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Fish and Wildlife Service

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In Reply Refer To:

AESO/ES  
2-21-96-F-226

April 11, 1997

MEMORANDUM

TO: Manager, Environmental Compliance Group, Bureau of Reclamation, Boulder  
City, Nevada

FROM: Field Supervisor

SUBJECT: Programmatic Biological Opinion for Construction and Operation of One Quarry  
and Operation of Eight Existing Quarries along the Lower Colorado River from  
near Davis Dam to near Cibola Lake, Arizona/California

This biological opinion responds to your request for consultation with the Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated September 26, 1996, and received by us on September 30, 1996. At issue are impacts that may result from construction and operation of one quarry and operation of eight existing quarries by the Bureau of Reclamation (Reclamation) along the lower Colorado River in San Bernardino and Riverside counties, California; and Mohave and La Paz counties, Arizona. These impacts may affect the Mojave population of the desert tortoise, *Gopherus agassizii*, a federally listed threatened species, and the species' designated critical habitat.

This biological opinion was prepared using information from the following sources: your September 26, 1996, request for consultation; Reclamation's Yuma Area Office August 12, 1996 request for consultation on the Palo Verde Quarry; biological assessments for the lower Colorado River quarry sites (CH2MHILL 1996a) and the Palo Verde Quarry (CH2MHILL 1996b); the biological assessment for operations and maintenance of the lower Colorado River (Reclamation 1996); the environmental assessment for the Colorado River Front Work and Levee System (Reclamation 1983); informal consultation between our staffs; and our files. Literature cited in this biological opinion is not a complete bibliography of all literature available on the desert tortoise, nor is it a complete review of the effects of quarry construction and operation on the species. A complete administrative record of this consultation is on file in our office.

The Service finds that the construction and/or operations of the proposed and existing quarries are not likely to jeopardize the continued existence of the desert tortoise, nor are they likely to result in destruction or adverse modification of the species' designated critical habitat. Twenty terms and conditions are described to reduce take associated with the proposed action.

## CONSULTATION HISTORY

As a result of discussions among the Service and non-Federal parties concerning management of the lower Colorado River, Reclamation agreed to initiate consultation on discretionary, ongoing river operations on the lower Colorado River from Davis Dam downstream to the southerly international boundary. Consultation was initiated with the Service's Arizona Ecological Services Field Office on August 15, 1996. Construction and operation of quarries and haul roads were not addressed in that consultation, but Reclamation acknowledged that these activities were interrelated and/or interdependent to the river operations under consultation. Reclamation agreed to initiate consultation on the quarries concurrently with the larger river operations consultation. In letters dated April 2, 1996, Reclamation requested species lists from the Service's Phoenix, Carlsbad, and Ventura Field Offices for proposed quarry construction and operation. Species lists were received by Reclamation from these offices on April 10, 1996 (Phoenix), May 24, 1996 (Ventura), and on May 28, 1996 (Carlsbad). A biological assessment was prepared and formal consultation was requested with the Service's Phoenix Office in a letter dated September 26, 1996. In letters dated October 30, 1996, the Phoenix Office proposed to the Carlsbad and Ventura Offices that it take the lead on the consultation because of its relationship to the river operations consultation. Personnel from the Carlsbad and Ventura Offices agreed to Phoenix taking the lead. Preparation of this biological opinion was coordinated with the Service's Carlsbad, Ventura, and Barstow offices.

In Reclamation's September 26, 1996 request for initiation, operation of seven existing quarries (not including the Palo Verde Quarry addressed herein) was addressed. Reclamation had an immediate need to quarry materials from the Palo Verde Quarry to complete work on the Three-Fingers Lake wildlife enhancement project at Cibola National Wildlife Refuge. Thus, informal consultation on this quarry was initiated early, in a letter dated August 12, 1996 and received by this office on August 13, 1996. The request was forwarded from this office to the Carlsbad Field Office in a letter dated August 22, 1996, because the quarry was located in California in the jurisdiction of the Carlsbad Office. Consultation on the Palo Verde Quarry was included in this biological opinion after obtaining verbal concurrence from Pablo Arroyave, Reclamation, Boulder City, Nevada; and Debbie Waldecker, Fish and Wildlife Service, Carlsbad, California in early January, 1997.

Reclamation's September 26, 1996, letter of initiation and biological assessment for the current consultation proposed construction and operation of two new quarries including the Quien Sabe West Quarry (addressed herein) and the Vidal Junction Quarry (not addressed). The proposed Vidal Junction Quarry would be located in the Riverside Mountains approximately five miles southeast of Vidal Junction, San Bernardino County, California. However, after concerns were raised in regard to possible adverse effects to desert tortoises and critical habitat, construction and operation of the Vidal Junction Quarry was withdrawn from consultation (Pablo Arroyave, pers. comm. 1996).

The Service hand delivered a draft biological opinion to Reclamation on February 4, 1997. Reclamation sent draft comments on the opinion to the Service in a facsimile on March 19, 1997. In late March the Service was informed by Pablo Arroyave that the draft comments would be finalized without changes. The comments were discussed in telephone conversations between Jim Rorabaugh of this office and Pablo Arroyave of Reclamation in Boulder City, and Rob Palmer of Reclamation's Yuma Area Office. This biological opinion was finalized after consideration of comments from Service offices in Carlsbad, Ventura, and Barstow, and from Reclamation offices in Boulder City and Yuma.

## BIOLOGICAL OPINION

### DESCRIPTION OF PROPOSED ACTION

Reclamation proposes to construct and operate the Quien Sabe West Quarry and operate eight existing quarries (Manchester, Agnes Wilson, Big Maria No. 2, Palo Verde, Times Gulch, La Paz, Ehrenberg, and Hart Mine No. 2)(CH2MHILL 1996a&b). These quarries are illustrated in Figures 1-6. The latter four quarries are located in Arizona, outside the range of the Mojave desert tortoise population. Discussion of the Arizona quarries will be brief because their operation is unlikely to effect the Mojave desert tortoise or other listed species. Reclamation proposes to operate all nine quarries through December 31, 2005. Other quarries may need to be used or developed, some of the nine quarries addressed herein may operate past year 2005, and these or other quarries may close before that time. These subsequent actions are not addressed here and would need to be considered in subsequent section 7 consultations (CH2MHILL 1996a; Pablo Arroyave, Reclamation, Boulder City, Nevada, pers. comm. 1996).

Up to 80,000 cubic yards of material are proposed to be quarried annually. Activities at existing quarries would result in disturbance of up to 10 acres of desert tortoise habitat annually. Quarried materials, including rock and gravel, would be used for routine maintenance and emergency repairs to the bed and banks of the Colorado River, in accordance with the Colorado River Front Work and Levee System Act of 1925, as amended. For example, rock would be used for riprap on banklines, levees, and jetties. Gravel would be used for road maintenance (CH2MHILL 1996a&b, Reclamation 1996). This consultation addresses only quarrying of the materials, hauling the materials through Mojave desert tortoise habitat, and stockpiling and storage of the materials where such materials are stockpiled in or adjacent to Mojave desert tortoise habitat. Use of the materials as riprap, in the construction of jetties, etc. is addressed in another biological opinion (2-21-95-F-216), currently in preparation.

### Mining Plans

Material would be quarried at the five California quarries (quarries within the range of the Mojave desert tortoise) under a combination of three mining plans (Plans A, B, and C),

