

4. During my employment with the Service, I have been assigned to the Divisions of Endangered Species, Habitat Conservation, and Ecological Services. My responsibilities have included eighteen listed invertebrates that are fully protected under the Endangered Species Act of 1973, as amended ("Act") and approximately one hundred candidate ("species of special concern") in California. I have dealt with numerous invertebrate issues under the Act, including section 4 (listing and recovery), section 7 (interagency and intragency consultations), section 9 (law enforcement), and section 10 (recovery and incidental take permits). I have advised other Service regions on the protection and management of federally listed invertebrates found elsewhere in the United States. I am a co-author of the proposed rule to list the Delhi Sands flower-fly as an endangered species, and the draft recovery plan for this animal.

5. The Delhi Sands flower-loving fly is an inhabitant of areas containing Delhi Sands soils in San Bernardino and Riverside Counties, California. This area covered approximately 40 square miles, but due to urban development and agricultural conversion, the current distribution of the animal is about 2 percent of its historic range. The Delhi series soils contain a biologically sensitive and very rare environment, and are inhabited by a number of plant and animal taxa that are candidates future listing or species of special concern. The region, also known as the Colton Dunes, is the largest inland cismontane sand dunes formation in southern California. The Delhi

Sands flower-loving fly is an indicator of this habitat, and other rare species that are found in this ecosystem include the legless lizard (*Anniella pulchra*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), Delhi Sands metalmark butterfly (*Apodemia mormo* new subspecies), Delhi Sands Jerusalem cricket (*Stenopelmatus* new species), convergent apiocerid fly (*Apiocera convergens*), and potentially Pringle's monardella (*Monardella pringlei*) (the last species is a plant which was restricted to Delhi Sands soils and is believed to be extinct).

6. The Delhi Sands flower-loving fly undergoes a complete metamorphosis (egg, larva, pupa, and adult). The life span of this animal is unknown, but likely takes at least two years or longer, depending on availability of food, temperature, rainfall, and other environmental conditions. The adults are active in the late summer and the early stages can be found throughout the year. Except for the adults, the animal spends its entire life cycle underground.

7. The flight season of the Delhi Sands flower-loving fly extends from early August to early September. The adults are active during the warmest portions of the day during periods of direct sunlight, generally from 1000-1400 hrs PDT. Adults have not been observed to fly during cloudy, overcast, or rainy conditions. The animals rarely fly during windy or breezy conditions, which typically occur in the afternoon, however, during these periods they have been located by disturbing the vegetation where they are perching. Roads have been observed to

act as barriers to Fly travel. However, in some circumstances, Flies have been observed to cross roads.

8. Population density has been observed to greatly fluctuate from day to day and from year to year at a given locality. A professional entomologist from the University of California did not find any Delhi Sands flower-loving flies at a site in 1989, whereas a single male was observed during a survey lasting a total of approximately five hours that was conducted over a three day period in August 1990. Moreover, this same scientist observed four males and a single female at this same location during a one hour period on a single day in August 1991. Environmental conditions, such as air temperature, wind speed, and cloud cover, may significantly affect the activities of these animals. It is also possible that the early stages of the fly are able to aestivate for long periods of time.

9. Estimates of the local population size of the Delhi Sands flower-loving fly have been reported for a few sites. The studies involved direct counts of the animals in the field. At the San Bernardino Hospital preserve, a population size of between 12-20 flies was estimated during the 1994 flight season. At another site a direct count of 13 individuals within a half hour over 10 acres during 1989 and an analysis based on a population model provided the basis for the conclusion that the total population size was in the low hundreds. However, portions of this site has been developed and it is unlikely the population

is currently contains numbers in this range. Twenty animals were seen on one day at a 40-acre site in the City of Colton in 1995.

10. Anecdotal conclusions concerning the past abundance of the Delhi Sands flower-loving fly may be inferred from museum specimens. The largest single day collections are 15, 13, and 13 individuals from Colton (1986), Mira Loma (1941), and Rialto (1956), respectively. However, the lack of data concerning the size of the habitat, time periods, and intensity of collecting precludes a definitive analysis based solely on these specimens. Population densities of the Delhi Sands flower-loving fly may have approached the low hundreds at some sites. However, areas containing significant habitat for this species had been eliminated by 1989.

11. Much of the Colton Dunes area has been used for agriculture, chiefly grapes and citrus since the 1800's. More recently, nearly all the remaining area has been used for dairies, housing tracts, and commercial/industrial sites. The present distribution of the Delhi Sands flower-loving fly represents less than 2 percent of its former range; the amount of habitat existing today is approximately one half of what existed in 1975. The majority of remaining sands with restoration potential is degraded to some degree. Prior to European man's settlement of southern California, the Delhi Sands flower-loving fly likely occurred throughout much or all of the Colton Dunes in San Bernardino and Riverside Counties, California.

12. The status of the Delhi Sands flower-loving fly has dramatically decreased in the last few years. One population of the animal was extirpated by urban development since 1990, one was partially destroyed by sand mining between 1991-1992, and at least four sites are for sale. Between the publication of the proposed rule to list this species in 1992 and the issuance of the final rule in 1993, about 45 acres of occupied habitat were destroyed. This represented a loss of 6-13 percent of the extant habitat that existed at the time of the proposed rule. Currently, at best, there are an estimated 155 acres of habitat documented to contain the animal and there are an estimated 1,200-acres of restorable habitat for the species.

