CALIFORNIA STATE PRISON — RIVERSIDE COUNTY

Environmental Assessment Study

Prepared for
California Department of Corrections

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PROJECT TITLE

California State Prison
Riverside County

TYPE OF ASSESSMENT

Environmental Assessment Study

AGENCY

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Planning and Construction Division
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EXECUTIVE SUMMARY

PROJECT

This Environmental Assessment Study (EAS) has been prepared by the California Department of Corrections for the construction of a proposed 2,000-bed low medium security (Level II) prison on a site in Chuckwalla Valley in eastern Riverside County. The authorization for the construction of the proposed Riverside County State Prison is provided for in Chapter 1549, Statutes of 1982 (SB 1574) as amended by Section 7(a) and (b) of Chapter 532, Statutes of 1986 (Assembly Bill 4356 of 1986). The proposed project was first planned as a 1,700-bed high medium security (Level III) prison but was changed in AB 4356 to a 2,000-bed Level II prison because of a revised departmental needs assessment projecting a shortage of Level II beds.

A waiver of the provisions of the California Environmental Quality Act and the direction to prepare this EAS were provided in Chapter 933, Statutes of 1985 (Senate Bill 253). SB 253 was an urgency measure providing that, "... immediate expansion of the prison system by the swiftest possible means is necessary to relieve the system from current and anticipated overcrowding and to maintain the public safety and security." The California prison system is presently operating at approximately 170 percent of its design capacity. In addition to taxing the operational capacities of the existing facilities, these overcrowded conditions pose a severe safety threat to both correctional facility personnel and inmates.

Since 1982, when the Riverside County State Prison was first authorized, the Department has investigated a number of potential sites for this facility. During this time, the Department has had several public meetings with local officials and residents concerning this project and the appropriate location for a State prison. In November 1984, the Department released a draft Environmental Impact Report (EIR) on six potential sites for the proposed prison, including two in Beaumont, two in Coachella, and two near Blythe. The Department eventually decided to reject all six of these sites because of building problems, access, adjacent land use, and the availability of drinking water.

In early 1985, the Department began preparing preliminary studies of the current project site in the eastern Chuckwalla Valley area. Based upon the positive results of these studies and the support expressed by residents in Blythe, the Department has proceeded with the preparation of this EAS.

The proposed prison site is a level parcel located approximately 17 miles west of the City of Blythe, California and 3 miles south of Interstate 10 at the eastern end of the Chuckwalla Valley in Riverside County. Existing land use on the project area consists of undeveloped desert and farming. Lands surrounding the project site mainly consist of open desert. The nearest community to the site is the City of Blythe.

Preliminary plans for the proposed facility provide for the prison to be constructed in the northeastern corner of the middle section of the study area (Section 17). The prison facility is estimated to cover approximately 200 acres. The remainder of the site will be used for the continuation of agricultural uses and open space.

Access to the site will be provided by paving a two lane road as far as the project area, a distance of approximately three miles. Access from Interstate 10 will be provided by using an existing interchange.

At the design occupancy of 2,000 beds, the proposed State prison would employ approximately 650 full-time staff. These employees would be distributed over 3 shifts because of the 24-hour nature of the prison operation. If the prison is operated at 125 percent of design occupancy (the maximum design level), approximately 750 staff will be employed.

There will be work, academic, or vocational program opportunities for all inmates. Prison industries that have been tentatively planned for this facility include: chain link fence assembly, office systems (partitions) manufacturing, laundry, office furniture manufacturing, and agricultural operations. Because of the Level II classification of this facility, some inmates will be available for outside work programs on public projects.

Total project costs are currently estimated to be $129 million. Construction costs are based on current prices escalated 4 percent per year for inflation to the estimated midpoint of construction (March 1988). Costs also include an

allowance for site location and a construction contingency. Site location costs include an allowance for such factors as sources of labor, subsistence, and transportation of materials costs. The site location factor for the Blythe area is estimated to range from 4.9 to 8.4 percent of the total project construction costs.

Construction of the proposed State prison is scheduled to begin in early 1987. Based upon this schedule, the first inmates are expected to occupy the institution by mid 1988. The Department anticipates that this institution will be fully operational in approximately 2-2.5 years from the start of construction.

SUMMARY OF THE ENVIRONMENTAL ASSESSMENT STUDY

GEOLOGY

Environmental Effects

The proposed prison site consists of a nearly level parcel underlain by sands and gravels with some silt. Depth to groundwater at the site is approximately 270 feet. The project area is not near any major faults. The project area is also not subject to liquefaction, landslides, or other geological hazards.

Mitigation Measures

The project will have no direct, off-site effects on the geology of the project area so no mitigation measures are required.

HYDROLOGY

Environmental Effects

The project area is located near the middle of the Chuckwalla Valley on relatively level ground away from major drainage channels. The site is not subject to serious flooding or inundation hazards.

Mitigation Measures

The drainage system of the proposed prison will be designed to protect the project area from surface runoff from upslope of the site. The proposed

drainage system will convey storm runoff around the project to prevent major changes in the area's existing drainage pattern. The project will also be designed to prevent erosion to off-site areas due to the discharge of site runoff from the prison's storm water system.

PLANT AND ANIMAL LIFE

Environmental Effects

A large portion of the project area has been previously disturbed by agricultural development. The remaining undisturbed portion of the site supports a Creosote Bush Scrub plant community, habitat that is common to the Chuckwalla Valley. The project area does not contain any unique or particularly sensitive habitat such as desert washes or large dunes. The project area is not reported to contain any rare, threatened, or endangered plant or animal species. The project will require the removal of some areas of undisturbed habitat on the prison site and access alignment.

The overall effects of the proposed prison are expected to be minor because of the amount of remaining open space in the project area, the restricted nature of the prison operation, and the absence of any unique biological resources on the prison site.

Mitigation Measures

Construction of the proposed project will have a minor, unavoidable effect on the existing plant and animal resources in the project area. To further reduce the effects of this project on the area's biological resources, the Department will try to minimize the amount of land and vegetation disturbed by construction of the prison and access road and, where feasible, restrict vehicular movement to established roads in the project area.

AIR QUALITY

Environmental Effects

The proposed prison will result in an increase in vehicular and stationary emissions. However, these increases are not considered significant because of the relatively small volume of these emissions in comparison to those of the

entire region and the fact that the prison will be designed to meet all applicable air quality regulations. It is also anticipated that vehicular emissions will be lower than those projected for this facility because there is a high likelihood of employee and visitor carpooling.

During construction of the proposed facility, it can be expected that dust emissions will increase because of the soils and climate in this area. These emissions are expected to decrease to the existing levels once construction is completed.

Mitigation Measures

No mitigation measures are proposed beyond compliance with applicable State and Federal air quality regulations and the use of good construction practices, such as site watering, to limit dust generation.

NOISE

Environmental Effects

The project is located in a generally uninhabited area of the Chuckwalla Valley. The proposed project is not expected to affect the existing noise levels in the project area because of the absence of human receptors and the lack of noise generating activities at the prison. Noise levels at the interchange and along the prison access road will increase slightly because of increased traffic volumes. These increases are expected to be negligible.

Mitigation Measures

None required.

LIGHT AND GLARE

Environmental Effects

The proposed project will represent the only major source of light in the eastern Chuckwalla Valley. While the lights of the prison will be designed to be directed towards the inside and immediate perimeter of the prison, the prison will be an unavoidable new source of light.

The light from the prison is not expected to be a significant problem because of the absence of residents in the project area and the site's distance from Interstate 10.

Mitigation Measures

There are no feasible mitigation measures available to completely eliminate this new source of necessary prison lighting.

UTILITIES

Environmental Effects

1. Natural Gas. Based upon contacts with the Southern California Gas Company, natural gas service can be extended to the project site without causing any major disruptions to other users in the Blythe area.

2. Electricity. Representatives of the Southern California Edison Company have indicated that electrical service can be extended to the project without causing major disruptions to other users in the Blythe area.

3. Telephone. The Continental Telephone Company of California has indicated that telephone service can be extended to the project without causing major disruptions to other users in the Blythe area.

4. Solid Waste. The proposed project will produce between approximately 1,560 and 1,950 tons of solid waste per year. This waste will be disposed of at the County landfill located north of Blythe by a contract hauler. The addition of this waste to the existing waste flows at this landfill are not projected to significantly reduce the remaining life of this facility. The Department would pay a fee for the use of this landfill through their contract hauler.

   The proposed project would generate very small amounts of material that could be considered hazardous, such as engine oil and paint lacquers. This material will be stored and disposed of in compliance with the applicable State and Federal regulations.

5. Sewage Disposal. The proposed prison will generate an average of approximately 0.50 million gallons of wastewater per day. Since there is no community treatment plant within a reasonable distance of the project area, the Department will develop and operate its own on-site wastewater treatment plant.

The Department has not yet selected the final design of the wastewater treatment system. However, such system will be designed to meet the requirements of the Regional Water Quality Control Board. The plant will probably be similar to the system used in the City of Blythe. This plant would treat the wastewater to a secondary level and then discharge the effluent to on-site evaporation/infiltration pond(s) and/or be used in an agricultural irrigation system.

6. Drinking Water. There are no feasible sources of water available to the prison except for local groundwater in the Chuckwalla Valley. Based upon an extensive investigation, adequate supplies of groundwater are available to serve the proposed prison.

Use of local groundwater will probably require treatment for fluoride, arsenic, and iron. Treatment systems are available to remove these minerals. Based upon the groundwater studies of the basin, the prison's projected water demand will not cause a long-term decline in the local water table.

Mitigation Measures

1. Natural Gas. None required.

2. Electricity. None required.

3. Telephone Service. None required.

4. Solid Waste. Solid waste generated by this project is expected to be within the County's projected waste increase of the local landfill. Therefore, no reduction in the useful life of this landfill is expected as a result of this project. However, the

Department does plan to implement a recycling and salvage program which would reduce the amount of solid waste delivered to the landfill.

5. Wastewater. Generation of wastewater effluent is an unavoidable effect of the project. However, the prison will have a wastewater treatment plant that is designed and operated to meet the requirements of the Regional Water Quality Control Board and Department of Health Services.

6. Drinking Water. None required.

ARCHAEOLOGY

Environmental Effects

The project site and road alignment does not contain any known archaeological sites or historical structures.

Mitigation Measures

None required.

ENERGY

Environmental Effects

The proposed project will require the use of renewable and nonrenewable natural resources such as electricity, natural gas, and gasoline. Use of these fuels, while not significant in comparison to other uses in Riverside County, is an unavoidable effect on the project. The project is not expected to affect the availability of energy resources in eastern Riverside County.

Mitigation Measures

The proposed facility will be designed to conserve energy, including the possible installation of a cogeneration plant. Department employees will also be encouraged to form carpools to reduce gasoline usage.

1. INTRODUCTION

This Environmental Assessment Study (EAS) has been prepared by the California Department of Corrections for the construction of a proposed 2,000-bed low medium security (Level II) prison on a site in Chuckwalla Valley in eastern Riverside County. The authorization for the construction of the proposed Riverside County State Prison is provided for in Chapter 1549, Statutes of 1982 (SB 1574) as amended by Section 7(a) and (b) of Chapter 532, Statutes of 1986 (Assembly Bill 4356 of 1986). The proposed project was first planned as a 1,700-bed high medium security (Level III) prison but was changed in AB 4356 to a 2,000-bed Level II prison because of a revised departmental needs assessment projecting a shortage of Level II beds.

A waiver of the provisions of the California Environmental Quality Act and the direction to prepare this EAS were provided in Chapter 933, Statutes of 1985 (Senate Bill 253). SB 253 was an urgency measure providing that, "... immediate expansion of the prison system by the swiftest possible means is necessary to relieve the system from current and anticipated overcrowding and to maintain the public safety and security." The California prison system is presently operating at approximately 170 percent of its design capacity. In addition to taxing the operational capacities of the existing facilities, these overcrowded conditions pose a severe safety threat to both correctional facility personnel and inmates.

The purpose of this EAS is to provide governmental decision-makers and the general public with information on the direct off-site environmental effects of the proposed project. In compliance with Section 7012(a) of the Penal Code, the EAS will address the following ten areas:

1. Geology
2. Hydrology - groundwater
3. Water Quality - surface waters
4. Plant and Animal Life - endangered and rare species
5. Air Quality
6. Noise
7. Light and Glare
8. Utilities - gas, electricity, telephone, solid waste, sewage disposal, drinking water
9. Archaeology
10. Energy

The EAS will also provide information on the mitigation measures that are available to substantially lessen or avoid the proposed project's environmental effects. Pursuant to Section 7012(c) of the California Penal Code, the approval of this EAS by the State Public Works Board is the only approval required for compliance with any applicable environmental requirements. Approval of the study by the State Public Works Board shall be final and binding on all parties.

In accordance with Section 7012 (d & e) of the Penal Code, members of the Joint Legislative Committee on Prison Construction and Operations have 30 days from the receipt of this report to adopt a recommendation on the EAS. The Committee is required to hold a public hearing on this study in the vicinity of the project site. This hearing will be held in Blythe since it is the community nearest to the eastern Chuckwalla Valley area. Members of the Riverside County Board of Supervisors and the Blythe City Council will be invited to participate in this meeting. The EAS shall be deemed to have received a recommendation of concurrence if the Committee does not take action on the study within 30 days of its submittal to the Committee.

Copies of this environmental assessment study are available for public review at the following locations:

California Department of Corrections
Planning and Construction Division
630 K Street
Sacramento, California 95814
Contact: Bernd Beutenmuller
Office of Government and Community Relations
Telephone: (916) 323-0731 or ATSS 473-0731

Offices of the Riverside County Board of Supervisors
Riverside County Board of Supervisors
4080 Lemon Street, 14th Floor
Riverside, California 92501-3655
Telephone: (714) 787-2717

Office of Patricia Larson, Supervisor 4th District
Riverside County Board of Supervisors
District Office
46-209 Oasis Street
Indio, California 92201
Telephone: (619) 342-8211

Offices of the Blythe City Council
Blythe City Hall
220 North Spring Street
Blythe, California 92225
Telephone: (619) 922-6161

Riverside County Main Library
3581 Seventh Street
Riverside, California 92501
Telephone: (714) 787-7201

Palo Verde District Library
125 West Chanslor Way
Blythe, California 92225
Telephone: (619) 922-5371

Questions about the scope, content, or approval process for this environmental assessment study for the proposed State prison in eastern Chuckwalla Valley should be directed to:

Robert A. Sleppy, EAS Project Manager
Department of General Services
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Sacramento, California 95814
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Department of Corrections
Planning and Construction Division
Government and Community Relations Branch
630 K Street
Sacramento, California 95814
Telephone: (916) 323-0731 or ATSS 473-0731

2. PROJECT DESCRIPTION

A. Project Location

The proposed prison site is located approximately 17 miles west of the City of Blythe, California and 3 miles south of Interstate 10 at the eastern end of the Chuckwalla Valley of Riverside County. Based upon engineering and environmental studies, the Department of Corrections has selected the lands in the general vicinity of the northeast corner of Section 17 (Township 7 South, Range 20 East, SBBM) for the construction of the prison and related facilities. Figure 2-1 provides a regional map of the project area and Figure 2-2 displays the prison site. The prison and its related facilities will cover approximately 200 acres. Some of the existing agricultural lands in Section 17 will be used as a prison industry program.

B. Project History and Public Involvement

The Legislature first authorized construction of a prison complex in Riverside County in 1982. Since that authorization was received, the Department has looked at over 30 sites in Riverside County in its search for a suitable location for the proposed State prison. During that initial phase, the Department contacted either individually or in community meetings a wide range of local officials and residents regarding the appropriate site for this facility.

In November 1984, the Department released a draft Environmental Impact Report (EIR) on six potential prison sites in Riverside County, including two sites in Beaumont, two sites in Coachella, and two sites in Blythe. A final EIR was not released because none of the six sites were considered suitable. Studies on the Beaumont sites revealed the need for extensive grading and other earthwork while the Coachella sites were eliminated because of the potential for soil liquefaction due to their proximity to the San Andreas Fault.

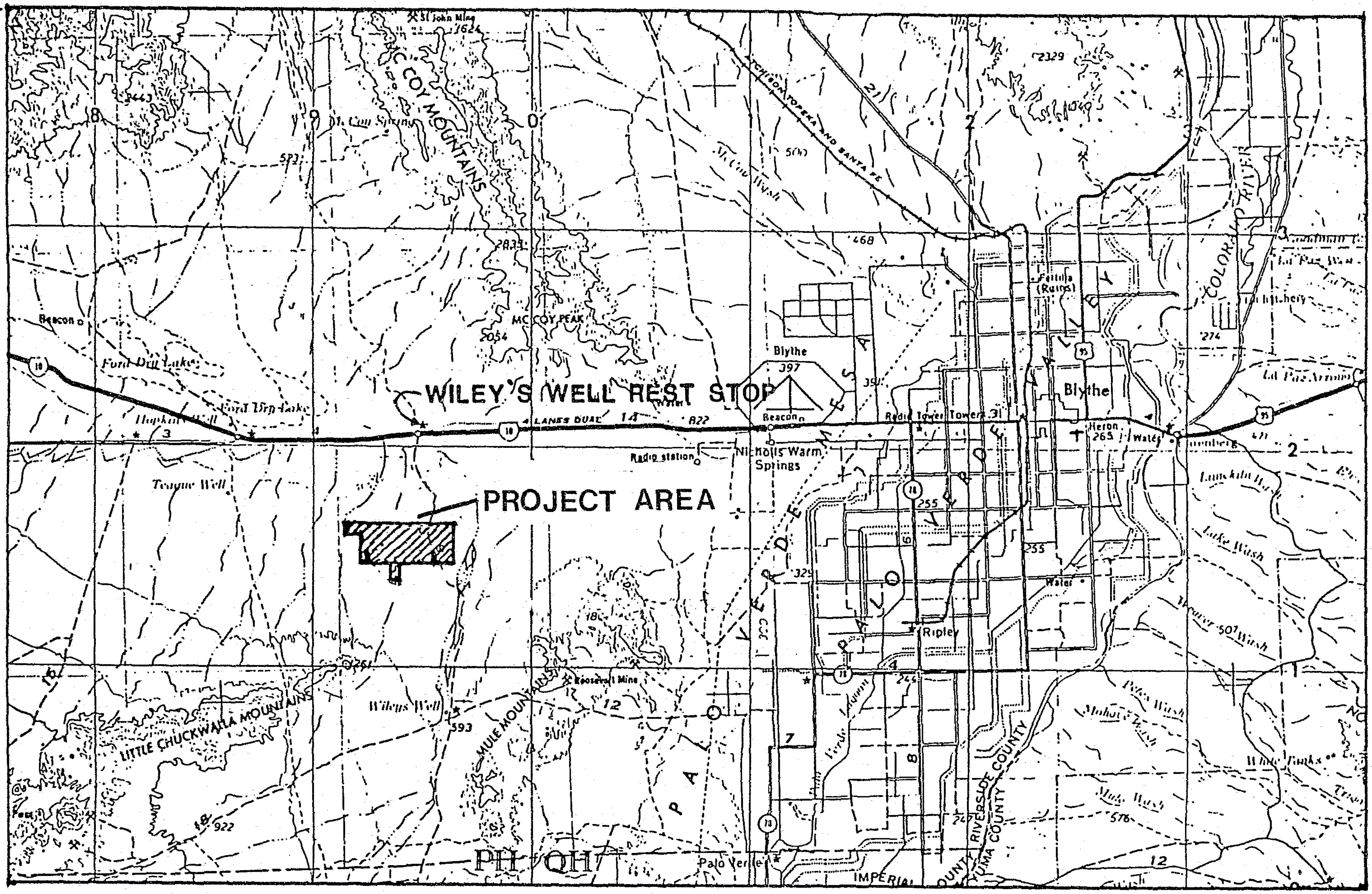
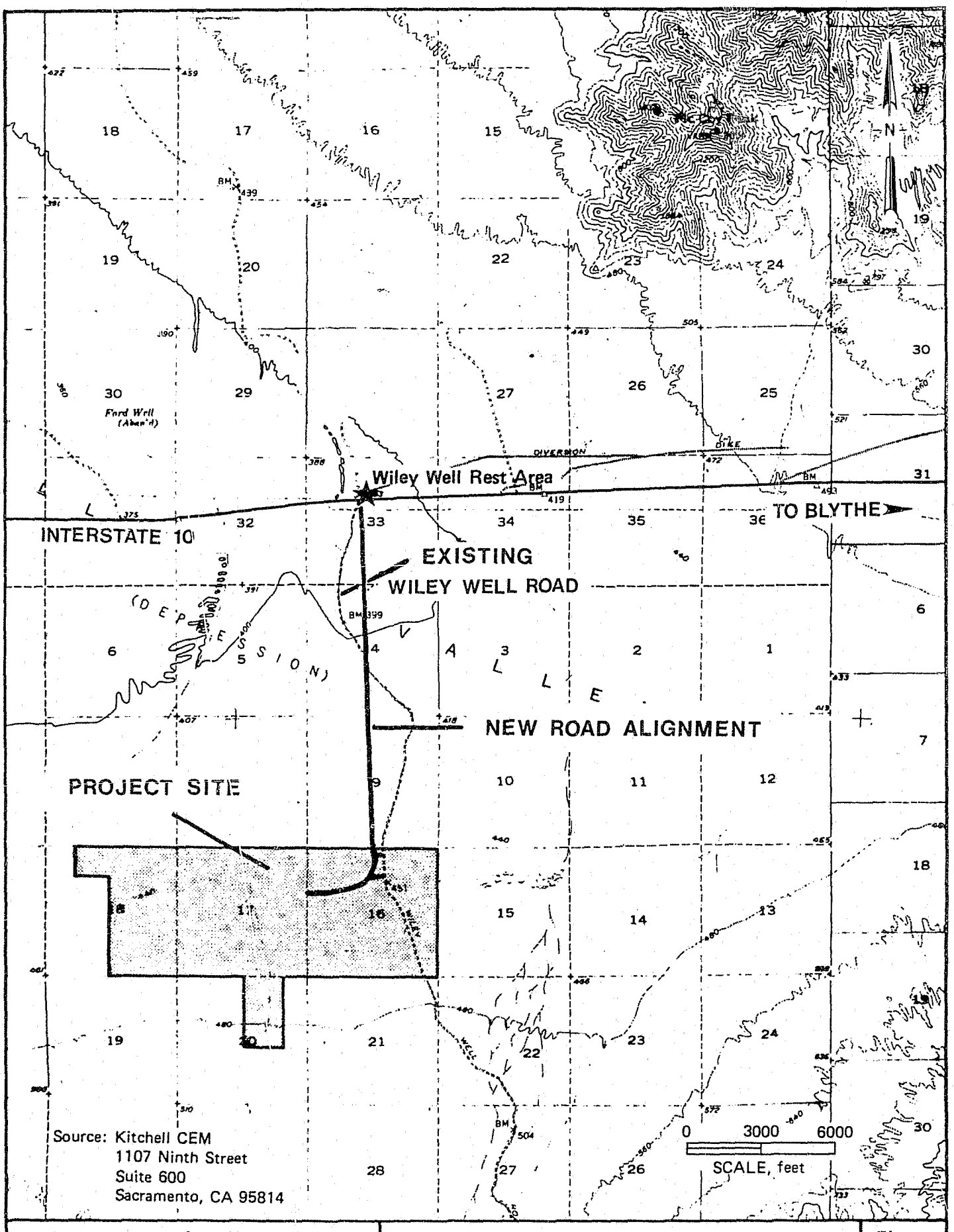


FIGURE 2-1 REGIONAL SITE LOCATION



Project: WILEY'S WELL AREA	PROJECT LOCATION	Fig. 2-2

The Sixth Avenue site in Blythe was eliminated because of its proximity to existing and planned residential development and potential access problems. Further consideration of the Airport site in Blythe was deferred due to the lack of an available water supply.

In early 1985, the Department began an investigation of the current project site in the eastern Chuckwalla Valley. Because of concerns regarding the water supply for this site, the Department conducted extensive groundwater studies prior to beginning preparation of the EAS. Based upon the favorable results of these initial water studies and the continuing support expressed by the community of Blythe, the Department directed the preparation of this report in April 1986.

There has been continuing contact with the local community since the Department decided to proceed with the preparation of this EAS. This contact includes a community meeting held in May 1986 to provide information on the project and to receive comments regarding the scope of the EAS. The Department also sent letters to potentially interested public agencies and other individuals announcing commencement of the EAS and soliciting comments on the scope of this report. The comments received as a result of these contacts have been considered in the preparation of this EAS.

C. Project Characteristics

Description of Security Levels

The Department of Corrections uses a ranking system of I through IV to designate the range of institutional security levels. This system, which has been in use since 1980, provides a uniform standard for evaluating inmates and assigning them to housing at security levels commensurate with their individual custodial, medical, and/or psychiatric requirements. The classification system is structured so that each inmate is evaluated on individual characteristics and then compared to other inmates within the State system. The Department gives each inmate an initial score and periodically reassesses that score. At a minimum, the Department reevaluates each inmate's

score once a year. Through this classification plan, the Department of Corrections endeavors to place inmates in the lowest possible classification. The Department's various security classifications are described as follows:

Level I

Level I is the lowest level of inmate custody, consisting of dormitory housing surrounded by an indirectly supervised perimeter or without a s ecure perimeter. Typically, small Level I security facilities are established to operate in conjunction with Level III and/or Level IV prisons; inmates in Level I facilities perform appropriate support service functions. Conservation camps and community based re-entry beds are included in Level I units. Level I housing units are normally located outside the secure perimeter in combined security level facilities.

Level II

Level II is more restrictive than Level I. Housing characteristics for Levels I and II are basically the same; however, Level II facilities have a more secure perimeter, including a double fence, that is constantly supervised by armed correctional officers in perimeter towers. Level II housing units normally consist of large multi-inmate dormitories.

Level III

The institution for this classification level requires celled housing and more secure perimeters including double fencing, increased lighting, and additional towers that are constantly supervised by armed correctional officers. Generally, inmate movement within the institution is more closely supervised and controlled.

Level IV

Level IV classification requires the most restrictive and secure environment. Housing consists of cells that are surrounded by a secure perimeter including walls, fencing, increased lighting, and towers that are constantly supervised by armed correctional offices. Level III and

Level IV facilities are routinely provided with gun coverage in the recreational yards. Correctional officers are provided with access to guns in the housing units, gymnasium, and dining areas. Inmate movement is strictly controlled. Housing units in Level IV facilities are structured to provide the highest level of inmate manageability: administrative segregation of individuals or groups of varying size is possible for those inmates who require carefully controlled isolation from the rest of the inhabitants. Level IV facilities employ electronic intrusion detection systems in perimeter areas.

Project Design

The proposed State prison in Riverside County will be designed to accommodate (at 100 percent design bed capacity) 1,992 Level II inmates and 8 Level I inmates (facility firehouse staff) for a total of 2,000 beds. Present Department of Corrections policy allows the temporary overcrowding of Level II facilities up to 125 percent of design bed capacity. Capacity is increased in the dormitories by simply adding extra beds to each dormitory. The Department normally does not overcrowd the Level I facilities (the firehouse in this case). If the proposed prison were overcrowded to 125 percent of the design bed capacity the facility would contain approximately 2,500 Level II inmates. It is important to note that the Department initially designs and constructs the prison's utility and operational systems to accommodate the projected overcrowding levels.

The inmate housing units will require approximately 25,000 square feet per building. These housing units will be one story high with an interior mezzanine. Eleven 172-bed Level II dormitory housing units will be constructed within the prison's secure area. There will also be a 100 cell administrative segregation unit.

Central administration and staff service functions for the institution, such as the prison's administrative office, business services, personnel, procurement, and staff dining, will be located outside the institution's security perimeter.

All warehousing and some maintenance operations will be located outside the security perimeter, including the Prison Industry Authority (PIA) warehouse,

the general warehouse, the firehouse, vehicle maintenance, and a building maintenance facility. All trucks and vehicles will be cleared for passage at a security checkpoint before approaching the support services buildings. No vendor or service vehicles will cross the security perimeter. Institutional vehicles will transfer goods and equipment into and out of the security perimeter through a central vehicle sallyport (a sallyport is a chamber with locking doors or gates at both ends that provides controlled entry through the institution's outside security perimeter fences).

All visitors and prison staff will cross the security perimeter through a central pedestrian sallyport. Outside the perimeter fence will be a Visitor Processing Center and a staff identification entrance. Visitor parking and staff parking will be located in separate lots.

A building site will be identified for a Visitor Center. It will be located within a reasonable distance of the Visitor Processing Center, but away from the main flow of the institution. The Center will be operated by a private, nonprofit agency. The Visitor Center provides inmate visitor services such as a day care center and transportation assistance.

Prison Security

The Level II facilities and accompanying program and support services buildings will be surrounded by 2 parallel 12 foot chain link fences. Each fence will be topped with breakaway extension arms topped with barbed tape wire and other security measures. The 2 security fences are normally spaced approximately 20 feet apart. Perimeter towers will be located every 1,100 feet around the outside fence. These towers are occupied by armed correctional officers on a 24 hour per day basis.

A "no-man's land" zone, never less than 50 feet wide, will be located inside of the double-fenced security perimeter. Family visiting units will be the only structures located in this zone. Patrols are also conducted around the outside perimeter of the institution on a 24-hour basis by security staff.

The institution's internal security system provides for surveillance of both inmates and people entering the security perimeter. The management of visitors, repair people, and vendors begins at the prison's entrance building

where these individuals are identified, screened, and passed through a metal detector. From there, these people would be limited to specific areas of the facility: visitors are directed to the appropriate visiting areas; vendors would only have access to necessary offices and warehouses; and repair personnel would be escorted directly to their respective places of work.