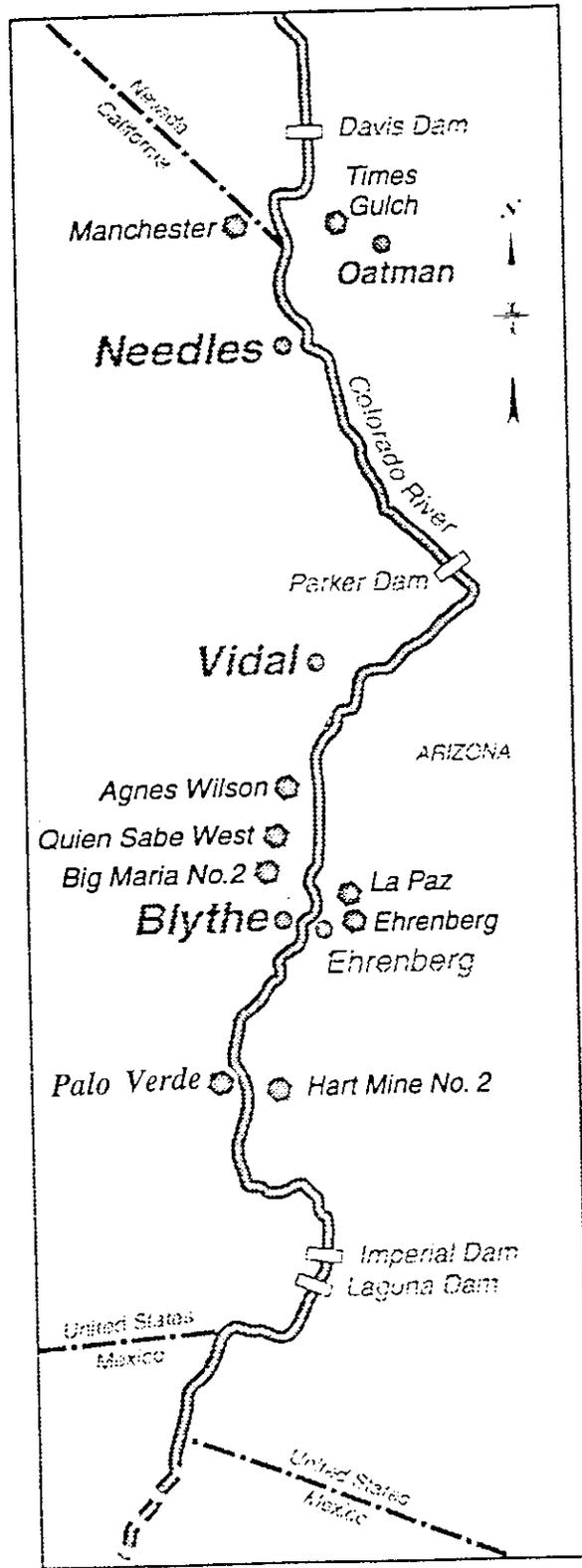


Figure 1: The nine Bureau of Reclamation quarries addressed in this consultation

depending on the access, terrain, and other site-specific conditions (CH2MHILL 1996a&b). A combination of Plans A, B, and C are proposed for use at the Quien Sabe West Quarry. One or Plan A is proposed for the Manchester Quarry and Plan B would be used at the Big Maria No. 2 Quarry (Reclamation 1983). One or more of the four plans would be used at the Palo Verde and Agnes Wilson quarries, depending on site conditions. Each mining plan is described below:

**Mining Plan A:** This plan is designed for use in areas with relatively gentle slopes where the top of the quarry can be reached via haul roads with less than eight percent overall grade and local grades not greater than 12 percent. These areas would be mined from the top down. As the limit of usable rock is reached, the backslope would be flattened to a one-to-flatter slope, or benches would be created to provide an average slope of not more than one-to-one. Processed rock would be hauled directly from quarry benches.

**Mining Plan B:** This plan would be used in steep terrain where the top of the quarry cannot be accessed by vehicle. These areas would be quarried from the bottom up. Equipment access roads would be developed to reach benches and work areas. These quarry roads would average approximately 12 feet in width.

**Mining Plan C:** This plan would be used on nearly vertical cliffs. Materials at the bottom of the cliff face would be used as riprap, and a two- to four-acre work area would be established at the base of the cliff. Tunnels would be excavated into the rock face and material would be removed by blasting.

Equipment used in mining includes front-end loaders, haul trucks, cranes, a compressor with air drills, scales, pickups and other vehicles, and D-9 bulldozers. Additional information on mining operations are contained in CH2MHILL (1996a&b) and Reclamation (1983).

### **Construction of Quien Sabe West Quarry**

The proposed Quien Sabe West Quarry would be located in the Big Maria Mountains, Riverside County, California, approximately four miles west of the Colorado River and 24 miles north of Blythe, California (Figures 1 and 4). Access would be via a newly-constructed road from Highway 95, approximately 3.3 miles in length and at least 24 feet in width (approximately 25.5 acres of disturbance). A single unit, approximately 25.5 acres in size, is proposed to be quarried. The site is a hillside located above a saddle between two hills. A maximum of 1,215,000 tons of rock would be removed over the life of the quarry (Reclamation 1983).

### **Hauling and Stockpiling the Materials**

Haul trucks would transport quarried materials along haul roads, secondary roads, and highways to material stockpiles located along the Colorado River in Arizona, California, and Clark County, Nevada, south of Davis Dam. During quarrying operations, approximately 50

trucks per day would transport materials from quarry sites to stockpiles. As of 1983, 41 stockpiles existed along the lower Colorado River. Four others were proposed (Reclamation 1983). Three currently existing stockpiles occur in potential habitat of the Mojave population of the desert tortoise. These include C-134.0, C-138.0, and C-151.0 (denoting that the site is in California (C), and the river mile above the southerly international boundary). C-134.0 is located approximately 0.4 mile northwest of Palo Verde Diversion Dam. C-138.0 is located 15.8 miles north of Blythe, California and 0.4 mile west of Highway 95. C-151.8 is located immediately west of Highway 95 approximately 9.5 miles south of Agnes Wilson Road. No new disturbance of desert tortoise habitat would result from operation of stockpiles.

### Proposed Mitigation Measures

Reclamation (CH2MHILL 1996a; Pablo Arroyave, pers. comm. 1997) proposes the following measures at the Manchester, Agnes Wilson, Quien Sabe West, and Big Maria No. 2 quarries to reduce the possibility of take of desert tortoises and destruction of desert tortoise habitat as a result of the proposed action.

1. Reclamation will appoint an individual to ensure compliance with terms and conditions, and reporting and reinitiation criteria in this biological opinion.
2. A desert tortoise protection education program will be presented to all personnel onsite at the quarries. The program will be presented to employees, inspectors, supervisors, contractors, and subcontractors. Personnel will sign a statement indicating they have attended the program and will comply with mitigation measures. The education program will include discussions of the following:
  - a. The legal and sensitive status of the desert tortoise;
  - b. general measures designed to minimize impacts, such as the importance of confining disturbance to the project site and the prohibition of cross-country travel in adjacent areas;
  - c. additional measures, such as respecting established speed limits and checking for desert tortoises resting in the shade under vehicles; and
  - d. protocols to follow if a desert tortoise is encountered, including appropriate contact points, such as construction supervisors, construction inspectors, and environmental monitors.
3. Prior to quarry excavation, work sites will be surveyed to locate and remove desert tortoises. Burrows inhabited by desert tortoises will be excavated using hand tools under the supervision of a qualified biologist. All burrows found in the construction zone will be collapsed or blocked to prevent re-entry. Before any desert tortoises are handled, the appropriate State permit will be obtained. Desert tortoise clearance surveys will be conducted a maximum of three times, or two consecutive surveys if no tortoises are removed from the work area. Pedestrian surveys to clear work areas

using parallel transects spaced no wider than 15 feet apart should be conducted no more than 48 hours before construction.

4. Desert tortoises moved from construction sites will be relocated to adjacent undisturbed habitat on public lands. If removed from a burrow, the animals will be placed in an existing, similar, unoccupied burrow. If a suitable natural burrow is not found, an artificial burrow will be constructed that is approximately the same size, depth, and orientation as the original burrow. Desert tortoises encountered will be documented, marked, and handled in a manner consistent with Service guidelines.
5. Construction during the active period of the desert tortoise, March 1 through November 1, should be monitored by a qualified biologist following pre-construction surveys if desert tortoises are found during the pre-construction surveys. The biologist would be available to remove desert tortoises that enter the site during construction. The biologist will have the authority to briefly halt a construction operation that might result in harm to an individual desert tortoise.
6. Existing roads will be used for quarry access wherever possible.
7. Turn-around areas, work areas, stockpiles, vehicular and equipment travel, and vehicle service areas will be located within the project site. Unauthorized vehicle use should be prohibited and cross-country travel should be discouraged.
8. Reclamation will be responsible for controlling and limiting litter, trash, and garbage by placing refuse in sealable receptacles. Trash and debris will be removed when construction is complete.
9. Oil, fuel, and other equipment fluid leaks will be cleaned up and properly disposed of as soon as they occur.
10. The Service will be notified within three days of finding any desert tortoise dead or injured. Notification will include the date, time, circumstances, name of reporting individual, and location of incident. Dead animals will be properly disposed of by incineration. Injured animals will either be treated and released, adopted, or euthanized, according to the veterinarian's recommendation.
11. Reclamation will work with the Bureau of Land Management to develop and implement appropriate compensation for residual impacts resulting from construction of the Quien Sabe West Quarry and access road, and expansion of other quarries into desert tortoise habitat, in accordance with desert tortoise compensation policy (Desert Tortoise Compensation Team 1991).