13. The Delhi Sands flower-loving fly was listed as an endangered species under the Act on September 23, 1993. The primary threats to this species are habitat destruction caused by urban development, agricultural conversion, invasive exotic weeds, dumping of manure, off-road vehicles, trampling by humans, and overcollecting.

14. There are eleven populations known of the Delhi Sands flower-loving fly. The areas containing populations of the animal and their Delhi Sands soils have been eliminated and fragmented by development in the last three years, especially north of Interstate 10. All of these populations occur within an 8-mile radius circle of each other. Ten of the sites are located on private lands (although the City of Colton owns a portion of

one of these sites) and the eleventh is on land owned by the County of San Bernardino.

15. Small patches of restorable habitat may exist in adjacent areas of Riverside County. These sites are remnants of the Colton Dunes. The most characteristic features of all known sites is the presence of fine, sandy soils, often with wholly or partly consolidated sand dunes. These soil types are generally classified as the Delhi series (primarily Delhi fine sand).

16. Section 9(a)(1)(B) of the Act prohibits the take of endangered species, including actions that kill or injure the species. Since all of the known populations of the Delhi Sands flower-loving fly exists on private or municipal property, and the Fly is not protected by the State of California's Endangered Species Act, ESA Section 9(a)(1)(B) is the only mechanism that prevents development of these properties. Absent the protection afforded the Fly by Section 9, this species would be rendered extinct as a result of the intense pressure to develop land within the species habitat and the Fly's already precarious status.

17. There is a substantial commerce trade in butterflies, beetles, and other large insects, such as flower-loving flies (*Rhaphiomidas*). Insects are purchased primarily by insect collectors. The majority of insect collectors are found in the developed nations in North America (United States and Canada), Europe, and Asia (Japan). This "hobby" can be highly popular, for example, it has been reported that one in ten adult males in

Japan collects butterflies and other insects. Collectors often place a special value on large, showy, rare species of insects. Members of the genus *Rhaphiomidas* are in this category because they are especially large for the order Diptera (flies), and are considered to be very rare.

18. The Delhi Sands flower-loving fly was included in a scientific study titled *A Revision of the North American Flies belonging to the Genus Rhaphiomidas (Diptera, Apioceridae)* by the late Dr. Mont Cazier. This peer-reviewed study was published by the American Museum of Natural History in the City of New York in 1985 as one of their *Bulletin* series. This publication is sent to museums, universities, and other institutions throughout the world. Rather than sell their publications to each other, it is a standard practice for scientific societies, museums, universities, and other research institutions to exchange (barter) journals.

19. Information on the ecology and biology of the Delhi Sands flower-loving fly was included in a 1993 paper by Rick Rogers and Rudi Mattoni titled *Observations on the Natural History and conservation biology of the giant flower-loving flies, Rhaphiomidas (Diptera: Apioceridae)* that was published in the Leningrad, Russia-based *Dipterological Research*, a peer-reviewed scientific journal. This journal is the major Dipterological (fly) journal that is read by professional and amateur entomologists throughout the world. The scientists

either purchase the journal or it is obtained via exchange of other journals.

20. Preserved specimens of the Delhi Sands flower-loving fly that were collected in southern California are housed at some large research institutions, including the Museum of Comparative Zoology at Harvard University in Boston, Massachusetts, the National Museum of Natural History (Smithsonian Institution) in Washington, D.C., the American Museum of Natural History in New York City, New York, and the Natural History Museum of Los Angeles County, Los Angeles, California.

21. On March 31, 1996, Mr. Neil Jones, a member of the Board of Directors of the British Butterfly Conservation Society, visited the Delhi Sands flower-loving fly habitat that is owned by the Southern California Edison Company in the City of Colton. Mr. Jones, a British citizen, had traveled from Great Britain to observe this endangered animal, as well as other imperiled insects in the United States. The Fly has also been studied since its listing by a biologist, at the best of industry groups, who lives in Arizona and travels to California.

22. It has been estimated that over 65% of living flowering plants depend upon insect pollinators for reproduction. Without insects, many human crops would simply cease to exist. Insects provide other direct benefits to Man. The threatened bay checkerspot butterfly is one of the most studied animals on earth. Scientists at Stanford University have been investigating the ecology, biology and population dynamics for over 30 years.

The science of modern genetics would not exist without the fruit fly. Because of the rapid life cycle and large number of offspring of this higher animal, critical insight has been made in developmental and population genetics. Gene splicing, recombinant DNA, and related biomedical techniques are a direct result of studies based on or utilizing fruit flies.

To the best of my knowledge, the foregoing is true and correct.

Dated: April 30, 1996, at Carlsbad, California.



CHRISTOPHER D. NAGANO



United States Department of the Interior



FISH AND WILDLIFE SERVICE
 ECOLOGICAL SERVICES
 CARLSBAD FIELD OFFICE
 2730 Loker Avenue West
 Carlsbad, California 92008

October 19, 1993

Mr. John Giblin
 County Administrative Office
 No. 1 Arrowhead Plaza, 5th floor
 335 North Arrowhead Avenue
 San Bernardino, CA. 92415-0120

RE: San Bernardino County Hospital Project

Dear Mr. Giblin:

The intention of this correspondence is twofold: 1) to inform the County of the protection afforded a federally listed species pursuant to the Endangered Species Act (Act) of 1973, as amended; 2) enunciate the Fish and Wildlife Services' (Service) position regarding the Habitat Preservation, Habitat Enhancement, and Impact Avoidance Plan for the Delhi Sands Flower Loving Fly at the San Bernardino County Hospital Replacement Site (Hospital Plan), which was received in this office on October 18, 1993. Our comments are based on site visits to areas occupied by the Delhi Sands Flower-loving Fly (Rhaphiomidas terminatus abdominalis) [Delhi Fly], and discussions with Mr. Greg Ballmer.