Prison Staffing

At the design bed capacity of 2,000 beds, the proposed State prison would employ approximately 650 full-time staff. This estimate includes correctional officers and the administrative, support, and PIA staff that would be needed to operate this facility. This estimate also includes relief staff used to cover employee absences for sick leave, vacation, training, etc. If the prison were overcrowded to the 125 percent occupancy level it would employ approximately 750 staff. The Department of Correction's goal for new institutions is to recruit 50 percent of the entry level staff from the local area. Success in meeting this goal will depend on the availability of qualified persons who are interested in working at the prison. Experienced correctional personnel will be transferred from existing facilities to the Riverside County prison. Additional staff will be hired, as is necessary, from outside the local area.

Since the prison will be operating continuously, staff will be distributed among three eight-hour shifts (or watches) per day, seven days a week. In a typical 24-hour period with the prison operating at 100 percent of design capacity, about 286 staff will work the day shift from 7:00 a.m. to 3:00 p.m. (second watch). About 137 staff will work the shift from 3:00 p.m. to 11:00 p.m. (third watch) and 48 will work from 11:00 p.m. to 7:00 a.m. (first watch). The PIA programs will employ approximately 75 persons, who will generally work the day shift from 7:30 a.m. to 3:30 p.m. Administrative and other ancillary staff, which are included in the total for the second watch above, generally work during the day shift from 8:00 a.m. to 4:15 p.m. Prison staffing levels, especially during the second watch, are generally lower on weekends.

Prison Operation

The proposed prison will be largely self-sufficient, having its own fire station, health care facilities, laundry, and maintenance shops. Mutual aid agreements with local law enforcement agencies, hospitals, and fire departments will be negotiated by the Department of Corrections. As with other correctional institutions, the California State Prison in Riverside County will rely on nearby communities such as Blythe for a variety of locally available goods and services. Other prisons typically spend from 5 to 25 percent of their yearly budgets (excluding salaries) on locally purchased goods and services. Staff salaries (including benefits) at this facility are expected to total approximately $24 million per year.

Inmate Programs

There will be work, academic, or vocational program opportunities for all inmates. Prison industries that have been tentatively planned for this proposed State prison include: Chain link fence manufacturing; agriculture; ornamental horticulture; office systems manufacturing; a furniture factory; laundry; administration; maintenance shops; and warehousing operations. Prison industry programs are projected to employ approximately 800 inmates. Select inmate work crews may also be available for local public projects on a daily basis. Outside work crews are always supervised by security staff. The facility will also offer various vocational and educational programs to the inmates.

Visitation

Visiting hours and days will be established that enable all inmates to receive visitors without interfering with participation in work and training programs and other activities. Tentative visiting hours for the proposed State prison will be Monday, Thursday, and Friday between 1:00 p.m. and 7:00 p.m. and Saturday and Sunday between 9:00 a.m. and 3:00 p.m. No visitation will generally be allowed on Tuesdays and Wednesdays. Based upon operations at other State prisons, the Department anticipates that this prison will receive approximately 300 visitors per day at 100 percent occupancy and 375 visitors per day at 125 percent occupancy. These estimates include both inmate visitors and individuals conducting business at the prison.

All visitors will be required to enter through the Visitor Processing Center where they will be identified, screened, passed through a metal detector, and then escorted to the appropriate visiting area. Visitors typically receive a second screening before being allowed to enter contact, non-contact, or family visiting areas.

The identity of inmates will be verified before they enter visitation areas. At the end of each visit, each inmate will be given a complete, unclothed body search. Family visits for eligible inmates take place in small apartments or house trailers located inside the perimeter fences. Parking areas for the anticipated number of visitors (and staff) will be provided by the Department on the prison grounds.

Construction Costs

Total project costs are currently estimated to be $129 million. Construction costs are based on current prices escalated 4 percent per year for inflation to the estimated midpoint of construction (March 1988). Costs also include an allowance for site location and a construction contingency. Site location costs include an allowance for such factors as sources of labor, subsistence, and transportation of materials costs. The site location factor for the Blythe area is estimated to range from 4.9 to 8.4 percent of the total project construction costs.

Construction/Occupation Schedule

The initial construction phase of the proposed State prison in Riverside County is planned to begin in early 1987. Based upon this schedule, the first inmates are expected to occupy the institution by mid 1988. Occupancy of the prison will proceed in phases as housing units are completed. The Department anticipates that this institution will be fully operational in approximately 2 - 2.5 years from the start of construction.

A. INTRODUCTION

General Site Characteristics

Project Site

The proposed project area consists of 1,720 acres of land located approximately 3 miles south of the Interstate 10 near the Wiley Well road interchange. Existing land use on this site consists of agricultural production (jojoba) and open space. The entire project area is presently in private ownership.

Based upon engineering and environmental studies, the Department has selected an area near the northeast corner of Section 17 for the proposed prison site. Figure 2-2 displays the boundaries of the project area and the proposed location of the prison site within this area.

The topography of the project site is nearly flat. The drainage pattern on the site is to the north towards Ford Dry Lake north of Interstate 10. No major drainages pass over the project area. A major regional drainage course, the Wiley Well wash, is approximately a mile east of the site.

The climate of the area is typical of an eastern California desert area. Precipitation is usually less than four inches per year. Temperatures in the area range from an approximate low of 26 degrees F. to an approximate high of 120 degrees F.

Vegetation in the project area is extremely sparse because of the low rainfall and warm climate of the eastern Chuckwalla Valley. The dominate plant community is Creosote Bush Scrub, a community common to the eastern Riverside County area. Portions of the project area are under cultivation with crops of jojoba. The project area does not contain any reported rare, threatened, or endangered species.

Land Use

Land use adjacent to the project area is generally open, undeveloped desert. The nearest developed lands consist of a large jojoba plantation approximately a mile south of the project site. Other development in the project area includes the rest area at the interchange on Interstate 10, a large power line corridor approximately a mile north of the site, and a few unpaved roads.

A small recreational area, the U.S. Bureau of Land Management's (BLM) Wiley Well campground, is approximately five miles southeast of the project site. Although there are other private parcels in the project area, the majority of the lands in the eastern Chuckwalla Valley area are within the jurisdiction of the BLM.

Approximately the southern two-thirds of the study area lies within an area identified by the BLM as the Little Chuckwalla Mountains wilderness study area (WSA). This WSA was inventoried in 1979 as part of a program to identify remaining roadless areas in the California Desert. As noted in this section, portions of the study area are already developed for agricultural uses. These areas lie within the boundaries of the WSA. Additional developed agricultural lands in Sections 20 and 28 to the south of the project area also lie within this WSA.

The BLM is presently completing a study of the WSA's in the California Desert that will eventually be submitted to Congress for the consideration of which wilderness areas to designate. The BLM does not have jurisdiction over the use of the privately owned lands within the Little Chuckwalla Mountains WSA, such as those in the project area.

The Riverside County Planning Department has indicated that the County's General Plan designates the site as "Desert Areas." The Desert Areas designation allows government uses. The County has also indicated that the zoning designation for this property is W-2-10, Controlled Development Areas, and N-A, Natural Assets. Land Use Ordinance No. 348, Section 18.2 exempts public projects from needing County approval. The County concluded that the

proposed prison would be consistent with the County General Plan Open Space and Conservation map, with the County Composite Environmental Hazards Map, the County Resources Map, and Land Use Ordinance No. 348.R-1/

Access

Access to the general vicinity of the project area from Interstate 10 is from an interchange at the Wiley Well rest area. Access to the project site will be provided by constructing a new, all weather two lane paved road south from the existing interchange to the project area. The design and construction of the access road and its connection with the existing Wiley Well interchange will be coordinated with the California Department of Transportation, the Riverside County Road Department, and the BLM. The alignment of this new road is shown on Figure 2-2.

Traffic volumes in the project area are currently very low, with the exception of the higher visitation times at the Wiley Well campground during January, February, and March. Even during these months there is a very low number of vehicles using the Wiley Well road.

Traffic volumes on Interstate 10, a divided four lane freeway, are also generally low. The latest annual average daily traffic (ADT) count on the freeway near the Wiley Well interchange was 9,000 vehicles in a 24 hour period.R-2/ The main use of this interchange is for vehicles going to the rest area on the north side of the highway. The most recent count of vehicles exiting the rest area is 570 in a 24 hour period in March 1983. Use of the westbound off-ramp, which will also serve the project site, was 260 vehicles in the same 24 hour period. The volume of vehicles using the other on and off-ramps was similar. These volumes are well below the interchange's design capacity.R-3/

The peak period for traffic at this intersection would occur on weekday mornings from approximately 6:30 to 8:00 a.m. Based upon a worst case situation wherein all of the staff on the second watch (day shift and administrative staff) and in the prison industries programs are arriving for work, approximately 360 vehicles would exit Interstate 10 westbound at the

Wiley Well road interchange. Because of differences in the starting times of different program areas at the prison, this peak period would occur over approximately an hour and a half.

Actual occupancy rates for vehicles traveling to this facility, particularly employees, should be considerably higher than the single occupancy rate used above. For example, the State prison at Tehachapi, which is located several miles from a major metropolitan area (Bakersfield), has vehicle occupancy rates ranging from 2.5 to 3.5 persons per vehicle. Since it is anticipated that a high percentage of the prison staff will live in the Blythe area, there is a high probability of employees carpooling to the proposed prison.

The proposed project is expected to have only a minor effect on the Wiley Well interchange because of its current low usage and the comparatively low peak traffic period generated by the prison. Employee carpooling, which is anticipated by the Department, will further minimize the effects of the project on this interchange.

Visual

The proposed prison will consist of several buildings clustered on an approximately 200 acre site in the general vicinity of the northeastern portion of Section 17. The tallest structures will be the perimeter towers which will be approximately 25-30 feet high. Other structures in the prison area will be low one or two story buildings. The inmate housing units will be similar to medium-sized warehouses. Building materials at the prison will be predominantly concrete. Most of the buildings will be unpainted. The only other notable structure at the prison will be the double security fence, which is made out of galvanized wire. The prison will generally present a low, clustered set of buildings with non-reflective surfaces.

The buildings on the project site will be located approximately three miles from the closest point to Interstate 10, the only frequently traveled highway in the area. Views of the prison will be possible during daylight hours from between a point approximately seven miles east of the rest area and just before the rest area. In this area the highway is upslope from the prison site. However, as noted, the prison would be a great distance from the highway along this portion of Interstate 10.

From the rest area westward, direct views of the prison are limited because of existing vegetation and low intervening slopes of the valley floor. Once again, any view of the prison on this portion of the interstate would be at a long distance.

The light and/or glow of the prison's lights would be visible to travelers on Interstate 10 in the eastern Chuckwalla Valley. These views would be moderated by the inwardly directed nature of the prison's lighting system and the distance of the facility from the highway.

INTRODUCTION REFERENCES

R-1/ Slavia Caric, Associate Planner, Letter dated May 15, 1986, Riverside County Planning Department.

R-2/ 1985 Traffic Volumes on California State Highways, California Department of Transportation, Page 30.

R-3/ Personal Communication, Mark Davey, District 11, California Department of Transportation.

B. GEOLOGY

ENVIRONMENTAL SETTING

Regional Geological Setting

The site, as shown in Figures 2-1 and 2-2, lies on a relatively flat alluvial fan within the southeast portion of the Chuckwalla Valley. The valley is bounded on the south by the Chuckwalla, Little Chuckwalla, and Mule Mountains; on the north by the Little Maria, Coxcomb, Palen, and Granite Mountains; on the west by the Eagle Mountains; and on the east by the Mule and McCoy Mountains. Surface elevations range from a low of about 350 feet mean sea level (msl) at Ford Dry lake to a high of about 4,500 feet msl in the Chuckwalla Mountains. Chuckwalla Valley forms a closed basin with surface drainage from all directions toward the playa (ephemeral) lakes located near the center of the valley.R-1/

The project site is situated upon Quaternary deposits (Qal) found at the surface throughout most of the Chuckwalla Valley (see Figure B-1). Unconsolidated playa (lake bed) deposits (Ql) also cover some lowland areas of the valley. Eolian sand (Qe) has formed dunes in some parts of the Chuckwalla Valley. The thickness of these sand and silt deposits ranges from a few inches to several feet in depth. Sand dunes in the Chuckwalla Valley also vary in thickness, ranging from a thin veneer to dunes several feet high.R-2/

The older alluvial (QTc) fan deposits in the Chuckwalla Valley consists mainly of gravel but may include all size ranges from boulders through clay. These deposits, which surround each of the local mountain ranges, may extend to significant depths in the valley. For example, well logs from the project area indicate alluvium to depths of over 1,000 feet.R-3/

Other older formations in the project area include the Bouse formation (Tb) and fanglomerates. The Bouse formation is a marine to brackish water deposit of later Tertiary age. The Bouse formation includes a sequence that contains the following materials: a marl (silt cemented by calcium carbonate) at the base, overlain by interbedded sand, silt and clay, and a tufa (limestone)

EXPLANATION

CENOZOIC — QUATERNARY

QUATERNARY DEPOSITS

Holocene; undiff alluvium (Qal); unconsolidated clay, and gravel of modern channels, low terrace colluvial slopes of the Colorado River and its t washes

Holocene; eolian sand (Qe); windblown sand comps and stabilized dunes; unconsolidated, well sorted crossbedded

Late Pleistocene to Holocene; playa deposits (ql) silt, sand, clay and evaporites deposited in closed basins; unconsolidated.

ALLUVIAL DEPOSITS OF THE COLORADO RIVER AND ITS TRIBUTARIES

Pliocene to late Pleistocene; Colorado River fluvial deposits (QTcb, Qtd, Qtc); poorly to moderately consolidated fluvial silt and clay, and sand and gravel derived from foreign igneous sources; silt and clay is stratified but non-crossbedded; sand and gravel is well rounded, stratified, nd crossbedded.

Pliocene to late Pleistocene; alluvial fan deposits (QTfa, Qtfc, Gtc); poorly to moderately consolidated silt, sand, and gravel; poorly sorted, angular to subrounded igneous, metamorphic and volcanic clasts of local origin.

TERTIARY

BOUSE FORMATION

Pliocene; marine (estuarine) deposits; basal gravelly marl and coquina are poorly to well consolidated, stratified, and locally crossbedded; interbedded silt, sand, and clay is poorly to moderately consolidated, and stratified and sand is locally crossbedded. Calcareous tufa is draped on the bedrock as a shoreline deposit throughout the sequence.

TERTIARY FANGLOMERATES

Miocene to Pliocene; alluvial fan deposits; well consolidated sand, silt, and gravel; poorly sorted, angular to subrounded igneous, metamorphic and volcanic clasts of local origin locally overlain by volcanic rocks.

VOLCANIC EXTRUSIVE ROCKS

Oligocene to Pliocene (?) rocks ranging from silicic to mafic in composition; includes flows, breccias and tuffaceous sediments

VOLCANIC INTRUSIVE ROCKS

Oligocene (?) to Pliocene, intrusive rocks ranging from silicic to mafic in composition; includes various hypabyssal rocks, such as stills and dikes

MESOZOIC — CRETACEOUS

METAVOLCANIC ROCKS

Late Cretaceous; predominately mafic phyllite with minor schist; includes metamorphosed silicic, intermediate, and mafic flows and breccias.

GRANITIC INTRUSIVE ROCKS

Late Cretaceous; predominately porphyritic quartz monzonite and granodiorite with minor quartz diorite, leucocratic quartz monzonite, aplasite, hornblende diorite, schist, amphibolitic schist, and augen gneiss. Locally intruded by coarse grained mafic dikes. Locally metamorphosed. Also included early Tertiary granitic rocks.

McCOY MOUNTAINS FORMATION

Late Cretaceous; nonmarine sedimentary deposits; arkose, subarkose; lithic arkose, conglomerate, mudstone, siltstone, and volcanic alronite. Regional low-grade metamorphism has resulted in incipient recrystallization and slight deformation throughout the unit.

JURASSIC

HYPABYSSAL ROCKS

Jurassic; rhyodacite porphyry containing scattered roof pendants of volcanic and sedimentary rocks. Includes allochthonous rocks (diorite, andesite, and quartz latite porphyry) and sedimentary rocks derived from hypabyssal rocks, sandstone and conglomerate. Unit is slightly metamorphosed with partial recrystallization.

PRECAMBRIAN

METAMORPHIC ROCKS UNDIFFERENTIATED

Precambrian; schist, including quartzo-feldspathic schist, and gneiss, including augen gneiss, quartz gneiss, quartz monzonite gneiss.

GRANITIC ROCKS, UNDIFFERENTIATED

Precambrian; granite, granite porphyry, melagranite, and granite gneiss

SYMBOLS

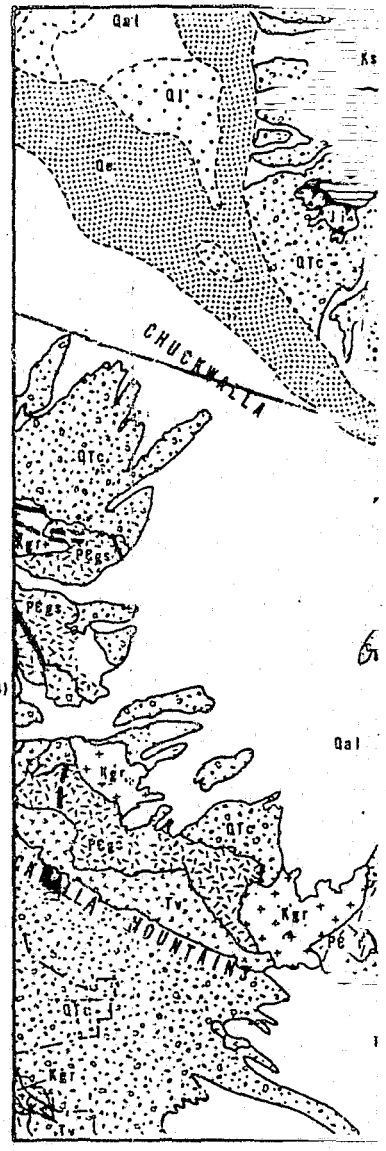
Contact; dashed where approximately located

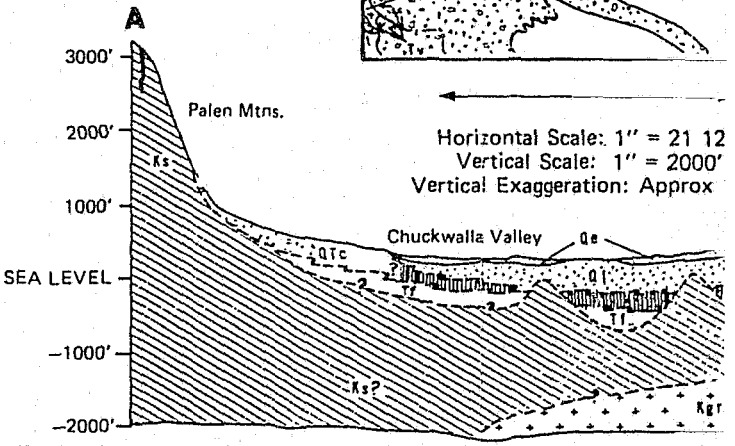
Fault; dashed where approximately located, dotted where concealed, queried where existence questionable

Reverse or thrust fault; barb on upper plate, pointing down fault dip.

Geology modified by SDG&E (1976), after Haxel and Dillon (1973), Jennings (1967), Metzger and others (1973), Pelka (1973), and Wilson (1960)

Subsurface geology: Chuckwalla Valley after Rotstein (1974)





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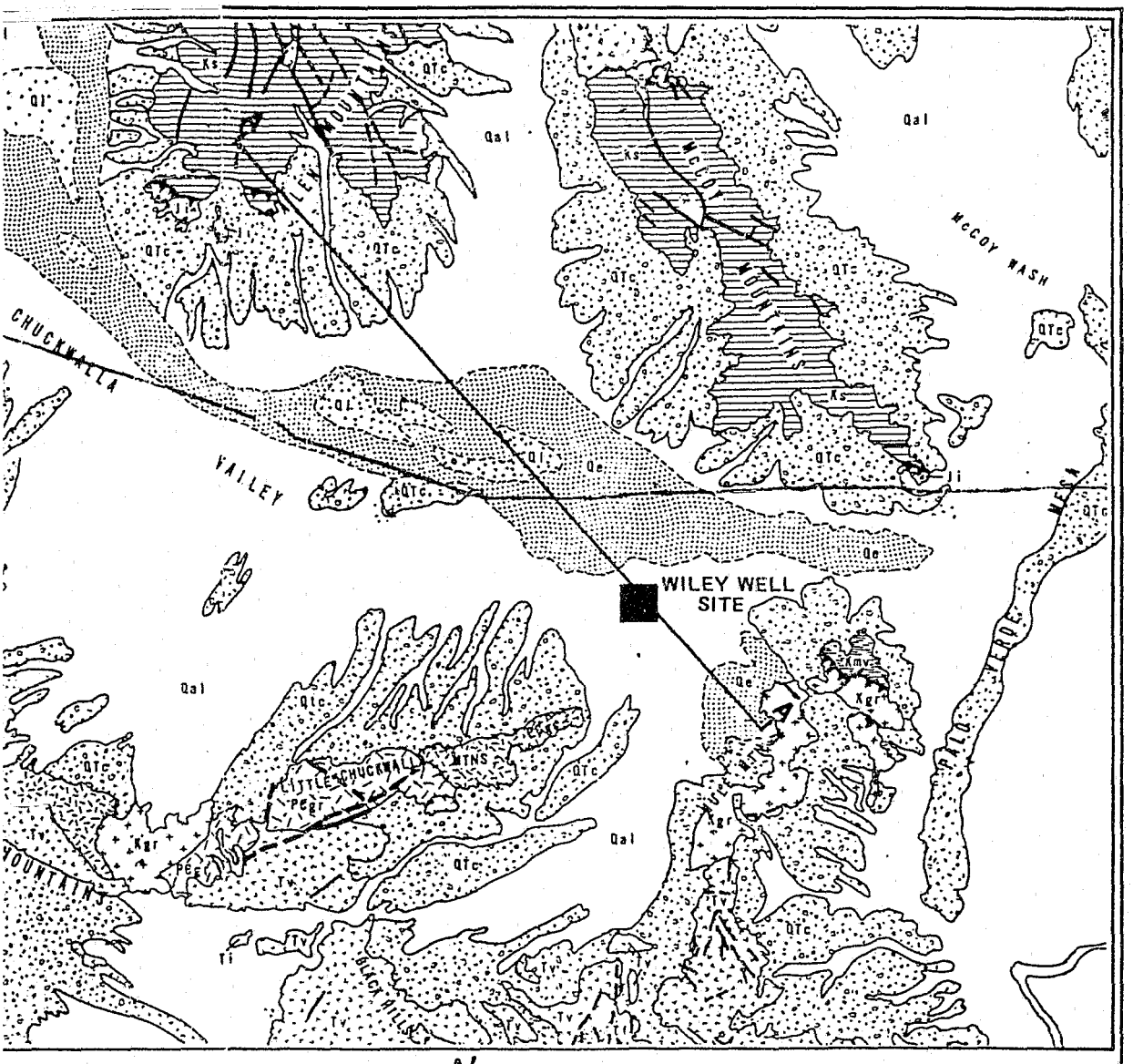
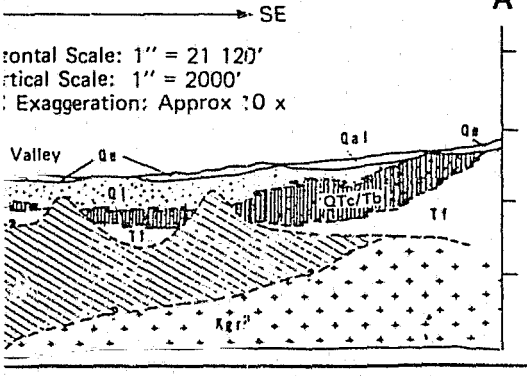
Vertical Scale: 1" = 2000'
Vertical Exaggeration: Approx





0 5 10

SCALE (miles)

Woodward-Clyde Consultants

GEOLOGIC MAP OF THE SITE VICINITY

Project No. 41795C

CSP RIVERSIDE - WILEY WELL

Fig. B-1

deposit near the top, which is transitional with older alluvium. While not confirmed at the project site, Bouse Formation is speculated to occur at depth in the Chuckwalla Valley below the older alluvial layers.R-4/

Beneath the Bouse formation and/or Older alluvium, Tertiary-age fanglomerates of the Osborne formation were deposited upon bedrock. These units are conglomerates, chiefly gravel to cobble sizes, with sands and silts also present.R-5/

Bedrock units range in age from Precambrian (older than 600 million years) to Cretaceous (about 60 to 80 million years old) in the mountains surrounding the project site. These units also extend beneath Chuckwalla Valley where alluvial deposits are found at the surface. These bedrock units include: Precambrian granitic and metamorphic rocks in the Chuckwalla and Little Chuckwalla Mountains; Cretaceous sedimentary, and metamorphic rock units in the Palen and McCoy Mountains; Cretaceous granitic rocks in the Chuckwalla, Little Chuckwalla, and Mule Mountains; and Cretaceous metavolcanic rocks in the Mule Mountains. These rock units have been deformed by a previous period of tectonism particularly in areas where older units, including thrust faults, are found.R-6/

Regional Seismic Setting

The project site is in a region of relatively low historical earthquake activity compared to areas to the east and west. To the east, the Intermountain Seismic Belt (ISB) extends to within 60 to 120 miles of the site. The ISB is considered to represent a broad active margin between the Basin-and-Range Province and the Colorado Plateau. To the west and southwest of the site lies the active plate margin separating the North American and Pacific plates. The San Andreas fault is considered to be the primary active component of this margin, but active tectonic deformation and associated earthquake activity is found within a broad zone in southern California extending from the continental shelf offshore as far east as the San Jacinto and San Andreas fault zone. The closest approach to the site of this active margin is the San Andreas fault and related faulting adjacent to the Salton Sea, a distance of approximately 47 miles.R-7/

The region in which the proposed project area is located is characterized by a very low level of historical earthquake activity. In recent time, 1932 to the present, no events of a magnitude greater than 4.0 have occurred in the project area. However, there have been occasional events in the magnitude of the 4.0 to 7.0 range farther southeast and southwest of the Blythe area. One of the largest recorded earthquakes to occur in the general project area was the Imperial Valley event in 1979. This event has been estimated to be a magnitude 6.6 earthquake. Intensities in the Blythe area were reported to be a level V, which is a low to moderate level.R-8/

The location of regional faults in the project area is displayed on Figure B-2. Recorded seismicity has been associated with the San Andreas, Blythe Graben, Blue Cut, and Sheep Hole faults. The remainder of these faults, the Salton Creek and the Chuckwalla Mountain faults, have no recorded seismicity associated with them, but are inferred to disrupt Quaternary deposits. Table B-1 lists the characteristics and likelihood of an earthquake occurring on any of these faults.R-9/

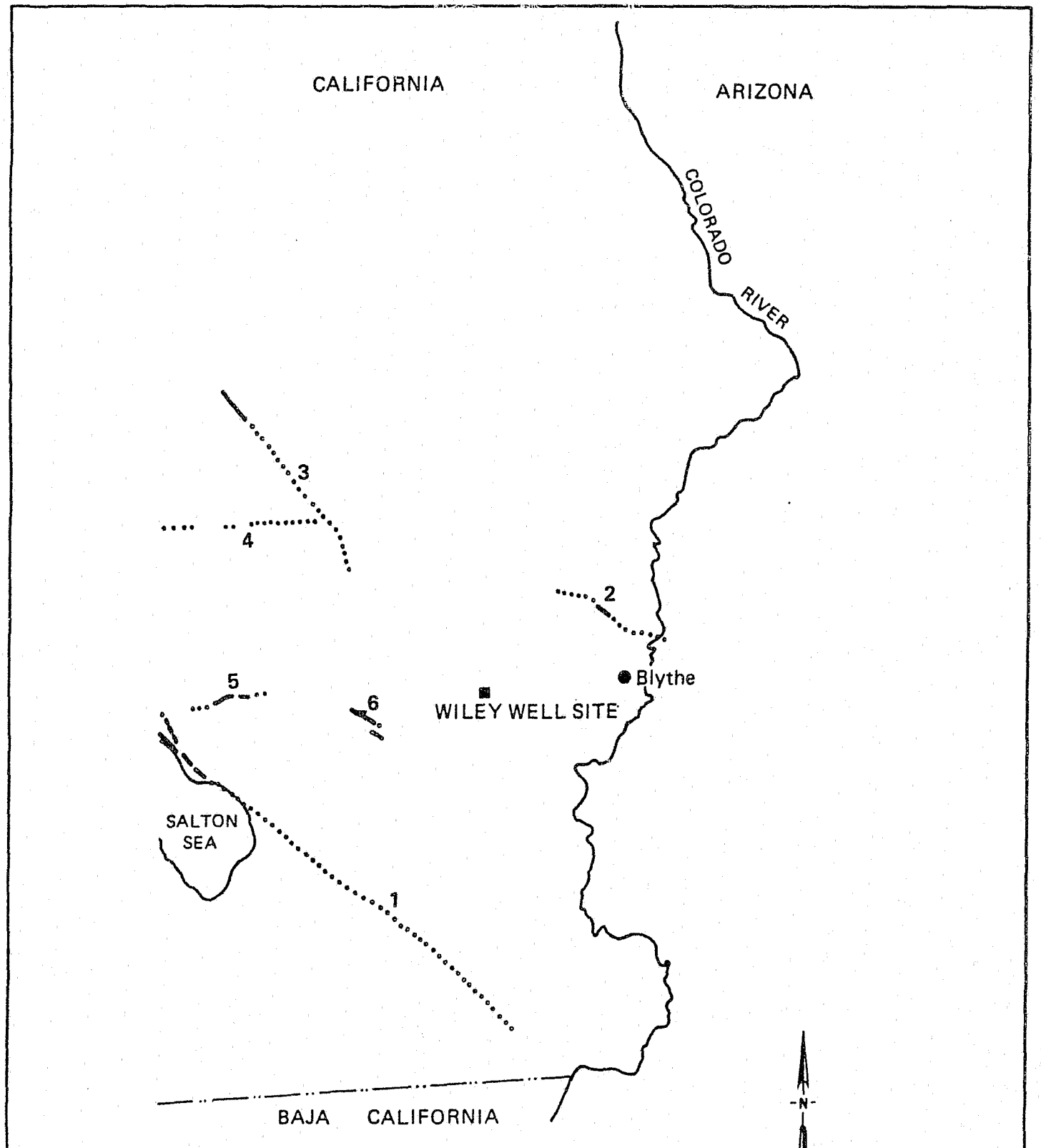
Project Site Geology

The project site is located on active and intermediate age alluvial fan surfaces, modern gullies and washes, and eolian deposits. A variety of Quaternary deposits overlie the site, which is on a gently sloping, relatively flat surface dissected by minor desert washes. Geomorphic surfaces of four distinct ages were identified on the site. Surface drainage on the site is to the north. The drainage pattern on the site, as well as in the area surrounding the site, is consistent with regional drainage patterns.R-10/

As shown in Figure B-3, the surface geology of the proposed site area consists entirely of Quaternary exposures. These alluvial fan deposits are composed primarily of silty sand and angular to sub-rounded gravel and pebble size clasts of igneous and metamorphic rock.R-11/

Alluvial units were differentiated by surface mapping and aerial reconnaissance using the following alluvial fan/pediment morphology:

1. relative dissection of fan surface, and
2. presence of desert pavement.R-12/



LEGEND

1. San Andreas South Fault
2. Blythe Graben
3. Sheep Hole Fault
4. Blue Cut Fault
5. Salton Creek Fault
6. Chuckwalla Mountain

SOURCE: C.W. Jennings, et al, California Division of Mines and Geology, GDM No. 1, 1975

Project: CSP RIVERSIDE - WILEY WELL Project No. 41795C	SCHEMATIC QUATERNARY FAULT DIAGRAM - WILEY WELL AREA	Fig. B-2

TABLE B-1

CHARACTERISTICS AND ESTIMATED MAXIMUM EARTHQUAKES FOR REGIONAL FAULTS

PROPOSED WILEY WELL PRISON SITE

Fault Name	Fault Classification	Approx. Closest Distance To Site (miles)	Approximate Fault Length (miles/km)	Est. Max. Probable Earthquake Magnitude	Est. Max. Credible Earthquake Magnitude	Ext. Slip Rate (mm/yr)	Maximum Historical Earthquake Magnitude
San Andreas	Right Lateral	47	125 (200)	8	8-1/2	25	None on this section, 8.3 on south-central section (1857)
Blythe Graben-Big Maria Mtns.	Normal and Right Lateral	21	19 (31)	5	6-1/2	Negligible	None
Chuckawalla Mtn.	Normal and Right Lateral	17	5 (8)	5	6	Negligible	None
Salton Creek	Left Lateral	39	12 (19)			Negligible	None
Sheep Hole	Normal and Right Lateral	29	40 (64)		6-1/2	Negligible	None
Blue Cut	Left Lateral	38	55 (89)	5-1/2	6-1/2	Negligible	None

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a. Based on estimated rupture length and Slemmons, 1982

EXPLANATION

DEVELOPED AGRICULTURAL FIELDS

Q4a — ACTIVE ALLUVIAL DEPOSITS; Unconsolidated, light tan, fine-medium grained sand and silty sand with some sub-rounded coarse sand and gravel to about 2 inches in diameter.