Also proposed by Reclamation were the following mitigation measures to be implemented at the Palo Verde Quarry (CH2MHILL 1996b, Pablo Arroyave, pers. comm. 1997):

1. Disturbance beyond the actual construction zone will be avoided by: (1) using existing roads for access to the project area wherever possible; and (2) locating turn-around areas, work areas, stockpile areas, and vehicle service areas within the project site.
2. Vehicular and equipment travel, as well as material storage, should not be allowed outside of the above-described areas. Unauthorized vehicle use should be prohibited and cross-country travel should be discouraged.
3. A trash abatement program will be implemented through the operation of the facility. Reclamation will be responsible for controlling and limiting litter, trash, and garbage by placing refuse in sealable receptacles. Reclamation will also ensure that all trash and debris from the facility site is removed when construction is completed.
4. Oil, fuel, and other fluid leaks from equipment will be cleaned up and properly disposed of as soon as they occur.
5. All quarry construction and operation activities will be contained within the existing quarry as shown on Figure 6.

## STATUS OF THE SPECIES

On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered. In a final rule dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened. The desert tortoise is a large, herbivorous reptile found in portions of the California, Arizona, Nevada, and Utah deserts, and in Sonora and northern Sinaloa, Mexico. The threatened Mojave population is found in California, Nevada, and north of the Colorado River in northwestern Arizona and southwestern Utah. Desert tortoises of the Mojave population are most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and after infrequent summer monsoons. Desert tortoises spend the remainder of the year in burrows, escaping the extreme weather conditions of the desert.

The desert tortoise is threatened by numerous factors, most of which are human-caused. These factors include destruction, degradation, and fragmentation of desert tortoise habitat resulting from habitat conversion to urban or agricultural development, construction of roads, mining, sheep and cattle grazing, and other activities; direct mortality or removal of animals from populations due to collecting, road kills, etc.; and mortality due to an upper respiratory tract disease (URTD), particularly in the western Mojave Desert (Service 1994). Fire is an increasingly important threat to desert tortoise habitat. Over 500,000 acres of desert lands

burned in the Mojave Desert in the 1980s. Fires in Mojave Desert scrub degrade or eliminate habitat for desert tortoises (Appendix D of Service 1994).

The recovery plan for the Mojave population of the desert tortoise (Service 1994) proposes the establishment of 14 Desert Wildlife Management Areas (DWMAs) in six recovery units. Land management in DWMAs would target the reduction or elimination of those factors that have caused declines in desert tortoise populations. The boundaries of proposed DWMAs are not precisely defined in the recovery plan, but would be established by the Bureau of Land Management, Department of Defense, National Park Service, and other land management agencies in coordination with the Service, State wildlife agencies, and others. The proposed Quien Sabe West Quarry is within the boundaries of an area being considered for designation as the Chuckwalla DWMA in the Northern and Eastern Colorado Desert Coordinated Resource Management Plan (Kirk Waln, Fish and Wildlife Service, Ventura, CA, pers. comm. 1996). The Manchester Quarry is located just east of the proposed Fenner DWMA. The other quarries are not located in or near areas proposed as DWMAs.

The Service designated critical habitat for the Mojave population of the desert tortoise in a Federal Register notice dated February 8, 1994 (59 FR 5820-5846, also see corrections at 59 FR 9032-9036). None of the existing or proposed quarries, haul roads or routes, or stockpiles addressed in this consultation are located in critical habitat.

Further information on the range, biology, and ecology of the desert tortoise can be found in Luckenbach (1982), Turner et al. (1984), Weinstein et al. (1987), Ernst et al. (1994), various papers by J.R. Spotila and others in Herpetological Monographs published June 30, 1994, various papers in Bury and Germano (eds.) (1994), and Service (1994).

## ENVIRONMENTAL BASELINE

### General Vegetation Communities and Habitat Conditions at the California Project Sites:

Agnes Wilson, Quien Sabe West, Big Maria No. 2, and Palo Verde quarry sites and haul routes, and stockpiles C-134.0, C-138.0, and C-151.0 are located within the lower Colorado River subdivision of Sonoran desert scrub. This is the largest and most arid subdivision of the Sonoran Desert. Mean annual precipitation varies from about 3.2 inches at Blythe to 4.5 inches at Needles. Vegetation communities are typically open and simple (Turner and Brown 1982). The Manchester Quarry is located near the southern limit of the creosote bush series of Mojave desert scrub (Turner 1982). Vegetation communities at this site share many species with and are similar to other quarry sites in Sonoran desert scrub (CH2MHILL 1996a).

In bajadas, through which haul routes pass, creosote, *Larrea tridentata*; cat claw, *Acacia greggii*; and teddy bear cholla, *Opuntia bigelovii* are dominant. Vegetation diversity increases on the slopes, where no species are dominant. Drainages at and near quarry sites support species such as desert lavender, *Hyptis emoryi*; chuckwalla's delight, *Bebbia juncea*;

blue palo verde, *Cercidium floridum*, and creosote (CH2MHILL 1996a&b). The Palo Verde

Quarry is on the edge of the Colorado River floodplain. Riparian species, particularly

Quarry is on the edge of the Colorado River floodplain. Riparian species, particularly saltcedar, *Tamarix chinensis*, occur on the southern and eastern edges of the site.

Habitats at existing quarries, haul roads, and stockpiles are heavily disturbed due to past and ongoing activities. Disturbance is variable adjacent to project features, but in rocky terrain adjacent habitats are relatively undisturbed. Further descriptions of habitats can be found in CH2MHILL (1996a&b), Reclamation (1983), Turner (1982), and Turner and Brown (1982).

#### Status of the Desert Tortoise at the California Project Sites:

Desert tortoise surveys were conducted May, 5-15, 1996 at the Manchester, Agnes Wilson, Quien Sabe, and Big Maria No. 2 quarry sites and along proposed or existing unpaved haul roads between the quarries and paved routes. Surveys of the Palo Verde Quarry were conducted July 2, 1996. One-hundred percent coverage surveys of variable extent were conducted within or adjacent to the quarry sites. Generally, these surveys covered areas that would be disturbed by quarry activities, but not necessarily all proposed disturbance areas. One hundred percent surveys were conducted by workers walking parallel transects spaced every 30 feet. Triangular strip transects, measuring 0.5 mile on a side, and 30 feet in width, were conducted along approximately each mile of existing or proposed haul. Other 30 foot wide transects were conducted in quarry areas to characterize desert tortoise occurrence. During all surveys, observers searched for and recorded desert tortoises and their sign.

Surveys did not conform to Service survey protocol (Service 1992) because not all areas proposed to be disturbed were surveyed with 100-percent surveys and surveys within the zone of influence were incomplete. Triangular transects and other 30-foot wide transects yielded data from the zone of influence, but not to the level of detail recommended in the Service's protocol.

Based on the detection of sign or desert tortoises, the CH2MHILL surveys confirmed presence of the species at the Manchester, Quien Sabe West, and Big Maria No. 2 Quarry sites. One live desert tortoise, two

Table 1: Results of desert tortoise surveys at California quarries and haul roads<sup>1</sup>

Site/Feature	#Tortoises	#Carcasses	#Scat	#Burrows
Manchester <sup>1</sup>				
Quarry	0	1	0	1
Haul Road	0	0	1	1
Agnes Wilson <sup>1</sup>				
Quarry	0	0	0	0
Haul Road	0	0	0	0
Big Maria <sup>1</sup>				
Quarry	0	1	1	1
Haul Road	0	0	1	4
Quien Sabe West <sup>1</sup>				
Quarry	1	0	3	4
Haul Road	0	0	0	2
Palo Verde <sup>2</sup>				
Quarry	0	0	0	0

<sup>1</sup> From CH2MHILL (1996a). Note: site specific locations for drinking depressions not available.