Section 9 of the Act prohibits the "take" of any species listed as endangered. The term "take" is defined as harass, harm, pursue, hunt shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. "Harm" is further defined as an act that actually kills or injures such species. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential patterns, including breeding, feeding, or sheltering (50 CFR Part 17.3).

For a non-federal party, the procedures for obtaining a permit to incidentally "take" a federally listed species are outlined in Section 10 of the Act. To obtain such a permit, the applicant must prepare a Habitat Conservation Plan (HCP) pursuant to Section 10(a) of the Act. This HCP will describe the impacts of the project to the biological resources, enumerate the means of avoiding, minimizing and mitigating these impacts, describe the alternatives that have been considered, and why these alternatives are not being considered, as well as commit funding for the components of the HCP in a legally binding fashion. In order for a permit to be issued, the Service must be assured that the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

The Hospital Plan, as currently designed, involves the removal of non-native vegetation, and its replacement with buckwheat (Eriogonum fasciculatum), in

the interior of, and surrounding a "horseshoe-shaped" patch of habitat to create an 8.35 acre habitat reserve surrounded by protective fencing and an "educational area". The Hospital Plan includes the following disclosures:

1. The habitat preserve would be 8.35 acres once the retention basis was removed, rather than the approximately 10 acres described to the Service during the Oct 8, 1993 meeting.
2. Field observations indicated 7 or 8 individuals of the Delhi Fly on the site.
3. Regular policing for litter, and other human disturbance will be provided.
4. The dunes will be changed from active dunes to stabilized dunes due to "wind suppression" resulting from the project.
5. "Little [nothing] is known about the success of revegetation as habitat restoration of the Delhi Fly".
6. "Apicocerids, possibly including the Delhi Fly, may exhibit lek behavior, which would suggest that open spaces and perches be provided (Toft and Kimsey, 1982)."
7. The Delhi Fly is "restricted to less than 10 known locations."

The Service appreciates the effort to address the conservation needs of the Delhi Fly in the Hospital Plan. However we have a number of concerns about the Hospital Plan as presented, and based on the best information available. We do not believe it meets 10(a) standards for the avoidance of "take" as defined by the Act.

Given the very restricted range and population size of the Delhi Fly, it is important to protect all extant populations, thereby preserving the severely reduced range of this endemic species. As you may know, a closely related subspecies, Rhaphiomidas terminalis terminalis became extinct after its range was reduced from approximately 1000-2000 acres to approximately 100 acres. Thus, when habitat, and therefore population size, is reduced to below self-sustaining levels by direct habitat loss as well as habitat fragmentation, populations are no longer able to be sustained. This is a form of "take" as defined by the Act. Current data indicate that the maximum habitat available to current populations of the Delhi Fly is approximately 700 acres. Therefore, any further loss of habitat, or habitat fragmentation, may reduce the Delhi Fly to below self-sustaining population levels. This issue is especially critical to this species, as the Delhi Fly does not occupy its habitat at high densities (Greg Ballmer, pers. comm.).

Regarding the specific population existing on the hospital site, your consultant, Tom Olsen, stated that it exists as an isolated, relictual population North of the freeway. He attributed this statement to Mr. Ballmer. In fact, the Delhi Fly has been observed on the site to the West of Pepper Avenue, directly across from the hospital site (Greg Ballmer, pers. comm.).

Additionally, the Service observed a single male individual Delhi Fly on this site on August 20, 1993. As these two large areas of sandy soil are separated only by Pepper Ave., Mr. Ballmer concludes that this street does not constitute a barrier to the Delhi Fly, and therefore this area is believed to support a single population which could be viable over the long term, if properly protected from development. Additional support for this statement is derived from Mr. Ballmer's observations of a female Delhi Fly utilizing an area of 100% dense non-native grassland, approximately 30 yards from what is generally regarded as acceptable habitat for the fly. While the Delhi Fly utilizes sandy areas supporting non-native vegetation, it is unlikely that it would utilize, or traverse this area were it to become a large parking lot, as proposed in your Hospital Plan.

The Service also disagrees with your designation of suitable Delhi Fly habitat, which you state is only 1.92 acres. As stated above, the Delhi Fly does utilize sandy areas with non-native grasses, if appropriate native vegetation is nearby. Also, over the course of its evolution, the Delhi fly has become adapted to active aeolian dune systems. This habitat type consists of a dynamic range of conditions, varying from rather densely vegetated, stabilized dunes to open areas, uncolonized by vegetation. It is these open areas, and unstabilized, partially vegetated dunes that comprise the proper habitat for the Delhi Fly. Stabilizing the dunes by increasing the density of vegetation, as you propose, and suppressing the wind, which is the factor that generated the habitat, constitutes an artificial modification of habitat which may adversely impact the Delhi Fly. The open "blow out" area in the interior of the habitat should remain as such and be allowed to be colonized naturally by vegetation. Also, as you indicate in your Hospital Plan the Delhi Fly may require open spaces due to its lek behavior. Unnecessary intrusion into this area, due to revegetation may destroy eggs or larva and would constitute "take" as defined by the Act.