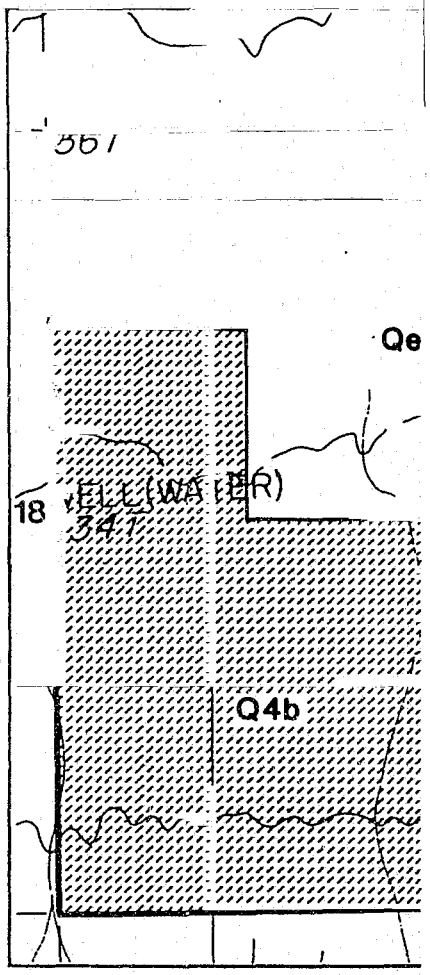
Q4b — STREAM AND FLOODPLANE DEPOSITS; Light tan to reddish-tan sandy silt to silty sand with angular to sub-angular igneous and metamorphic gravel pieces at the surface.

Q3a — OLDER ALLUVIAL DEPOSITS; Light tan to reddish-tan silty sand and sandy silt with some gravel overlain by shiney reddish-brown angular rock fragments which form desert varnish.

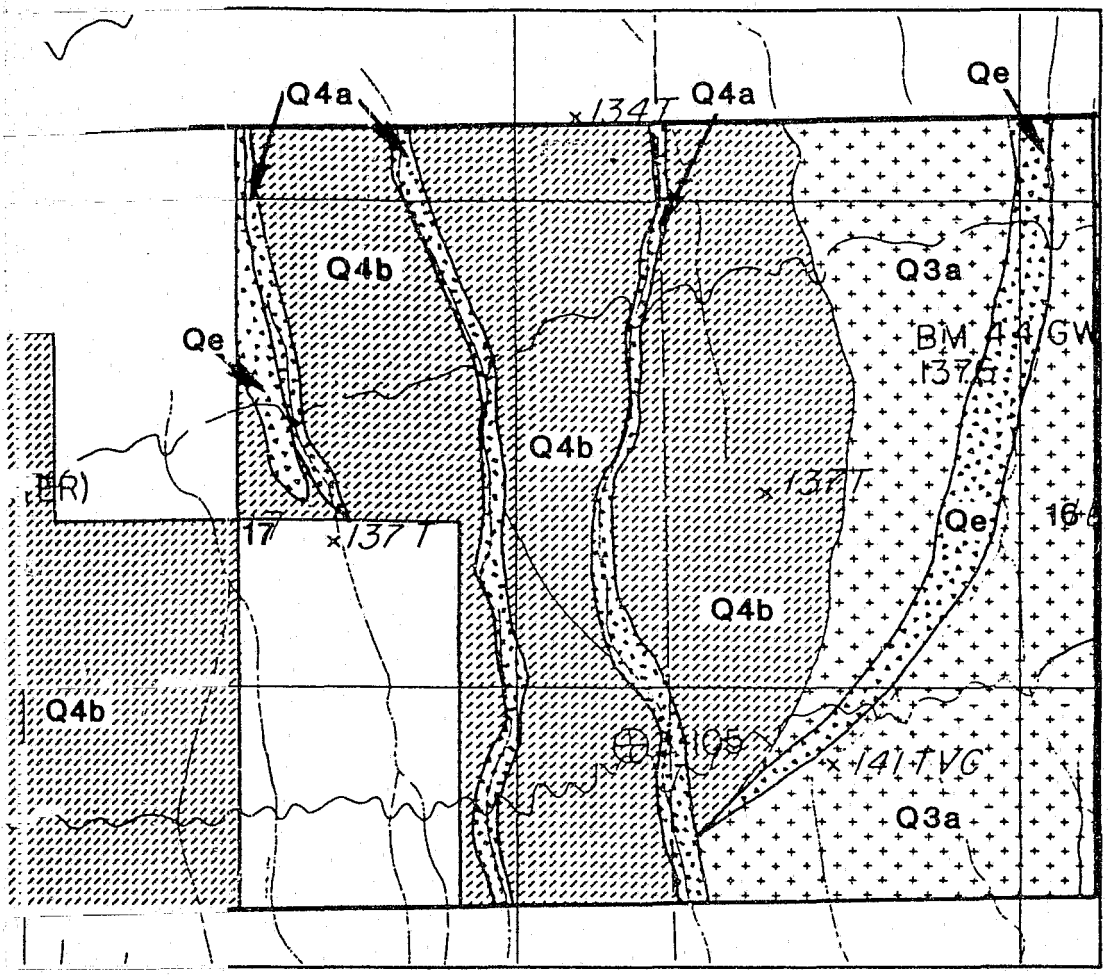
Qe — EOLIAN DEPOSITS; Well sorted, unconsolidated, light tan, very fine-grained eolian sands with some medium grained sand and silt.

SYMBOLS

———— Contact; dashed where approximately located



SOURCE: USGS Quadrangle Map of Hopkins Well, California
Provisional Edition, 1983



0 500 1000
SCALE (feet)

N

Woodward-Clyde Consultants

SITE GEOLOGY/GEOMORPHOLOGY

Project No. 41795C
CSP RIVERSIDE - WILEY WELL

Fig. B-3

Active Stream Channels (Q4). The Q4 alluvial deposits consist of fresh sands and gravels of the active ephemeral streams. The drainages exhibit bar and channel topography and drain from the mountain ranges south of the site in generally a south-north direction. The loose, well graded stream deposits range in size from silt to cobbles. The major drainage on the site approximately parallels the eastern margin of Section 17. This drainage is incised up to about three feet near the center of this area. Desert varnish is not present in Q4 deposits. Q4 deposits are further distinguished into intermittently active stream deposits with low flood recurrence intervals (Q4a) and stream and floodplain deposits with greater flood recurrence intervals (Q4b).R-13/

Q4a deposits generally consist of unconsolidated, light tan, fine-medium grained sand and silty sand with some sub-rounded coarse sand and gravel to about two inches in diameter. Q4b deposits generally consist of loose, light tan to reddish-tan sandy silt to silty sand with angular to subangular igneous and metamorphic gravel at the surface.R-14/

Alluvial Fans (Q3). The Q3 alluvium is similar to the Q4 alluvium, except that surficial features indicate that streamflow has not occurred on the surfaces in Modern time. The primary feature indicating a substantial age for the Q3 alluvium is the presence of desert varnish on the larger fragments of metamorphic and volcanic rocks at the surface. Bar and channel topography is not present within this unit. The unit consists of light tan to reddish-tan silty sand and sandy silt with some gravel overlain by shiny reddish-brown angular rock fragments which form the desert varnish. The Q3 deposits are found primarily in the eastern three-quarters of Section 16.R-15/

Eolian Deposits (Qe). Eolian deposits (wind blown dune deposits) are common in the Chuckwalla Valley. Qe deposits on site consist of unconsolidated, light tan, well sorted, very fine-grained, cross bedded eolian sands with some medium grained sand and silt. On-site eolian deposits consist of a sand dune that extends from the north-central area of Section 16 and curves toward the southwest corner of the section. Eolian deposits are also present on a small area north of the center of Section 17. This unit generally trends in a north-south direction and occurs locally as a thin veneer over alluvial deposits.R-16/

Subsurface Conditions

A test pit was excavated in the northeast corner of Section 17 to a depth of about 8 feet. Soils encountered in a test pit (excavated in the northeast corner of Section 17) consisted of irregularly interbedded silty sand and silty sandy gravel, with a few inches of sandy silt and the surface. Several test hole borings to a depth of approximately 30 feet in the project area confirmed the initial test pit findings. The estimated density of the near surface soils ranged from very loose to medium dense. Groundwater was not encountered in the test pit or deeper soil borings.R-17/

Soils from the test borings contained some calcareous cementation, a condition common to many local desert soils. Tests performed on these samples indicated that the soils in the project area are slightly to moderately compressible, particularly when the soil's moisture content is increased. While subject to settlement under certain conditions, the geotechnical consultants for this project concluded that the building site is suitable for the proposed development.R-18/

ENVIRONMENTAL EFFECTS

Strong Ground Motion

The nearest major earthquake source is the San Andreas fault, located approximately 47 miles west of the site. A strong earthquake on the San Andreas fault centered closest to the project area could produce potentially damaging ground motions at the site, but not the high intensity vibratory motions typically encountered in close proximity to a large earthquake. The Blythe graben, which is approximately 21 miles northeast of the site, may be associated with future earthquake activity, but based on apparent geologic and geomorphologic relationships, an earthquake associated with the Blythe graben is unlikely to occur within the life of the facility. Table B-1 presents data regarding earthquakes that may be associated with faults in this region.R-19/

The proposed facility will be designed to ensure that critical structures can withstand the effects of a large earthquake.

Surface Fault Rupture

Active faults are not known to be located at or immediately adjacent to the site. The Blythe graben may be along the frontal fault of the Big Maria Mountains to the east, but this fault does not trend toward the site. Accordingly, surface faulting is unlikely at the site.R-20/

Liquefaction Potential

Groundwater levels are found at approximately 270 feet beneath the surface in the project area. These levels preclude the possibility of soil liquefaction due to vibratory ground motion during a strong earthquake.R-21/

Slope Instability

No slopes exist on or near the site area.R-22/

Earthquake-Induced Flooding

No dams or canals are known in areas upstream from the project site; accordingly, earthquake-induced flooding of the site is not a hazard in this area.R-23/

Shallow Groundwater

Groundwater is present at depths of approximately 270 feet beneath the site. Accordingly, shallow groundwater is not a construction constraint in the project area.R-24/

Erosion Potential

Surface soils on the site are easily erodible, especially in disturbed areas. However, erosion from the site will be reduced to negligible levels by the planned drainage control system.R-25/

Ground Settlement

Soils on the project site are slightly to moderately compressible, particularly when the soil's moisture content is increased. The building pads and soils underlying the prison buildings and other related structures will have to be prepared to prevent settlement.R-26/

MITIGATION MEASURES

The proposed project will not have a direct off-site effect on the geology of the project area, so no mitigation measures are necessary.

While the soils in the proposed building area are potentially subject to settlement or consolidation, the effects of such surface settlement are not expected to extend outside of the project area. The foundations of the prison buildings and related facilities will be designed to minimize settlement. Building preparation will probably involve the compaction of an engineered mat (layer) of soil two to four feet thick. Other factors that serve to limit the settlement of the buildings is their relatively light foundation loads and the absence of extensive landscape irrigation near buildings.R-27/

GEOLOGY REFERENCES

R-1/ Page 7.11, Final Technical Site Study, Wiley Well Area, Riverside County, Tucker Sadler & Associates, August 21, 1986.

R-2/ Ibid., Pages 7.11 and 7.12

R-3/ Ibid., Page 7.12

R-4/ Ibid.

R-5/ Ibid., Page 13

R-6/ Ibid.

R-7/ Ibid., Pages 7.8 and 7.9

R-8/ Ibid., Pages 7.9 and 7.11

R-9/ ibid, Pages 7.6 to 7.8

R-10/ Ibid., Page 7.13 and 7.14

R-11/ Ibid., Page 7.14

R-12/ Ibid.

R-13/ Ibid.

R-14/ Ibid., Pages 7.14 and 7.15

R-15/ Ibid., Page 7.15

R-16/ Ibid.

R-17/ Ibid., Pages 7.15 and 7.16

R-18/ Preliminary Geotechnical Investigation, California State Prison, Wiley Well, Riverside County, California, Woodward-Clyde Consultants, August 8, 1986, pages 3 to 5.

R-19/ Loc. Cit., Pages 7.16 and 7.17

R-20/ Ibid., Page 7.17

R-21/ Ibid.

R-22/ Ibid.

R-23/ Ibid.

R-24/ Ibid., Page 7.18

R-25/ Ibid.

R-26/ Preliminary Geotechnical Investigation, California State Prison, Wiley Well, Riverside County, California, Woodward-Clyde Consultants, August 8, 1986, pages 3 to 5.

R-27/ Ibid.

C. HYDROLOGY*

EXISTING SETTING

Topography

The proposed prison site is located at the southeastern end of the Chuckwalla Valley hydrologic basin near the Little Chuckwalla Mountains and the Mule Mountains. The basin elevation ranges from 4,500 feet above mean sea level (MSL) at the Chuckwalla range to 350 feet (MSL) at Ford Dry Lake. The proposed site will be located on an alluvial fan at a slightly higher elevation than surrounding areas. The site elevation ranges from 430 to 466 feet above MSL and slopes northerly. The Chuckwalla Valley hydrologic basin and the proposed prison site are shown on Figure C-1. There are no perennial streams in this basin.

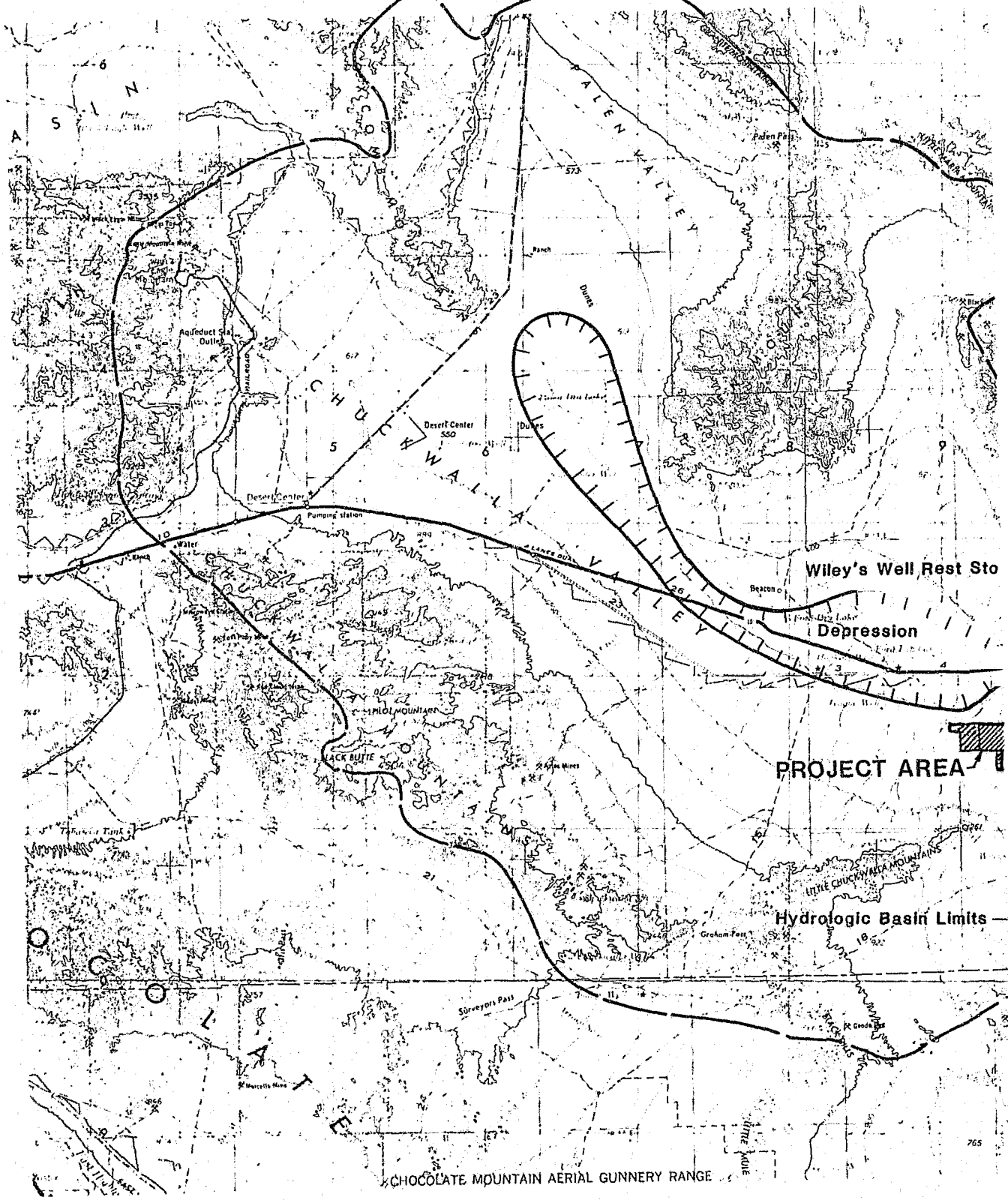
Climate, Vegetation, and Soils

The climate of the region can be characterized as semi-arid to arid with hot, dry summers. National Oceanic Atmospheric Administration (NOAA) reports an average annual precipitation of 3.37 inches over a 30-year period for this area. The majority of the precipitation is in the form of localized summer thunderstorms and cyclonic winter rainstorms. Evapotranspiration rates are expected to be high because of the warm, dry weather.R-1/

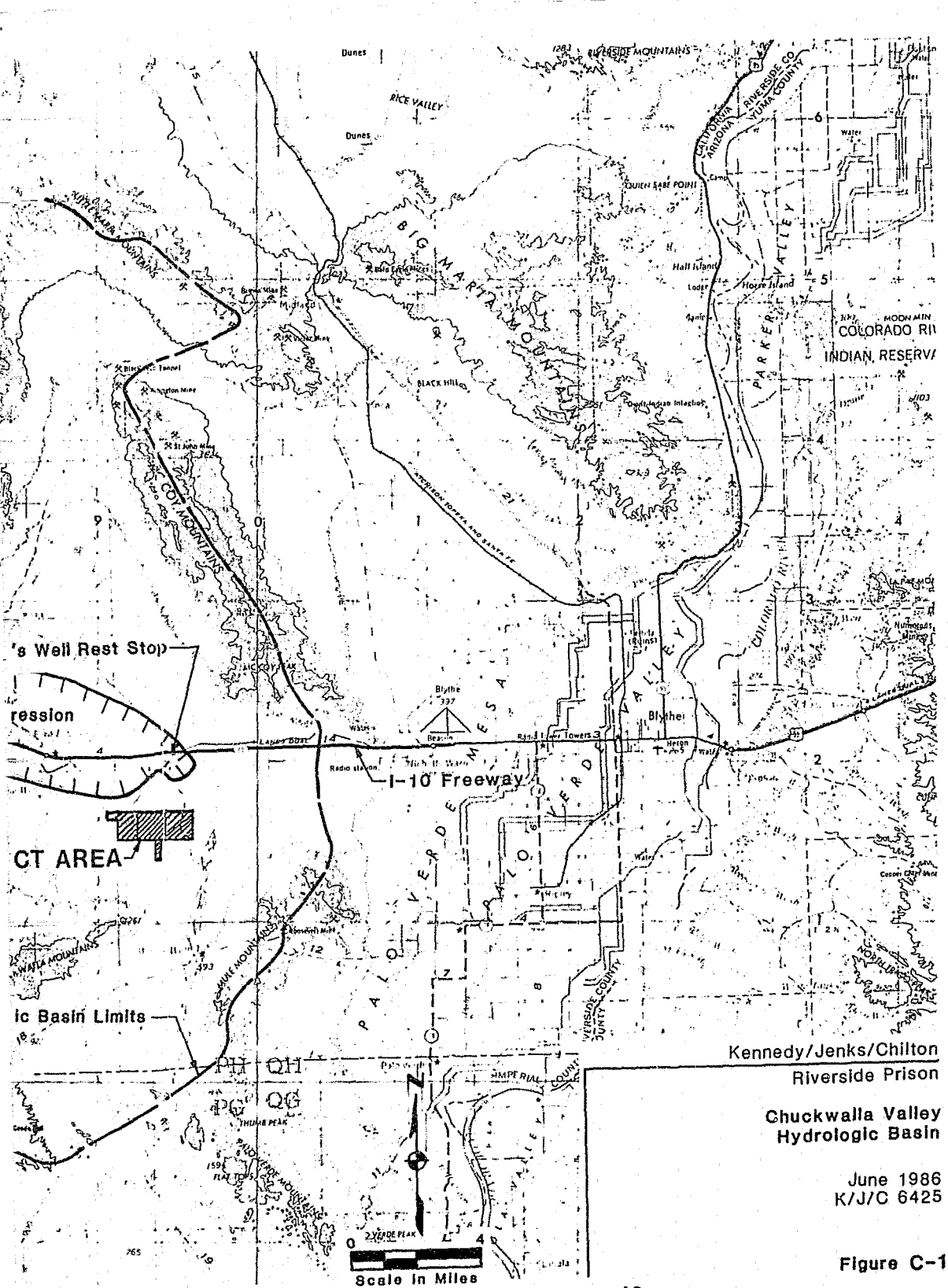
Vegetation is very sparse and consists of shrubs typical of the surrounding desert region. In addition, some private land in the area is under cultivation, primarily in jojoba.

The soils of the area are generally formed of alluvial deposits, principally sandy loams, loamy sands, fine, medium, and coarse sands and gravel in the valleys bounded by the bedrock mountain ranges. Infiltration rates at the valley floors are considered to be moderate. Typically, several feet of

*This section covers hydrology, flooding, surface water, and site drainage. The availability, quality, and use of groundwater by the proposed prison is addressed in Section H. Utilities, 6. Drinking Water. The prison's wastewater treatment system and its effects are addressed in Section H. Utilities, 5. Sewage Disposal.