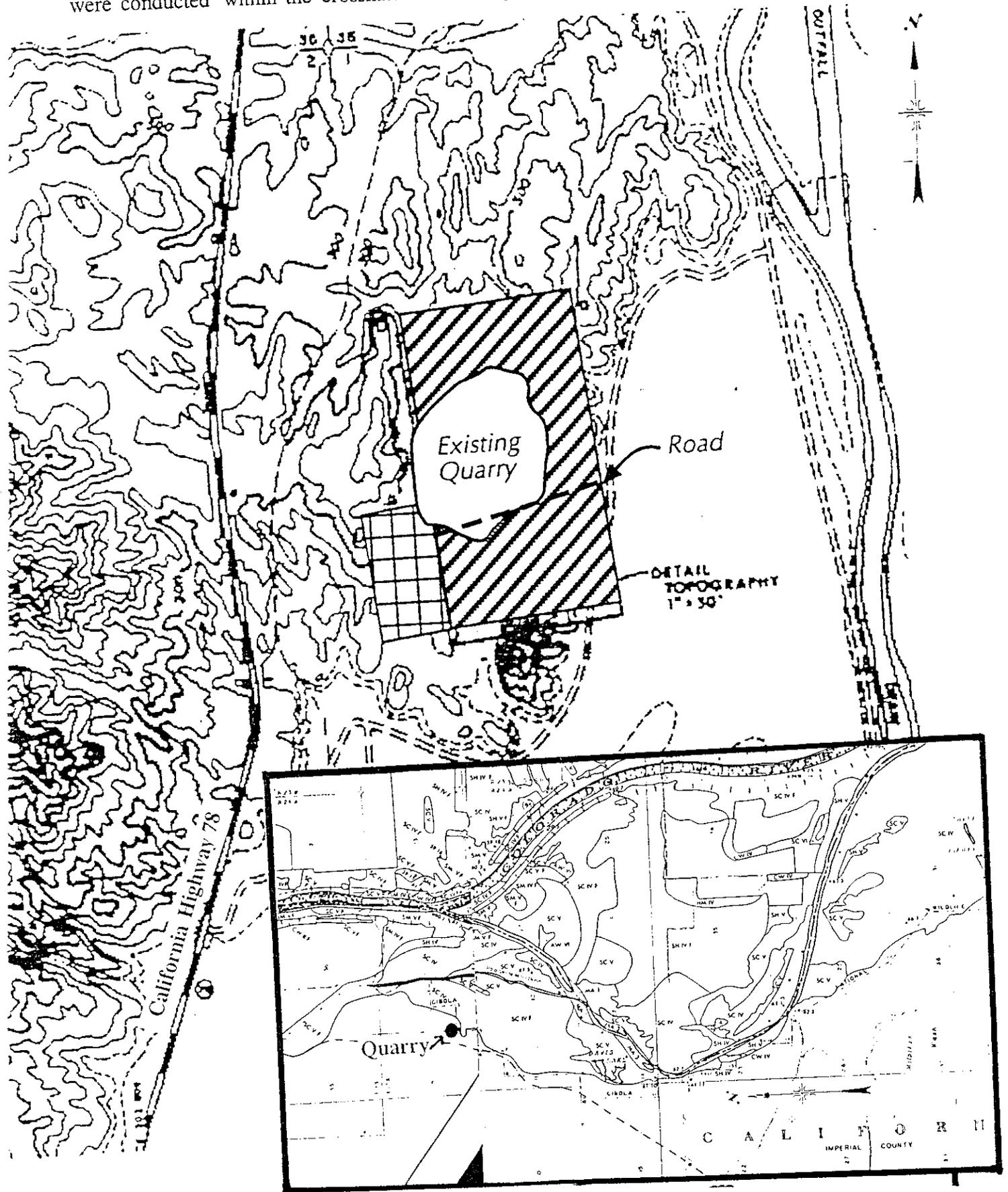
<sup>2</sup> From CH2MHILL (1996b). Material is hauled either on an unpaved route to the east through riparian habitat that is unsuitable for desert tortoises, or is hauled via adjacent Highway 78, thus no surveys of hauls routes were conducted.

populations are typically depressed adjacent to frequently-used roads (Nicholson 1978a&b, Boarman et al. 1992, LaRue 1992). However, apparently suitable habitat occurs west of Highway 78 and desert tortoises could potentially wander into the Palo Verde Quarry from this area.

Based on the 100-percent survey results, CH2MHILL (1996a&b) estimated that desert tortoise densities were very low (0 to 10 per mi<sup>2</sup>) at all California quarry sites. Based on strip transects, densities were estimated to be very low (0 to 10 per mi<sup>2</sup>) at the Agnes Wilson and Palo Verde quarries, low (20 to 50 per mi<sup>2</sup>) at Manchester and Quien Sabe West Quarry sites; and high (100 to 250 mi<sup>2</sup>) at the Big Maria No. 2 Quarry. The estimate for the Big Maria No. 2 Quarry could be artificially high due to a large number of drinking depressions in the sign counts. These depressions were not found at other sites, and could have been made by animals other than desert tortoises (CH2MHILL 1996a).

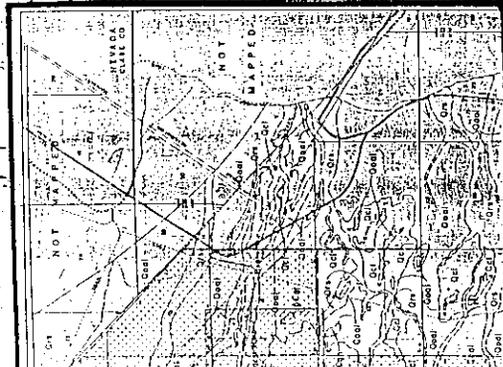
... these data is problematic. Sign counts

Figure 6: Location Map: Palo Verde Quarry. All proposed activities would occur within the area indicated as "Existing Quarry" and in other areas shown by the stripped area north of the road that traverses the southern edge of the existing quarry. Desert tortoise surveys were conducted within the crosshatched area by CH2MHILL (1996b).



Location Map





AREA TOPOGRAPHY

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SCALE OF FEET  
Contour Interval: 40 Feet