The Service is also mandated to consider indirect impacts to a federally listed species. The sandy area to the Northeast of the occupied habitat, where you propose a large parking lot, is undoubtedly acting as a sand source for the occupied habitat which is found downwind of it. Eliminating this source could prevent the dunes from replenishing themselves and would irrevocably alter the site. This alteration may also be defined as "take" under the Act.

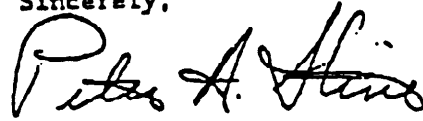
The Service understands the valuable and necessary functions to be performed in this facility, as well as the time constraints imposed by the issuance of bonds and the construction commencement schedule which are described in your letter of October 15, 1993. We are therefore reviewing your proposal as rapidly as possible. In view of the urgency of your need, it is unfortunate that the County of San Bernardino repeatedly cancelled meetings, and finally refused to schedule additional meetings with the Service, despite numerous warnings that the occupied habitat on this site could present a problem if planning did not occur. Additionally, the Service biologist visited the hospital site on May 13, 1993 with Mr. Jim Squire and Mr. Randy Scott of the County of San Bernardino and explained that this particular site would need to be protected when the Delhi Fly was listed. The Service was not told at that time that a project was being planned that would occupy 100% of the site.

Mr. John Giblin

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In view of the fact that the Service does not believe your plan is adequate to avoid "taking" of the Delhi Fly, we recommend that a meeting be arranged to discuss additional modifications of the project which may avoid the necessity of a 10(a) permit. If you have any questions concerning this correspondence, please contact Linda Daves, of my staff, at (619) 431-9440.

Sincerely,



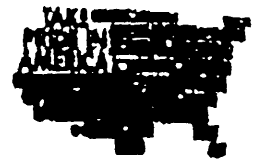
Peter A. Stins
Acting Field Supervisor

cc: Greg Ballmer
Tom Olsen

0306



United States Department of the Interior



FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
CARLSBAD FIELD OFFICE
2730 Loker Avenue West
Carlsbad, California 92008

December 20, 1993

Mr. John Giblin
Deputy Administrative Officer
County of San Bernardino
385 N. Arrowhead Avenue
San Bernardino, CA 92415-0120

RECEIVED
DEC 20 1993

HOSPITAL DESIGN CTR.

Re: San Bernardino County Hospital Replacement Project

Dear Mr. Giblin:

As we discussed during our meeting of December 3, 1993, this letter serves to confirm the conclusion of the U.S. Fish and Wildlife Service (Service) regarding construction and operation by San Bernardino County (County) of a hospital facility (Project) on property located northeast of the intersection of Pepper Avenue and Valley Boulevard in the city of Colton (Project site). It is the Service's opinion that if project activities are conducted as outlined in the County's December 1, 1992 Habitat Preservation, Habitat Enhancement, and Impact Avoidance Plan (Conservation Plan), the project will not cause take of individuals of the federally listed endangered Delhi sands flower loving fly (Rhaphiomidas terminatus abdominalis). The Service also concludes that the County will not require a permit under section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended (Act) for the construction and operation of the Project, as described by the County in the Conservation Plan. The Service understands that the County plans to begin construction activity on the Project site as early as January 5, 1994.

The Service and the County's representatives have met over the past two months to discuss the potential impacts of the Project on the flower loving fly. The County's consultant has identified known occupied habitat of the flower loving fly on approximately 2 acres of dune habitat located in the southeast corner of the Project site. Pursuant to the Conservation Plan, the County has committed to:

- (1) preserve and avoid causing any disturbance to an approximately 6.35 acre area surrounding and including the identified occupied fly habitat;
- (2) preserve an additional area of disturbed, potential habitat extending from the dune area along the entire south edge of the Project site (100 feet wide), and then up the west edge of the Project site (30 feet wide) for approximately 700 feet;

0308

Mr. John Giblin

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(3) engage in certain habitat enhancement efforts at the preserved areas of the Project site; and


(4) conduct certain studies and monitoring and educational programs regarding the fly and its habitat at the Project site.

The Service has reviewed the County's proposed Conservation Plan and has concluded that, with its complete implementation, the County's construction and operation of the Hospital will not cause adverse impacts to the flower loving fly. Accordingly, it will not be necessary for the County to apply for a permit under section 10(a)(1)(B) of the Act to construct or operate the hospital. Nevertheless, in order to allow the County to implement, and the Service to monitor the studies, enhancements efforts, and other steps called for in the Conservation Plan in an organized, cooperative manner, we recommend that the Service and the County execute a memorandum of understanding (MOU) to specify how the Plan will be implemented and the schedules for such steps. We are prepared to enter into such an agreement by January 31, 1994.

Notwithstanding the foregoing, it is important for the County to bear in mind that the Service's conclusions are based on the Conservation Plan (and description of the Project) as submitted and other information that the County has supplied the Service, which we have assumed is complete and accurate. Information about endangered species and their habitat is subject to change as we study and learn more about them. This letter therefore does not authorize take of any endangered species, including the flower loving fly, if the Service or the County determines at any time during construction or operation that take of the flower loving fly or any other threatened or endangered species (including any species listed after the date of this letter) may occur as a result of such activities. It remains the County's responsibility to avoid such consequences or to seek authorization prior to engaging in such activity.

