to 1.5 per acre (Turner et al. 1978, Muth and Fisher 1992, Rorabaugh 1994, Wone and Beauchamp 1995). Assuming moderate densities of flat-tailed horned lizards (0.8 per acre), then approximately six horned lizards may occupy the 8.1 acres that would be lost or disturbed as a result of the project. These animals could be subject to death or injury.

Vehicle use of the proposed paved portions of County 23rd and Avenue B is expected to result in additional, ongoing mortality and injury to lizards. Increased vehicle traffic as a result of improved access and a need to access the new City of Yuma Landfill is expected to result in increased mortality over what is currently occurring on the unpaved portions of County 23rd and Avenue B. For instance, of 12 flat-tailed horned lizards observed on the paved portions of County 23rd and Avenue B, all but two had been crushed by vehicles.

However, of 12 flat-tailed horned lizards observed on the unpaved portions of these roads, only two were found dead (Service files).

Roads can act as mortality sinks for small animals (Boarman et al. 1992, Klemens 1989, Rosen and Lowe 1994). Over a four-year period, mortality along a 27.4-mile section of Route 85 in southern Arizona, Rosen and Lowe (1994) recorded mortality of snakes equivalent to the estimated snake population in a 1.93 mi<sup>2</sup> area. They also found this to be equivalent to eliminating all snakes within 213 feet of the road. Desert tortoise populations are depleted up to a mile or more on either side of roads for which average daily traffic is greater than 180 vehicles (Nicholson 1978a&b). Recent analysis suggests that flat-tailed horned lizard population viability is particularly sensitive to mortality (Flat-tailed Horned Lizard Conservation Team 1996). Thus, the ongoing mortality of flat-tailed horned lizards expected along the newly paved portions of County 23rd and Avenue B could affect horned lizard populations for significant distances from the roadways.

Periodic maintenance of the roadways could also result in occasional mortality or injury of horned lizards. During resurfacing of roadways, lizards and other small animals may become entrapped in drying asphalt or on oiled surfaces. Regrading of road shoulders could result in crushing of animals in burrows or on the surface.

#### **Interrelated and Interdependent Actions: City of Yuma Landfill and the State Prison**

The City of Yuma Landfill will, over a 20 or 30-year period, result in the loss of 640 acres of flat-tailed horned lizard habitat (Bureau of Reclamation 1985). Based on scat counts, this habitat was judged to be of high quality for the horned lizard (Bureau of Reclamation 1985). Refuse would be placed in excavated trenches and covered with at least three feet of soil. The site would be excavated and filled progressively in cells. The landfill would be surrounded by a six-foot tall chain link fence and a well and pump would be installed to provide water for dust abatement. Recovery of creosote-bursage vegetation communities is questionable due to the presence of refuse within three feet of the surface, but if recovery did occur it would likely take many decades or perhaps centuries to fully recover (Vasek et al. 1975). Assuming moderate densities of flat-tailed horned lizards (0.8 per acre), up to 512 flat-tailed horned lizards could be killed or displaced by development of the landfill.

The Arizona State Medium Security Prison is located on 640 acres of land on the southeast corner of the intersection of Avenue B and County 23rd (Figure 1). However, the original facility occupied only approximately 40 acres. The new Cheyenne Unit, currently under construction, will occupy an additional estimated 40 acres. Flat-tailed horned lizards and their habitat are or will likely be eliminated from the developed 80 acres. The remainder of the site is desert scrub vegetation that is likely inhabited by the species. Although the State of Arizona has no immediate plans to develop the remainder of the site, it is available for development. Assuming moderate densities of flat-tailed horned lizards (0.8 per acre) up to 480 flat-tailed horned lizards could be lost as a result of development on the remaining undeveloped 600 acres of the property.