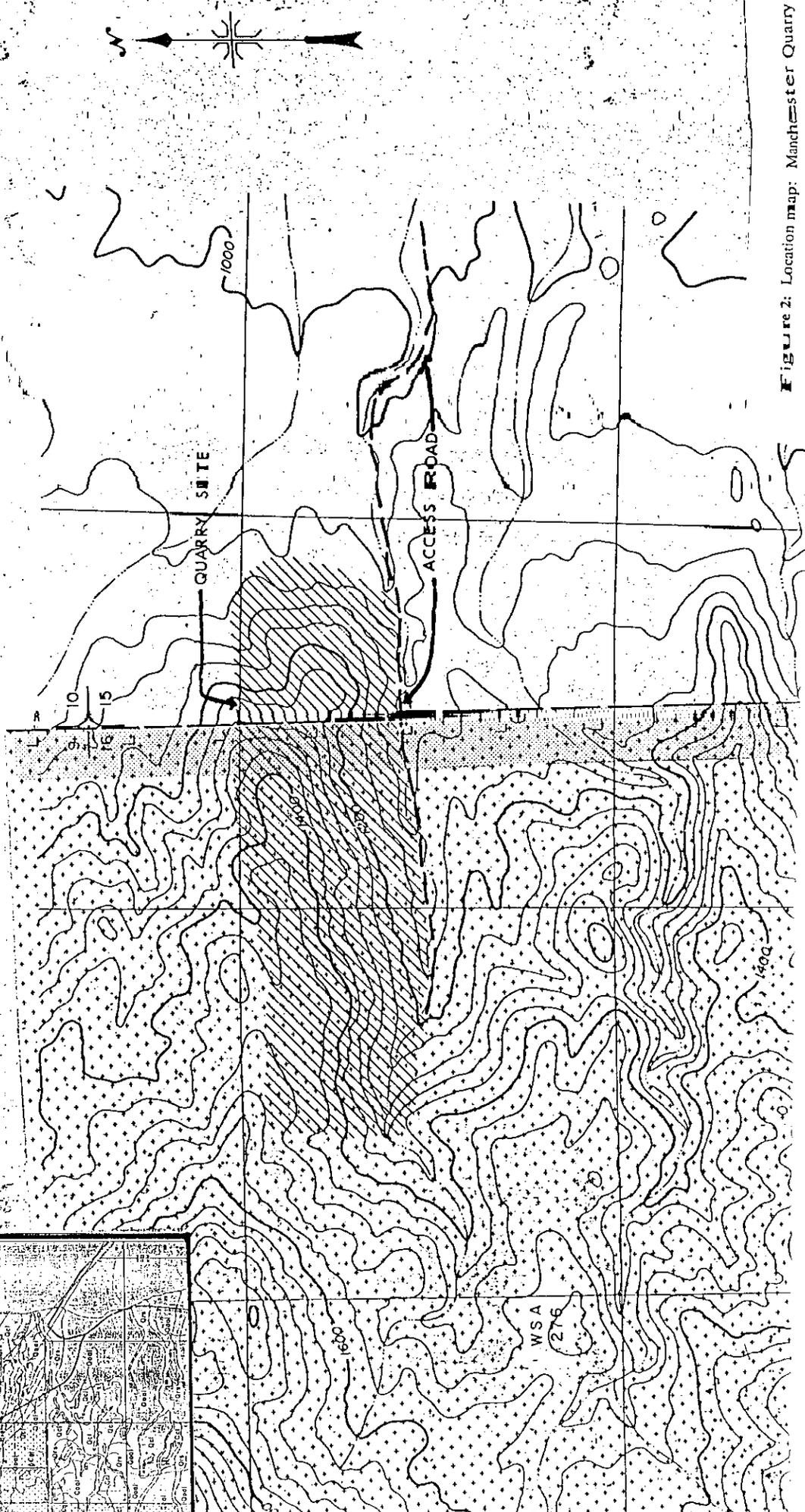


Figure 2: Location map: Manchester Quarry

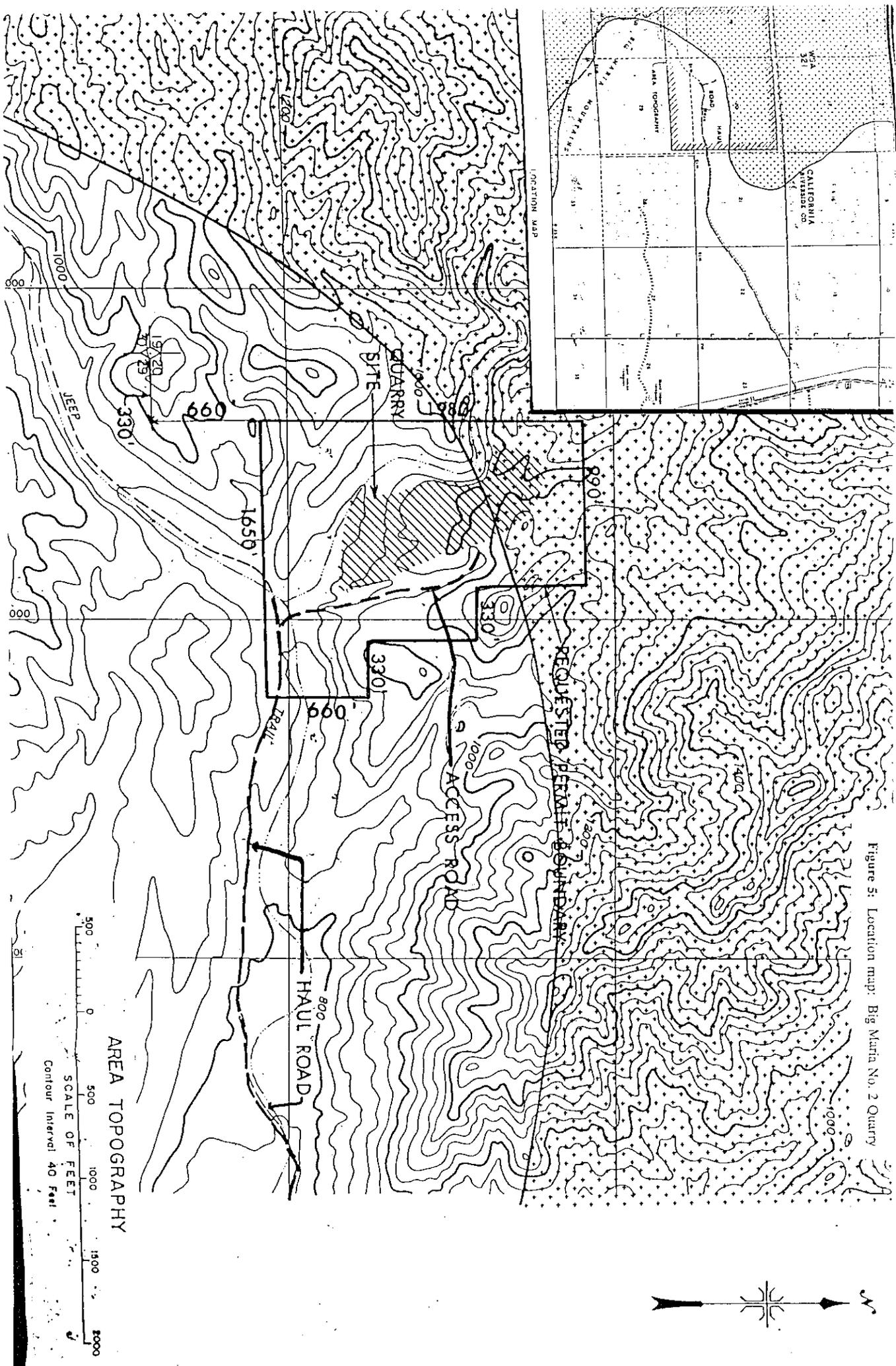


Figure 5: Location map: Big Maria No. 2 Quarry

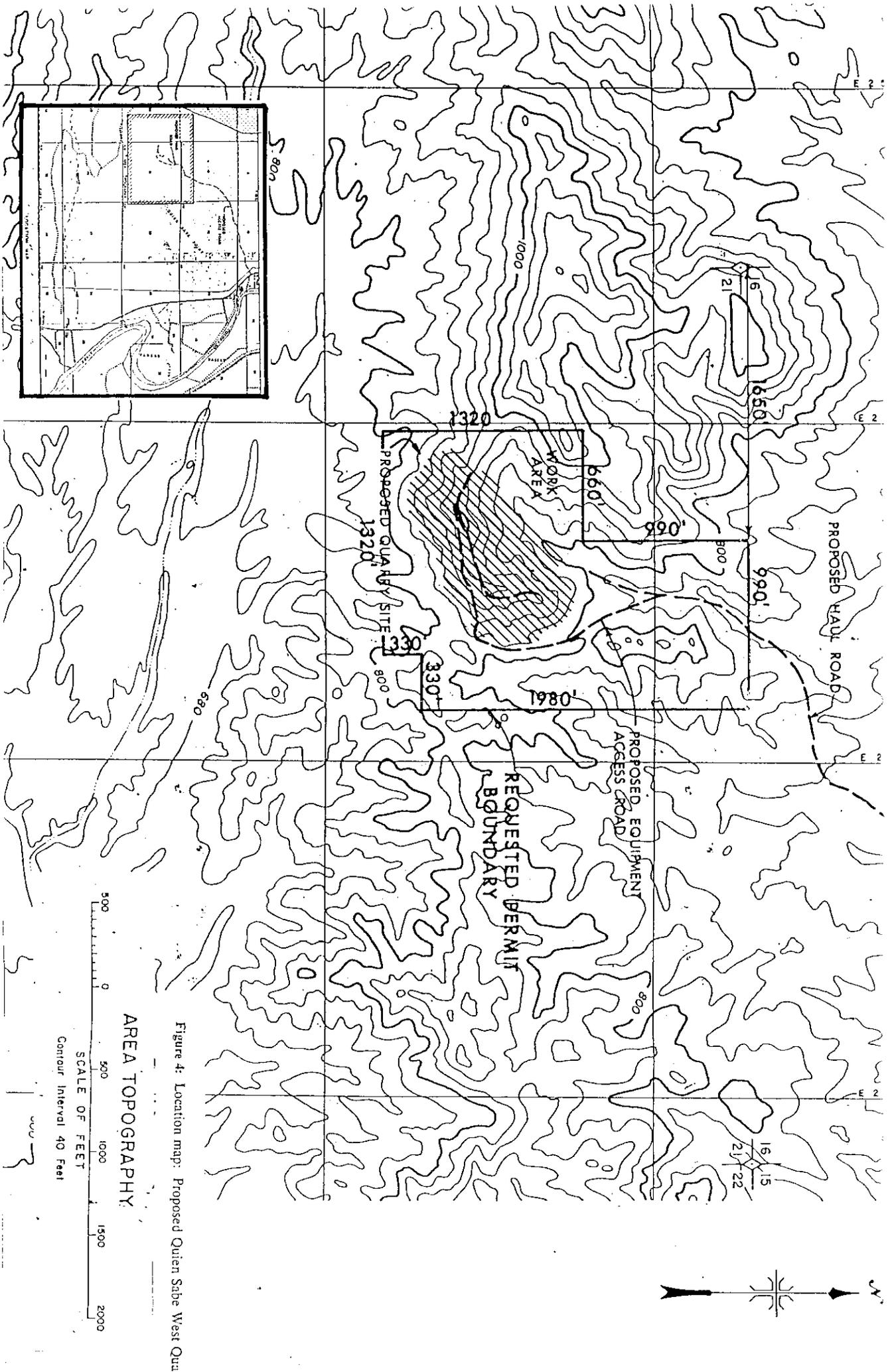
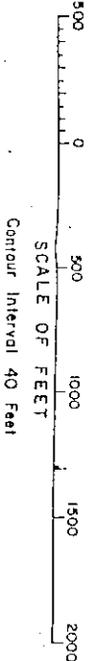


Figure 4: Location map: Proposed Quien Sabe West Qua

AREA TOPOGRAPHY



1996). CH2MHILL calibrated their density estimates using the linear regression model developed by Berry and Nicholson (1984) in level terrain in the Mojave desert. Use of this model is likely inappropriate due to differences in detectability of desert tortoises, scat, and other sign between the often rocky, mountainous terrain of the project site and the level terrain where the model was developed. Detection of sign and desert tortoises is also influenced by observer bias, vegetation structure, asynchronous behavior, climatic events that affect detectability of sign and desert tortoise activity, differences in detectability from year to year or among seasons, and other factors (Esque 1996, Karl 1996). One-hundred percent surveys are fairly accurate at enumerating adult desert tortoises that are detectable on the surface or visible in burrows, but are not reliable for quantifying numbers of hatchling and juvenile desert tortoises or desert tortoises that are deep in burrows. In rocky or rough terrain, sign and desert tortoises are easily missed.