We appreciate the efforts the County has demonstrated to take into account the concerns of endangered species in connection with its plans for the hospital. If you have any questions regarding this matter, please contact John Bradley of my staff at (619) 431-9440.

Sincerely,


for Gail Kobach
Field Supervisor

1-6-94-HC-031

0309

**HABITAT PRESERVATION, HABITAT ENHANCEMENT,
AND IMPACT AVOIDANCE PLAN FOR THE
DELHI SANDS FLOWER LOVING FLY AT THE
SAN BERNARDINO COUNTY MEDICAL CENTER
REPLACEMENT SITE**

EXHIBIT E

INTRODUCTION

This Habitat Preservation, Habitat Enhancement, and Impact Avoidance Plan (Plan) is submitted to the United States Fish and Wildlife Service (FWS) to demonstrate that construction and operation of the new San Bernardino County (County) Medical Center Replacement Project (Hospital) in Colton, California will (1) preserve existing Delhi sands flower-loving fly (Delhi Fly) habitat found on the Hospital property, (2) avoid direct impact to the Delhi Fly, (3) enhance additional areas of the Hospital property to serve as potential future habitat of the Delhi Fly, (4) produce no secondary effects adverse to the Delhi Fly, and (5) provide the first long-term (5 years) opportunity to study this species. As an animal species listed as endangered pursuant to section 4 of the Endangered Species Act (ESA), the Delhi Fly is protected under section 9(a)(1) of the ESA from conduct by any person which would "take" a species individual. With implementation of the Plan, we believe no harm, harassment, or other take of Delhi Fly individuals will occur in connection with the construction and operation of the Hospital.

Although the Hospital project involves no federal approval or funding which would invoke federal agency consultation responsibilities under section 7 of the ESA, this Plan has been prepared with the section 7 "informal consultation" procedures in mind as a guide for demonstrating the Hospital's ESA compliance status. Under informal consultation, a federal agency which concludes its proposed actions may affect an endangered species can work with FWS input to modify the proposal to avoid those impacts. See 50 C.F.R. § 402.13(b). Where the action agency and FWS agree the modifications have avoided adverse impacts, no further (formal) consultation is required. See 50 C.F.R. § 424.13(a).

The County concluded that its original Hospital layout and design proposal, prepared prior to the September 22, 1993 listing, would have had an adverse impact on the Delhi Fly and would have required incidental take authorization under section 10(a) of the ESA if the Hospital design were not modified. Because the Hospital's financing and construction schedules were well underway at the time the Delhi Fly was listed as endangered on 22 September 1993, the County concluded that the delay associated with obtaining a section 10(a) permit would effectively terminate the project. A delay in or termination of Hospital construction could cause a public health crisis in the County. Moreover, the County does not believe destruction of any Delhi Fly habitat should occur as a result of the Hospital if it can be reasonably avoided.

Accordingly, much like the approach taken in informal consultations under section 7 of the ESA, the County concluded that a strategy for modification of the Hospital layout and design was needed to eliminate direct and indirect impacts to the Delhi Fly and thereby avoid the need for a section 10(a) permit. Appendix I lists design modifications which have been made subsequent to the listing of the species as endangered. Appendix II lists financial impacts of actions taken subsequent to the listing of the Delhi Fly. The consulting team of Thomas Olsen, Thomas Olsen Associates, Inc., with the assistance of Dr. Steven W. Carothers, SWCA Inc., and attorney J. B. Ruhl, Fulbright & Jaworski L.L.P., was employed to advise on design modifications and the ESA consultation process to meet the objective of elimination of direct and indirect impacts to the Delhi fly. Certain site plan and structural design features of the Hospital are required in order for the Hospital to serve effectively as a provider to elderly, indigent, and emergency care patients, as a health care and medical profession training center, and as a primary burn care center for a large geographical area. Thus, there are limits to

design modifications. The consulting team assessed the status of the Delhi Fly on the Hospital property and worked with the County and FWS to identify ways to avoid existing occupied Delhi Fly habitat on the Hospital property, to enhance areas surrounding occupied habitat in order to create potential future habitat, and, to avoid secondary impacts adverse to the Delhi Fly.

ASSESSMENT OF THE DELHI FLY ON THE HOSPITAL PROPERTY

Project Location: The project is located in an unincorporated portion of San Bernardino County. The Hospital is to be built on a 76 acre parcel immediately east of the City of Rialto and in the City of Colton northeast of the intersection of Pepper Avenue and Valley Boulevard. The Interstate 10 freeway is approximately ¼ mile south of the Hospital site. The project is bounded on the north by San Bernardino Avenue, on the west by Pepper Avenue, on the east by Meridian Avenue. Valley Boulevard is south of the project and separated from the property by 150' on the west and 400' on the east. Figure 1 (Appendix III) is the Project Vicinity Map. Figure 2 (Appendix III) is the Project Location Map.

Species Listing Background: In October 1989 the FWS received a petition to list the Delhi Fly as an endangered species from Mr. Greg Ballmer, an entomologist associated with the University of California, Riverside. A similar petition was submitted to the California Fish and Game Commission (Commission) at that time. The California Department of Fish and Game (CDFG) acting on behalf of the Commission found that the petitioned action "may be warranted." However, no action was taken by the Commission. It is unclear whether or not the Commission has authority to list insects under the California Endangered Species Act.