CHOCOLATE MOUNTAIN AERIAL GUNNERY RANGE



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Riverside Prison

Chuckwalla Valley Hydrologic Basin

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Figure C-1

coarse sand and gravel atop the soil column provide adequate drainage during low to moderate rainstorms, resulting in little area runoff during these events.R-2/

Precipitation Records

Blythe Airport, about 12 miles east of the proposed prison site, is the nearest precipitation recording station. Annual precipitation records are available from 1909 to the present. A standard eight-inch automatic weighing gauge records continuous precipitation. Riverside County Flood Control District (RCFCD) has prepared precipitation Depth-Duration-Frequency tables from the Blythe Airport gauge. Design storms have been simulated for various durations using the Pearson Type III distribution technique. The NOAA has also prepared isoheyetal and rainfall duration/frequency maps. However, storms with less than six-hour duration are not mapped for this area.R-3/

In addition, an historic storm recorded in 1940 for Indio, California is often used as a standard project storm for planning and design in this region. The Indio storm compares with a storm of 10,000-year return period at Blythe Airport (approximately 6.5 inches of rainfall in 24 hours).R-4/

Precipitation from these three sources for various duration storms are compared in Table C-1. The recorded values at Blythe Airport compare well to the values obtained from the NOAA atlas. However, the Indio storm had approximately twice the volume for a 24-hour duration than did the 100-year storm from the other 2 sources. Typical storm durations are less than three hours for this area. Therefore, for the purposes of this study, Blythe Airport precipitation values have been used.R-5/

TABLE C-1

REGIONAL STORMS

Source	Precipitation (Inches)			
	1-Hour	3-Hour	6-Hour	24-Hour
Blythe Airport*	1.4	2.02	2.36	3.79
NOAA Atlas*	--	--	2.88	3.10
1940 Indio Storm	__	__	--	6.45

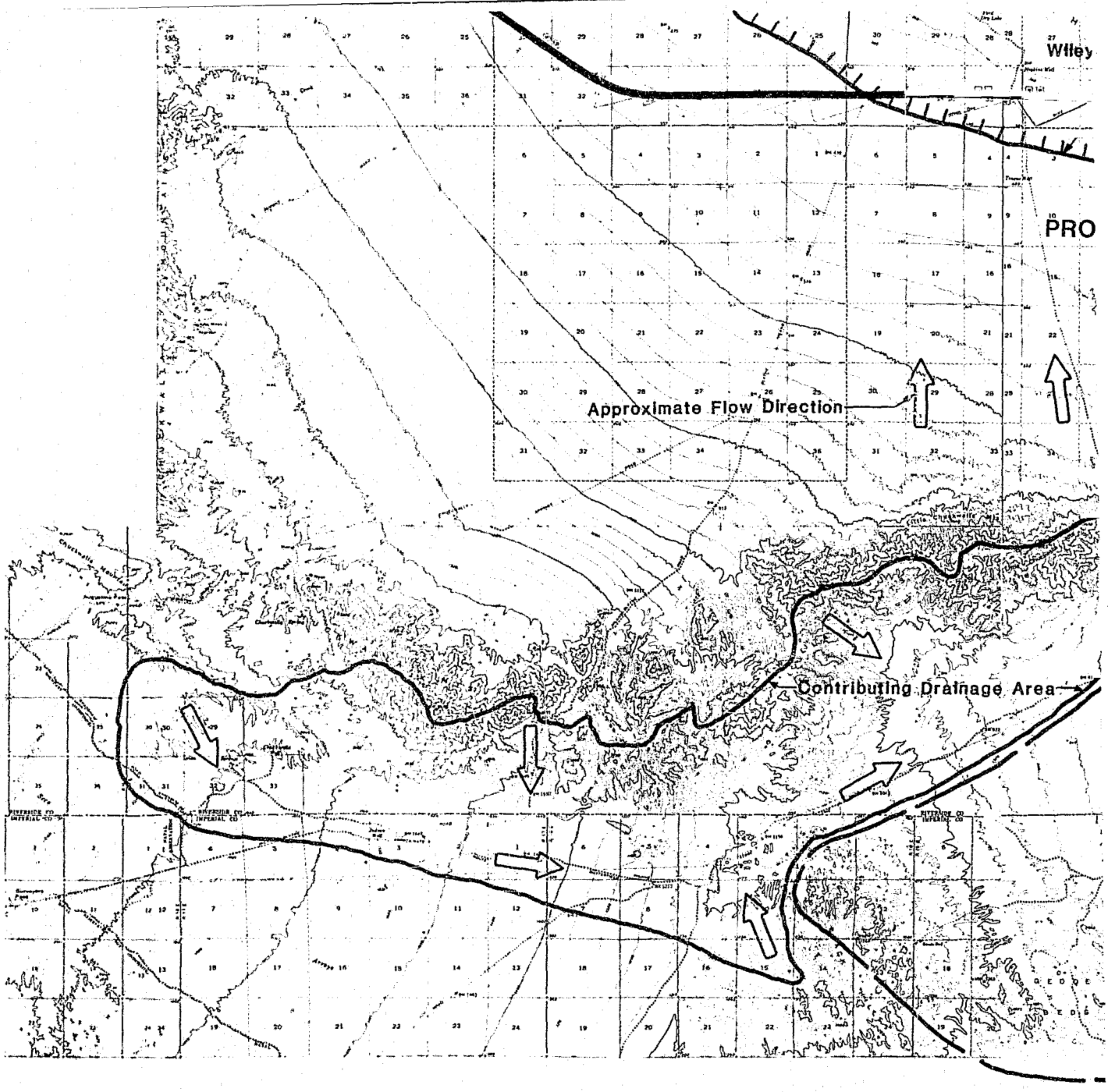
*100-year return period

Surface Water Drainage

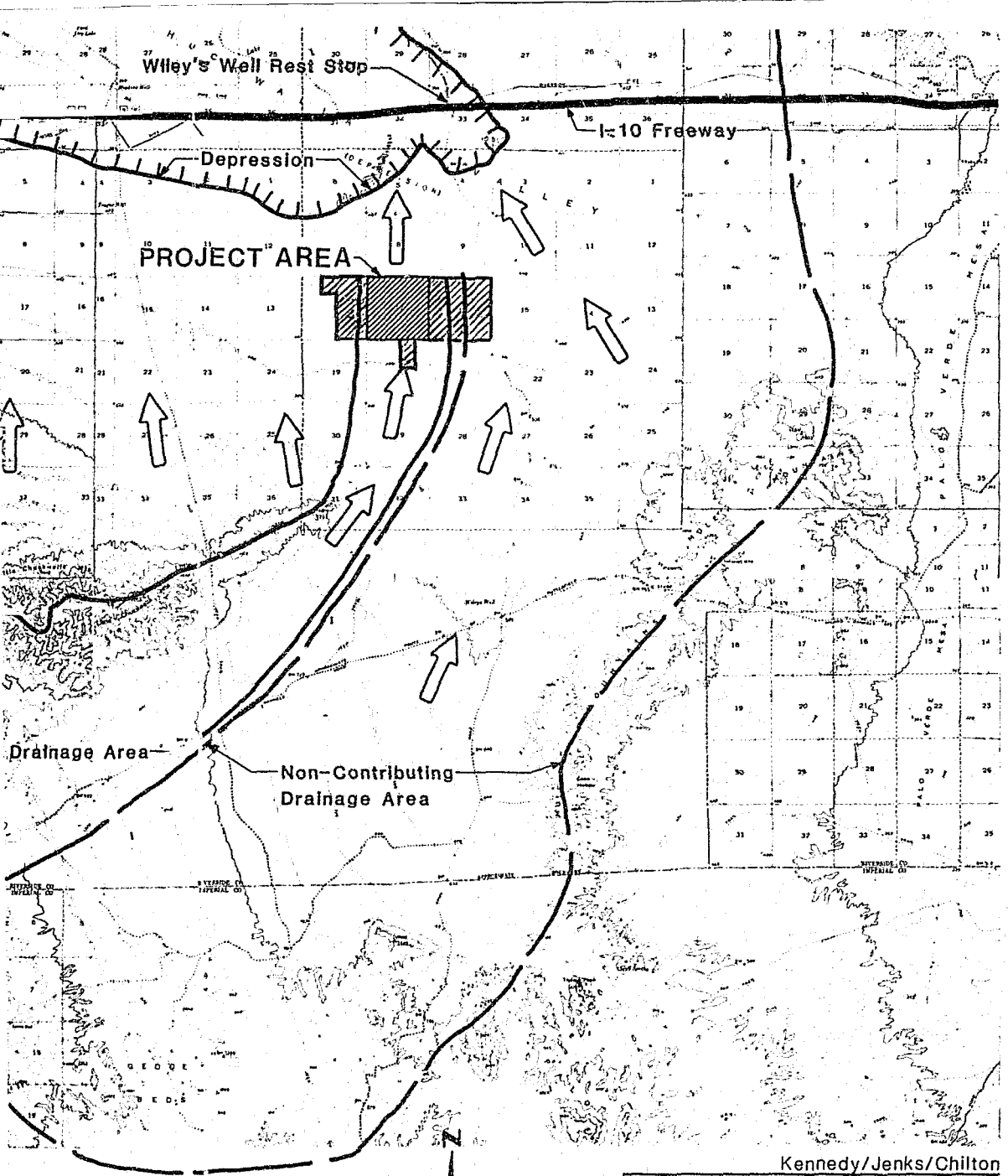
The proposed prison site is located in the southeastern corner of a closed hydrologic drain basin, delineated on Figure C-1. The area runoff is from ephemeral streams, which drain toward the center of the basin, terminating in dry lakes. Flows usually occur in response to localized thunderstorms or winter showers. No records of previous major flooding at the site were found and a site inspection did not reveal any evidence of such flooding.R-6/

As shown in Figure C-2, the contributing site drainage area is approximately 60 square miles, which forms a long watershed to the southwest of the proposed prison site. The runoff in this watershed comes mainly from the southern slopes of the Chuckwalla and the Little Chuckwalla ranges. The northern slopes of the Little Chuckwalla drain immediately to the west of the site. The lands to the east drain the eastern and western slopes of the Black Hills and Mule Mountain ranges, respectively. General flow directions of these drainage areas are shown by arrows on Figure C-2.R-7/

Aerial photographs and a site inspection indicate that the majority of the watershed's sand washes flow seasonally and usually do not reach the proposed prison site. It is suspected that peak flows spread out on the flatter portions of the fan, pond, and evaporate or infiltrate before reaching the lower parts of the basin. Mud cracks and salt deposits on the valley floors confirm this observation. In addition, no large channelized gullies were observed within the confines of the project site.R-8/



NOTE: All Runoff From The Overall, Contributing Drainage Area Shown Hereon May Not Reach The Project Site Because Of The Relatively Long, Flat Basin Configuration. See Text For Discussion.



Kennedy/Jenks/Chilton
Riverside Prison

Regional Drainage Areas

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Figure C-2

The site visit also indicated that the main natural flow lines run along the middle of the basin (Figure C-2), which deepens about 1.5 miles south of the site. However, it is suspected that during a major storm event (e.g., 100-year return period or greater) all of the 60-square-mile drainage area outlined in Figure C-2 could contribute to the runoff at the prison site. Wind and other climatic conditions may have deposited loose sand on previously channelized gullies making it difficult to identify the exact depth and capacity of the existing channels. Therefore, it is assumed, for the purposes of this study, that this entire 60-square-mile drainage area could contribute drainage to the site.R-9/

Groundwater Conditions

The proposed prison site is situated in the groundwater basin covering approximately 560,000 acres within the Chuckwalla Valley hydrologic basin. The perimeter of this groundwater basin corresponds to the boundary of the valley floor within the area delineated in Figure C-1.R-10/

Recharge to the aquifer occurs due to the infiltration of precipitation and agricultural return flow within the basin, and from inflow from Pinto Basin at the northwestern corner of Chuckwalla Valley. The groundwater flow direction is generally toward the basin center and eastward. Groundwater exits the basin (subsurface) near the southeastern corner of the valley through the divide between the McCoy and Mule Mountains. The portion of the aquifer beneath the proposed site is under confined conditions. The depth to the top of this aquifer in this area is approximately 270 feet. Depths to water in wells on or adjacent to the site range from 165 to 200 feet depending on the ground surface elevation.R-11/ The water is higher in these wells than the surface of the aquifer because of hydraulic head. Existing wells on the project site extend to depths of approximately 1,000 feet.

At present, approximately 400 acres of land on or near the site are irrigated utilizing wells with reported capacities of 700 to 2,100 gallons per minute (gpm). Although no reliable historical water level data are available for wells near the proposed site, no long-term water level declines have been evident. The effects of using groundwater for the proposed prison are addressed in Section H. 6. (Utilities, Drinking Water).R-12/

ENVIRONMENTAL IMPACTS

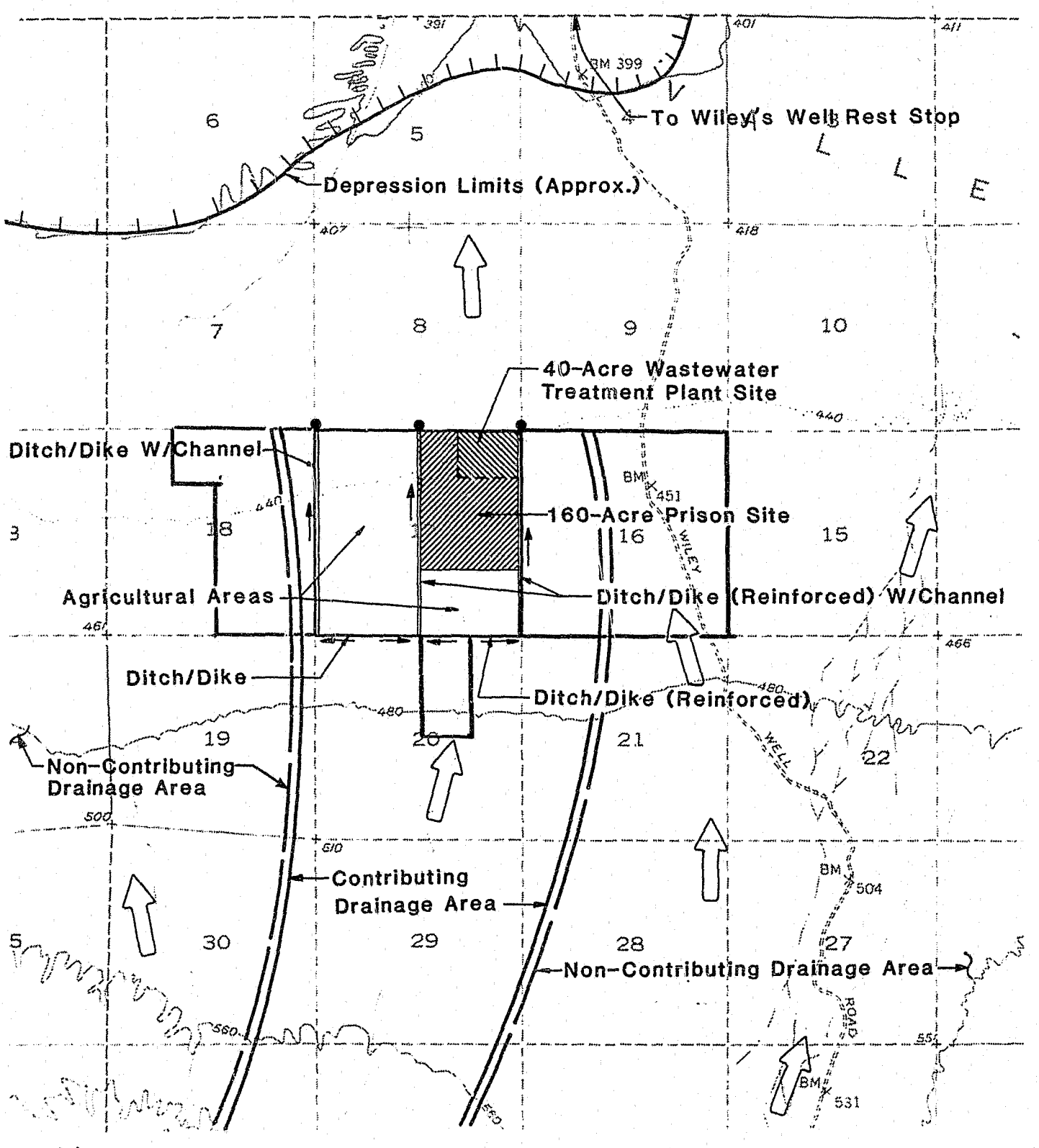
Off-site Effects

Surface Water. The proposed prison site is subject to surface runoff from the drainage area to the southwest (Figure C-2). This long drainage area was subdivided, for study purposes, into seven subareas, each with an area of less than ten square miles, and the Rational Method was used to estimate runoff from each subarea. The time of concentration for each subarea was estimated to be between 1 and 3 hours and the 100-year return period rainfall record at the Blythe Airport (Table C-1) was used in calculating the flow tributary to the site. The resulting runoff quantities for each subarea were added together to arrive at an estimated total discharge from the 60-square-mile drainage area of 20,000 cfs. The Rational Method used for this study is quite conservative for areas this large and, additionally, other assumptions used during the calculations were conservatively employed. For example, addition of individual subarea runoff quantities instead of calculating differing times of concentration and resulting lower rainfall intensities is a very conservative approach. Due to the nature of this study a conservative or worst case approach was considered appropriate.R-13/

The runoff described in the preceding paragraph, if not controlled, could cause damage to the proposed prison facilities and would need to be mitigated. Even though the volumes of runoff used for the purposes of this study are very conservative, the mitigation measures recommended would be similar in magnitude for a large range of runoff quantities.R-14/

On-site Impacts

Surface Water. For the purposes of this study, the area where the proposed prison would be built was divided into approximately 160 acres of developed prison complex, 40 acres of sewage treatment facilities, and 420 acres of open space or agriculture. It was assumed that the 160-acre prison complex would consist of approximately 40 acres of impermeable surfaces and 120 acres of permeable surfaces. The preliminary layout of the site used for this study is shown on Figure C-3.R-15/



N

LEGEND

- Natural Flow Direction
- Diverted Flow Direction
- Drainage Concentration Point

0 2000 4000

Scale in Feet

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Riverside Prison

Preliminary Site Layout

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Figure C-3

Since agricultural operations are presently underway on portions of the site, it is expected that similar operations on-site would not change the existing runoff conditions. However, the remaining prison and treatment plant complex would cause an increase in storm water runoff due to the increase in ground surface imperviousness. The quantity of runoff within the project area was estimated using the Rational Method and is approximately 60 cfs using a weighted runoff coefficient of 0.5 and an intensity of 0.67 inches per hour (based upon the Blythe Airport 3-hour storm). The volume of runoff generated during a 3-hour storm for the 200-acre, non-agricultural area of the prison would be approximately 15 acre-feet. If not controlled, this amount of runoff could cause moderate downstream flooding and erosion.R-16/

MITIGATION MEASURES

Off-site Drainage

Since there are no existing flood control or storm drainage facilities within the project area (except for graded berms to protect some of the agricultural areas from storm runoff), measures must be taken to protect the building area from off-site runoff. The Department will implement measures that would provide flood protection from a storm with runoff greater than that for a 100-year storm event (approximately 20,000 cfs) from the assumed contributing drainage area.R-17/

A graded ditch/dike configuration would be constructed on three sides of the site to direct floodwaters around and through the site. These redirected waters would be carried adjacent to and through the site in graded drainage channels and discharged downstream at the northern site boundary. The ultimate destination of these waters, which is the sink areas to the north near the freeway, would be the same after the prison is developed as it is now. The new drainage channels may serve as perimeter access roads and would be dry except for a few days per year. This proposed flood protection system is diagramed on Figure C-3. Discharge structures would be designed and constructed to prevent erosion to lands outside of the project area.R-18/

Because of the proposed drainage controls, the project would not have a direct, off-site effect on surface drainage or increase erosion.

An earth ditch with dikes reinforced using rip-rap or some other means for controlling erosion would be constructed to protect the 200-acre developed area of the prison from off-site drainage. The improvements would be constructed along the south, east and portions of the west boundaries of these 200 acres and would direct the runoff to graded, north/south channels along the east and west boundaries. These channels would be graded at elevations below adjacent land to convey the collected drainage to be discharged onto the undeveloped land on the northern boundary of Section 17. The discharge points and channels are also shown on Figure C-3. Discharge structures for these channels would also be designed and constructed to prevent erosion of lands outside of Section 17.R-19/

A similar ditch/dike configuration would be constructed to protect the agricultural land from off-site drainage; however, the dikes are proposed to be similar to those now used to protect existing agriculturally developed land. Similar channels would be graded, north to south to convey the runoff through and around the agricultural area to discharge points at the north boundary of the property. Erosion control devices, such as retention basins or rip-rap, would be necessary at each northerly concentration point to mitigate runoff effects prior to discharge downstream onto undeveloped land.R-20/

The redirection of this off-site tributary storm water is considered insignificant since the change in direction of flow is minor compared with the overall length of travel and since the ultimate destination and volume remains the same. No long-term, cumulative downstream impacts are expected. An advantage of the flood protection methods is that the proposed facilities could be constructed entirely within prison property.R-21/

Site Drainage

Since there are no existing flood control or storm drainage facilities within the vicinity of the proposed prison and the expected runoff from the improved 200-acre prison area would be greater than existing runoff, retention of rainwater from on-site sources would be necessary to mitigate the erosive effects on adjacent, downstream land.R-22/

As discussed previously, site agricultural operations are not expected to generate runoff in excess of that for present site conditions. Portions of the site which are presently undeveloped, when developed with agriculture, would actually generate less runoff since cultivation would slow runoff and encourage infiltration; and site areas which are presently developed with agriculture would stay approximately the same.R-23/

The estimated runoff from the 200-acre prison and treatment plant complex would be approximately 15 acre feet. This volume was estimated using a 3-hour duration, 100-year frequency storm. All of this runoff could be contained on-site using retention ponds formed as part of the grading and landscaping of the open space. For example, if 20 acres of open space were available for this purpose within the 200-acre site, only about 1 foot of storm water would be ponded on the available open spaces for a 100-year event. This ponded water would eventually infiltrate and evaporate, thereby alleviating the effects of downstream flooding and erosion from the proposed prison development.R-24/ Because of these measures, the proposed project would not have a direct, off-site effect on surface drainage.

HYDROLOGY REFERENCES

R-1/ Page 2.1, Final Technical Site Study, Wiley Well Area, Riverside County by Tucker Sadler & Associates, August 21, 1986.

R-2/ Ibid., Page 2.3

R-3/ Ibid.

R-4/ Ibid.

R-5/ Ibid.

R-6/ Ibid., Page 2.4

R-7/ Ibid.

R-8/ Ibid.

R-9/ Ibid.

R-10/ Ibid.

R-11/ Ibid., Page 2.6

R-12/ Ibid.

R-13/ Ibid.

R-14/ Ibid., Page 2.8

R-15/ Ibid.

R-16/ Ibid.

R-17/ Ibid.

R-18/ Ibid., Pages 2.8 - 2.9

R-19/ Ibid., Page 2.9

R-20/ Ibid.

R-21/ Ibid.

R-22/ Ibid.

R-23/ Ibid., Page 2.10

R-24/ Ibid.

D. PLANT AND ANIMAL LIFE

ENVIRONMENTAL SETTING

General Site Conditions

Background information for this portion of the EAS was provided from a biological survey was prepared under the direction of Dr. Ruth C. Wilson, Professor of Biology, California State University, San Bernardino for the entire study area, including an access corridor north to the freeway and for a buffer area around the edge of these parcels. Background information was also provided by staff from the Office of Project Development and Management, California Department of General Services.

The study area consists of a large open parcel located approximately half way between the center of Chuckwalla Valley and the Little Chuckwalla Mountains (see Figure 2-2). The study area slopes gently towards the center of the valley. The only well defined drainage channel in the general vicinity of the study area is the Wiley Well wash. This wash passes approximately one mile east of the study area. Other much smaller drainage channels pass over and around the study area but these washes lack the well established desert riparian woodland found in the Wiley Well wash.

Portions of the study area have been disturbed by a variety of activities such as off road vehicle use, land clearing, and cultivation for jojoba farms, and development of access roads. The Wiley Well road passes through the middle of Section 16 on a north-south alignment.

The lands immediately adjacent to the study area are generally open and undeveloped with a few exceptions. A 500 kV power transmission line corridor is located approximately one mile north of the study area. The California Public Utilities Commission is presently considering an application from the Southern California Edison Company for the construction of a second transmission line that would run parallel to this existing line.R-1/ A large jojoba plantation is located south of the study area in Section 28. The

Chuckwalla Valley Dune Thicket Area of Critical Environmental Concern is located immediately northwest of the study area. This particular area is discussed in more detail later in this section.

The principal plant community in the study area is Creosote Bush Scrub, a community typical of the lower elevations of the Colorado Desert.R-2/ The two dominant plant species in this community are Creosote Bush (Larrea tridentata) and Burrow Weed (Ambrosia dumosa). Other species common to this community area are Hymenoclea salsola (Cheesebush), Boerhaavia coulteri (Four O'Clock), Chorizanthe brevicornu, Palafoxia linearis, and Chenopodium sp. (Pigweed).R-3/ The low populations of Ambrosia dumosa in the Creosote Bush community are an indication of the extremely harsh setting of this habitat.R-4/

Areas of desert pavement are found in the study parcels. Desert pavement consists of a thin rocky crust that forms over the surface of the ground. Desert pavement forms through a combination of several environmental factors, such as wind erosion and rainfall, on generally level terrain in gravelly or rocky soils. Because desert pavement presents a harsh, relatively impermeable surface, few plants are successful at establishing in these areas. The dominant plant species in the desert pavement areas is Rigid Spiny-Herb (Chorizanthe rigida), a small spiny annual.R-5/ Other plants common to this community include Eriogonum ordii, E. nodosum, Fagonia laevis, and Nemacladus rubescens.R-6/

Two species of trees occur in and near the drainages that cross the study area. These two trees are Ironwood (Olneya tesota) and Palo Verde (Cercidium floridum).R-7/ The best habitat in this general area for these trees is the Wiley Well wash located southeast of the study area and the slopes closer to the mountains south of the site. Some portions of this wash contain relatively dense stands of these trees, especially farther south near the BLM's Wiley Well campground. Because of the distance of the study area from the mountains, the lack of any large drainage channels, and general absence of any surface water there are only a few trees in the study area.R-8/

No rare, threatened, or endangered plants were reported in the biological study prepared for the proposed prison.R-9/ Record searches by the California

Department of Fish and Game Natural Diversity Data Base and the U.S. Fish and Wildlife Service also did not identify the presence of any rare, threatened, or endangered plants in the study area.R-10/

Table 1 in Appendix 1 lists the wildlife species either observed or expected to occur within the study area. The desert iguana, Dipsosaurus dorsalis, is the most frequently observed reptile in the site. The species appears to be most abundant along the margins of the jojoba fields. Other reptiles noted in the study area include the gopher snake (Pituophis melanoleucus), long-nosed snake (Rhinocheilus lecontei), desert horned lizard (Phyrnosoma platyrhinos), western whiptail (Cnemidophorus tigris), desert spiny lizard (Sceloporus magister), and the Mojave fringe-toed lizard (Uma scoparia). The Mojave fringe-toed lizard is associated with the dune area northwest of the study area and may occur on similar but smaller dune deposits in the study area.R-11/

The rodent fauna is typical of this portion of the Colorado Desert and in the creosote and wash plant communities that dominate the site. The Merriam kangaroo rat, Dipodomys merriami, is the most abundant small mammal found over most of the study area. The round-tailed ground squirrel, Citellus tereticaudus, is also very abundant on the site except in well-developed washes on the extreme west and east of the study area.R-12/

Large mammals observed or expected to inhabit the study area include the coyote (Canis latrans), kit fox (Vulpes macrotis), and the black-tailed jackrabbit (Lepus californicus). Two kit fox dens were located in the study area although no concentrations of these burrows were found. One site where a badger may have been digging was also observed on the study area.R-13/

No reptiles or mammals that are presently listed as rare, threatened, or endangered were found or were reported to occur in the study area.R-14/

A total of 20 birds were sighted in the study area during preparation of the biological survey for the proposed prison. This relatively low number of birds was attributed to the generally sparse nature of the study area. The birds that were observed in this area include:

Swainson's Hawk	American Kestrel
Prairie Falcon	Gambel's Quail
Mourning Dove	Lesser Nighthawk
Costa's Hummingbird	Western Kingbird
Say's Phoebe	Horned Lark
Rough-winged Swallow	Barn Swallow
Common Raven	Black-tailed Gnatcatcher
Loggerhead Shrike	Yellow-rumped Warbler
Black-throated Sparrow	Brewer's Sparrow
White-crowned Sparrow	House Finch

A few of these species were found to be nesting in the study area, such as the Loggerhead Shrike. Many of the other species are considered to be nomadic (use the area on an occasional basis for feeding) or transient (migratory species that are simply moving through the area to another location). Staff conducting the bird surveys concluded that the study area does not appear to support either numerous or diverse avian populations.R-15/

A list of the birds that could be expected to occur in the general vicinity of the project site is provided in Table 2 Appendix 1 at the end of this report.

Lands Adjacent to the Study Area

The environmental setting of the lands immediately outside of the study area continues to be dominated by the Creosote Bush Scrub community. To the north and northwest of the site is an area of dry lake beds and low sand dunes near the middle of Chuckwalla Valley. To the south of the site are the Mule Mountains and Little Chuckwalla Mountains.

The BLM has identified the area containing the low sand dunes northwest of the study area as the Chuckwalla Valley Dune Thicket Area of Critical Environmental Concern (ACEC). ACECs are designated by the BLM because of the need to provide for special management of certain environmentally sensitive areas. The Chuckwalla Valley Dune Thicket ACEC Management Plan has been

prepared by the BLM to provide for the protection and enhancement of the small pockets of dense Palo Verde woodland associated with a two-mile long dune system located in a depression at the eastern end of this valley.R-16/

A few areas adjacent to the subject study area would be expected or are reported to have much higher diversity of bird species. For example, the Wiley Well wash, which contains large areas of Ironwood and Palo Verde trees, would be expected to support greater populations of both resident and migratory birds.R-17/ The area containing the dune thicket habitat located northwest of the study area has been reported to contain high winter bird populations.R-18/ The area is also reported to have diverse reptile and mammal populations.R-19/ However, these areas are not expected to be affected by construction of the proposed prison because of their distance from the project site.

A map displaying the boundaries of the Chuckwalla Valley Dune Thicket ACEC is provided on Figure D-1. The southern boundary of this ACEC is contiguous with the western portion of the northern boundary of the project area.

Management plans for this area include the acquisition of private lands in the ACEC, protection of the area from off road vehicle use and other damaging activities, improvement of the dune thicket habitat, and monitoring of developments on adjacent lands.R-20/

Environmental Setting of Project Site

The proposed project site for the prison would be near the northeastern corner of Section 17. Actual placement of the buildings will depend on the final site plan. As with the other lands in the study area, Section 17 is a nearly level area typical of the eastern Chuckwalla Valley area. Two large parcels in Section 17 have been cleared for agricultural cultivation. These parcels are located in the southeast and northwest quandrants of the section. These two parcels cover approximately 300 acres. The other portions of Section 17 are generally in a natural condition. Section 16, immediately to the east of this area, is also in a natural condition. Other improvements to the site include two small seasonally occupied house trailers (farm workers) and two water wells with holding basins.

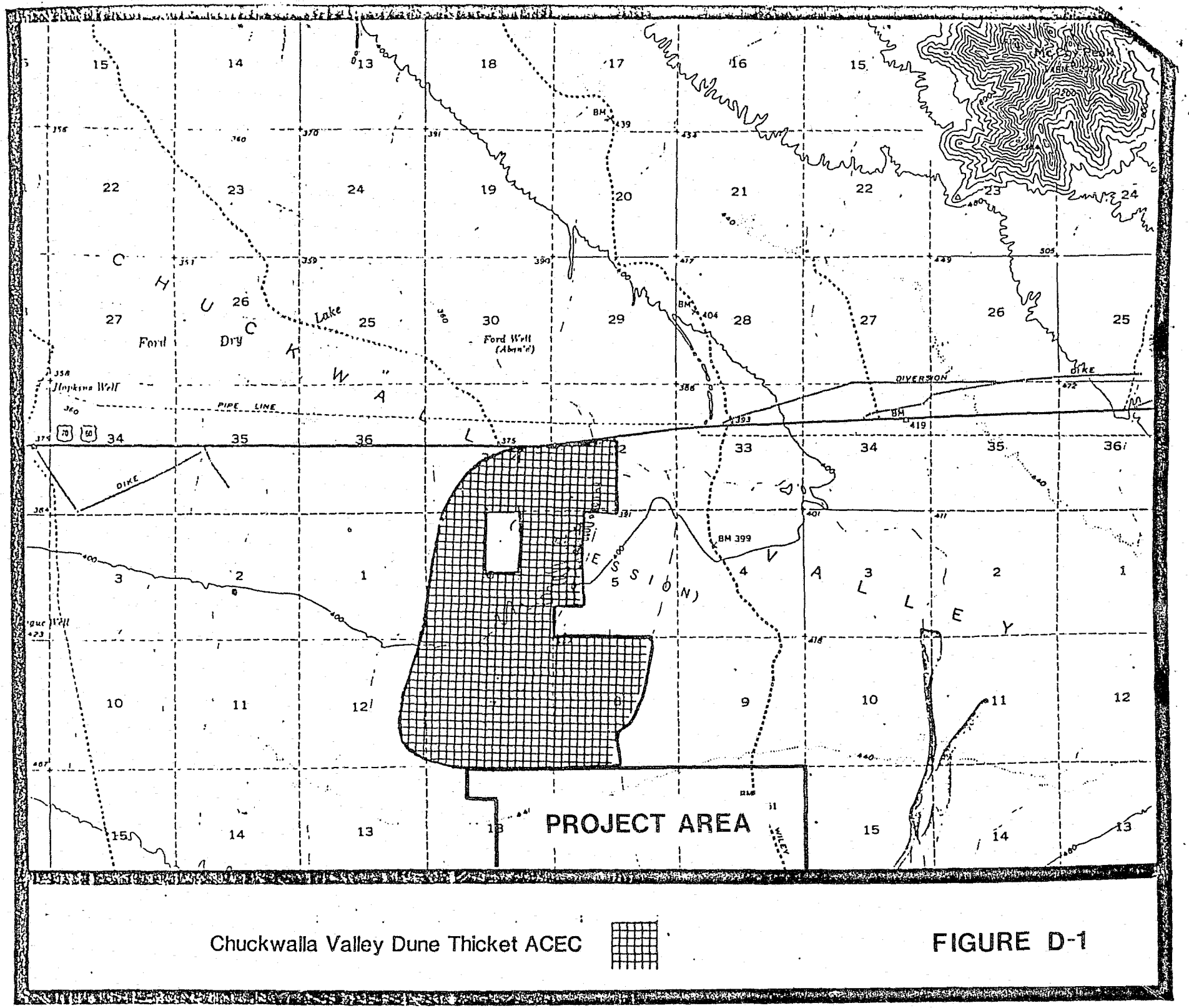


FIGURE D-1

The alignment of the new access road corridor is generally level and avoids major riparian wash areas. A large portion of this alignment has been disturbed by construction and maintenance of the existing road. This area also contains older parallel alignments of the Wiley Well road that have been previously abandoned and a power line right-of-way.