Interpretation of the data is further complicated because survey areas do not precisely overlay proposed areas of disturbance. Triangular transects and individual 30-foot transects traversed the general area in which haul routes and quarries are located or proposed. Typically, the 100-percent surveys were conducted in subsets of disturbed areas or areas proposed for expansion. For instance, 100-percent surveys of the Manchester, Big Maria No. 2, and Quien Sabe West quarry sites sampled portions of, but not all, areas proposed for quarry activities. Furthermore, results of surveys in disturbed portions of quarry sites are probably not representative of adjacent, undisturbed areas that would be affected by the proposed action. Because of the problems and likely errors in using these survey data to estimate densities, the Service believes the density estimates calculated by CH2MHILL may not be accurate.

The Quien Sabe West Quarry and haul road are category 2 desert tortoise habitat (Larry Foreman, Bureau of Land Management, Riverside, California, pers. comm. 1996). Category 2 habitats are those with medium to high density populations, or low density populations adjacent to medium or high density populations. Category 2 areas may be essential to maintenance of viable populations. The remaining California quarries are not classified as either category 1 or 2 habitats. By definition, if desert tortoises or sign are found in areas uncategorized habitats, these areas are designated category 3. Thus, the Manchester and Big Maria No. 2 quarries and haul roads are located in category 3 habitat. Category 3 are those habitats that support low to medium densities of desert tortoises (Spang et al. 1988).

Although not extensively-studied, the Service is unaware of any high density populations of desert tortoises in mountainous, rocky terrain in California. This information, combined with habitat categorization, and the findings of CH2MHILL (1996a&b) suggest that desert tortoise densities at the five California quarry sites is in the range of 0 to 100 per mi<sup>2</sup> (low to moderate). Desert tortoises may be absent from the Agnes Wilson Quarry, haul road, and surrounding areas; and from the Palo Verde Quarry.

The Service is unaware of survey data for stockpile sites or areas aligning paved roads that will likely be used during transport of materials from quarries to stockpiles. However,

desert tortoises probably occur along some of these roads, such as Highway 95 on the California side of the Colorado River through the Parker Division, and Highway 78 near the Palo Verde Quarry, where these roads adjoin desert scrub. Desert tortoises also likely occur adjacent to the paved road along the Colorado River between Laughlin, Nevada and Needles, California (Nevada Highway 76).

## EFFECTS OF THE PROPOSED ACTION

### Habitat Loss:

CH2MHILL (1996a) estimated that a maximum of 10 acres per year would be disturbed as a result of operations at the eight existing quarry sites in Arizona and California. Assuming similar usage of each of the remaining eight quarries over the 10-year operation plan, then approximately 50 acres of desert tortoise habitat could be lost in California at the Manchester, Agnes Wilson, Big Maria No. 2, and Palo Verde quarries. Construction and operation of the Quien Sabe West Quarry would result in an additional estimated 35.1 acres of new disturbance (quarry - 25.5 acres, access road - 9.6 acres). Areas disturbed by quarry operations and road construction would be lost as desert tortoise habitat. Impacts would be long term, if not permanent.

### Habitat Degradation Associated with Haul Roads:

Unpaved haul roads to the quarries are used by off-highway vehicle enthusiasts, rockhounds, campers, and other recreationists. A portion of these users drive off-road, dump trash, start fires, or conduct other activities that can reduce the capability of the habitat to support desert tortoises. Human-induced disturbance is the primary cause of the decline of the desert tortoise (Service 1994). Roads facilitate human use and associated habitat degradation (Appendix D of Service 1994). Of particular concern is the proposed haul road at the Quien Sabe West Quarry site.

### Direct and Indirect Impacts to Individual Desert Tortoises:

Desert tortoises could be killed or injured at quarry work areas, or by haul trucks and other vehicles travelling to and from the quarries and stockpiles on unpaved and paved access routes. At existing quarries and stockpiles, desert tortoises could wander into active work areas and be struck by equipment, crushed by vehicles, or killed or injured by explosions or rock falls. As quarries expand into adjacent habitats, desert tortoises could be killed or injured by collapse of their burrows. Employees and personnel could also collect desert tortoises and remove them from the area.

Considerable truck traffic (50 trucks per day) associated with quarry operations presents a significant hazard to desert tortoises crossing roads. Desert tortoise mortality or injury could occur anywhere that haul trucks and other project vehicles encounter desert tortoises, including quarry sites, haul roads, paved access routes, and stockpile sites. Desert tortoise

populations have been depleted up to a mile or more from roads where average daily traffic is greater than 180 vehicles (Nicholson 1978a&b). Corridors of low density or zones of extirpation have been documented along Highways 58 and 395 in the Mojave Desert of California (LaRue 1992, Boarman et al. 1992). Similar reductions along roads has been recorded in snakes populations in southern Arizona (Rosen and Lowe 1994).

Along existing routes, quarry activities would cause an incremental increase in vehicular use that would exacerbate population effects along roads; although the magnitude of the effect cannot be quantified. New access would initiate population decline in a corridor along the route, with public use compounding the effect. In particular, new access or improved routes contribute to additional traffic and result in greater mortality and injury of desert tortoises. Users could also collect desert tortoises on haul routes or release desert tortoises that may carry and spread infectious diseases such as URTD to the local desert tortoise population.

Refuse generated at quarry sites and stockpiles may attract and enhance populations of desert tortoise predators, such as common ravens, *Corvus corax*, and coyotes, *Canis latrans*. Ravens and coyotes can be significant predators of desert tortoises (Berry 1985, Peterson 1994).

In the desert regions where quarry projects are proposed or located, most desert tortoise activity occurs between March 1 and November 1. Reducing or eliminating quarry and truck traffic during this time interval would minimize the extent of desert tortoise mortality and injury due to vehicle strikes and quarry activities.

#### Interrelated and Interdependent Effects:

The proposed action is part of Reclamation's operations and maintenance activities on the lower Colorado River. In accordance with 50 CFR 402.14(g), the Service is required to consider all effects of the proposed action, which 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, that 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" (50 CFR 402.02). The Service's Section 7 Handbook provides further guidance on the definition of "interrelated and interdependent actions" by establishing the following rule: Determining if an action is interrelated or interdependent depends on the "but for" test. Ask whether the Federal, State, or private activity could occur "but for" the proposed action.

Certain river operations and maintenance activities, such as construction of jetties and placement of riprap could not occur but for the quarrying of rock from the quarries addressed herein. Thus, these river operations and maintenance activities are interrelated and interdependent to the action addressed in this consultation. Reclamation acknowledges that these other activities may affect listed species and their critical habitat (Reclamation 1996).

These effects are being addressed in a separate consultation, which was initiated in August, 1996.

### **Effects to Critical Habitat:**

This opinion must determine whether the proposed action may result in destruction or adverse modification of critical habitat. "Destruction or adverse modification" means a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of the species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical." (50 CFR 402.02).

None of the existing or proposed project features are located in or immediately adjacent to critical habitat. Thus, no adverse effects to critical habitat would occur.

### **Cumulative Effects:**

Cumulative effects are those adverse effects of future non-Federal (State, local government, and private) actions that are reasonably certain to occur in the project area. Future Federal actions would be subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed project. Effects of past Federal and private actions are considered in the Environmental Baseline. Due to the extent of the lands in this area of the Mojave Desert administered by the Bureau of Land Management and Reclamation, many of the actions that are reasonably expected to occur in the general area of the quarries would be subject to section 7 consultations. For instance, most activities anticipated to be implemented by Reclamation will be addressed in an ongoing consultation. Activities on Bureau of Land Management lands in and adjacent to the Manchester and Quien Sabe West quarries are expected to be addressed in the Eastern Mojave, and Northern and Eastern Colorado Desert Coordinated Resource Management Plans, currently in preparation by the Bureau's California Desert District and other participating agencies and parties. These plans are expected to implement the Desert Tortoise (Mojave Population) Recovery Plan in the Eastern Mojave, Northern Colorado Desert, and Eastern Colorado Desert Recovery Units and would be the basis for programmatic section 7 consultation.