In July 1990 Mr. Ballmer again requested that FWS list the Delhi Fly. On November 21, 1991 the Delhi Fly was included as a Category I candidate species. A candidate species is a species for which the FWS has substantial information indicating that listing may be warranted.

In March 1992 Mr. Ballmer petitioned the FWS to list the Delhi Fly on an emergency basis due to ongoing and anticipated construction projects within the species' habitat. A proposed rule to list the Delhi Fly as endangered was published in the Federal Register on November 19, 1992. The FWS has one year to make a determination of the status of a species after publication of a proposed rule.

The Final Rule listing the Delhi Fly as endangered was announced and became effective on September 22, 1993. The Final Rule was published in the Federal Register on Thursday September 23, 1993. See 58 Fed. Reg. 49881. The action was signed by Richard N. Smith, Acting Director, FWS, and dated September 14, 1993.

Species Description: The Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) is a large fly (*Diptera*) in the family *Apioceridae*. It has an elongate body, much like a robber fly and a long tubular proboscis which is thought to be used for extracting nectar from flowers. Feeding has not been reported for the Delhi Fly. The Delhi Fly is approximately 2.5 centimeters long, orange-brown in color with dark brown oval spots on the upper surface of the abdomen.

The Delhi Fly is currently known from and believed to be restricted to seven sites in southwestern San Bernardino County and northwestern Riverside County. All known colonies occur on private land within a 10 mile radius.

Knowledge of the biology of the Delhi Fly is extremely limited. It is believed that larvae and pupae live beneath sand, and adults emerge only from late July through mid September. The species is associated with fine, sandy soils with wholly or partly consolidated dunes and sparse

(30-50% cover) native vegetation. Egg-laying and larval development are assumed to take place in Delhi sand and in association with the Riversidean sage scrub plant community.

Survey Methods: Surveys for *Rhaphiomidas terminatus abdominalis* were conducted at the Hospital site on 1, 7, 14, 15, 21, and 29 August and 4 September. These dates encompass the known flight period of the species. Searches were conducted between the hours of 10:00 a.m. and 2:00 p.m., which is the primary period of adult activity (pers. comm. G. Ballmer to D. Hawks). The weather was suitable for adult Delhi Fly activity on all occasions (80's to low 90's, except on 1 August = low 100's). A total of 43 person-hours were spent surveying the site. Personnel were Mr. David C. Hawks and Mr. Guy P. Bruyca of the University of California Riverside Entomology Department, both of whom were familiar with the species. The majority of the survey time was spent searching for adult *Rhaphiomidas* on approximately six acres of potential habitat (a loose, relatively undisturbed Delhi sand deposit with sparse vegetation) located near the southeast corner of the property. This area was identified as potential habitat by Mr. Greg Ballmer of the University of California, Riverside (UCR). Mr. Ballmer has surveyed extensively for the Delhi Fly during the past few years and is the author of the listing petition presented to FWS in October 1989. Mr. Ballmer stated that the remainder of the Hospital site property is unsuitable for *Rhaphiomidas* (pers. comm. and site visit with M. Call, Psomas Associates [August 1993] and letter to Mr. John Giblin [October 16, 1993]).

Results: A total of eight sightings representing seven or eight individuals of both sexes of *Rhaphiomidas terminatus abdominalis* were made on 15 August (1 sighting), 21 August (6 sightings) and 29 August (1 sighting). All sightings were made near the southern boundary of the site, adjacent to the inner periphery of perennial native plant growth which consists primarily of *Eriogonum fasciculatum* with some *Croton californicus*, *Ambrosia spp.* and *Heterotheca spp.* occurring. Areas of open sand as well as areas of dense vegetative cover dominated by weedy exotic grasses (*Bromus spp.* and *Avena spp.*) are unsuitable for the flies. The amount of existing suitable habitat on the Hospital for this species is estimated to be no more than two acres. The balance of the site proposed for Hospital development is not suitable habitat.

One voucher specimen of *R. t. abdominalis* (a male) was collected on 21 August and has been included in the UCR Entomology Museum collection. Other insect species were collected during the surveys as partial documentation of the insect fauna of the site. These also have been deposited in the UCR Entomology Museum.

POPULATION VIABILITY

The Delhi Fly has been found only in association with sandy soils of the Delhi Series, which occur irregularly in western Riverside and San Bernardino Counties in an arc extending from Chino north and east through Mira Loma, Ontario, Fontana, Rialto, and Colton to San Bernardino. Although it is presumed that the Delhi Fly once occurred throughout the distribution of Delhi Sands in Riverside and San Bernardino Counties, nearly all extant populations are located within an approximately 5000 acre patch of Delhi Sands which includes portions of the cities of Colton and Rialto and portions of unincorporated Riverside and San Bernardino Counties. This area is bisected by the Interstate 10/Union Pacific RR corridor and includes the proposed Hospital.

The listing petition (G.R. Ballmer to FWS, October 18, 1989) states:

Existing collection records, including numbers of individual *R. t. abdominalis* taken have been detailed in section V. Since no data are available to indicate actual historic population levels of this species, the best estimate of population trends must

be based on the extent of occupied habitat. Former documented populations in Bloomington, Mira Loma, and parts of Colton have been extirpated. Additionally, it is presumed that much, if not all, areas of Delhi soils in southwestern San Bernardino and northwestern Riverside Counties were former habitat of *R. t. abdominalis*. Current populations of this species occupy about 2.5% of the total area of Delhi series soils in this region. On the basis of habitat loss, approximately 97.5 percent of all *R. t. abdominalis* have been eliminated.