Existing access to the project area from the Wiley Well road is by two small dirt roads that follow the east-west section lines on the northern and southern boundaries of the study area. These roads are generally unimproved except for occasional maintenance grading.

No major washes or other drainage channels cross the project area or new access alignment. Small ditches on the uphill side of the cultivated areas serve to divert localized surface runoff around the developed farm fields.

Vegetation in the undisturbed portions of the project area and along the Wiley Well road consists of Creosote Bush Scrub, which is found throughout the study area. A description of this community is provided above.

Several weedy plant species occur in the disturbed areas of the project site, such as along roads and in the cultivated fields of jojoba (Simmondsia chinensis). These plants include Sand Verbena (Abronia villosa), Rough-stemmed Blazing Star (Mentzelia puberula), Venus Blazing Star (Mentzelia nitens), and Pigweed (Chenopodium sp.). Other weedy annuals that might be expected on the disturbed portions of this parcel include Pectis papposa, Euphorbia albomarginata, Boerhaavia coccinea, and Petalonyx thurberi.R-21/

The wildlife and bird species of the project area are generally the same as those of the study area identified above. Some species, because of their tolerance or preference for disturbed habitat, would be expected to be in greater numbers in the farm fields in Section 17. For example, the desert iguana was most abundant along the edge of the fields probably because they feed on wildflowers which grow well in cultivated areas. Other animal species such as the black-tailed jackrabbit could also be expected in greater numbers in the farm fields because of the availability of both herbaceous feed and cover.R-22/

No rare, threatened, or endangered species have been identified as occurring in the project area or the road alignment by the survey biologists, the California Department of Fish and Game, or the U.S. Fish and Wildlife Service.

ENVIRONMENTAL EFFECTS

Construction of the proposed prison will result in the removal of between 100 and 200 acres of the remaining Creosote Bush Scrub habitat in the project area. The exact amount of disturbance will depend upon the final placement of building areas and the amount of land used for agricultural purposes by the prison industries program. Based upon preliminary plans, the building site for the proposed prison and related facilities (parking lots, wastewater treatment plan, etc.) will only cover approximately 200 acres of the land near the northeastern corner of Section 17. It is anticipated that a large portion of the existing agricultural areas will be left intact so they can be used as a prison industry. This would include the existing jojoba fields in the southeastern and northwestern portions of Section 17.

The construction of a paved two lane road from the Wiley Well road at Interstate 10 to the entrance to the proposed prison will also result in the removal or disturbance of a small amount of creosote scrub along the existing road and in Section 16. The total area covered by this corridor is approximately 150 feet wide by 3 miles long. This area would include construction of a standard two lane paved road and utility right-of-ways.

Because of the large amount of Creosote Bush Scrub habitat available in the Chuckwalla Valley, the conversion of these lands to developed uses is not considered a significant environmental impact.

Resident wildlife and bird species in the project area would be affected to varying degrees by development of the proposed prison. For example, during construction, many of the more mobile wildlife species will be able to move out of the area. Other less mobile species such as small rodents and reptiles could be eliminated during grading and foundation construction. Construction activities on the prison site will also eliminate the use of this area for foraging by predators such as kit foxes and coyotes. Bird species are not expected to be significantly affected by the proposed project because of their mobility and the availability of similar adjacent habitat.

While there will be an incremental loss of open space in the building area and on the new road, there will still be an enormous amount of remaining open space available in the general vicinity of the site. Construction of the proposed prison will only directly affect a small amount of habitat in the Chuckwalla Valley.

Once construction of the proposed prison is completed, there may be some opportunity for wildlife to return to this area. For example, the proposed prison will contain large areas of open space around the perimeter of the housing units, at the wastewater treatment plant ponds, and on the agricultural fields. While construction of the proposed prison will introduce a new source of traffic into the area, these cars will be restricted to the main access road and facility parking lots. Except for traffic on the access road, farming, and outside security patrols, human activity outside of the prison will be greatly restricted. In particular, nighttime human activity will be limited to an occasional perimeter patrol vehicle and a low amount of traffic generated by one watch change.

As noted in Section G. the proposed facility will be a new source of night light in the eastern Chuckwalla Valley area. The illumination of the prison grounds and a perimeter area is unavoidable because of the facility's security requirements. However, it should be noted that only the main prison grounds will be lighted, not the entire boundary of Section 17 or the entire length of the access road. Perimeter lighting is expected to directly illuminate only a small area outside of the security fence. It is not the intent of these lights to directly illuminate lands several hundred feet from the prison's boundaries. While spot lights are provided on each perimeter tower, they are only used on an occasional basis. Night lighting will also be provided in some parking areas.

Night light from the prison will probably reduce usage of the perimeter lands by some species, particularly during the early stages of occupation. Because of the general absence of people outside of the prison at night, there is a strong likelihood that many species will become used to this light over time. The numbers of some avian species, such as bats, poorwills, and nighthawks may

slightly increase because of the opportunity to feed on insects attracted by the prison's security lighting. Night lighting from the prison is not expected to hinder migratory birds passing through the area.R-23/

The direct off-site environmental effects of the project on biological resources are also expected to be very limited. As noted above, a high proportion of the prison's activities occur inside of the security perimeter. With the exception of traffic on the access road and the farming program (which is a continuation of an existing use), all prison activities and buildings will be near the northeastern corner of Section 17. The only other area where any construction activities will occur is along the access road and utility corridor.

It can be expected that certain wildlife species such as kit foxes or large raptors may not frequent the boundary areas of this section to the same degree they presently do. However, because of the large amount remaining open space in the project area and the restricted nature of the prison operation, this is expected to be only a minor impact of the project.

The Chuckwalla Valley Dune Thicket ACEC, which is located northwest of the project area, is expected to be affected to only a minor degree by construction of the proposed prison. The area that could be affected is the southern end of the smaller dune that extends through the center of Section 8, north of the project site. However, the much larger dune area located northwest of the project site should not be directly affected by this project because of its distance from the construction area. To maintain the natural flow of surface water to this area, surface runoff from the uphill side of the project area (south) will be directed around and through the subject property. The discharge facilities for these drainage channels will be constructed so that erosion does not occur in Section 8.

As with other perimeter areas outside of the project area, the presence of the prison will probably serve to inhibit the use of the southern boundaries of this ACEC by certain development-sensitive species. For example, kit foxes that may forage in this area and some birds would be expected to not inhabit this buffer area to the same density they do at present. However, in general, it is not anticipated that the Chuckwalla Valley Dune Thicket ACEC will be

significantly affected by this project given the remaining openness of the area, the restrictive nature of the prison operation, and the placement of the access road.

The Wiley Well wash, which is located east of the project site, is not expected to be affected by the proposed prison. This wash is located over a mile from the project area so wildlife populations should not be significantly changed by construction of the prison. Since Section 17 lies outside of the drainage area for the Wiley Well wash, the amount of surface water in this drainage will not be changed by this project.

In conclusion, while the project will result in an incremental loss of open space and it will increase local traffic to this area, the proposed prison is expected to have only a very minor effect on the biological resources of the eastern Chuckwalla Valley area. The project will result in the unavoidable loss of some areas of Creosote Bush Scrub and will lead to the displacement or loss of the wildlife presently using the site. The loss of these lands is not considered significant because of the remaining availability of open space in the Chuckwalla Valley, the confined nature of the prison operation, and the absence of any unique desert habitat on the project site.

MITIGATION MEASURES

The proposed project is expected to have only a very minor effect, if any, on the biological resources of the study area. To assure that the proposed project does not generate any significant environmental effects on biological resources, the Department will implement the following measures:

1. Minimize the amount of land disturbed during construction of the proposed facility and access road, particularly in areas of undisturbed desert vegetation;

2. Restrict vehicular movement on the prison property to established roads where feasible; and

3. Stabilize the surface of disturbed areas, where feasible, upon completion of the construction activities.

PLANT AND ANIMAL LIFE REFERENCES

R-1/ California Public Utility Commission, personal communication, Elaine Russell, July 17, 1986.

R-2/ Page 3, Biological Resources Survey of the Wiley's Well Proposed Prison Site, April 1986, Dr. Ruth C. Wilson, California State University, San Bernardino. The use of the term "Colorado Desert" is taken from A California Flora, Philip A. Munz and David D. Keck, University of California Press, 1973, page 11.

R-3/ Ibid., Page 5

R-4/ Ibid., Page 3

R-5/ Ibid.

R-6/ Ibid., Page 5

R-7/ Ibid.

R-8/ Ibid., Page 3

R-9/ Ibid.

R-10/ Letter dated July 31, 1986, Elaine Hamby, California Department of Fish and Game natural Diversity Data Base and a letter dated July 21, 1986, Nancy M. Kaufman, Project Leader, Laguna Niguel Field Office, U.S. Department of the Interior, Fish and Wildlife Service.

R-11/ Page 8, CSUSB Biological Survey

R-12/ Ibid., Page 9

R-13/ Ibid.

R-14/ Ibid.

R-15/ Ibid., Pages 14-18

R-16/ Chuckwalla Valley Dune Thicket Management Plan, U.S. Department of Agriculture, Bureau of Land Management, undated, page 1.

R-17/ CSUSB Biological Study, pages 14-18.

R-18/ Loc. Cit., Pages 1-4

R-19/ CSUSB Biological Study, Pages 8-10.

R-20/ Loc. Cit.

R-21/ CSUSB Biological Study, Pages 5-6

R-22/ Ibid., Pages 8-9

R-23/ Ibid.

E. AIR QUALITY

ENVIRONMENTAL SETTING

Existing Air Quality

The proposed site is located in the western portion of the Southeast Desert Air Basin (SEDEB). The SEDEB is the air basin containing Imperial County, and three specific desert portions of the Los Angeles, Kern, Riverside and San Bernardino Counties. The Riverside County portion of the SEDEB is within the jurisdictional boundaries of the South Coast Air Quality Management District (SCAQMD). The SCAQMD establishes and enforces regulations for stationary sources at this location and for all of Los Angeles, Orange and Riverside Counties and the non-desert portion of San Bernardino County. The jurisdictional boundaries of the SCAQMD are generally referred to as the SCAQMD Region.R-1/

The Clean Air Act of 1967 establishes a national program to maintain standards of air quality throughout the nation. Pursuant to this law, the Environmental Protection Agency (EPA) promulgated National Ambient Air Quality Standards (NAAQS) for those pollutants of health concern. The ambient air quality standards are established to protect those members of society particularly susceptible to adverse air quality. In addition, the State of California has air quality standards which are generally more stringent than the Federal standards. The State and Federal standards are listed in Table E-1. The SCAQMD maintains a network of air monitoring stations to monitor progress toward ambient air quality standards. Most of the areas monitored by the SCAQMD violate State and Federal standards for hydrocarbons (HC), oxides of nitrogen (NOx), carbon monoxide (CO), ozone, and particulate matter (PM). The existing air quality in the vicinity of an air monitoring station may be characterized by the incidence of ambient air quality standard violations.R-2/

The nearest SCAQMD air monitoring station to the proposed site is in Indio, approximately 80 miles west. Consequently, no accurate air quality data from the SCAQMD are available at the proposed site. The Indio data show violations of the Federal standards for ozone and particulates. Air monitoring data from the Indio station are summarized in Table E-2. The air quality in the area of

TABLE E-1

AIR QUALITY STANDARDS

AIR POLLUTANT	AIR QUALITY STANDARDS(a)		
		NATIONAL(b)	
	California	Primary	Secondary
Ozone O_3	0.10 ppm 1-hr. avg.	0.12 ppm (240 ug/m^3) 1-hr. avg.	0.12 ppm (240 ug/m^3) 1-hr. avg.
Carbon Monoxide CO	10 ppm 12-hr. avg. 40 ppm 1-hr. avg.	9 ppm (10 mg/m^3) 8-hr. avg. 35 ppm (40 mg/m^3)	9 ppm (10 mg/m^3) 8-hr. avg. 35 ppm (40 mg/m^3)
Nitrogen Dioxide NO_2	0.25 ppm 1-hr. avg.	0.05 ppm (100 ug/m^3) AAM	0.05 ppm (100 ug/m^3) AAM
Sulfur Dioxide SO_2	0.05 ppm* 24-hr. avg. 0.50 ppm 1-hr. avg.	0.14 ppm (385 ug/m^3) 24-hr. avg. 0.03 ppm (80 ug/m^3) AAM	0.50 ppm (1300 ug/m^3) 3-hr. avg.
Particulate Matter (TSP)	100 ug/m^3 24-hr. avg. 60 ug/m^3 AGM	260 ug/m^3 24-hr. avg. 75 ug/m^3 AGM	150 ug/m^3 24-hr. avg. 60 ug/m^3 AGM
Hydrocarbon (corrected for methane)		0.24 ppm (160 ug/m^3) 3-hr. avg. 6-9 a.m.	0.24 ppm (160 ug/m^3) 2-hr. avg. 6-9 a.m.

* Occuring in combination with a violation of the State Ozone or TSP standards.

(a) Standards shown in parenthesis are restatements of the preceding standard but expressed on an alternative basis.

(b) Concentrations other than annual averages not to be exceeded more than once a year.

the proposed site is better than that in metropolitan areas. It generally improves in an easterly direction from the San Bernardino/Riverside area. The SCAQMD jurisdictional area is generally considered a non-attainment area for the criteria pollutants which include hydrocarbons, oxides of nitrogen, carbon monoxide and particulates, except for oxides of sulfur (SOx). A non-attainment area is one in which a National Ambient Air Quality Standard for an air pollutant is exceeded.R-3/

TABLE E-2

AIR QUALITY DATA
INDIO AIR MONITORING STATION

YEAR	OZONE 1/ (No. of Days Standard Exceeded)	PARTICULATE MATTER 2/ (% of Year Standard Exceeded)
1980	0	0
1981	30	0
1982	18	0
1983	33	1 sample 3/
1984	19	1 sample 3/
1985	-	-

1/Federal 1-hour Standard
2/Federal 24-hour Standard
3/Reporting changed to no. of samples per year instead of % per year.R-4/

Affected Regulatory Agencies

South Coast Air Quality Management District (SCAQMD). The SCAQMD is responsible for achieving attainment of the NAAQS. The SCAQMD has established regulations potentially applicable to the stationary emission sources at the proposed project site. The regulations potentially applicable to this project include:

- Regulation IV, Prohibitions - Rules which limit the emission rate of specific air contaminants from all types of equipment.
- Regulation IX, New Source Performance Standards - Rules which set forth air contaminant emission limits for specific sources such as gas turbines.

- Regulation X, National Emission Standards for Hazardous Air Pollutants - Rules which establish specific emission limits for toxics such as vinyl chloride.

- Regulation XI, Source Specific Standards - Rules which establish emission limits for sources such as dry cleaners.

- Regulation XIII, New Source Review - Rules which limit emission increases from new or modified sources to ensure progress in attainment of the NAAQS.R-5/

New Source Review, in essence, limits emission increases from new or modified permit units, e.g., internal combustion engines, or stationary sources to the following for non-attainment area air contaminants:

Reactive Organic Gases1/	75 pounds per day
NOx	100 pounds per day
SOx	150 pounds per day
CO	550 pounds per day
PM	150 pounds per day

In addition, New Source Review requires that Best Available Control Technology (BACT) be installed for any emission increase from affected new or modified permit units. As defined by the SCAQMD, BACT is essentially the most effective air pollution control device which has been practically used or is technically feasible. The SCAQMD currently has a policy of considering the cost of BACT for new sources of air pollution, but is not obligated to do so by law, except for small businesses. If emission increases will exceed those listed above, then emission offsets may be required for the total emission increase. Offsets are emission credits from other sources which have achieved emission reductions. Offsets have historically been unavailable. It should be noted that the applicability of New Source Review is uncertain based on available information about the project to date.R-6/

U.S. Environmental Protection Agency - PSD Permit. The EPA requires Prevention of Significant Deterioration (PSD) Permits for significant projects

1/Most hydrocarbons are presumed to be reactive and, therefore, subject to regulation by the SCAQMD.

with emissions greater than 250 tons per year, that would emit pollutants for which the NAAQS have been achieved. The proposed project is not expected to require a PSD Permit.R-7/

ENVIRONMENTAL EFFECTS

Air quality impacts may be divided into short-term and long-term. Short-term impacts would be expected from construction of the proposed project. Long-term impacts would be expected from the continued operation of the facility from industrial operations and motor vehicle traffic.R-8/

Short-Term Effects

During construction of the proposed prison, short-term air contaminant emissions may be expected from the operation of construction equipment; e.g., exhaust emissions; and from site preparation; e.g., dust.R-9/

Dust generated as a result of construction activities is caused by land clearing, excavation, building construction, and equipment traveling on temporary, unpaved roads. Dust emissions vary from day to day depending on the level and type of activity and the weather.R-10/

The EPA has measured suspended dust emissions from construction projects. An approximate emission factor for construction operations is 1.2 tons per acre of construction per month. Using this factor, for every 5-acre construction envelope, an emission rate of roughly 100 pounds per weekday may be expected. An effective watering program may be expected to reduce this value by approximately 50 percent. These impacts are not expected to create a local nuisance due to the remoteness of the proposed project and the short duration of the dust emissions. Dust emissions tend to be larger and more inert than the complex organic particulates from combustion sources.R-11/

Fugitive emissions from the continued operation of the prison are not expected to be significant because heavily traveled areas will be paved. Dust emissions from agricultural operations may be expected, however. These emissions, if necessary, may be controlled by various means including watering, a reduction in the frequency of tilling, and use of ground cover (grasses, etc.) between the rows.R-12/ In the long term, fugitive emissions

should return to their present level on the project site since most of the prison building area will be covered or paved. Existing road emissions will be reduced because three miles of the Wiley Well Road will be paved.

Exhaust emissions from construction equipment include HC, NOx, SOx, CO and particulates. Emission rates from construction equipment vary considerably, primarily due to the many different types of equipment and the variability in construction activity. EPA emission rates in pounds of air contaminant per thousand gallons of fuel, i.e., gasoline and diesel fuel, for typical grading equipment are shown in Table E-3.R-13/

TABLE E-3

EMISSION RATES FOR HEAVY DUTY EQUIPMENT

	GASOLINE lbs/1000 gal.	DIESEL lbs/1000 gal.	EMISSIONS 1/ lbs per day
Hydrocarbons	132	17.4	16
Oxides of Nitrogen	102	374	12
Oxides of Sulfur	5.31	31.1	0.6
Carbon Monoxide	3910	78	469
Particulates	6.86	22.2	0.8

1/Daily emission rates were estimated assuming the operation of five gasoline-powered motor graders operating eight hours per day with an average fuel consumption rate of five gallons per hour.R-14/

Long-Term Effects

Air contaminant emissions generated from the operation of the prison may include those from mobile sources, the combustion of natural gas for utilities such as space and water heating, the on-site generation of electric energy, and the operation of prison industries.R-15/

Mobile Sources. There are three types of mobile sources that may contribute to the impact on air quality including: (1) agricultural equipment, (2) in-plant vehicles, and (3) vehicular traffic.R-16/

One of the prison industries proposed includes agriculture. Agriculture would be expected to require the use of some farm tractors. Assuming the use of four diesel tractors at least eight hours per day, anticipated exhaust

emission rates have been summarized in Table E-4.R-17/ This is a worst case estimate and is not expected to be realized during the life of the project. Agricultural equipment emissions are actually expected to be negligible because the average use of farm tractors will probably be much lower than these projections.

Emissions from in-plant vehicles for the light industries proposed are expected to be negligible.

Vehicular traffic related to prison operations will be the largest source of mobile source emissions. This traffic will consist primarily of commuting travel by staff and visitors. At 100 percent of capacity (2,000 inmates), the prison is expected to generate approximately 1,550 total vehicle trips (one way, to or from the prison site) per weekday. This figure is extrapolated to approximately 1,950 vehicle trips per weekday with overcrowding at 125 percent of capacity (2,500 inmates). Including visitors, vendors, and staff, the total number of weekday vehicle miles was calculated to be 130,000 miles. It should be noted that these estimates are extreme worst case maximums and are not likely to be realized during operation of the proposed prison. For example, employee mileage was calculated on the basis of no carpooling among staff with a round trip distance of 40 miles per day. In addition, emissions generated as a result of this traffic will be distributed over a large area extending to, at least, Los Angeles. Weekend traffic emissions are expected to be lower. The emissions projected from this volume of traffic are shown in Table E-4. Peak traffic distances during a weekday were used to estimate daily emission rates, while the yearly value include both weekday and weekend emission rates.R-19/

TABLE E-4

WORST CASE
MOBILE SOURCE EMISSIONS

	HC		NOx		SOx		CO		PM	
	PPD*	TPY**	PPD	TPY	PPD	TPY	PPD	TPY	PPD	TPY
Agricultural Equipment 1/	.6	0.5	32	3.0	3	0.3	11	1.1	4	0.4
In Plant Vehicles	Neg	Neg	Neg	Neg	Neg	Neg	Neg	Neg	Neg	Neg
Vehicular Traffic 2/	120	20	226	38	21	3.8	1481	248	14	2.4
TOTAL	126	21	258	41	24	4.1	1492	249	18	2.8

*PPD: Pounds per day.
**TPY: Tons per year.

1/Calculated using U.S. E.P.A. emission factors. Assumes the use of 4 diesel tractors, each operated 8 hours per day 1,500 hours per year.

2/Calculated using California Air Resources Board emission factors (EMFAC 7B-1986). Assumes worst case of 130,000 vehicle miles per work day, (2,500 inmates @ 125 percent of capacity), and 44 million vehicle miles per year of light duty automobiles.R-20/

Stationary Sources. Emissions will be generated by the on-site generation of electrical energy (stand-by or cogeneration), the combustion of natural gas for space or water heating, and the operation of prison industries. Prison industries proposed with the project that may impact air quality include office systems manufacturing, furniture manufacturing, and laundering. It should be noted that details on the equipment proposed have not been determined to date. Therefore, emission rates have been developed with using general equipment designs.R-21/

If economically viable, the on-site generation of electrical energy utilizing a cogeneration system may be used. A 4.5 MW natural gas-fired, turbine-generator with a waste heat recovery steam generator is expected to be proposed for this project. Electricity produced by the turbine could be used on-site with additional power requirements met by SCE. Steam produced from the turbine exhaust could be used for space and hot water heating.R-22/

In conjunction with possible cogeneration system, stand-by electric generators capable of supplying 1.0 MW would be used at the prison. The stand-by generators would be used only if electricity was unavailable from the local utility. They were assumed to be natural gas-fired, reciprocating engine-generators and would normally be operated only a few hours per month.R-23/

Also, the on-site combustion of natural gas for space and water heating will produce emissions. If a cogeneration system is installed, the natural gas consumption for space and water heating will be reduced. However, it was assumed that 100 percent of the natural gas normally consumed (2.1 million SCFD) would be required in addition to cogeneration for purposes of estimating impacts. In actuality, peak thermal demands in excess of those satisfied by the proposed on-site generation system would be supplied by the facility's boilers.R-24/

Office systems manufacturing, or the production of partitions, will involve cutting, sanding, and the assembly of metal, wood, and plastic components. The operations will all be contained inside of enclosed buildings. Particulate emissions are typically produced from these types of fabricating operations and hydrocarbon emissions may be expected from surface coating operations. Similarly, furniture manufacturing will generate particulate and hydrocarbon emissions. Particulate emissions will be produced from sanding, sawing, chipping, and planing operations. Hydrocarbon emissions will be generated by surface coating and, possibly, degreasing operations.R-25/

While the prison will have a small dry cleaning plant, this operation uses a closed-loop system that prevents hydrocarbon emissions.R-26/

MITIGATION MEASURES

The generation of a certain amount of vehicular emissions is an unavoidable effect of the project. These emissions are expected to be reduced with time, however, as the use of more efficient and better emissions-controlled vehicles are used by industry and the public. It should also be noted that the emission rates provided in the EAS are worst case maximums and are very unlikely to be realized from the operation of the proposed prison. Because of the location of the prison and the fact the majority of the employees will

live in or near Blythe, it is anticipated that there will be a high usage of carpools. Emissions generated by visitors will also probably be lower because of factors such as carpooling and the use of public transit.R-27/

The construction and operation of the proposed project has the potential to degrade ambient air quality from the release of air contaminant emissions. This would be expected from the construction or operation of any new source of air pollution. The emissions expected from mobile sources have been quantified based on available information or stated assumptions. Emissions rates for stationary sources will be developed from equipment design as the project proceeds and be reviewed during permitting of the project by the affected regulatory agencies. It is expected that the air quality effects of the construction and operation of the proposed prison will be minimized with available air pollution control technologies. Additionally, the emissions from this source must comply with all the applicable Federal, State, and local air pollution control regulations. The regulatory requirements and specific air pollution control requirements will be addressed during the design and permitting of the project.R-28/

AIR QUALITY REFERENCES

R-1/ Page 8.1, Final Technical Site Study, Wiley Well Area, Riverside County, Tucker Sadler & Associates, August 21, 1986.

R-2/ Ibid.

R-3/ Ibid., Pages 8.1 and 8.3

R-4/ Ibid., Page 8,.3

R-5/ Ibid., Page 8.4

R-6/ Ibid.

R-7/ Ibid.

R-8/ Ibid., Page 8.5

R-9/ Ibid.

R-10/ Ibid.

R-11/ Ibid.

R-12/ Ibid.

R-13/ Ibid.

R-14/ Ibid., Page 8.6

R-15/ Ibid.

R-16/ Ibid.

R-17/ Ibid.

R-18/ Ibid.

R-19/ ibid., Pages 8.6 - 8.7

R-20/ Ibid., Page 8.7

R-21/ Ibid., Page 8.8

R-22/ Ibid.

R-23/ Ibid.

R-24/ Ibid.

R-25/ Ibid.

R-26/ Lyndon Johnson, California Department of Corrections, September 5, 1986, personal communication.

R-27/ Ibid., Page 8.9

R-28/ Ibid.

F. NOISE

ENVIRONMENTAL SETTING

The existing sources of noise in the project area are very limited. Sources of noise are limited because of the undeveloped nature of the eastern Chuckwalla Valley area. On the project site the only non-background sources of noise are the infrequent use of small farm tractors to disc the jojoba fields, occasional low flying airplanes (especially jet fighters on low level flights), and the large trucks traveling on Interstate 10.

Noise from low flying aircraft is the most notable sound in the project area, however, this only occurs a few times a day, if at all. Sounds from the freeway are barely noticeable most of the time because of the distance to the freeway (approximately three miles) and the frequent presence of a light southwesterly wind. While the Wiley Well road is close enough to hear the sound of motor vehicles, there is usually a very low amount of traffic on this road.

Sound levels of less than 50 dBA were recorded both at night and during the day on and adjacent to the project area. Similar readings were recorded within approximately a mile of Interstate 10.

Noise levels adjacent to the interstate and at the Wiley's Well rest area were higher because of the presence of highway noises. For example, sound levels during the daytime at the rest area were between 65 and 75 dBA. Similar levels were recorded at night. Noise levels at the rest area are particularly influenced by the large trucks that use this stop for a break or an extended rest. Because these trucks are normally left with their motors idling, the general noise level is higher than if just cars were using this area. The noise generated by the presence of these trucks masks the noise generated by vehicles using the off-ramp to the Wiley's Well road and passing by on the highway.

There are presently no permanently occupied houses on or adjacent to the project area. The Wiley Well rest area is the nearest location where any concentration of people presently occurs. The only other area where there are

concentrations of people is at the Wiley Well campground approximately five miles south of the project site. However, use of the campground is normally limited to the cooler winter and spring months.

ENVIRONMENTAL EFFECTS

The proposed project is not expected to generate any significant increases in noise levels because of the institutional nature of this facility. The only exception to this will be when the firing range is in use. In contrast to many developments, prison activities are generally concentrated inside of the housing units and program buildings, all of which are normally enclosed. None of the prison industry programs planned for this facility are expected to generate significant noise levels because of the nature of these industries (light manufacturing, warehousing, etc.) and the fact that all, except agriculture, will be enclosed in buildings.