Refuse, water, and perching or nesting sites at the landfill and the State Prison could provide habitat for predators of flat-tailed horned lizards, including potential or known predators such as the common raven, *Corvus corax*, loggerhead shrike, *Lanius ludovicianus*, and roadrunner, *Geococcyx californianus*. These predators could prey on and increase mortality of flat-tailed horned lizards in adjacent habitats.

Hodges (1995) estimated that between 212 and 222 mi<sup>2</sup> of flat-tailed horned lizard habitat occurs in Arizona. The total habitat directly affected by the proposed action, including its interrelated and interdependent effects, represents approximately 0.09 percent of available habitat in Arizona. Populations of flat-tailed horned lizards in adjacent habitats would be adversely affected as well due to the roads acting as mortality sinks.

### Cumulative Effects

Cumulative effects are those impacts of future non-Federal (State, local government, and private) actions that are reasonably certain to occur in the project area. Future Federal actions will be subject to the consultation and conferencing requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed project.

Because much of the flat-tailed horned lizard habitat in the vicinity of the project area is managed by the Bureau of Reclamation, Department of Defense, and/or the Bureau, many of the activities likely to occur in this area, including the Area Service Highway proposed by Yuma Metropolitan Planning Organization, will be Federal actions subject to section 7 of the Act. However, considerable private and State lands supporting flat-tailed horned lizards occur within a few miles to the north of County 23rd. Continued development of non-Federal lands for residential, industrial, and agricultural purposes is expected. If the flat-tailed horned lizard is subsequently listed, the effects of non-Federal actions, including residential and other development, will be addressed through the section 10(a)(1)(B) permit process.

The Service believes the impacts described above will not jeopardize the continued existence of the flat-tailed horned lizard. Our conclusion is based on the following reasons:

- 1) The proposed action would affect a relatively minor portion of the species' range.
- 2) The Bureau proposes measures to mitigate, in part, the direct impacts of the proposed action by reducing direct take of flat-tailed horned lizards.

### INCIDENTAL TAKE STATEMENT

Section 9 of the Act prohibits the take of listed species without special exemption. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to

listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering. Incidental take is any take of a listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with this incidental take statement.

The prohibitions against taking in section 9 of the Act do not apply to proposed species, such as the flat-tailed horned lizard. Nevertheless, the Service advises the Bureau to consider implementing reasonable and prudent measures that address protection of this species. If the species is listed, and if this conference opinion is adopted as a biological opinion for the flat-tailed horned lizard, those measures would become non-discretionary, and would have to be implemented by the agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Bureau would also have a continuing duty to regulate the activity covered by this incidental take statement. If the Bureau (1) fails to require any applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) could lapse.

#### AMOUNT OR EXTENT OR TAKE

This conference opinion anticipates the following forms of take would occur as a result of the proposed action:

- 1) All flat-tailed horned lizards inhabiting the proposed project sites, including the paved roadways of County 23rd and Avenue B. Take is anticipated to be in the form of direct mortality or injury resulting from crushing or injury as a result of construction activities. The Service anticipates that up to six flat-tailed horned lizards may be taken incidentally to the proposed action.
- 2) If the Bureau implements the suggested possible mitigation measure of relocating lizards that are in harm's way (Bureau 1996b), then unlimited numbers of flat-tailed horned lizards could be taken in the form of harassment. Although such mitigation would increase take in the form of harassment, lethal take estimated above would be reduced.
- 3) Fifteen flat-tailed horned lizards per year as a result of animals moving onto the new pavement of County 23rd and Avenue B from adjacent habitats and being crushed or injured by passing vehicles.

4) Approximately 1,000 flat-tailed horned lizards as a result of construction of the City of Yuma Landfill and facilities at the Arizona State Prison.

If this conference opinion is adopted as a biological opinion, the Service will only authorize forms of take that are incidental to construction, operation, and maintenance of the proposed paved portions of County 23rd and Avenue B. Incidental take will be authorized, only if such activities are consistent with the terms and conditions of this conference opinion. If adopted as a biological opinion, no take will be authorized for either the Arizona State Prison or the City of Yuma Landfill. Any take resulting from those projects would have to be authorized in an incidental take statement of another biological opinion or through a section 10(a)(1)(B) permit.