Anecdotal evidence concerning past abundance of *R. t. abdominalis* may also be gleaned from the size of past collections. The largest single-day collection series are 15, 13, and 13 specimens from Colton (1986), Mira Loma (1941), and Rialto (1956), respectively. The average number of specimens for all collections is only 3.3. Without knowing how much area was searched for each collection, it is not possible to establish a population density. The largest one-day number of *R. t. abdominalis* observed during 1989 was on approximately 20 acres near Slover Mountain where an intense survey by three searchers disclosed 13 individuals. All individuals were found on the portion (ca 10 ac.) having the greatest abundance of native vegetation and least abundance of introduced weeds. Thus, in that survey the abundance of *R. t. abdominalis* ranged from 0 (where introduced vegetation predominated) to 1.3 individuals per acre (where native vegetation predominated). This indicates that population density is not necessarily uniform within occupied habitat. It also suggests: (1) that such population clumping may be due to nonuniformity of resources (such as native vegetation) in the environment, and (2) that introduced vegetation may make habitat unsuitable for *R. t. abdominalis*.

Knowledge of the biology of the Delhi Fly is limited to the adult. Adults are active during August and early September and utilize Delhi sands. These soils, which include occasional dunes, are aeolian deposits of fine particles of unconsolidated granitic alluvium below the mountain passes in San Bernardino County. Because Delhi Fly eggs are deposited in sand to a depth of approximately three inches, it is probably crucial that surface sand be of relatively fine texture and loose enough for females to penetrate during oviposition (G. Ballmer pers. comm.). Nothing is known about the habits of Delhi Fly larvae other than that they live below the soil surface. Information about the larval stage is limited to a very few laboratory experiments. The larval growth period is thought to last about one year (or possibly multiple years) with maturation in mid- to late summer. Mature Delhi Fly pupae move to the soil surface just prior to adult emergence. Adult life span in nature is unknown but may be up to one week. Under captive conditions an adult is known to have lived for two weeks (G. Ballmer pers. comm.).

Reduction in range of the Delhi Fly is related to alteration of habitat for human uses such as agriculture, urbanization, mining, and transportation infrastructure. These activities have eliminated habitat or made it unsuitable for the Delhi Fly over large areas. Areas of occupied habitat have become fragmented by the same activities.

It is generally considered an ecological precept that habitat fragmentation results in smaller, isolated populations which may be more vulnerable to mortality factors and local extinction. The smaller and more isolated the population, the greater the likelihood that a local environmental catastrophe (fire, flood, disease, etc.), or genetic inbreeding will lead to local extirpation. However, few species evolved in or inhabit continuous homogeneous habitat under natural conditions. Habitat fragmentation is a natural process. Human understanding of what constitutes effective barriers for dispersal of species is very limited. The Delhi sands are a naturally-occurring fragmented habitat, consisting of irregularly distributed deposits of wind-blown sand. There are no data indicating the effective dispersal range, effects of potential "barriers," or population biology of the Delhi Fly other than observations in patches of

discontinuous habitat throughout a defined range. These observations may suggest that the Delhi Fly is capable of dispersion between discontinuous, naturally fragmented habitat patches, and is capable of finding and establishing itself in suitable habitat where such is available.

Mr. Greg Ballmer states in his 11/16/93 letter to John Giblin:

The relatively small quantity of habitat remaining, coupled with a trend toward continuing losses and fragmentation has prompted the Department of Interior to list the DSF [Delhi Sands Fly] as Endangered. Fragmentation of DSF habitat has been intense in the region north of Interstate 10 surrounding the proposed CHS [Hospital] facility and has resulted in relatively small patches of occupied habitat separated by streets, homes, and other structures. Not only will it be difficult and costly to preserve these colonies intact, but without maintaining habitat linkages between them, it is likely that environmental stochasm [sic] will eventually lead to their demise. Undoubtedly, more critical habitat for DSF in terms of quantity, quality, and defensibility lies south of the Interstate 10 freeway, where relatively minor fragmentation has occurred; without protecting this portion of DSF habitat, it is likely that extinction cannot be avoided.

Mr. Ballmer goes on to state:

The DSF population on the proposed CHS site is small, although perhaps of somewhat higher density than at other sites. This population is apparently localized around the perimeter of a "blow-out" sand deposit in a soil transition zone between coarse sand virtually devoid of plant cover and loamy sand with a relatively rich vegetative cover dominated by weedy exotic grasses (chiefly *Bromus* and *Avena*). It is not clear whether this location of adult activity is specifically and directly related to the soil properties or to the vegetation, which is dominated by scattered low woody perennials such as California buckwheat (*Eriogonum fasciculatum*) and California croton (*Croton californicus*).

The apparent absence of DSF over most of the CHS site suggests that use of that land for construction purposes will not pose a direct threat to the species as a whole or to the local population to be conserved on-site. Nevertheless, conversion of the remainder of the CHS site to a built landscape will have indirect effects (loss of potential future habitat, loss of potential dispersion avenues, etc.), which may require mitigation.

The Hospital colony and the colony occurring west of Pepper Avenue (the closest known colony to the Hospital north of the freeway) may be in jeopardy due to isolation by the Interstate 10 freeway from populations to the south and isolation of the two colonies themselves. The colonies are separated from one another by a distance of at least 2,500 feet. The habitat separating the two colonies is densely vegetated with invasive weedy species and subject to discing and dumping. Pepper Avenue, currently with an average pavement width of 40', will ultimately be a 120' right-of-way.