The proposed prison will contain a small firing range. This facility will be non-commercial and is intended to be used only by prison personnel and possibly other law enforcement agencies. The range will be operated approximately 10 to 15 days per month. Firing range exercises will generally occur during daylight hours, although there will also be some limited-duration nighttime weapons practice. The types of weapons that will be fired at this range will include handguns, rifles, and shotguns. The tentative location of the range is on the southern or western side of the project area.

Based upon noise studies prepared for other firing ranges, noise levels of 54 to 85 dBA could be expected at a distance of 1 mile if there are no barriers or other obstructions between the receptor and the range. The upper range of this estimate, 85 dBA, is considered a worst case situation that is normally not expected to occur.R-1/

A proposed safety berm will surround the firing range. Placement of this berm is expected to lower the projected noise levels at 1 mile by 5 to 20 dBA.R-2/ Other elements of the site that will serve to reduce the noise levels generated by the firing range are the gently rolling topography and vegetative cover of the lands surrounding the prison site.

The only areas where there is any regular concentration of people that could possibly notice the noise generated by the firing range would be at the Wiley Well campground south of the project site and at the rest area on Interstate 10. Because of the respective distances (approximately five and three miles) those areas lie from the source of this noise, it is unlikely that any problems will occur.

The generation of noise by the firing range, while reduced by the berms, is an unavoidable effect of the project. However, its effects are greatly reduced by the low amount the range will be used, by the distances between the range and any noise receptors, and absence of permanent residences in the project area.

The only other new source of noise in the project area will be the increased traffic volumes at the Wiley Well road interchange and on the prison's access road.

The peak traffic period at the Wiley Well interchange will occur between approximately 6:30 and 8:00 a.m. when the employees on the day shift are traveling to the prison. It has been estimated that under worst case conditions (no carpooling of staff and maximum occupancy of the prison) approximately 360 vehicles will exit the freeway and turn south onto the prison access road. In actuality it is expected that a much lower number of vehicles will be coming to the prison during this peak period because of carpooling.

Because of the existing noise levels at the rest area and the comparatively low volume of peak traffic that will occur on this interchange, it is anticipated that there will be only a minor increase in the noise levels in this area. Another factor that serves to minimize the significance of this possible noise increase is that there are no permanent residences near the interchange.

Noise levels would increase on the section of the Wiley Well road between the interchange and the entrance to the prison, a distance of approximately three miles. While there would be a minor increase in the noise levels in this area, there are no residences or campgrounds along this section of the road.

In conclusion, the proposed prison will cause a minor increase in noise levels in the project area, along the access road, and at the interchange on Interstate 10 because of increased traffic and the operation of the prison. The greatest noise generator at this facility will be the firing range.

The anticipated noise increases are not expected to have any direct, off-site effects because of the absence of permanent residences in the project area and the relative remoteness of the prison site.

MITIGATION MEASURES

No mitigation measures required.

NOISE REFERENCES

R-1/ California State Prison - Corcoran, Environmental Assessment Study, California Department of Corrections, December 1985, pages 81 to 82.

R-2/ Ibid.

G. LIGHT AND GLARE

ENVIRONMENTAL SETTING

The project site presently contains no major sources of night light. The farmland portions of the site have no lighting fixtures such as street or floodlights. The two seasonal farm residences (small house trailers) associated with the agricultural areas may have small gas or generator powered lights, but they have not been observed during the course of this study. As noted in the section on utilities, electrical service is not available in the project area.

The only regular source of night light in the general vicinity of the project site is the Wiley Well rest area, the lights on the interchange, and the light of the vehicles traveling in this area. There are no other lights on the Wiley Well road or on the lands immediately adjacent to the project site. The only possible exception to this could be a few lights at the small farm building in Section 28, south of the project site.

There are no permanent residences on or near the project area. The nearest places where people are present in the project area at night are the rest area, on the interstate and the Wiley Well road, and at the Wiley Well campground. With the exception of people using the campground, the remainder of people in this area at night are generally in transit to other areas. The campground, which is about five miles southeast of the project site, is used particularly during the winter for long term camping (a week or more). Because of the climate of this area, this campground does not experience a high level of use during the late spring, summer, and early fall.

The general topography of the project site and the lands surrounding this area is nearly flat. Some local relief is provided by the shape of the alluvial fans that extend out into the Chuckwalla Valley. The project site is also partially obscured from some vantage points by desert vegetation or the depressed grade of the interstate. The project site is visible from just east of the rest area on the interstate. While partially obscured in some places, the project site is also visible along portions of Interstate 10 west of the rest area.

The proposed prison would be visible along portions of the Wiley Well road, especially closer to the interstate. Farther south, such as near the Wiley Well campground, there are no direct views of the prison site. The prison site is also visible from high points near the site such as the Little Chuckwalla Mountains. However, these areas are not visited with any significant frequency, especially by people at night.

Prison Lighting System

The perimeter of the prison's secure area will be fenced with a double row of chain link fencing topped with razor wire. Armed perimeter towers approximately 25-30 feet high will be located on the outside edge of this fence on approximately 1,100 foot centers. With the exception of a roof-mounted searchlight and a very low wattage high pressure sodium (HPS) lighting fixture over the entry door of each tower, no exterior lighting will exist on the towers. Mounted on the peak of the roof of each tower will be a high-powered searchlight. Each searchlight consists of a 1,000 watt incandescent lamp that generates approximately 1,500,000 candlepower. The control of each searchlight will allow 360 degrees of horizontal movement and 55 degrees of vertical movement from horizon to ground.R-1/

Also located near the secure perimeter fence will be a series of wooden poles spaced approximately 180 feet apart for power, signal, and lighting fixtures. These poles will have approximately five lighting fixtures that will provide a total of five footcandles to the area on and immediately adjacent to the secure perimeter. These lighting fixtures will be aimed both laterally down the secure perimeter and inward to the housing units.R-2/

Lighting inside the perimeter of the secure area will be by 1,000 watt HPS lighting fixture mounted on poles approximately at 80 feet above the ground. The purpose of these lights is to provide between two and five footcandles of light throughout this area.R-3/

With the exception of the prison entrance and some of the parking areas, no exterior lighting is planned outside of the secure perimeter. The parking lot and prison's entrance would have sufficient lighting to provide approximately two footcandles of light throughout these areas.R-4/

The only other area where lighting would be provided is at the Wiley Well road interchange on Interstate 10. Additional lighting may be needed at this intersection once the prison access road has been upgraded and connected to the overpass. Any additional lighting provided at this intersection would be in compliance with the standards of the California Department of Transportation.R-5/

It is not anticipated that lighting would be provided along the Wiley Well road, except at the interchange and the prison's entrance. The prison lighting system will also not include fixtures that directly illuminate large areas outside of the secure perimeter.

Control of any roadway lighting fixtures will be by individual photocell located on each light. Prison lighting will generally be computer controlled with a manual override.R-6/

Prison policy currently requires all exterior lighting in the secure area to be turned on all night with the exception of the armed perimeter tower searchlights, which are only activated in emergency situations.R-7/

ENVIRONMENTAL EFFECTS

The State has mandated an average lighting level of one footcandle for roadway lighting. The lighting fixtures must also comply with the standards established by the California Department of Transportation. Providing lighting at the prison entrance and possibly additional lights at the Wiley Well interchange will be required to ensure public safety. While these are not expected to be significant sources of light, they are an unavoidable necessity of the project.R-8/

Lighting in and around the prison facility itself is necessary because of the 24-hour nature of the prison operation and for reasons of security. As such, it is an unavoidable effect of the project. The perimeter floodlights facing in toward the housing units will create no direct glare problems for the surrounding environment. There will generally be little reflected glare from the building surfaces because of their concrete construction.

Perimeter lights that are aimed down the fence lines of the secure perimeter generally constitute the greatest source of light that may be directed outside the immediate boundaries of the prison. While avoidable, the effect of these lights is moderated by their comparatively low mounting heights and lateral (rather than outward) aim.R-9/

While the operation of the proposed prison will result in the creation of a new source of light to the lands south of Interstate 10, the project is not expected to cause a significant impact on travelers or campers in this area. Lighting employed by the prison facilities is designed to be directed downward and inward so that it effectively illuminates a very specific area. Prisons do not generally use lighting that spills over into large areas outside of the secure perimeter. Such a practice would represent unnecessary waste of electricity and lighting equipment.

Since most of the travelers and campers in this area would be located at a distance of over three miles from the prison, it is not anticipated that the prison lighting will be objectionable or cause a traffic hazard. The effect of night lighting on the biological resources of this area is discussed in Section D.

Skyglow from the prison site will occur to a certain degree, even with the most directed lighting plan. However, it is important to note that most of the observers of this light will be located at a significant distance, such as on Interstate 10, from the source of this illumination. While not considered significant, skyglow is an unavoidable effect of the project. Because of the importance of maintaining adequate lighting within the prison facility, it will not be possible to wholly eliminate skyglow and direct views of the prison's lights at night from surrounding areas.

MITIGATION MEASURES

The proposed prison will be a new source of night light in the project area. While not considered significant, there are no measures available to completely eliminate this effect. However, the design of the lighting system will serve to minimize sources of unnecessary light on and around the facility.

LIGHT AND GLARE REFERENCES

R-1/ Environmental Assessment Study, California State Prison - Corcoran, California Department of Corrections, December 1985, Pages 97-98.

R-2/ Ibid., page 99 and personal communication, Geoff Marmas, Kitchell CEM, August 27, 1986.

R-3/ Ibid.

R-4/ Ibid.

R-5/ Personal communication, Geoff Marmas, Kitchell CEM, August 27, 1986.

R-6/ Environmental Assessment Study, Loc. Cit., page 103.

R-7/ Ibid.

R-8/ Personal communication, Loc. Cit.

R-9/ Ibid.

H. UTILITIES

1. NATURAL GAS

Existing Conditions

Southern California Gas Company (SCG) provides natural gas to Blythe and the surrounding area. An interstate gas transmission pipeline runs along the southern side of Interstate 10, approximately 2.75 miles north of the proposed prison site (Figure H.1-1). A gas compressor station at Fourteenth Avenue and Arrowhead Boulevard in Blythe maintains a transmission pressure from 400 to 800 pounds per square inch (psi). At present, natural gas service is not available at the proposed prison site, however, representatives of SCG indicated their system has adequate capacity to meet the natural gas requirements of the proposed prison.R-1/

ENVIRONMENTAL EFFECTS

Operations of a 2,000 bed prison at 125 percent occupancy including prison industries are expected to result in a natural gas demand of approximately 1.25 million cubic feet per day. The required pressure for natural gas service to the prison site is expected to be approximately 60 pounds per square inch gravity (psig).R-2/

Services from SCG's transmission system would meet both the pressure and volume criteria of the prison's natural gas needs. The new service would entail constructing approximately three miles of new pipeline from Interstate 10 along the new prison access road to the site.R-3/

Cogeneration facilities are being considered to produce both electrical and thermal energy. The use of a cogeneration plant would require a substantially greater quantity of natural gas than is needed to satisfy only thermal demands. Refer to Section J. for a more extensive discussion of the cogeneration potential for this facility.R-4/

MITIGATION MEASURES

Natural gas usage in the area would increase as a result of the development of the project. However, based upon contact with Southern California Gas Company, no disruptions to other natural gas users will result because of service being extended to the prison.R-5/

Mitigation measures that will be incorporated in prison facility design to specifically reduce the use of natural gas are:

- o Heat recovery systems in the cogeneration facility.
- o Pipe insulation on hot water lines, steam and condensate return piping.
- o Selection of gas efficient equipment.

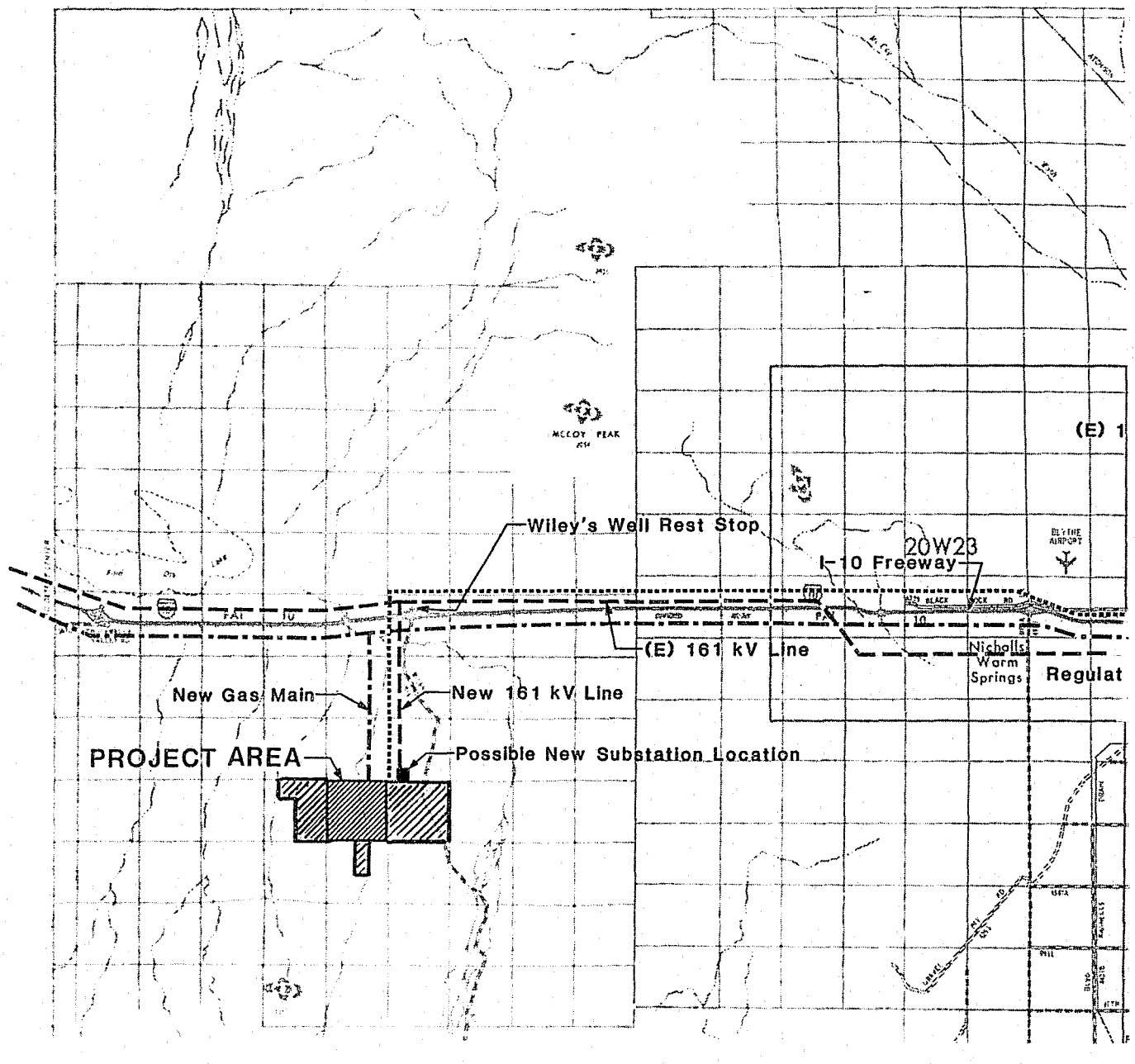
2. ELECTRICITY

Existing Conditions

Southern California Edison (SCE) provides electrical service to the Blythe area. Power from Parker Dam is delivered to the City by means of overhead 161-kV transmission lines running along the edge of the first mesa northwest of the City of Blythe. The primary electrical substation for the Blythe area is located on the route of this line along Hobson Way between the City and Blythe Airport. The 161-kV transmission line continues on to the west just north of and parallel to the Interstate 10. This line would be the nearest source of power for the proposed prison site and SCE has indicated that it has sufficient capacity to serve the facility's anticipated 5- to 7.5-megawatt load. Relevant portions of this existing system are indicated on Figure H.1-1.R-6/

ENVIRONMENTAL EFFECTS

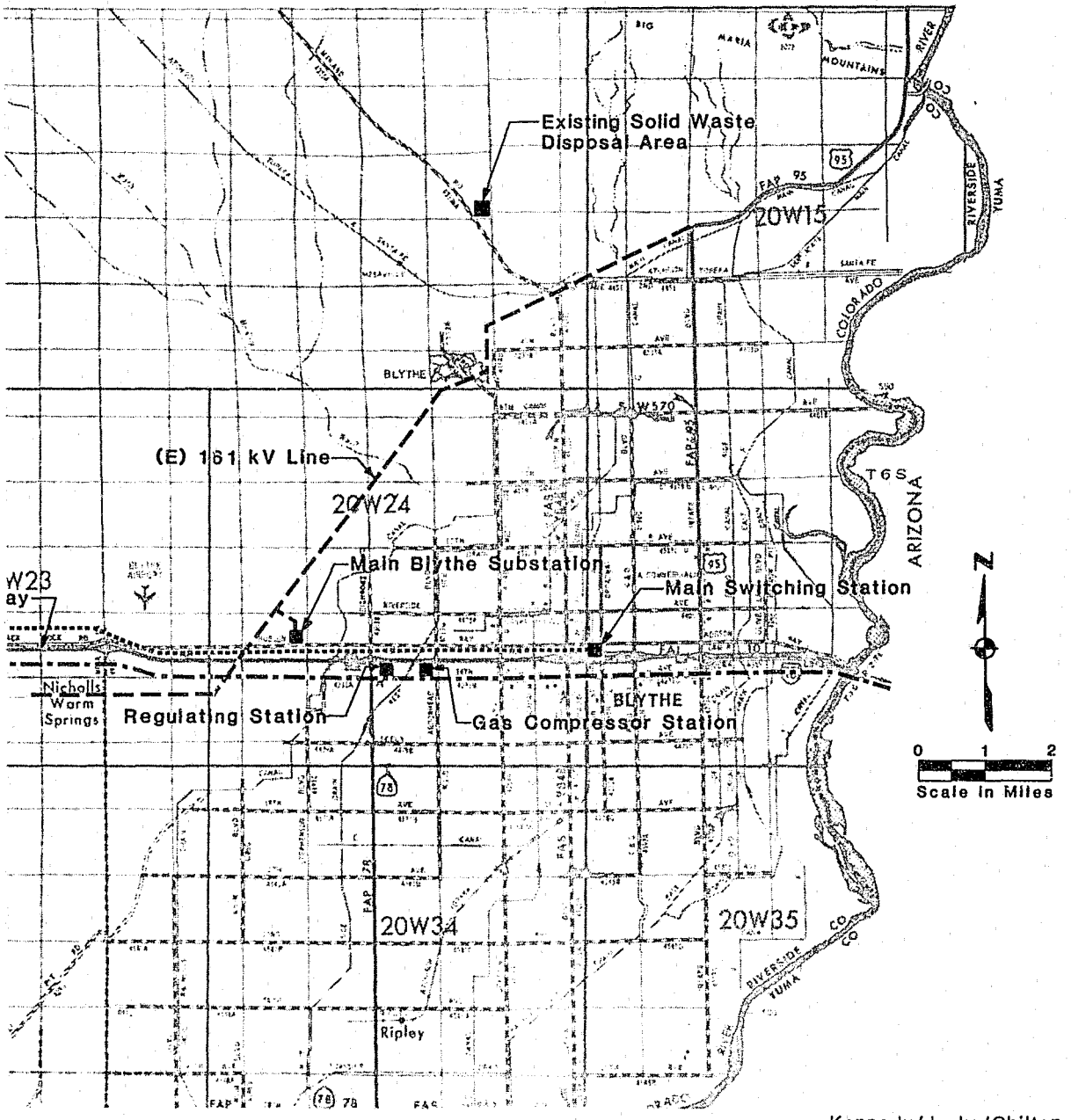
This right-of-way would parallel the alignment of the new access road to the prison. Construction in this corridor, which is already partly disturbed by existing roadways, would not generate any significant environmental effects in



LEGEND

- Electrical Transmission Lines
- Natural Gas Transmission Lines
- New Telephone Line

NOTE: Routes Of Utilities
And Are Not Intende



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Riverside Prison

Utility Map of the Blythe Area

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Figure H.1-1

Routes Of Utilities Shown Hereon Are Schematic Only And Are Not Intended To Delineate Specific Routes.

the project area. Other related improvements, such as necessary substations or additional connecting lines, would be constructed in or adjacent to existing utility corridors along Interstate 10.R-7/

The electrical load presented by the prison is non-cyclic and therefore has no effect on electrical service to other power users on Southern California Edison's transmission lines.R-8/

MITIGATION MEASURES

The proposed project will have no direct, off-site effects on local electrical service so no mitigation measures are necessary.

3. TELEPHONE

Existing Conditions

Telephone service in the Blythe area is provided by Continental Telephone Company of California (CONTEL). Telephone lines are generally direct-buried cables with existing main trunk lines extending in several directions from the switching station located on 3rd Street in the City of Blythe.R-9/

In the direction of the prison site, a 900-pair trunk line extends along Hobson Way to the Airport, but the trunk capacity has been reduced to 25 pair by the time it reaches the Airport vicinity. No telephone service currently exists beyond Nicholl's Warm Springs, which is approximately nine miles east of the site.R-10/

ENVIRONMENTAL EFFECTS

During prison construction, CONTEL anticipates being able to provide a minimum amount of service on a limited basis by using the existing Hobson Way trunk with some line modification. CONTEL is planning to serve the prison and is currently in the process of filing for annexation of the territory with the State of California Public Utilities Commission.R-11/

To serve the prison requirements, a new, 900-pair telephone trunk line will have to originate at the 3rd Street switching station and be routed along

Hobson Way past Nicholl's Warm Springs and thence along Interstate 10 to the Wiley Well rest area and then south to the prison site. This is a total distance of approximately 20 miles. Right-of-way easements for the route must be obtained beyond Nicholl's Warm Springs. Since the cables would be underground, there would be no visual impact. Installation of this line would only result in a minor amount of surface disturbance along the Interstate 10 corridor and the utility right-of-way to the project site.R-12/

MITIGATION MEASURES

No mitigation measures are required.

4. SOLID WASTE

Existing Conditions

Solid waste generated in the Blythe area is disposed of at the Riverside County landfill located at 1000 Midland Road, which is approximately seven miles north of the City of Blythe. The landfill received 11,000 tons of waste in 1984. Based on previous County estimates, the landfill has a projected useful life of another 53 years (to the year 2039). Blythe Sanitation Service Company provides solid waste collection services in the unincorporated area around Blythe, whereas the City of Blythe provides solid waste services to customers within the City limits.R- 3/

ENVIRONMENTAL EFFECTS

The Department of Corrections estimates that prisons normally generate approximately 30 pounds of solid waste per inmate per week. This estimate includes solid waste from prison industry programs. Based upon the proposed inmate capacity, the prison would generate between 1,560 (100 percent occupancy) and 1,950 (125 percent occupancy) tons of refuse per year. These amounts exclude solid waste generated by the operation of any on-site wastewater or water treatment facilities.R-14/

Solid waste generated by the proposed prison would increase the solid waste volume received at the County landfill by 14 to 18 percent. Based on County figures for estimated closure and remaining landfill capacity, the 14 to 18

percent increase in solid waste should fall within the projected annual solid waste increase for this facility. Therefore, no reduction of the useful life of the landfill is expected to occur as a result of this project.R-15/

Some minor amounts of hazardous materials are expected to result from operation of the prison industry programs and vehicle maintenance. Hazardous materials that are typically used in furniture manufacturing operations include lacquers and various solvents such as acetone and turpentine. Volumes of hazardous materials vary for such facilities, however, it is estimated that about 500 gallons per year of waste lacquer and solvents would require disposal. Perchloroethylene generated by the dry cleaning operations will be recycled within a closed loop system.R-16/

On-site vehicle maintenance could generate waste oil from routine operations. It is estimated that 30 gallons of waste oil per year could be generated for every 10 service vehicles maintained on-site.R-17/

These hazardous materials will be handled, stored and disposed of in strict compliance with all applicable State and Federal regulations. Compliance could include hauling the waste to a licensed Class I waste disposal site or recycling of the waste on-site.R-18/

Sludge generated from the proposed on-site wastewater treatment operations would be accepted at the County landfill providing the necessary permits are obtained. It is anticipated that up to 20 tons per year of dewatered sludge would require disposal. Disposal fees would be negotiated with the County of Riverside and paid for by the Department of Corrections based upon the actual quantity refuse requiring disposal.R-19/

MITIGATION MEASURES

Solid waste generated by this project is expected to be within the County's projected waste increase of the local landfill. Therefore, no reduction in the useful life of this landfill is expected as a result of this project.

The California Department of Corrections has initiated a Recycling and Salvaging Program (RASP) for prisons throughout the State. The program description (December 1985) states that "based on the projected inmate

population and increased solid waste produced, a Recycling and Salvage Program (RASP) shall be incorporated into the support services division of the inmate work/training programs for the new prisons, and subsequently into the existing support services divisions of existing prisons and work/training programs where feasible." The RASP program includes recycling of such materials as paper, wood, glass and metal. The materials are sorted and stored for further recycling under contract to a private agency. A RASP program at the proposed prison would reduce the quantity of solid waste delivered to the County landfill.R-20/

5. WASTEWATER TREATMENT AND DISPOSAL

ENVIRONMENTAL SETTING

Existing Conditions

The closest existing wastewater facilities to the proposed prison site are the City of Blythe's secondary wastewater treatment facility, which is more than 20 miles away, and the County of Riverside's wastewater system at the County Airport in Blythe, which is more than 9 miles away. A previous site suitability study (Tucker, Sadler & Associates, September 1984), performed for the proposed prison in Riverside County, contained a discussion of the possibility of pumping prison-generated wastewater to either of these facilities. Based upon the economics of this previous study, both of these facilities are considered to be too far from the proposed prison site to be feasible wastewater disposal and treatment options for wastewater flows generated at the proposed prison site.R-21/

As discussed in other sections of this report, the property under investigation for the prison site contains no significant surface water courses, lakes, or ponds. The parcel is relatively flat with no natural topographic features or existing development to inhibit the construction of on-site wastewater treatment or disposal facilities.R-22/

Due to the location of the proposed prison, development of new on-site wastewater treatment facility is the prison's only reasonable option. The

following is an analysis of the facility's anticipated wastewater production and the on-site wastewater management options available to the Department.R-23/

Wastewater Production

Non-industrial wastewater flows produced within the prison complex include flows associated with inmate and staff accommodation, such as personal hygiene facilities, food processing, and laundry. Based upon wastewater production studies at existing similar prison complexes within the State, it has been estimated that non-industrial wastewater production at this facility would be 200 gallons per day (gpd) per inmate. At the peak projected occupancy, the prison facility would produce an average daily wastewater flow of about 500,000 gpd (0.50 mgd).R-24/

Of the industries under consideration for the prison, none would have a significant wastewater production. Laundry is considered part of the non-industrial flow, and manufacturing assembly and crop production has no associated wastewater production in excess of the 200 gallons per inmate previously discussed.R-25/

Wastewater System Design Capacity

Since the on-site wastewater flow associated with industries at the prison site is negligible, the design capacity for alternative wastewater treatment and disposal systems is dictated by non-industrial flows. For the purposes of alternatives evaluation, a wastewater system with a design capacity to accommodate peak flows associated with an average day flow of 0.50 mgd has been established.R-26/

Raw wastewater pumping and transmission facilities must be designed to handle peak flows originating at the prison. Due to the regimented nature of daily inmate and staff schedules, diurnal variation in wastewater production is expected to be significant. A typical diurnal peaking factor (ratio of peak instantaneous flow to average daily flow) for a city having a population equal to that for this prison facility is about 2.6. It is assumed that a diurnal

peaking factor of 3.0 is appropriate for this prison facility. Therefore, raw wastewater transmission facilities would have a design capacity of 1.50 mgd (1,040 gpm).R-27/

Expected Wastewater Quality

The expected major constituent concentrations of the prison site's wastewater are presented below:

EXPECTED WASTEWATER QUALITY

CONSTITUENT	CONCENTRATION (mg/l)
BOD_5 a,b/	500 - 700
Suspended Solids b/	225
Total Dissolved Solids c/	1,030

a/Biochemical oxygen demand (5 day).
b/Based upon wastewater qualities at existing State prisons.
c/Based upon expected water supply quality and a typical TDS increment of usage of 250 mg/l.