State and tribal activities along the lower Colorado River downstream of Glen Canyon Dam are expected to be summarized in the Lower Colorado River Multi-Species Conservation Program. This program is expected to serve as a habitat conservation plan and the basis for a section 10(a)(1)(B) permit application. Continued development of private lands in California and southern Nevada, particularly adjacent to the Colorado River in California at Blythe, Needles, the Parker Strip, and the west shore of Lake Havasu; and at Laughlin, Nevada, is expected. Compliance with the Act for private development could occur through section 7 consultation, if a Federal nexus exists [e.g. the requirement for a section 404 permit from the Corps of Engineers, pursuant to the Federal Water Pollution Control Act (33

U.S.C 1251-1376)]. These actions could also be addressed through section 10(a)(1)(B) of the Act.

### Effectiveness of Proposed Mitigation

Reclamation has proposed a number of actions that would act to offset or mitigate many of the adverse effects described above. Briefing personnel on the desert tortoise, limiting disturbance to the project site, waste/trash control, desert tortoise relocation by a qualified biologist, and other measures as described in CH2MHILL (1996a&b) and summarized in the "Proposed Mitigation Measures" herein, should all contribute to reduced incidence of mortality or injury of desert tortoises and lessen habitat damage directly attributable to proposed quarry construction and operation.

### SUMMARY OF EFFECTS

The Service believes the effects described above are neither likely to jeopardize the continued existence of the desert tortoise nor result in adverse modification or destruction of desert tortoise critical habitat. We present this conclusion for the following reasons:

1. The proponent's project description includes features to minimize take of desert tortoises and mitigate the direct and indirect impacts of the proposed action on the desert tortoise and its habitat.
2. Four of the nine quarries proposed for operation are outside of the range of the Mojave population of the desert tortoise, and therefore would not affect the listed population. Four of the five quarries within the range of the Mojave population are not located in areas currently being considered for designation as DWMAs.
3. Operation of existing quarries for the most part involves working in highly disturbed areas that are no longer suitable as desert tortoise habitat.
4. No indirect or direct effects to critical habitat would occur.
5. The extent of desert tortoise habitat loss and degradation are relatively minor.

### CONCLUSION

After reviewing the current status of the Mojave population of the desert tortoise, the environmental baseline for the action area, and the anticipated effects of proposed operation of eight existing quarries and construction and operation of one new quarry, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the desert tortoise and is not likely to destroy or adversely modify desert tortoise critical habitat.

## 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 measures described below are non-discretionary, and must 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. Reclamation has a continuing duty to regulate the activity covered by this incidental take statement. If Reclamation (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) may lapse.

### AMOUNT OR EXTENT OF TAKE

The Service anticipates the following forms of take as a result of the proposed action:

- 1) A total of two desert tortoises in the form of direct mortality or injury resulting from operation of the five California quarries and hauling of rock to stockpiles.
- 2) A total of one desert tortoise in the form of direct mortality or injury resulting from construction of the Quien Sabe West Quarry and haul road.
- 3) All desert tortoises and their eggs located in project areas through harassment associated with excavation of occupied burrows and movement of desert tortoises and their eggs out of harm's way during construction and operation activities.

This biological opinion does not authorize any form of take not incidental to operation of the Manchester, Agnes Wilson, Big Maria No. 2, and Palo Verde quarries and haul roads, and construction and operation of the Quien Sabe West Quarry and haul road. This take statement does not apply to desert tortoises of the Sonoran population located east of the Colorado River, which are not protected by the Act. Reclamation should contact Arizona

Game and Fish Department (602/942-3000) in regard to permit requirements for the Sonoran population. Additional permits may be required by California Fish and Game Department (916/653-7664) to handle desert tortoises in California. If the incidental take authorized by this opinion is met, Reclamation shall immediately notify the Service in writing. If the incidental take authorized by this opinion is exceeded, Reclamation must immediately reinitiate consultation with the Service to avoid a violation of section 9 of the Act. In the interim, Reclamation must cease the activity resulting in the take if it is determined that the impact of additional taking will cause an irreversible and adverse impact on the species. Reclamation should provide to this office an explanation of the cause of the taking.

### EFFECT OF THE TAKE

In this biological opinion, the Service finds the anticipated level of take is not likely to result in jeopardy to the species.

### REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the desert tortoise:

1. Personnel education programs, defined construction areas, and well-defined operational procedures shall be implemented.
2. Preconstruction surveys shall be conducted to locate desert tortoises that may be injured or killed as a result of proposed activities.
3. Activities that may result in a take of desert tortoise or destruction of desert tortoise habitat shall be closely monitored to ensure compliance with the terms and conditions of this biological opinion. Where adverse effects to an individual desert tortoise cannot be avoided, the animal shall be moved from harm's way.
4. Attraction of potential desert tortoise predators to the project area shall be reduced to the maximum extent possible.
5. Reclamation shall monitor incidental take resulting from the proposed action and report to the Service the findings of that monitoring.

### TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, Reclamation must comply with the following terms and conditions in regard to proposed quarry construction and operation in California. Implementation of these terms and conditions are only required at the California quarries, haul routes, and stockpiles, and any haul routes in Nevada. These terms and conditions implement the reasonable and prudent measures described above.

Terms and conditions are nondiscretionary. Terms and conditions 1.a. through e., 2.a., 3.a., and 4 are adapted from CH2MHILL (1996a&b) and discussions between the Service and Reclamation.

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

a. Reclamation shall designate a field contact representative (FCR) who shall be responsible for overseeing compliance with these terms and conditions and for coordination on compliance with the Service. The FCR and authorized/qualified biologist(s) (see terms and conditions 2.a. and 3.b.) shall have the authority and the responsibility to halt all project activities that are in violation of these terms and conditions. These individuals shall have a copy of the terms and conditions of this biological opinion while on the work site. Quarry Managers may serve as FCRs.

b. A desert tortoise education program shall be presented to all employees, inspectors, supervisors, contractors, and subcontractors prior to initiation of construction or operation activities at the quarries, haul routes, and stockpiles. Personnel shall sign a statement confirming attendance and compliance with these terms and conditions. The education program will include discussions of the following:

1. legal protection of the desert tortoise and sensitivity of the species to human activities;
2. a brief discussion of desert tortoise distribution and ecology;
3. the terms and conditions of this opinion;
4. project features designed to reduce adverse effects to desert tortoises and their habitat, and to promote the species' long-term survival;
5. protocols during encounters with desert tortoises and associated reporting requirements; and
6. the definition of take and penalties for violations of Federal and State laws.

c. Turn-around sites, work areas, stockpiles, vehicular and equipment travel, and service areas shall be located within the project sites. Vehicle use shall be limited to existing routes and areas of disturbance except as necessary to access or define boundaries for new areas of construction or operation. Any unauthorized vehicle use shall be prohibited.

d. Oil, fuel, and other equipment fluid leaks shall be immediately cleaned and disposed of according to applicable protocols and regulations.

e. Areas of new construction, including construction of the Quien Sabe West Quarry and haul road and expansion of existing quarries, shall be flagged or marked on the ground prior to construction. All workers shall strictly limit their activities and

vehicles within these designated areas. Personnel shall be trained to recognize markers and understand restrictions involved.

f. To the maximum extent possible, Reclamation shall schedule construction and operation activities between November 1 and March 1.

g. Reclamation shall, through gating or other measures, limit access to project vehicles on the proposed Quien Sabe West access road.

h. All project-related vehicles (including dump trucks) operating on unpaved haul roads from the quarries shall limit their speed to no more than 25 miles per hour from March 1 through November 1.

i. Prior to surface-disturbing activities, a tortoise-proof perimeter fence shall be constructed around the Quien Sabe West Quarry site. The fence shall consist of galvanized hardware cloth of a maximum mesh size of 1-inch (horizontal) by 2-inches (vertical) fastened securely to metal posts. The wire mesh shall extend at least 18 inches above the ground and 12 inches below the surface of the ground. Where burial is not possible, the lower 12 inches shall be folded outward, away from the enclosed site, and fastened to the ground so as to prevent desert tortoise entry. Entrances and exits through the fence shall be constructed in a way to prevent tortoise entry. Where the fence crosses drainages, the Service recommends loosely tying the wire mesh to the posts so that the mesh will break away during storm events and can be subsequently retrieved and reused. The fencing shall be inspected yearly (prior to emergence of desert tortoises in March) and maintained as necessary to ensure its effectiveness at excluding desert tortoises.

j. Reclamation shall coordinate with the Bureau of Land Management to develop and implement appropriate compensation for residual impacts resulting from construction of the Quien Sabe West Quarry and access road, and expansion of existing quarries into desert tortoise habitat, in accordance with desert tortoise compensation policy (Desert Tortoise Compensation Team 1991).