Following listing of the flat-tailed horned lizard and adoption of this document as a biological opinion, if the incidental take authorized herein is met, the Bureau shall immediately notify the Service in writing. The Bureau should provide an explanation of the causes of the taking. If the incidental take authorized by this opinion is exceeded, the Bureau must immediately reinstate consultation with the Service to avoid a violation of section 9 of the Act, and all activities resulting in the take must cease if it is determined that the impact of additional taking will cause an irreversible and adverse impact on the species.

#### EFFECT OF THE TAKE

In this conference opinion, the Service finds that this level of anticipated take is not likely to result in jeopardy to the flat-tailed horned lizard.

#### REASONABLE AND PRUDENT MEASURES

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize the incidental taking authorized by this conference opinion. If the species is listed, then the incidental take statement in this opinion, including its protection against a section 9 violation, will apply only to the proposed action.

- 1) Worker education programs, defined construction areas, and procedures shall be implemented to avoid or minimize the take of flat-tailed horned lizards and loss of habitat for this species resulting from construction, operation, and maintenance of the proposed action.
- 2) Construction activities shall be monitored by qualified biologists and any animals in project areas shall be moved out of harm's way.
- 3) Lizard-proof barriers shall be designed and constructed to limit mortality of lizards occupying adjacent habitats.
- 4) The Bureau shall monitor incidental take resulting from the proposed action and report to the Service the findings of that monitoring.

## Terms and Conditions

The following terms and conditions are established to implement the reasonable and prudent measures described above. Term and condition 1.b. is adapted from Bureau (1996c). If the species is listed, implementation of these terms and conditions will be mandatory.

The following terms and conditions implement reasonable and prudent measure number 1:

- a. The Bureau shall make terms and conditions that apply to the road extensions binding conditions of the ROWs. The Bureau shall revoke the ROWs if the County fails to comply with terms and conditions that apply to the road extensions.
- b. An educational brochure for County employees and the public shall be developed urging the conservation of flat-tailed horned lizards. Bureau employees shall be made available to make presentations concerning the lizards.
- c. All personnel who implement proposed actions shall be briefed on the biology and status of the flat-tailed horned lizard, protection measures designed to reduce potential impacts to this species, and reporting procedures to be used if flat-tailed horned lizards are encountered in the field. Personnel shall be advised that unauthorized handling of flat-tailed horned lizards is prohibited by State law.
- d. Ground-disturbing activities shall occur on previously disturbed sites whenever possible. To the maximum extent possible, the newly paved roadways shall overlay the existing unpaved roadways. In equipment staging and storage areas, and other areas of temporary disturbance, blading and clearing shall be minimized, and disturbance to perennial shrubs shall be avoided, if possible.
- e. The area of ground disturbance from construction shall be minimized to the maximum extent practicable. The outer boundaries of construction areas shall be clearly flagged or marked to define the limit of work activities. All construction workers shall strictly limit their activities and vehicles to areas that have been flagged to eliminate adverse impacts to flat-tailed horned lizards. All workers shall be instructed that their activities are restricted to flagged areas.

The following terms and conditions implement reasonable and prudent measure number 2:

- a. A qualified biologist(s), approved by the Bureau, shall be present during any activities that may result in a take of a flat-tailed horned lizard. The biologist shall work with the construction supervisor to take steps, as necessary, to avoid disturbance to flat-tailed horned lizards and their habitat. The biologist shall periodically examine (at least hourly) the construction area in order to move or flush flat-tailed horned lizards out of harm's way. Deep excavations (if any) shall be inspected for lizards by the biologist prior to backfilling. Flat-tailed horned lizards found inside excavations

shall be captured by hand and relocated from the construction area into nearby suitable habitat in accordance with term and condition 2.b. Biologists shall walk in front of equipment and vehicles to flush or move lizards from the immediate work area and out of harm's way. Biologists shall also monitor all project-related activities to ensure compliance with these terms and conditions. Biologists shall have the authority to halt activities not in compliance with these terms and conditions. Handling and relocation of flat-tailed horned lizards shall be in compliance with terms and conditions 2.b. and 2.c.