For the purpose of evaluating alternatives in this study, treatment alternatives will be able to accommodate wastewaters of the quality presented in the above table.R-28/

Wastewater Treatment Options

Treatment requirements and associated treatment options for an on-site treatment facility depend upon the anticipated method of disposal. Table H.5-1 presents the available methods of disposal and associated treatment levels required as specified by the Regional Water Quality Control Board, Colorado River Basin Region (RWQCB) and the California Department of Health Services (DHS).R-29/

Effluent discharged to disposal ponds must meet State quality requirements as dictated by the Waste Discharge Requirements as adopted by RWQCB. It is anticipated that the effluent quality limitations for disposal ponds would be similar to those of the City of Blythe's discharge limitations. According to the City of Blythe's Waste Discharge Requirements, effluent discharged to the

ponds must meet the State's secondary treatment standard. Typically, secondary treatment includes primary treatment, oxidation and secondary clarification.R-30/

TABLE H.5-1

DISPOSAL OPTION	REQUIRED LEVEL OF TREATMENT
Evaporation/Percolation Ponds	Secondary Treatment
Forage Crop Irrigation	Primary Treatment
Field Crop (Not Eaten, Processed)	Secondary Treatment

Three general categories of secondary treatment can be considered for the prison: 1) a suspended growth activated-sludge process; 2) an attached growth biofiltration (trickling filter) process; and 3) waste stabilization ponds.R-31/

Certain unit process additions or expansions would be required no matter which secondary treatment process is selected. These include headworks and raw wastewater pumping. Additionally, grit removal, sludge digestion, and sludge disposal would be required for either activated sludge or trickling filter processes. Primary and secondary clarification also is addressed in the analysis of these two specific treatment concepts.R-32/

Activated-Sludge. In the activated-sludge process, organic waste is introduced into a reactor where an aerobic bacterial culture is maintained in suspension. The aerobic environment in the reactor is achieved by the use of diffused or mechanical aeration, which also serves to maintain a completely mixed regime. After a specified period of time, the mixture of new cells and old cells is passed into a settling tank where the cells are separated from the treated wastewater.R-33/

There are many types of activated-sludge processes including conventional, compact stabilization, extended aeration, and oxidation ditch. One advantage of the activated sludge process is its ability to provide a relatively high quality effluent for discharge. Disadvantages

of an activated sludge process include high energy requirements, extensive operator attention, and extensive maintenance requirements.R-34/

Biofiltration. Aerobic attached-growth biological treatment processes usually are used to remove organic matter found in wastewater. They are also used to achieve nitrification (the conversion of nitrogen in the form of ammonia to nitrate). The attached-growth processes include the trickling filter, the roughing filter, rotating biological contactor, and fixed-bed nitrification reactor. The trickling filter process, which is used most commonly, consists of a bed of highly permeable media to which micro-organisms are attached and through which wastewater is percolated or trickled - hence the name. The filter media usually consist of rocks, but plastic media, a more recent innovation, is also used.R-35/

The advantages of a biofiltration (trickling filter) system are its relatively low energy requirements and flexibility to varying organic and hydraulic loadings. A disadvantage of a trickling filer system is the pretreatment requirements which include either a primary clarifier or fine screen.R-36/

Waste Stabilization Ponds. In their simplest form, waste stabilization ponds are large, shallow earthen basins that are used for the treatment of wastewater by a natural process involving the use of both algae and bacteria. A waste stabilization pond contains bacteria and algae in suspension, and the aerobic, or a combination of aerobic and anaerobic (facultative), conditions prevail throughout its depth.R-37/

Waste stabilization ponds are a combination of aerated and facultative ponds which provide both waste stabilization and clarification. Stabilization ponds are energy efficient, have low maintenance requirements, and are highly flexible and reliable. A disadvantage of stabilization ponds is their extensive land requirement.R-38/

Primary treatment is defined by the DHS in its Wastewater Reclamation Criteria as providing an effluent with not more than 0.5 ml/l-hour of settleable solids. Forage crop irrigation, such as alfalfa, is the only acceptable means

of disposal of primary effluent available to the prison facility and can only be used in locations with limited public access and, due to odor problems, limited proximate development. Secondary treatment is sufficient for reclaimed water to be used for irrigation of certain field crops that are not eaten or processed. Although public access and treated effluent runoff must be controlled, secondary effluent should not pose the health risks and odor potential associated with primary treated effluent.R-39/

In addition to biological considerations, treated water reuse for agricultural purposes would entail the consideration of the water quality constituents such as salts and heavy metals. Key constituents of concern are dissolved solids, sodium and boron. A number of field and forage crops are semi-tolerant to tolerant to these constituents and the anticipated concentrations in the biologically treated wastewater should not pose a problem if appropriate crops are selected.R-40/

Wastewater Disposal Options. Considering existing site conditions, two methods of wastewater disposal would be available to the proposed prison facility: disposal ponds and reuse of treated effluent.

Disposal Ponds. The City of Blythe and the County Airport both use disposal ponds to discharge their treated effluent. Unlined ponds effect discharge through a combination of evaporation and infiltration. Evaluation of the existing disposal pond systems and the existing site conditions indicates that the region's evaporation and percolation potential is relatively high and that this means of disposal would be appropriate for the prison's effluent. Ponds in the six- to eight-foot deep range would be used for this discharge. Considering the results of preliminary soils investigations, the underlying soils consist mostly of sands and gravels which are condusive to this method of disposal. Based upon historical disposal capacities experienced by both the City and the Airport and a knowledge of the soils present at this site, a 20-acre pond system appears adequate for an average effluent flow of 0.50 mgd. This would allow intermittent use and maintenance of the ponds, as well as a margin of reliability. However, the final acreage will be confirmed during final design of the wastewater treatment plant.R-41/

Reuse of Treated Effluent. One of the industries proposed for this prison site is agricultural production. Certain crops would provide a potential for reuse of treated wastewater. Depending upon the number of acres put into production, a portion, if not all of the wastewater effluent could be accommodated through agricultural reuse. An option that would provide year-round effluent disposal would be a spray irrigation system. Such a system could be used on agricultural crops or prison landscaping. Use of treated effluent for irrigation requires controls to prevent runoff to adjacent lands and measures to prevent human contact with this water.R-42/

Proposed Treatment Alternative. Based upon the treatment options discussed above, and discussions with the RWQCB, it is recommended that a secondary treatment facility be located within the developed area of the prison site, adjacent to the secured prison complex.R-43/

The treatment plant would have an overall design capacity to handle peak flows associated with an average day flow of 0.50 mgd, based upon anticipated long-term maximum flows. The headworks of the treatment facility would be designed to handle the anticipated peak flow of 1.50 mgd. Although any of the secondary treatment methods discussed previously could be used at the prison, an oxidation ditch activated-sludge process will be used as an example since it provides a good representation of the operational and environmental effects of the wastewater disposal system. The actual method of secondary treatment to be implemented at the prison will be determined during final design once the Department of Corrections proceeds with this project and makes a formal request to the RWQCB for tentative waste discharge requirements. Other unit processes required include preliminary treatment, a clarifier unit subsequent to the oxidation ditch, sludge digestion, and sludge drying beds. A primary clarifier is typically not required for an oxidation ditch process, unless large amounts of grit, solids or grease are present.R-44/

Using this system disposal would be accomplished by a low-head, 700 gpm effluent pump station discharging through a 10-inch pipeline to a series of 6- to 8-foot deep evaporation/percolation ponds totaling 20 acres. Pumping requirements would be greater for the agricultural reuse alternative. Dried sludge could be disposed of at a local sanitary landfill. Occasionally, local

agricultural interests haul away the dried sludge for use as fertilizer. Section H.4., which addresses solid waste issues, provides more specific information on potential sludge disposal alternatives.R-45/

A list of the on-site treatment and disposal system components proposed at the prison site is presented in Table H.5-2. The conceptual layout of this wastewater alternative is presented on Figure H.5-1. The total energy requirement for this 0.50 mgd treatment and disposal system is about 285,000 kWh per year.R-46/

TABLE H.5-2
COMPONENTS OF ON-SITE WASTEWATER
TREATMENT AND DISPOSAL ALTERNATIVES

COMPONENT	DESCRIPTION
Influent Pump Station	1,040 gpm; 15 hp
Preliminary Treatment	Bar screen/comminuter/grit chamber
Oxidation Ditch	Race track with aerators
Secondary Clarification	Circular
Sludge Digestion	Aerobic
Sludge Disposal	Sludge drying beds; dry solids hauling
Effluent Disposal Pump Station	700 gpm; 10 hp
Pipeline	500 feet of 10-inch pipeline
Evaporation/Percolation ponds	20 acres; 6 to 8 feet deep

ENVIRONMENTAL EFFECTS

Construction of the proposed State prison will require development of a wastewater treatment plant to serve the needs of the facility. The proposed treatment plant would be located on the downhill side of the prison near the northeastern corner of Section 17. The physical effects of the construction of the proposed treatment plant, as well as other parts of this facility, have been discussed in the section on Biological Resources.

A second potential environment impact of the proposed wastewater treatment plant is the discharge of 0.50 mgd of secondary effluent to on-site evaporation/percolation ponds. While the warm, dry climate of the project area would result in the evaporation of a significant amount of this effluent,

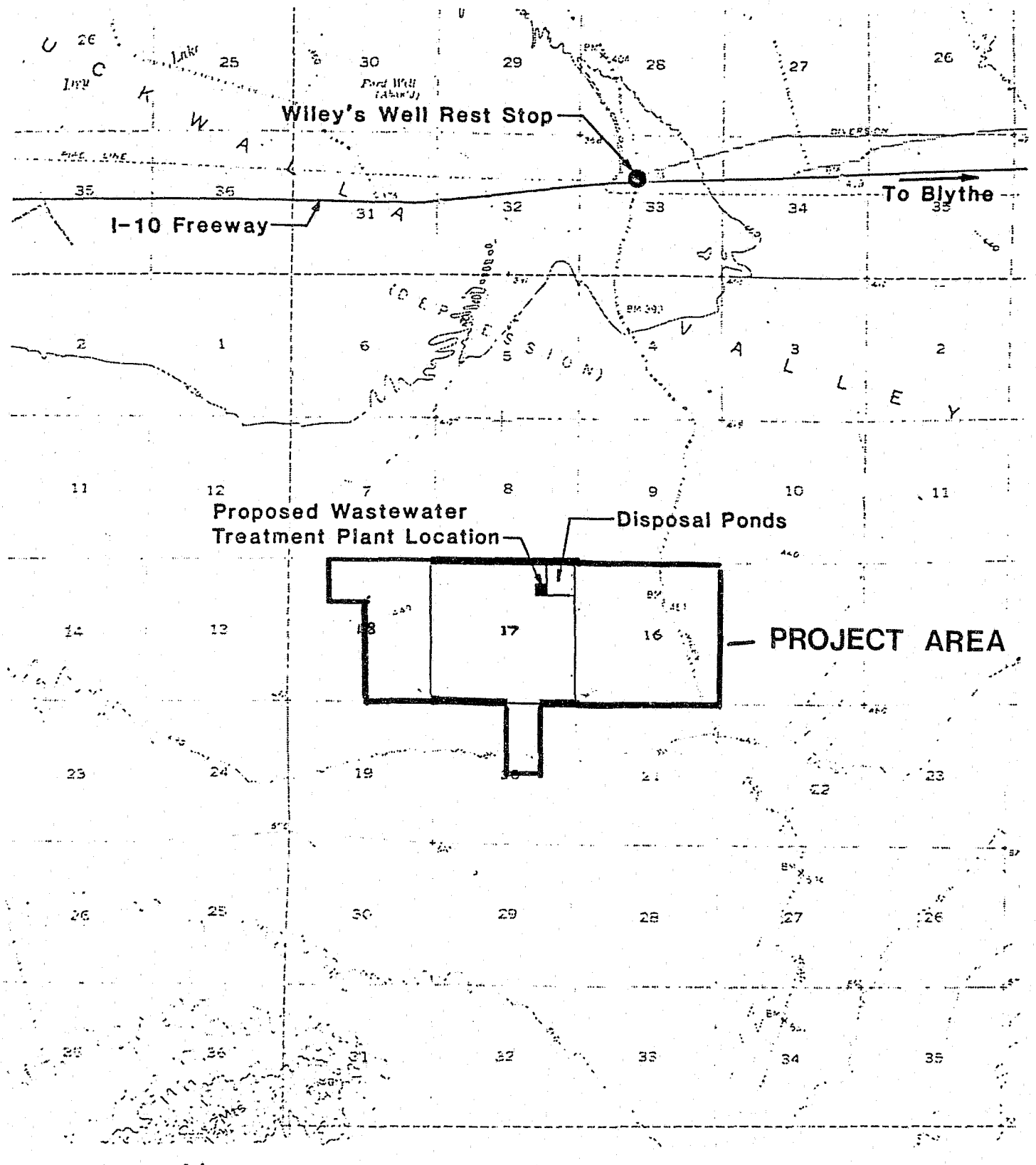

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Figure H.5-1

a certain portion would also percolate into the soils under the ponds. As indicated in the following section, the groundwater will be used as the source of both potable and agricultural irrigation water for this facility.R-48/

Based upon studies conducted by Woodward Clyde Consultants for this project, the depth to groundwater in the project area is approximately 270 feet below the effluent disposal ponds. It is anticipated that while water from the disposal ponds may percolate to the surface of the groundwater table, several factors will prevent the deterioration of the existing groundwater quality. These factors include the level of treatment the water receives before being discharged to the disposal ponds, the purifying effect the soil column will have on this water, and the diluting effect the large underlying basin will have on this water. Because of these factors, the proposed discharge of treated effluent is not expected to have an effect on existing groundwater quality. If treated effluent is used to irrigate agricultural lands on the prison site, there will be even a lower possibility of groundwater contamination occurring.R-49/

The handling and treatment of wastewater could be expected to generate a source of odors in the project area. Generation of odors is not expected to be significant because the treatment plant will be designed and operated to meet the requirements of the RWQCB (which would minimize odor production) and the amount of open space around the prison site.

Since all of the wastewater generated by the proposed project will be treated and disposed of on-site, there will be no direct, off-site effects of the treatment system.

In conclusion, the treatment and disposal facilities at the proposed prison will be designed, constructed, and operated to meet the standards of the RWQCB and the DHS. Treatment and disposal methods similar to those proposed in this section are acceptable to the RWQCB and the DHS and are currently used by neighboring communities. Compliance with the RWQCB standards should prevent the wastewater treatment system from generating any significant environmental effects.

MITIGATION MEASURES

No mitigation measures are necessary since the proposed wastewater treatment plant is not anticipated to have any direct, off-site effects.

In regard to groundwater, it is also not anticipated that percolation of treated wastewater effluent will cause deterioration of groundwater quality in the project area. If in the long term increases occur in salts or nitrates in the local groundwater basin, additional wastewater treatment may be required. This could include the construction of lined evaporation ponds that would not percolate the treated effluent on other similar measures.R-50/

6. WATER SUPPLY AND TREATMENT

ENVIRONMENTAL SETTING

The prison will require a potable water supply to meet the drinking, bathing, culinary, fire suppression, and other usual municipal-type water needs. The prison also plans to include industrial and agricultural operations for the inmate labor force.R-51/

Sources of Water Supply

Several sources of water to supply the proposed prison were investigated for the proposed prison. The sources include groundwater at the site, surrounding groundwater basins, and surface water.R-52/

Transporting water from other basins, such as the Palo Verde Valley or Pinto Basin, into the eastern Chuckwalla Valley area would be very expensive. From the site suitability report prepared for the Blythe Airport site, a pipeline of at least 10 inches in diameter would be required. The cost of interbasin pipelines would range from $5 million to $12 million, depending upon which basin is selected. Treatment may be required for water taken from other basins.R-53/

The nearest source of surface water to the proposed prison site is the Colorado River at Blythe, about 25 miles from the project site. The river could provide water of adequate quality and quantity. However, a system to transport the water to the site would cost between $5 million and $6 million.R-54/

The next closest source of surface water is the Colorado River Aqueduct at Eagle Mountain, about 43 miles from the site. The aqueduct is owned by the Metropolitan Water District of Southern California (MWD) and could be a reliable source of water for the prison. However, the cost of providing a system to transport the water would be between $10 million and $11 million. Treatment may be required for either of the surface water sources.R-55/

Previous studies have shown that adequate quantities of groundwater, to supply the needs of the proposed prison, are available at the site. Additionally, it appears feasible to treat this water to provide a water supply that meets current health standards.R-56/

Based upon a comparison of the alternative water supply sources, on-site development of groundwater is the only feasible source of water for the project.R-57/

Preliminary Water Quality Findings

Two studies, one in 1985 and one in 1986, were conducted to assess the quantity and quality of water at the project site. As part of those studies, existing irrigation wells were sampled and analyzed for the State's primary and secondary drinking water standard perimeters. One well was sampled for organic chemicals and compared with California Department of Health Services (DHS) action levels for those chemicals.R-58/

The data obtained during the preparation of these previous studies indicate that the water in the wells generally complies with the primary drinking water standards. However, fluoride (6.3 to 8.9 mg/l) was found to be above the 1.4 mg/l standard, and arsenic concentrations are approaching the primary standard of 0.05 mg/l.R-59/

The secondary water quality standards are divided into two groups, Consumer Acceptance Limits and Mineralization. Specific maximum contaminant levels (MCLs) are set for consumer acceptance limits; but, no fixed MCLs have been set for the mineralization parameters. Only iron was found to exceed the secondary MCL, and this occurred only in three of the five wells sampled. Total dissolved solids (TDS) were found to be between the recommended and upper limit MCL for mineralization. This is typical for Southern California desert community water supplies. The data for mineralization parameters are quite similar to the data presented for the City of Blythe and are less than that observed near the previously proposed Airport site.R-60/

Comparison of the data with DHS action levels indicates that measured parameters are below the action level concentrations. The data suggest that those parameters not measured are also likely to be below the DHS action levels.R-61/

Recent Water Quality Findings

An additional water quality study was conducted in mid-1986 to determine the optimum stratum for extraction of water. The results of that study indicate that the best quality water is likely to be produced from below a depth of 600 feet. This study included the drilling of a new on-site well in the project area to a depth of approximately 1,000 feet. This well was drilled near an existing well in the center of the northern side of Section 17. The existing well is identified as Well 78.R-62/

Well 78 is located near the center of the northern boundary of Section 17. This well is presently being used for agricultural irrigation. Well 78 was sampled during an extended pumping test in July 1986. One of the purposes of the test was to assess whether extended pumping would result in water quality changes. The drinking water standards and the preliminary and recent test results for Well 78 are presented in Table H.6-1. The data from this well test confirms that the water generally complies with the primary drinking water standards. Fluoride was found to be above the 1.4 mg/l primary MCL; however, the iron concentration was lower than previously measured. Thus, iron removal may be unnecessary if this result is confirmed in a later testing. Additionally, the TDS concentration was found to be similar to the

TABLE H.6-1

QUALITY OF WATER SAMPLED AT
WELL 78 IN THE WILEY'S WELL AREA

PARAMETER	UNITS	MAXIMUM CONTAMINANT LEVEL(1)	CONCENTRATION	
			January 1986	July 1986
PRIMARY STANDARDS				
Arsenic	mg/l	0.05	0.02	0.02
Barium	mg/l	1.0	0.12	0.08
Cadmium	mg/l	0.010	<0.002	<0.002
Chromium	mg/l	0.05	0.001	0.002
Lead	mg/l	0.05	0.01	<0.01
Mercury	mg/l	0.002	<0.0002	0.0002
Nitrate	mg/l	45	0.04	<0.25
Selenium	mg/l	0.01	<0.01	<0.01
Silver	mg/l	0.05	<0.01	<0.01
Endrin	mg/l	0.002	<0.00005	(8)
Lindane	mg/l	0.004	<0.00005	(8)
Methoxychlor	mg/l	0.1	<0.00002	(8)
Toxaphene	mg/l	0.005	<0.001	(8)
2, 4-D	mg/l	0.1	<0.0001	<0.0004
2, 4, 5-TP Silvex	mg/l	0.01	<0.0001	<0.00004
Fluoride	mg/l	1.4 - 2.4	8.9	9.3
Turbidity	TU	(2)	6.7	1.3
Radioactivity	pCi/l	15(3)	0	0
SECONDARY STANDARDS				
Color	CU	15	10	<1
Copper	mg/l	1.0	0.11	<0.01
Foaming Agents	mg/l	0.5	<0.01	<0.1
Iron	mg/l	0.3	1.2	<0.02
Manganese	mg/l	0.05	0.02	0.01
Odor	TON(4)	3	ND(5)	ND(5)
Zinc	mg/l	5	0.02	<0.01
Total Dissolved Solids	mg/l	500(6)	710	710
Chloride	mg/l	250(6)	215	210
Sulfate	mg/l	250(6)	214	212
pH(7)	units	6.5 - 8.5	8.7	8.7
Temperature(7)	°F	---	109	109

(1) Maximum level allowable in accordance with the State's primary and secondary water standards.
(2) For surface water supplies only.
(3) Gross alpha particle activity (standard deviation = ± 1.84).
(4) Threshold odor number.
(5) None detected.
(6) Recommended maximum only. Upper contaminant levels are 500 mg/l, 500 mg/l and 1,000 mg/l for chloride, sulfate and TDS, respectively.
(7) Not part of the secondary standards.
(8) Not anaylyzed because sample spilled when the extract concentrator glassware cracked.

preliminary findings. It should be noted that where test results differ between samples taken in January and July, that the results of testing samples taken in July are probably more representative due to the fact that the samples were taken after prolonged pumping. Samples taken in January were taken very shortly after pumping began.R-63/

If wells constructed for the prison produce similar quality water, treatment will be required to comply with the State's drinking standards.R-64/

Feasibility of Treatment to Meet Drinking Water Standards

It has been noted that fluoride, arsenic and iron are likely to require treatment to meet the State's drinking water standards. Although arsenic and iron contents were found to be below the MCLs in the more recent samples from Well 78, previous samples tested (from Well 78 for iron and from another nearby well for arsenic) indicated the presence of these contaminants at quantities near or higher than the MCL. Therefore, a definitive statement as to their presence cannot be made until the proposed wells are sampled and tested.R-65/

Fluoride and arsenic removal mechanisms are very similar and arsenic removal should occur as a secondary result of fluoride treatment. The most common method of fluoride removal is ion exchange (or adsorption) using either bone char or activated alumina as the exchange medium. Both materials are readily available. Adsorption of arsenic on bone char results in irreversible changes in the structure of the char, reduces its effectiveness, and ultimately renders it useless. However, activated alumina is readily regenerated when both arsenic and fluoride are removed.R-66/

For previous studies, the health departments of California, Arizona and Nevada were contacted to identify active, successfully operating fluoride removal treatment plants. Several systems were identified and four were contacted by telephone. All of the facilities contacted had been operating for between 7 and 16 years. The initial fluoride concentrations at two of the plants were in the same range as that measured in the water samples taken during this and prior studies. All plants contacted were using activated alumina and were achieving fluoride concentrations below the primary MCL.R-67/

Fluoride and arsenic reduction to the primary MCLs is considered to be feasible and activated alumina is expected to be the preferred media. Although blending was not practiced at the contacted plants, blending to reduce plant size at the prison may be desirable.R-68/

Iron is a common mineral that frequently occurs in concentrations greater than the 0.3 mg/l secondary MCL. The first iron removal system was constructed in Germany in 1874 and the first United States facility was built in 1893, in New Jersey. By 1958, nearly 14 percent of all public water supplies and 70 percent of the Illinois water supplies were treated for iron reduction. Iron reduction is very common and can be effected by several treatment processes including: aeration or chlorination followed by filtration; lime softening; ion exchange; or iron retention. Locally, the City of Blythe treats its well water with a sequestering agent (iron retention) that inhibits the adverse consequences of iron. Iron treatment, if needed, is considered feasible for the proposed prison water supply.R-69/

Groundwater Hydrology

The aquifer within the Chuckwalla Valley hydrologic basin is comprised of sands and gravels interbedded with silts and clays. With few exceptions these sediments are unconsolidated in nature. Groundwater occurs in these alluvial deposits under confined conditions. The aquifer is recharged primarily by infiltration of precipitation, agricultural return water from irrigation, and subsurface inflow from Pinto Basin located to the northwest. Groundwater is currently pumped from the basin for agricultural and domestic use. In addition, some groundwater flows out of the basin (subsurface) through the divide between the McCoy and Mule Mountains to the east. Total storage in the Chuckwalla Valley groundwater basin has been estimated to be a minimum of five million acre feet. Recoverable storage from this basin has been estimated to be a minimum of 2.8 million acre feet and a maximum of 15 million acre feet.R-70/

A hydrologic water budget analysis of the Chuckwalla Valley groundwater basin indicates that the water requirements of the proposed prison may be met without depleting groundwater supplies within the basin.R-71/ Table H.6-2 provides a hydrologic balance for the proposed project.

TABLE H.6-2

HYDROLOGIC BALANCE OF CHUCKWALLA VALLEY
GROUNDWATER BASIN

ITEM	QUANTITY OF WATER, in acre-ft/yr		
	Current Conditions	Including Prison Requirements	Including Prison Requirements and On-Site Agriculture
INFLOW:			
Infiltration of Precipitation	29,530	29,530	29,530
Agricultural Irrigation Return Flow	19,200	18,720	18,720
Subsurface Inflow from Pinto Basin	290	290	290
Prison Effluent Return Flow	0	410	410
Prison Agricultural Return Flow	0	0	340
TOTAL INFLOW	49,020	48,950	49,290
OUTFLOW:			
Pumpage for Agricultural Irrigation Use	48,000	46,800	46,800
Pumpage for Domestic Use	150	150	150
Subsurface Outflow to Palo Verde Valley	870	1,380	870
Pumpage for Prison Domestic Use	0	620	620
Pumpage for Prison Agricultural Use	0	0	850*
TOTAL OUTFLOW	49,020	48,950	49,290

*If treated wastewaster effluent is used for the agricultural program approximately 250 acre feet of water would be available to replace or augmenrt the use of groundwater.

Table revised from Table 4.2, Phase II Groundwater Investigation, Wiley Well area, Woodward-Clyde Consultants, August 14, 1986.

Proposed Prison Water Demands

The proposed prison water demand and storage requirements include non-industrial water, fire suppression water, and industrial water requirements.

Non-Industrial Water Demands. Non-industrial water demand is the water required to meet usually potable water needs. Among the types of activities that influence non-industrial water demand are direct consumption, personal hygiene, food preparation, landscape irrigation, laundry and vehicle washing.R-72/

The Department has estimated that the non-industrial water requirement for this prison will be about 220 gallons per inmate per day (gpid). This unit water demand includes the water used by inmates, staff, visitors and in all prison areas, except for prison industries.R-73/

The design occupancy for the prison is established at 2,000 beds. However, it has been estimated that the occupancy will fluctuate above and below the design capacity. The peak occupancy is estimated to be about 125 percent of the design capacity. The duration of the peak occupancy is undetermined at this time. Therefore, the average day non-industrial water demand can be estimated to be about 550,000 gpd (380 gpm) or about 620 acre-feet per year. Applying the State's peaking factors, the corresponding maximum day and peak hour requirements are estimated to be 1.10 mgd (760 gpm) and 1,500 gpm, respectively. The operational and emergency non-industrial water storage requirement is estimated to be 825,00 gallons.R-74/

Fire Suppression Water Demand. The fire flow required for the proposed prison is calculated by developing factors for the type of construction, occupancy, exposure, and communication. Fire protection requirements for similar facilities are found to be between 3 hours for a fire flow of 3,500 gpm and 4 hours for a fire flow of 4,000 gpm. Therefore, fire flow storage is estimated to be between 630,000 gallons and 960,000 gallons.R-75/

Industrial Water Demands. The amount of water required to meet the industrial water demand is highly variable and depends on the type and magnitude of the

industrial operation conducted at the proposed prison. The prison industries currently being considered include chain link fence assembly, and office system furniture assembly, each of which have negligible water demands. The list is tentative and may change as the project concept is better formulated. The water demand for possible agricultural industries is discussed in a later paragraph.R-76/

The type of industries tentatively selected for the proposed prison will have a minor impact on the fire flow requirements. Any agricultural operations will have little, if any, fire flow requirements.R-77/

Agricultural Water Requirements

The Prison Industry Authority plans to establish an agricultural program at this proposed prison. Depending upon the crops selected, the Department currently plans to cultivate between 150 and 300 acres of land, which would require the use of approximately 850 acre feet of water per year. If it is determined during the final design of the prison that it is economically feasible to use treated wastewater effluent, approximately 250 acre feet of water would be available to replace or augment the use of this groundwater for agricultural programs.R-78/

Three wells are currently operating in the vicinity of the proposed prison site. These wells are reported to be between about 800 and 1,100 feet deep with depth to groundwater about 200 feet below the ground surface. These wells are currently used for agricultural purposes.R-79/

Water Supply System

Based upon a preliminary evaluation of the project site water would be produced from 3 proposed 1,100-foot-deep, 800 gpm wells. Water produced from the wells would be conveyed to the prison and reservoir through an estimated 13,000 feet of 10-inch-diameter on-site pipeline. Within this alternative, a 2 million gallon storage tank would be constructed near the prison structures. Telemetry and controls would be provided for adequate operation of the system. The existing wells in the project area may be used instead of developing new wells or they may be used for agricultural irrigation depending upon the facility's final design.R-80/

Water Treatment System

The removal of fluoride is considered likely and removal of arsenic and iron is considered possible for water produced from wells similar to Well 78. Fluoride and arsenic could be removed by the same process. Fluoride treatment, using either bone char or activated alumina, is practiced successfully. Iron reduction has been practiced for more than 100 years and is used extensively in the United States. Treatment technology to reduce fluoride, arsenic and iron is considered well established and therefore feasible for use at the proposed site.R-81/

Solid and liquid waste by-products from the treatment process, such as spent activated alumina, caustic soda, or precipitated solids, would be removed and disposed of under contract with a qualified waste hauler to a dump site determined by the hauler. To avoid classification as a hazardous waste storage facility, the by-products which would be classified as hazardous must be disposed of at least every 90 days. Procedures involving these by-product are considered as normal in the day-to-day operation of a plant of the type expected to be designed for this facility. The landfill and temporary storage of this material would not generate any significant environmental effects.R-82/

To determine the specific treatment process, bench scale testing of the well water will be performed. The objective of this testing will be to verify the performance of the candidate treatment processes so that a cost effective facility can be designed.R-83/

Groundwater Use

Based upon groundwater studies of the Chuckwalla Valley, the operation of the prison will not cause a long-term decline in local groundwater levels. The project is also not anticipated to affect the amount of water that flows through subsurface means toward the Palo Verde Valley.R-84/

The localized effect of pumping water for the prison on the existing water levels in the project area is projected to be minimal. Based upon the proposed use of 620 acre feet of water for the prison and approximately 850 acre feet for on-site agriculture, the proposed project would lower water

levels in the nearest well outside the project area by less than 1 percent. This well is located on the agricultural lands in Section 28, approximately one and a half miles southeast of the prison site. This would be the only direct, off-site effect of the project on water resources. This effect is considered negligible. The project would otherwise have no effect on the water resources of the Chuckwalla Valley or other adjacent basins.R-85/