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

a. Prior to any surface-disturbing activities, work sites shall be surveyed for desert tortoises by a qualified biologist approved by Reclamation (a qualified biologist should be an individual trained to conduct tortoise surveys). Areas of new disturbance, including new and upgraded haul roads and areas within 40 feet of such roads, proposed access routes to the Quien Sabe West Quarry, and expansion areas at existing quarries, shall be surveyed with 100-percent coverage. Surveys at the Quien Sabe West Quarry shall be in accordance with term and condition 2.b. For construction/operation activities occurring during the desert tortoise season (March 1 through November 1), surveys shall be conducted within 24 hours of initiation of

surface-disturbing activities. Between November 1 and March 1 any new disturbance shall be preceded by 100-percent surveys conducted within one week of the proposed activities. The 100-percent surveys of new areas of disturbance shall be conducted a maximum of three times, or two consecutive times if no desert tortoises are found. During surveys, occupied desert tortoise burrows in or within 40 feet of areas to be disturbed shall be excavated using hand tools under the supervision of an authorized biologist (term and condition 3.b.). Burrows discovered in areas to be disturbed by project activities shall be collapsed or blocked to prevent entry by tortoises (any tortoises in those burrows shall be relocated first). Desert tortoises and any desert tortoise eggs found in areas to be disturbed shall be relocated in accordance with terms and conditions 3.c. and d. All handling of desert tortoises and their eggs shall be in accordance with terms and conditions 3.b., c., and d.

b. Prior to surface-disturbing activities at the Quien Sabe West Quarry, a qualified biologist shall accompany construction workers to flag the location of the tortoise-barrier perimeter fence. The biologist shall survey the route for tortoises and tortoise burrows. To the maximum extent possible, the fence shall be located so that tortoise burrows are located outside of the fenced quarry site. The fence shall be constructed before any other surface-disturbing activities occur. Once the fence is complete, the qualified/authorized biologist shall survey the enclosed area as described in term and condition 2.a. Any tortoises found shall be relocated outside the fence in accordance with terms and conditions 3.b., c., and d. After the enclosed quarry site has been cleared of tortoises, construction and operation activities may occur within the fence without the presence and monitoring of a biologist.

3. The following terms and conditions implement reasonable and prudent measure number 3:
- a. Construction and operation activities during the desert tortoise active period, March 1 through November 1, shall be monitored by a qualified biologist at the Manchester and Big Maria No. 2 quarries. If desert tortoises are found during preconstruction or other surveys at or within 0.25 mile of either of the other two quarries (Agnes Wilson and Palo Verde), a qualified biologist shall also monitor construction and operation activities during March 1 through November 1 period at the quarry or quarries at which the desert tortoises were found. The biologist shall be present during all activities during the active season that may result in take of desert tortoises at the quarry sites. The biologist shall watch for desert tortoises wandering into construction areas, check under vehicles, check at least three times per day any excavations that might trap desert tortoises, and conduct other activities necessary to ensure that take is minimized. Within 24 hours of blasting activities, the qualified biologist shall survey for desert tortoises within all areas that may be subject to falling rock and debris. Any desert tortoises or their eggs in such areas, and other desert tortoises found in harm's way at work areas shall be relocated in accordance with terms and conditions 3.b., c., and d.

b. Only biologists authorized by the Service and California Fish and Game Department shall handle desert tortoises. Reclamation shall submit the name(s) of the proposed authorized biologist(s) to the Service for review and approval at least 15 days prior to the onset of activities that could result in a take.

c. Upon discovery of a desert tortoise found on a project site, the authorized biologist shall translocate the animal the minimum distance possible within appropriate habitat to ensure its safety from death, injury, or collection associated with the project or other activities. The authorized biologist shall be allowed some discretion to ensure that survival of each relocated desert tortoise is likely. Desert tortoises shall not be translocated to lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for desert tortoises and their eggs shall adhere to protocols outlined in Desert Tortoise Council (1994 with 1996 revisions - Appendix 1).

d. The authorized biologist shall maintain a record of all desert tortoises encountered during project activities. This information shall include for each desert tortoise:

- The locations and dates of observation
- General condition and health, including injuries and state of healing and whether animals voided their bladders
- Location moved from and location moved to
- Diagnostic markings (i.e. identification numbers of marked lateral scutes)

No notching of scutes or replacement of fluids with a syringe is authorized.

e. Desert tortoises that are handled shall be marked for future identification. An identification number (using the acrylic paint/epoxy technique) shall be placed on the 4th costal scute (Fish and Wildlife Service 1992).

4. The following term and condition implements reasonable and prudent measure number 4:

Construction/operation areas shall be maintained in a sanitary condition at all times. Reclamation shall be responsible for controlling and limiting litter, trash, and garbage by placing refuse in predator-proof, sealable receptacles and removing the debris regularly from the quarry sites.

5. The following term and condition implements reasonable and prudent measure number 5:

Reclamation shall submit annual monitoring reports to the Arizona Ecological Services Field Office by December 31 of each year beginning in 1997. These reports shall briefly document for the current calendar year the effectiveness of the desert tortoise mitigation measures, actual acreage of desert tortoise habitat disturbed, the

number of desert tortoises excavated from burrows, the number of desert tortoises moved from construction sites, and information on individual desert tortoise encounters as stipulated in term and condition 3.d. The report shall make recommendations for modifying or refining these terms and conditions to enhance desert tortoise protection and reduce needless hardship on Reclamation and its contractors.

Anticipated take limits that would require reinitiation are addressed in "AMOUNT OR EXTENT OF TAKE". With careful implementation of terms and conditions the Service believes that no desert tortoises will be taken in the form of direct mortality or injury during construction and operation of the California quarries, haul routes, and stockpiles through December 31, 2005. If, during the course of the proposed action, this minimized level of lethal or injurious incidental take is exceeded, such incidental take would represent new information requiring review of the reasonable and prudent measures. Reclamation should 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 OR INJURED DESERT TORTOISES

Upon locating a dead or injured desert tortoise, initial notification must be made to the Service's Division of Law Enforcement in Torrance, California at 310/328-1516 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 animal, a photograph, and any other pertinent information. The notification shall be sent to the Division of Law Enforcement Office with copies to the Phoenix Office; and the Carlsbad Office, if the take occurs in Riverside or Imperial counties, California; or to the Ventura Office, if the take occurs in San Bernardino County, California. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact desert tortoises shall be submitted to 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 desert tortoise survive, the Service should be contacted regarding the final disposition of the animal.

#### CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of listed species. Conservation recommendations are discretionary agency activities to minimize

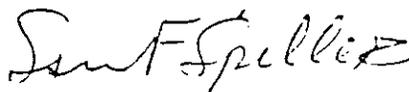
or avoid effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information on listed species. The recommendations provided here do not necessarily represent complete fulfillment of the agency's section 2(c) or 7(a)(1) responsibilities for the desert tortoise. In furtherance of the purposes of the Act, we recommend implementing the following actions:

1. Reclamation should implement the terms and conditions herein at the Arizona quarry sites, haul roads, and stockpile sites in desert tortoise habitat.
2. Reclamation should assist in implementation of the Arizona Interagency Desert Tortoise Team Management Plan.
3. Reclamation should assist in the preparation and implementation of the Northern and Eastern Colorado Desert Coordinated Resource Management Plan, and the Northern and Eastern Mojave Coordinated Resource Management Plan.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitat, the Service requests notification of the implementation of any conservation recommendations.

#### CLOSING STATEMENT

This concludes formal consultation on proposed operation of eight existing quarries and construction and operation of one quarry along the lower Colorado River downstream of Davis Dam. 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 maintained (or is authorized by law) and if: 1) the amount or extent of incidental take (from page 22) is exceeded; 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. In instances where the amount or extent of incidental take (page 22) is exceeded, any operations causing such take must cease pending reinitiation, if it is determined that the impact of such taking will cause an irreversible and adverse impact to the species. 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)(AES)  
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Director, Arizona Game and Fish Department, Phoenix, AZ  
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