b. Flat-tailed horned lizards that need to be relocated out of harm's way shall be moved to nearby suitable habitat on Federal lands south of County 23rd and east of the State Prison that are not slated for development. Relocated flat-tailed horned lizards shall be placed in the shade of a large shrub that is a short distance from the construction zone and in the direction of undisturbed habitat. If surface temperatures in the sun are less than 30° C or exceed 50° C, the biologist shall hold the flat-tailed horned lizard for later release. Initially, captured flat-tailed horned lizards shall be held in a cloth bag, cooler, or other appropriate clean, dry container from which the lizard cannot escape. Lizards shall be held at temperatures between 25 and 35° C and shall not be exposed to direct sunlight. Release shall occur as soon as possible after capture and during daylight hours when surface temperatures range from 32 to 40° C. If such conditions do not occur within 48 hours of capture, the lizard shall be transferred to a terrarium containing at least 2 inches of sand from the project area. The terrarium shall be maintained at 25 to 35° C until conditions at the site are appropriate for release. The biologist shall be allowed some judgement and discretion to ensure that survival of flat-tailed horned lizards found in the project area is likely.

c. Persons that may handle flat-tailed horned lizards shall obtain all necessary permits and authorization from Arizona Game and Fish Department before construction is initiated. If the species is listed, only persons authorized by both Arizona Game and Fish Department and the Service under the auspices of this opinion shall be permitted to handle flat-tailed horned lizards. If the species is listed, the names(s) and credentials of proposed authorized biologists shall be submitted to the Service for review and approval at least 15 days prior to the onset of any construction activities.

d. Prior to land-disturbing activities, an individual shall be designated as a field contact representative (FCR). The FCR shall have the authority to ensure compliance with protective stipulations for the flat-tailed horned lizard and be responsible for coordination with the Service and Arizona Game and Fish Department. The FCR shall have the authority and responsibility to halt activities that are in violation of these terms and conditions.

The following terms and conditions implement reasonable and prudent measure number 3:

a. The Bureau shall investigate the efficacy of lizard-proof barrier fencing. Investigations shall begin by testing the response of flat-tailed horned lizards to the fence design(s) to determine if the lizards can climb the fence or get through it. The Service suggests that barrier fence designs to be tested include 0.25-inch and 0.5-inch mesh hardware cloth that extends eight inches below the surface and at least 12 inches above ground. Once a fence design has been identified, the Bureau shall fence a 100-foot portion of the County 23rd extension to determine if the fence will be vandalized or if windblown sand may collect around the fence. The hardware cloth shall be firmly attached to an existing fence or otherwise adequately supported. Tests of the barrier fencing should be complete by January 1, 1997. If a functional barrier fence design is identified, then term and condition 3.b. shall be implemented. If designs are ineffective at excluding lizards due to behavior of the lizards, windblown sand, or other problems, the Bureau shall contact the Service by January 1, 1997, to develop alternate approaches for reducing mortality of lizards.

b. A lizard-proof barrier fence shall be constructed in the following locales. If a barrier fence design is identified before construction begins, the fence shall be constructed prior to any surface-disturbing activities:

1. On the west side of the unauthorized paved and proposed paved portions of Avenue B south of County 23rd
2. On the south side of the unauthorized and proposed paved portions of Country 23rd.

(Fence locations are designed to reduce mortality of flat-tailed horned lizards south of County 23rd, an area which will likely be included in the Yuma Desert Flat-tailed Horned Lizard Management Area.)

c. The barrier fence shall be inspected at least quarterly and maintained so that it is effective at excluding lizards from work areas.