MITIGATION MEASURES

The construction impacts of drilling new wells, building storage tanks and water treatment facilities and installing pipelines would be short-lived and confined within the project boundaries. These effects would be minor and can be mitigated through appropriate construction procedures. Energy consumption associated with water pumping during operation of the prison would be minimized by installing energy efficient pumps. To conserve water as much as possible, the prison's domestic water system would be designed to use low-flow plumbing fixtures and irrigation of landscaped areas would be scheduled during times of day with lower evaporation potentials. Use of reclaimed water will be considered to replace or augment the use of groundwater for agricultural programs or landscape irrigation.R-86/

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I. ARCHAEOLOGY

ENVIRONMENTAL SETTING

Introduction

A cultural resource assessment for the proposed prison site was prepared under the direction of Daniel F. McCarthy, Staff Archaeologist, Archaeological Research Unit, University of California, Riverside. This survey also covered the other sections in the original study area, a buffer around the study area, and the alignment of the new access road.R-1/

Survey Overview

At the outset of the project survey a review of the California Archaeological Inventory records on file at the Information Center for Eastern California (University of California, Riverside) indicated that there were no known archaeological sites within the boundaries of the subject property. However, there have been several studies conducted in this general area that have identified the presence of archaeological sites. Previous studies have been performed for several transmission and natural gas right-of-ways and for a proposed geothermal development.R-2/

Sites recorded in this area suggest only casual use of the Chuckwalla Valley, perhaps just for the purpose of traveling through, as evidenced by an extensive trail network, lithic scatters, and isolated pottery scatters. These sites suggest a series of temporary camps, primarily Late Prehistoric in age, but with some possibility of earlier use, that took advantage of the ephemeral lakes and watercourses in the valley.R-3/

The trail network leads from one resource to another with the most important resources being water. Often associated with these water sources are petroglyphs, food processing equipment such as bedrock metates, metates (milling stones), and ground stone tools, and a variety of plant and (sometimes) animal resources. Other sites within the general area include a variety of activity areas including cache sites, vegetal food milling

features, lithic scatters, and quarry sites. Some of these sites, such as the quarry sites, suggest sporadic use by the aboriginal inhabitants over a long period of time.R-4/

The aboriginal inhabitants in the general vicinity of the project area were largely Yuman-speakers who primarily lived along the Colorado River. In historic time, the Mojave, Quechan, and Halchidhoma all probably lived in the area at various times. The Colorado River area was home to the Halchidhoma until about 1826 when the combined attack of the Quechan and Mojave resulted in more than 250 casualties to the resident tribe. Survivors of this tribe fled to the Gila River area where they joined the Maricopa and lost their tribal identity. Their vacated territory was soon filled by division of the desert-welling, Shoshonean-speaking Chemehuevi, an offshoot of the Southern Paiute.R-5/

Subsistence along the Colorado River was based on both intensive collecting of wild plant foods and floodwater farming, supplemented by hunting and fishing. Mesquite was unquestionably the most important wild plant, although various cacti and grasses in the nearby uplands were also important. Farming was a rather casual, but usually productive, endeavor that involved clearing garden plots prior to the annual flood of the river. During the spring floods sufficient moisture was provided to the soils to grow an entire crop without further rainfall or irrigation. The floodplain's high water table also contributed to the success of these crops. Typical crops were corn, beans (including teparies), squashes, and, in historic times, wheat, barley, and melons.R-6/

Exceptionally large or unseasonable flood episodes meant fewer crops were harvested. During such periods full-time hunting, fishing, and gathering was required to sustain life. Since tribes along the river depended on the floodplain for probably 95 percent of their food supply, a shortage of cultivated crops led to more competition for native resources, thefts of food, petty conflicts, and occasionally outright war. The warfare pattern among these peoples typically involved neighboring groups and was often chronic and brutal. Sometimes alternate groups along the river were, by necessity, allies against common enemies living in between.R-7/

The people in this area made remarkable ceramics that included a variety of painted and plain vessel forms, especially "ollas" for the storage of foodstuffs, and dolls. They hunted with the bow and arrow, fished with poisons, nets, and wiers. Their villages were located on the riverbanks, and houses were usually flat-topped ramada-like affairs. Boats were made of balsas and rafts were made of bundled bulrushes and reeds. In 1605, Don Juan de Onate reported more than 16,000 Indians living on the lower Colorado River between present-day Las Vegas and the tidewater.R-8/

No area of California is less known prehistorically than the lower Colorado River. There has not been a single archaeological site excavated and reported in literature within 100 km of the study area. It is believed that ceramic technology in the area dates back to perhaps A.D. 800. The antiquity of local agriculture is unknown.R-9/

Project Site Survey

The project area was surveyed in July and September of 1986 by staff from the Archaeological Research Unit at the University of California, Riverside. To aid later ground surveys, the subject property was first flown using a fixed wing aircraft to observe major features of the site terrain, the amount of surface disturbances (farming, roads, etc.), and to note significant features such as trails, rock alignments, or intaglios (surface designs or patterns, usually in relief). The subject property was then covered on foot in a series of north/south transects spaced at approximately 30 meter intervals. Ground visibility was excellent in the study area because of the open nature of the native vegetation. Transects were also made along the Wiley Well Road. A subsequent transect was made of the alignment of the new proposed access road.R-10/

Because only surface sites were expected to be found in the study area, the areas under cultivation (approximately 600 acres) were not systematically surveyed. The disruption caused by the leveling and grading done prior to the planting of jojoba fields is expected to have destroyed any sites that may have occurred in these areas.R-11/

Survey Results

No ground figures or trails were observed on the undisturbed portions of the study area. As the result of the surface transects two archaeological sites and four isolated finds were reported in the study area. The two sites were characterized as ceramic sherd scatters (broken pieces of clay pottery). There was also evidence of previous military activities in the study area such as a rusted food ration can of World War II vintage and some old vehicle tracks.R-12/

Site CA-RIV-3093 is a sherd scatter of seven buffware sherds located on light colored gravel in the northeastern portion of the study area.R-13/

Site CA-RIV-3094 is a more extensive sherd scatter representing at least five and possibly seven different vessels. This site was also located on the northern side of the study area. Because of the nature and abundance of this scatter, it was collected for further study.R-14/

Attempts at reconstruction of the vessels by the survey staff were fruitful. Several rim sherds of a narrow-mouthed vessel, probably used as a water contained, were recovered. The rim diameter when projected from the fragments recovered measures approximately 10 centimeters. Approximately 20 percent of another vessel was recovered and pieced together. This vessel represents a large-mouthed "olla" with a projected rim diameter of 20 centimeters. There were over 30 other sherds that may be part of this vessel but they could not be pieced together. There was also evidence from these sherds of three other vessels. None of the recovered sherds exhibit any decoration such as painting or incising.R-15/

The isolated finds are described as follows:

Isolate 1 - one red jasper core that is sandblasted with several flakes removed;

Isolate 2 - one red jasper core that is sandblasted with only a few flakes taken off;

Isolate 3 - a single buffware sherd having fine-grained sand temper; and

Isolate 4 - three buffware sherds that are reddish brown and very weathered, all appearing to be from the same vessel.R-16/

The two sites and most of the isolated finds were identified in the northern portion of the study area. This might be an indication that this area was used as a corridor to reach the Chuckwalla Mountains to the west of the site. Several regional trails have been identified in that area. Pottery sherd scatters are often associated with these trails.R-17/

In conclusion, two sites and four isolated finds were identified during the cultural resource survey of the study area. No historic sites are reported to occur in this area. The subject sites and isolates have been described and site records have been forwarded to the California Archaeological Inventory. Site CA-RIV-3094 has been collected and studied. The other identified site lies well outside of the area that could potentially be effected by this project. The survey archaeologist concluded that no further study of the reported sites or the study area is necessary.R-18/

ENVIRONMENTAL EFFECTS

Based upon the archaeological survey prepared for this environmental assessment study, it has been determined that the proposed project will not have any effect on cultural resources in the project area. The subject sites in the project area have either been collected and no further study is warranted or they lie well outside of the construction area (site CA-RIV-3093). The proposed project will also not have a direct off-site impact on cultural resources since none were found along the edge of the construction area or in the alignment of the prison's access road.

MITIGATION MEASURES

Since no archaeological resources are known to remain in or immediately adjacent to the project site, no mitigation measures are necessary.

Potential impacts to sites that may lie on lands adjacent to the project area will be prevented because construction activities and other surface disturbances related to the construction of the proposed prison will occur only within the surveyed area of this study.

The Department of Corrections will call in a qualified archaeologist during construction of the proposed prison to examine, collect, and determine the significance of any subsurface archaeological material that may be exposed as a result of grading or trenching activities.

ARCHAEOLOGICAL REFERENCES

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J. ENERGY

ELECTRICAL AND NATURAL GAS

EXISTING CONDITIONS

At present, there are no structures or facilities located in the immediate vicinity of the proposed prison site except for two gas motor driven water pumps. Therefore, electrical and thermal energy expenditures in the area are essentially negligible.

ENVIRONMENTAL EFFECTS

Prison and Prison Industry Authority (PIA) operations are expected to result in a peak connected electrical energy demand of approximately 5.0 to 7.5 megawatts (MW). At a load factor of 0.6, the base load would be approximately 4.5 MW. The average thermal energy demand for prison and PIA operations is expected to be approximately 1,188 million BTU per day (equivalent to 900,000 pounds of steam per day) over a 24-hour period. Peak thermal and electrical energy demand would occur during the daytime hours when prison industry is fully operational.R-1/

The thermal energy needs of the proposed prison can be met by steam boilers fueled by natural gas. The existing availability of natural gas in the vicinity of the site and the improvements necessary to supply gas to the prison are described in Section H.R-2/

The electrical energy needs of the proposed prison can be met through the purchase of energy from Southern California Edison (SCE) under any one of a number of rate schedules, governed by the physical configuration of the transmission facilities and the characteristics of energy use at the site. The existing electrical facilities in the vicinity of the proposed prison and the required improvements to transmit the power and energy to the site are described in Section H.R-3/

A cogeneration plant, consisting of several natural gas turbines, could supply both the thermal and electrical energy needs of the proposed prison and PIA operations. The natural gas fueled turbines would generate electrical energy

and, at the same time, recover exhaust heat from the turbines to generate steam to meet the prison's thermal energy demands. Use of a cogeneration plant would reduce the needs to purchase electricity from SCE. Purchase of natural gas from Southern California Gas Company (SCG) would still be required to fuel the gas turbine; however, this purchase price would be substantially lower if the plant could meet efficiency requirements imposed by Federal regulations.R-4/

A cogeneration plant sized to meet the peak electrical demand of 7.5 MW would not be economical as such a plant would not run efficiently under the varying loads. Therefore, the cogeneration plant would be sized to generate the daytime base load of a 4.5 MW, with the waste heat generating steam for a portion of the daily thermal load. A 4.5 MW plant would meet the Federal efficiency requirement and qualify for the low Qualifying Cogenerator's natural gas rate, as long as thermal requirements coincide with electrical requirements throughout each day.R-5/

A cogeneration plant sized at 4.5 MW would generate enough recoverable waste heat to produce approximately 380,000 pounds of steam per day. Additional thermal energy demand could be met by hot water from boilers fueled by natural gas. The peak electrical demands would be supplied by SCE and standby generators would supply backup power should either the cogeneration plant or SCE be taken off-line. A 4.5 MW cogeneration plant would utilize approximately 1.3 million cubic feet per day of natural gas, in addition to approximately 770,000 cubic feet per day of natural gas required to meet the additional thermal energy demand.R-6/

MITIGATION MEASURES

The proposed prison will be designed, where possible, to reduce electrical and thermal energy usage. Mitigation measures that will be considered to help reduce thermal and electrical energy usage include:

- Insulation on the roof and walls to reduce heating and cooling loads
- Use of energy-efficient HVAC systems and equipment including evaporative coolers

- Use of weatherstripping on the doors and windows
- Use of energy-efficient lighting and motors R-7/

A significant amount of the electrical energy and power demands of the prison and PIA operations can be met by a central cogeneration plant, as described in the preceding section. The decision to design a cogeneration plant at the prison will be made during preliminary design. That decision should be made after a careful evaluation of the thermal and electric loads and the life cycle costs of the cogeneration plant versus the cost to purchase natural gas and electricity from the local utilities.R-8/

The proposed project will not have direct off-site impacts on energy resources in the project area. Adequate electrical capacity and natural gas capacity is available in the eastern Riverside County area. Also, a cogeneration system, if installed, would further reduce the prison's dependence on outside energy resources.R-9/

TRANSPORTATION FUELS

EXISTING CONDITIONS

Currently, there is only negligible transportation fuel consumption (from tractors) in the immediate vicinity of the proposed prison site. The nearest main vehicle artery is Interstate Highway 10, located approximately three miles north of the proposed site.R-10/

ENVIRONMENTAL EFFECTS

Table J-1 summarizes the estimated vehicle miles traveled (VMT) and the vehicular fuel energy consumption that would result from operation of the proposed prison. This table provides a worst case estimate of the maximum amount of fuel that could be consumed as a result of the project.

It is expected that the majority of the vehicle use will be personal cars, as public transportation is not currently available in the project area. A previous survey conducted by the State for several institutions identified approximately 84 percent personal car use; 12 percent carpool use; and 4 percent use by other transportation means.R-11/ Other individual State

prisons, such as the one at Tehachapi, have very high rates for the use of carpools. There is expected to be a high usage of carpools because a majority of the prison employee's will live in the Blythe area.

TABLE J-1

ESTIMATED ANNUAL VEHICLE MILES TRAVELED (VMT)
PRISON RELATED TRANSPORTATION

Percentage of Design Inmate Population	Annual VMT (Miles)	Fuel Consumption gal./yr.1/	Fuel Consumption Million BTU/yr.
100%	34,693,500	2,312,900	293,740
125%	43,629,900	2,908,600	554,100

1/Estimates are based on a vehicle mix of automobiles, buses, motorcycles and light trucks with an average mileage of 15 miles per gallon.R-12/

MITIGATION MEASURES

Construction of the proposed prison will result in an unavoidable increase in the consumption of fuel for transportation in the project area. However, there is an ample supply of fuel in Blythe and in the surrounding areas.R-13/

The following measures would help decrease fuel energy use due to prison-related transportation:

- Encouraging the use of carpools by prison employees.
- Encouraging the development of public transportation to and from Blythe and the surrounding areas.R-14/

ENERGY REFERENCES

R-1/ Final Technical Site Study, Wiley Well Area, Riverside County, Tucker Sadler & Associates, August 21, 1986, Page 6.1.

R-2/ Ibid.

R-3/ Ibid.

R-4/ Ibid., Page 6.2

R-5/ Ibid.

R-6/ Ibid.

R-7/ Ibid., Pages 6.2 and 6.3

R-8/ Ibid., Page 6.3

R-9/ Ibid.

R-10/ Ibid.

R-11/ Ibid.

R-12/ Ibid., Page 6.4

R-13/ Ibid.

R-14/ Ibid.

APPENDIX 1

WILDLIFE SPECIES OF THE PROJECT AREA

TABLE 1

Observed (*) and Expected Reptiles

Reptiles

Testudinidae	**Tortoises and Allies**
Gopherus agassizi	Desert Tortoise
Gekkonidae	**Geckos**
Coleonyx variegatus *	Banded Gecko
Iguanidae	**Iguanids**
Dipsosaurus dorsalis *	Desert Iguana
Callisaurus draconoides *	Zebra-tailed Lizard
Uma scoparia *	Mojave Fringe-Toed Lizard
Crotaphytus wislizenii *	Leopard Lizard
Sceloporus magister *	Desert Spiny Lizard
Uta stansburiana *	Side-Blotched Lizard
Urosaurus graciosus *	Long-Tailed Bush Lizard
Phrynosoma platyrhinos *	Desert Horned Lizard
Teiidae	**Whiptails**
Cnemidophorus tigris *	Western Whiptail
Leptotyphlopidae	**Blind Snakes**
Leptotyphlops humilis	Western Blind Snake
Colubridae	**Colubrids**
Phyllorhynchus decurtatus	Spotted Leaf-Nosed Snake
Masticophis flagellum *	Coachwhip
Salvadora hexalepis	Western Patch-Nosed Snake
Arizona elegans	Glossy Snake
Pituophis melanoleucus *	Gopher Snake
Lampropeltis getulus	Common Kingsnake
Rhinocheilus lecontei *	Long-Nosed Snake
Chionactis occipitalis	Western Shovel-Nosed Snake
Tantilla planiceps	Black-Headed Snake
Hypsiglena torquata	Night Snake
Viperidae	**Vipers**
Crotalus atrox *	Western Diamondback
Crotalus cerastes *	Sidewinder

Observed (*) and Expected Mammals

Soricidae	Shrews
Notiosorex crawfordi	Desert Shrew
Phyllostomidae	Leafnose Bats
Macrotus californicus	Leafnose Bat
Vespertilionidae	Plainnose Bats
Myotis thysanodes	Fringed Myotis
Myotis californicus	California Myotis
Yuma myotis	Yuma Myotis
Pipistrellus hesperus *	Western Pipistrel
Eptesicus fuscus	Big Brown Bat
Antrozous pallidus	Pallid Bat
Molossidae	Freetail Bats
Tadarida brasiliensis	Mexican Freetail Bat
Eumops perotis	Western Mastiff Bat
Mustelidae	Skunks, Badgers, Weasels
Taxidea taxus	Badger
Canidae	Dogs
Canis latrans *	Coyote
Vulpes macrotis *	Kit Fox
Felidae	Cats
Lynx rufus	Bobcat
Sciuridae	Squirrels
Citellus tereticaudus *	Roundtail Ground Squirrel
Ammospermophilus leucurus *	Whitetail Antelope Squirrel
Geomyidae	Pocket Gophers
Thomomys bottae *	Valley Pocket Gopher
Heteromyidae	Pocket Mice, Kangaroo Rats
Perognathus longimembris *	Little Pocket Mouse
Perognathus formosus *	Longtail Pocket Mouse
Dipodomys deserti *	Desert Kangaroo Rat
Dipodomys merriami *	Merriam Kangaroo Rat
Cricetidae	Mice
Peromyscus eremicus *	Cactus Mouse
Peromyscus maniculatus	Deer Mouse
Onychomys torridus	Grasshopper Mouse
Neotoma lepida *	Desert Woodrat
Leporidae	Hares and Rabbits
Lepus californicus *	Blacktail Jackrabbit
Sylvilagus auduboni *	Desert Cottontail

TABLE 2

BIRD LIST FOR WILEY WELL AREA

The following list of birds represents a probable record of occurrence for the Wiley Well area. These birds would not be out of place in this region on a seasonal or resident basis, as the situation now stands. With changes to the habitat, there would be probable consequences to regularly occurring avifauna. The seasonal breakdown is expressed in only rough terms due to the complexity of migration seasons in southern California. As a result, winter will refer to December through March, spring will refer to the first of April through May, Summer will refer to June through the middle of September, and Fall will refer to the middle of September through November. There is some overlap in these designations due to the variable nature of migration seasons among different avian groups.

W	Sp	Su	F		
x	x	x	x	Turkey Vulture	Cathartes aura
x	x	x	x	Northern Harrier	Circus cyaneus
x	x		x	Sharp-shinned Hawk	Accipiter striatus
x	x	x	x	Cooper's Hawk	Accipiter cooperii
	x		x	Swainson's Hawk	Buteo swainsoni
x	x	x	x	Red-tailed Hawk	Buteo jamaicensis
x			x	Rough-legged Hawk	Buteo lagopus
x	x	x	x	Golden Eagle	Aquila chrysaetos
x	x	x	x	American Kestrel	Falco sparverius
x	x	x	x	Prairie Falcon	Falco mexicanus
x	x	x	x	Gambel's Quail	Callipepla gambelii
	x	x		White-winged Dove	Zenaida asiatica
x	x	x	x	Mourning Dove	Zenaida macroura
x	x	x	x	Greater Roadrunner	Geococcyx californianus
x	x	x	x	Western Screech-Owl	Otus kennicottii
x	x	x	x	Great Horned Owl	Bubo virginianus
x	x	x	x	Burrowing Owl	Athene cunicularia
x	x	x	x	Long-eared Owl	Asio otus
	x	x		Lesser Nighthawk	Chordeiles acutipennis
	x	x	x	Common Poorwill	Phalaenoptilus nuttallii
	x	x		Vaux's Swift	Chaetura vauxi
x	x	x	x	White-throated Swift	Aeronautes saxatalis
	x	x		Black-chinned Hummingbird	Archilochus alexandri
x	x	x		Costa's Hummingbird	Calypte costae
x			x	Anna's Hummingbird	Calypte anna
	x			Calliope Hummingbird	Stellula calliope
	x	x		Rufous Hummingbird	Selasphorus rufus
x			x	Red-naped Sapsucker	Sphyrapicus nuchalis
x	x	x	x	Ladder-backed Woodpecker	Picoides scalaris
x			x	Common Flicker	Colaptes auratus
	x		x	Olive-sided Flycatcher	Contopus borealis
	x	x	x	Western Wood-Pewee	Contopus sordidulus
	x	x	x	Willow Flycatcher	Empidonax traillii
	x		x	Hammond's Flycatcher	Empidonax hammondii
	x		x	Dusky Flycatcher	Empidonax oberholseri
x	x		x	Gray Flycatcher	Empidonax wrightii
	x	x	x	Western Flycatcher	Empidonax difficilis

W	Sp	Su	F		
x	x	x	x	Black Phoebe	Sayornis nigricans
x	x	x	x	Say's Phoebe	Sayornis saya
	x			Vermillion Flycatcher	Pyrocephalus rubinus
x	x	x		Ash-throated Flycatcher	Myiarchus cinerascens
	x	x		Cassin's Kingbird	Tyrannus vociferans
	x	x		Western Kingbird	Tyrannus verticalis
x	x	x	x	Horned Lark	Eremophila alpestris
x	x	x	x	Tree Swallow	Tachycineta bicolor
x	x	x		Violet-green Swallow	Tachycineta thalassina
x	x		x	Rough-winged Swallow	Stelgidopteryx serripennis
	x	x		Bank Swallow	Riparia riparia
	x	x		Cliff Swallow	Hirundo pyrrhonota
x	x	x	x	Barn Swallow	Hirundo rustica
x	x	x	x	Common Raven	Corvus corax
x	x	x	x	Verdin	Auriparus flaviceps
			x	Red-breasted Nuthatch	Sitta canadensis
x	x	x	x	Cactus Wren	Campylorhynchus brunneicappilus
x	x		x	Bewick's Wren	Thryomanes bewickii
	x	x	x	House Wren	Troglodytes aedon
x	x	x	x	Northern Mockingbird	Mimus polyglottos
x	x		x	Sage Thrasher	Oreoscoptes montanus
	x	x		Bendire's Thrasher	Toxostoma bendirei
x	x	x	x	Crissal Thrasher	Toxostoma crisale
x	x	x	x	LeConte's Thrasher	Toxostoma lecontei
x			x	Western Bluebird	Sialia mexicana
	x			Swainson's Thrush	Catharus ustulatus
x	x		x	Hermit Thrush	Catharus guttatus
x	x		x	American Robin	Turdus migratorius
x	x		x	Ruby-crowned Kinglet	Regulus calendula
x	x	x	x	Blue-gray Gnatcatcher	Polioptila caerulea
x	x	x	x	Black-tailed Gnatcatcher	Polioptila melanura
x	x		x	Cedar Waxwing	Bombycilla cedrorum
x	x	x	x	Phainopepla	Phainopepla nitens
x	x	x	x	Eurasian Starling	Sturnus vulgaris
x	x	x	x	Loggerhead Shrike	Lanius ludovicianus
	x		x	Solitary Vireo	Vireo solitarius
	x	x	x	Warbling Vireo	Vireo gilvus
	x	x	x	Orange-crowned Warbler	Vermivora celata
	x		x	Nashville Warbler	Vermivora ruficapilla
	x	x		Lucy's Warbler	Vermivora luciae
	x	x	x	Yellow Warbler	Dendroica petechia
x	x		x	Yellow-rumped Warbler	Dendroica coronata
	x		x	Black-throated Gray Warbler	Dendroica nigrescens
	x		x	Townsend's Warbler	Dendroica townsendi
	x			Hermit Warbler	Dendroica occidentalis
	x			Black-and-white Warbler	Mniotilta varia
	x		x	American Redstart	Setophaga ruticilla
	x	x	x	MacGillivray's Warbler	Oporornis tolmiei
	x	x	x	Common Yellowthroat	Geothlypis trichas
	x	x	x	Wilson's Warbler	Wilsonia pusilla

W	Sp	Su	F		
	x		x	Western Tanager	Piranga ludoviciana
	x		x	Black-headed Grosbeak	Pheucticus melanocephalus
	x		x	Lazuli Bunting	Passerina amoena
x	x		x	White-crowned Sparrow	Zonotrichia leucophrys
x			x	Dark-eyed Junco	Junco hyemalis
x	x	x	x	Chipping Sparrow	Spizella passerina
x	x		x	Brewer's Sparrow	Spizella breweri
x	x	x	x	Lark Sparrow	Chondestes grammacus
x	x	x	x	Black-throated Sparrow	Amphispiza bilineata
x	x	x	x	Sage Sparrow	Amphispiza belli
	x		x	Green-tailed Towhee	Pipilo chlorurus
	x	x		Hooded Oriole	Icterus cucullatus
	x	x		Northern Oriole	Icterus galbula
	x	x		Scott's Oriole	Icterus parisorum
x	x	x	x	Brewer's Blackbird	Euphagus cyanocephalus
x	x	x	x	Brown-headed Cowbird	Molothrus ater
x	x	x	x	House Sparrow	Passer domesticus
x	x		x	Pine Siskin	Carduelis pinus
x			x	American Goldfinch	Carduelis tristis
x	x	x	x	Lesser Goldfinch	Carduelis psaltria
x	x	x	x	House Finch	Carpodacus mexicanus

If the proposed project utilizes on-site waste treatment in the form of a sewage pond, or if there will be a fair amount of landscaping with irrigation, then the following birds could be expected to use this resource on a regular or irregular basis, depending upon the species in question.

W	Sp	Su	F		
x	x	x	x	Pied-billed Grebe	Podilymbus podiceps
x	x	x	x	Eared Grebe	Podiceps nigricollis
	x		x	Western Grebe	Aechmophorus occidentalis
	x	x	x	Great Blue Heron	Ardea herodias
	x	x		Snowy Egret	Egretta thula
x				Cattle Egret	Bubulcus ibis
	x	x	x	Green-backed Heron	Butorides striatus
	x	x	x	Black-crowned Night-Heron	Nycticorax nycticorax
x			x	Greater White-fronted Goose	Anser albifrons
x			x	Snow Goose	Chen caerulescens
x			x	Canada Goose	Branta canadensis
x	x		x	American Wigeon	Anas americana
x	x		x	Gadwall	Anas strepera
x	x		x	Green-winged Teal	Anas crecca
x	x		x	Mallard	Anas platyrhynchos
x	x		x	Northern Pintail	Anas acuta
	x		x	Blue-winged Tail	Anas discors
x	x		x	Cinnamon Teal	Anas cyanoptera
x	x		x	Northern Shoveler	Anas clypeata
x	x		x	Canvasback	Aythya vallisineria
x	x		x	Redhead	Aythya americana
x	x		x	Ring-necked Duck	Aythya collaris
x	x		x	Lesser Scaup	Aythya affinis
x	x		x	Bufflehead	Bucephala albeola
	x		x	Red-breasted Merganser	Mergus serrator
x	x		x	Ruddy Duck	Oxyura jamaicensis
x	x	x	x	American Coot	Fulica americana
	x	x	x	Black-necked Stilt	Himantopus mexicanus
	x	x	x	American Avocet	Recurvirostra americana
	x	x	x	Snowy Plover	Charadrius alexandrinus
x	x	x	x	Killdeer	Charadrius vociferus
	x	x	x	Greater Yellowlegs	Tringa melanoleuca
	x		x	Lesser Yellowlegs	Tringa flavipes
		x	x	Solitary Sandpiper	Tringa solitaria
	x	x	x	Spotted Sandpiper	Actitis macularia
		x		Willet	Catoptrophorus semipalmatus
	x			Whimbrel	Numenius phaeopus
x	x		x	Long-billed Curlew	Numenius americanus
	x	x	x	Western Sandpiper	Calidris mauri
		x		Baird's Sandpiper	Calidris bairdii
	x		x	Dunlin	Calidris alpina
	x	x		Short-billed Dowitcher	Limnodromus griseus
x	x	x	x	Long-billed Dowitcher	Limnodromus scolopaceus
x	x		x	Common Snipe	Gallinago gallinago

W	Sp	Su	F		
	x	x	x	Wilson's Phalarope	Phalaropus tricolor
	x	x	x	Red-necked Phalarope	Phalaropus lobatus
	x			Bonaparte's Gull	Larus philadelphia
x	x	x	x	Ring-billed Gull	Larus delewarensis
x	x	x	x	California Gull	Larus californicus
		x		Forster's Tern	Sterna forsteri
	x	x		Black Tern	Chlidonias niger
	x	x		Blue Grosbeak	Guiraca caerulea
x	x		x	Lincoln's Sparrow	Melospiza lincolnii
x	x		x	Golden-crowned Sparrow	Zonotrichia atricapilla
x	x	x	x	Savannah Sparrow	Passerculus sandwichensis
x	x		x	Vesper Sparrow	Pooecetes gramineus
	x		x	Yellow-headed Blackbird	Xanthocephalus xanthocephalus
x	x	x	x	Red-winged Blackbird	Agelaius phoeniceus
x	x	x	x	Western Meadowlark	Sturnella neglecta
x	x	x	x	Great-tailed Grackle	Quiscalus mexicanus