The following terms and conditions implement reasonable and prudent measure number 4:

a. Within 90-days of completion of construction projects needing a qualified biologist in accordance with terms and conditions 2.a., the Bureau shall submit a monitoring report to the Arizona Ecological Services Field Office. The report shall include the actual acres of flat-tailed horned lizard habitat disturbed; numbers and locations of flat-tailed horned lizards encountered; and numbers of flat-tailed horned lizards killed, injured, moved, or otherwise taken as a result of activities authorized by this opinion. The report shall also make recommendations for modifying or refining the terms and

conditions stipulated herein to enhance flat-tailed horned lizard protection or to reduce needless hardship on the Bureau and project applicant.

b. Anticipated take limits that would require reinitiation are addressed in "AMOUNT OR EXTENT OF TAKE" and are based on implementation of the proposed action without these terms and conditions. With implementation of terms and conditions the Service believes that no more than three flat-tailed horned lizards will be taken as a result of direct mortality or injury due to project construction, and four flat-tailed horned lizards per year resulting from direct mortality due to crushing of lizards on roadways. An unlimited number of flat-tailed horned lizards could be taken as a result of harassment due to moving of animals out of harm's way. If, during the course of the proposed action, this minimized level of incidental take is exceeded, such incidental take would represent new information requiring review of the reasonable and prudent measures. The Bureau must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

#### **DISPOSITION OF DEAD, INJURED, OR SICK FLAT-TAILED HORNED LIZARDS**

If the species is listed, and if a dead, injured, or sick flat-tailed horned lizard is found at the project sites, initial notification must be made to Service Law Enforcement, Federal Building, Room 105, 26 North McDonald, Mesa, Arizona, 85201 (Telephone: 602/261-6443) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the finding, a photograph of the animal, and any other pertinent information. The notification shall be sent to Law Enforcement with a copy to the Arizona Ecological Services Field Office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. If possible, the remains of intact flat-tailed horned lizards shall be placed with educational or research institutions holding appropriate State and Federal permits. If such institutions are not available, the information noted above shall be obtained and the carcass left in place.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution prior to implementation of the action. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should any treated flat-tailed horned lizards survive, the Service should be contacted regarding the final disposition of the animals.

#### **Conservation Recommendations**

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of listed species. The term "conservation recommendation" has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed

action on listed species or critical habitat or regarding the development of information. The recommendations provided here do not necessarily represent complete fulfillment of the agency's section 2(c) or 7(a)(1) responsibilities for the flat-tailed horned lizard, should it be listed. In furtherance of the purposes of the Act, we recommend implementing the following actions:

1. The Bureau should work with the Marine Corps Air Station - Yuma and Arizona Game and Fish Department to support research necessary to: 1) improve our knowledge of the ecology and life history of the flat-tailed horned lizard, particularly in regards to demographic parameters needed to better understand population dynamics and viability; and 2) determine the relationship between scat/lizard counts and lizard densities.

2. In accordance with Bureau manual, Sections 6840.06(B) and 6840.11(G); 40 CFR 1508.20(e); and 40 CFR 1500.2(f), the Bureau should require compensation from Yuma County for residual impacts resulting from paving County 23rd and Avenue B. Compensation could be in the form of a compensation fee and/or the County could close and rehabilitate roads elsewhere in the Yuma Desert.

3. The Bureau should assist the Bureau of Reclamation, the City of Yuma, and the State Prison in minimizing impacts to the flat-tailed horned lizard and its habitat at the State Prison and at the site of the City of Yuma Landfill.

The Service requests notification of the implementation of any conservation recommendations so we can be kept informed of actions that either minimize or avoid adverse effects, or that benefit proposed species or their habitats.

### Conclusion

This concludes the conference for construction, operation, and maintenance of paved portions of County 23rd and Avenue B, Yuma County, Arizona. If the flat-tailed horned lizard is listed, the Bureau may request in writing that the Service adopt this conference opinion as a biological opinion. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned, or in the information used during the conference, the Service will confirm the conference opinion as a biological opinion and no further section 7 consultation will be necessary. The conference opinion will not be confirmed if: 1) the amount or extent of incidental take (from pages 12 and 13) is reached; 2) new information reveals effects of the agency action that may adversely 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 a listed species or critical habitat that was not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by this action (50 CFR 402.16). The incidental take statement does not become effective until the species is listed. At that time, if the amount or extent of anticipated incidental take (from pages 12 and 13) is exceeded, the Bureau must

immediately reinitiate consultation and the activity resulting in take must cease if it is determined that the impact of additional taking will cause an irreversible and adverse impact on the species. We would appreciate notification of your final decision on this matter. Any questions or comments should be directed to Jim Rorabaugh or Ted Cordery of my staff.



Sam F. Spiller

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (GM:AZ)  
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State Director, Bureau of Land Management, Phoenix, AZ  
Larry Foreman, Bureau of Land Management, California Desert District,  
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Literature Cited

- Boarman, W.I., M. Sazaki, K.H. Berry, G. Goodlett, B. Jennings, and A.P. Woodman. 1992. Measuring effectiveness of a tortoise-proof fence and culverts: Status report from the first field season. Pages 126-142 in K.R. Beaman (ed.), Proceedings of the 1992 Desert Tortoise Council Symposium.
- Bolster, B., and K. Nicol. 1989. The status of the flat-tailed horned lizard (*Phrynosoma mcallii*) in California. California Department of Fish and Game, Sacramento, CA.
- Brattstrom, B.H. 1965. Body temperatures of reptiles. American Midland Naturalist 73(2):376-422.
- Bureau of Land Management. 1990. Management strategy for the flat-tailed horned lizard (*Phrynosoma mcallii*) on Bureau of Land Management administered lands in the California Desert Conservation Area. Bureau of Land Management, Riverside, CA.
- Bureau of Land Management. 1996a. Memo dated 12 March 1996, from the District Manager, Yuma District Office, Bureau of Land Management, to the Field Supervisor, Fish and Wildlife Service, Phoenix, requesting initiation of conferencing on the extensions of County 23rd and Avenue B.
- Bureau of Land Management. 1996b. Memo dated 16 May 1996, from District Manager, Yuma District Office, Bureau of Land Management, to the Field Supervisor, Fish and Wildlife Service, Phoenix, providing additional information on the County 23rd and Avenue B conference.
- Bureau of Land Management. 1996c. Threatened and endangered species clearance, Yuma County right-of-way application for 2.5 miles of road along County 23rd and Avenue B. File # 6840/AZA 29182. Bureau of Land Management, Yuma Resource Area, Yuma, Arizona.
- Bureau of Reclamation. 1985. Final environmental assessment and finding of no significant impact for the City of Yuma landfill operation. FONSI #LC-85-7. Bureau of Reclamation, Yuma Projects Office, Yuma, AZ.
- DMJM Inc. 1995. County 23rd Street grading and paving plan. DMJM Inc., Phoenix, AZ
- Fish and Wildlife Service. 1996. Biological opinion and conference opinion for existing and proposed activities by the Marine Corps Air Station - Yuma in the Arizona Portion of the Yuma Training Range Complex. Arizona Ecological Services Field Office, Phoenix, AZ.

- Flat-tailed Horned Lizard Conservation Team. 1996. Draft flat-tailed horned lizard, *Phrynosoma mcallii*, population viability analysis: implications for conservation strategies and research priorities.
- Hodges, W.L. 1995. *Phrynosoma mcallii* occurrence in Arizona. Report to the Arizona Game and Fish Department, Phoenix, AZ. Contract Q95-15-K.
- Howard, C.W. 1974. Comparative reproductive ecology of horned lizards (Genus *Phrynosoma*) in southwestern United States and northern Mexico. *J. Ariz. Acad. of Sci.* 9:108-116.
- Johnson, T.B., and R.B. Spicer. 1985. Status Report: *Phrynosoma mcallii* (Hallowell 1852). Report to the Office of Endangered Species, U.S. Fish and Wildlife Service, Albuquerque, New Mexico. Contract No. 14-16-0002-81-224. 57 pages.
- Mayhew, W.W. 1965. Hibernation in the horned lizard, *Phrynosoma mcallii*. *Comp. Biochem. Physiol.* 16:103-119.
- Muth, A., and M. Fisher. 1992. Development of baseline data and procedures for monitoring populations of the flat-tailed horned lizard, *Phrynosoma mcallii*. Report to the California Department of Fish and Game, Sacramento, California.
- Nicholson, L. 1978a. The effects of roads on tortoise populations. Report to the Bureau of Land Management, Riverside, CA. Contract No. CA-060-CT8-000024.
- Nicholson, L. 1978b. The effects of roads on desert tortoise populations. Pages 127-129 in *Proceedings of the 1978 Desert Tortoise Council Symposium*.
- Norris, K.S. 1949. Observations on the habits of the horned lizard *Phrynosoma mcallii*. *Copeia*, 1949(3):176-180
- Parker, W.S. and E.R. Pianka. 1975a. Ecology of horned lizards: a review with special reference to *Phrynosoma platyrhinos*. *Copeia* 1975:141-162.
- Rorabaugh, 1994. An analysis of scat counts as a survey method for the flat-tailed horned lizard (*Phrynosoma mcallii*). Report to the Fish and Wildlife Service, Phoenix, Arizona.
- Rorabaugh, J.C., C.L. Palermo, and S.C. Dunn. 1987. Distribution and relative abundance of the flat-tailed horned lizard (*Phrynosoma mcallii*) in Arizona. *Southwestern Naturalist* 32(1):103-109
- Rosen, P.C., and C.H. Lowe. 1994. Highway mortality of snakes in the Sonoran Desert of southern Arizona. *Biological Conservation* 68(1994):143-148.

- Turner, F.B., and P.A. Medica. 1982. The distribution and abundance of the flat-tailed horned lizard (*Phrynosoma mcallii*). *Copeia* 1982(4):815-823.
- Turner, F.B., P.A. Medica, and H.O. Hill. 1978. The status of the flat-tailed horned lizard (*Phrynosoma mcallii*) at nine sites in Imperial and Riverside counties, California. Report to the Bureau of Land Management, El Centro, CA.
- Turner, F.B., J.C. Rorabaugh, E.C. Nelson, and M.C. Jorgensen. 1980. A survey of the occurrence and abundance of the flat-tailed horned lizard (*Phrynosoma mcallii*) in California. Contract YA-512-CT8-58. 52 pages.
- Turner, R.M. 1982. Sonoran desert scrub. In: D.E. Brown (ed.). Biotic communities of the American Southwest-United States and Mexico. *Desert Plants* 4(1-4):181-222.
- U.S. Fish and Wildlife Service. 1993. Endangered and threatened wildlife and plants; proposed rule to list the flat-tailed horned lizard as threatened. *Federal Register* 58(227):62624-62629.
- Vasek, F.C., H.B. Johnson, and D.H. Eslinger. 1975. Effects of pipeline construction on creosote bush scrub vegetation of the Mohave Desert. *Madrono* 23(1):1-13.
- Wone, B., and B. Beauchamp. 1995. Baseline population size estimation of the horned lizard *Phrynosoma mcallii* at Ocotillo Wells State Vehicular Recreation Area, San Diego and Imperial counties, California. Report to the California Department of Parks and Recreation, Off-Highway Motor Vehicle Division, Sacramento, CA. Contract No. C9414011.