Mr. Ballmer further states in the 11/16/93 letter to John Giblin:

The DSF occupied habitat patch west of Pepper Avenue is the largest one remaining north of Interstate 10, but is partially fragmented by commercial structures and roads and heavily impacted by illegal dumping and off-road recreational vehicles. The proximity of recently built residential tracts can also be expected to contribute to habitat degradation through invasion by cats and dogs and perhaps weedy exotic plants. These invaders may directly affect DSF density or, more likely, will alter ecological conditions and thereby degrade the habitat quality for DSF. The large and irregular

perimeter of this habitat patch, coupled with incompatible surrounding land uses, will make it difficult to protect and maintain DSF on this site. Nevertheless, a corridor linking it to the CHS site would improve the viability of both populations.

Hence, the only biological justification for a habitat corridor for the Delhi Fly is to improve conditions (i.e., promote recovery) for the Hospital and Pepper Avenue populations, not to avoid injury to them from any specific feature of the Hospital.

It is our opinion that loss of potential future habitat is a recovery issue and that indirect effects will not occur as a result of the proposed project. Loss of potential dispersion avenues relates more to the ability of the fly to propagate elsewhere (recovery), than to the health of on-site individuals. Similarly, the "indirect effects" Mr. Ballmer posits address recovery of the species, not the avoidance of injury to existing individuals on the Hospital site.

Nonfederal projects must avoid take, and may seek a permit to authorize prohibited take of species under ESA section 10(a)(1), 16 USC § 1539(a)(1). If no take will occur in connection with a nonfederal project, a section 10(a) permit is not necessary, and there is no duty for a non-federal project to promote the recovery of endangered species or to avoid inhibiting recovery.

GEOMORPHOLOGIC ANALYSIS

The geomorphologic analysis of the Hospital has been prepared to assist in the understanding of the existing conditions of the aeolian sand deposits on the project site and the relationship of these soils to *Rhaphiomidas terminatus abdominalis* habitat.

Aeolian deposits are unconsolidated, inorganic particles that have been transported and deposited by wind action. These deposits may be found in sand (2-.05 mm), silt (.05-.002 mm) or clay (finer than 0.002 mm) sized particles.

A mound or a ridge of sand deposited by wind is called an *aeolian sand dune* (Chester et al., 1969). Generally, sand dunes are localized by a small or large obstacle which distorts the flow of air. The air velocity within a meter or two of the ground surface varies with the slightest irregularity of the surface. As it encounters an obstacle, say a large boulder or a desert shrub, the wind sweeps over and around it but leaves a pocket of slow-moving air immediately behind and a similar but smaller pocket in front of the boulder or shrub. In these pockets of lower velocity, sand grains drop out and form a small mound on each side. Once formed, the mounds themselves influence the air flow by slowing down the wind and depositing more particles. This continuous accumulation of particles results in the development of an extensive dune.

An important post-depositional process in sand dunes is pedogenesis. This soil formation process is characterized by vertical horizon differentiation and formation of "*solum*". Soil horizon differentiation is primarily due to accumulation of biological materials and airborne dust in the near surface zone, and addition of weathering products from the original materials and translocation and subsequent deposition of these materials in the sub-surface zone. The textural behavior of soils derived from aeolian deposits resembles that of the parent materials, particularly in arid and sub-humid regions.

The Santa Ana wind is the transporting agent in the formation of aeolian sand dunes in San Bernardino County. The Santa Ana wind, unless deflected through canyons or by other features of the terrain, comes from a dry, northeasterly quadrant and usually blows during the fall and winter months (Sergius et al., 1962). The episodic winds may last from a day up to a week or longer.

According to Nakata et al. (1976) who studied six dust plumes rising from the Santa Ana winds, surface-wind records from Edwards Air Force Base on January 1, 1973 reveal winds from the east-northeast with a maximum velocity of 52 Km/hour. Such winds exceed the threshold velocity necessary to transport particles within the size .7 mm (medium sand) to .03 mm (medium silt). This means that the Santa Ana wind is the agent responsible for the deposition of sand sized materials when the particles are loose and free to be transferred. The fine particles of the unconsolidated granitic alluvium that are associated with San Bernardino Valley are suitable candidates to be transferred and deposited as aeolian dune sands.

Hospital Site - Aeolian Processes: This analysis is based on direct site observation, study of the aerial photos ([1938, 1955, 1969, 1991] Figures 4-7, Appendix III) and San Bernardino County, Southwest Part, Sheet 8, Soil Survey Report ([1980] Figure 8, Appendix III) and the USGS 7.5' quadrangle map (San Bernardino South 1967, photo revised 1980).

That portion of the site which is fenced to protect occupied habitat is located on "wind-reworked granitic alluvium." The site is a part of the *Delhi soil association* that covers the areas near Ontario International Airport, Cucamonga Creek, and west of Bloomington. The Delhi soil association is "nearly level to strongly sloping, somewhat excessively drained, very deep soils on alluvial fans" (Soil Survey Report, 1980). The slope of the alluvium ranges from 0-15%, and elevation ranges from 800 to 1600 feet. A portion of the occupied habitat is currently an *aeolian dune*, characterized by a bare surface, excessively drained and with no vegetative cover. The dune is surrounded by finer alluvial materials, presumably reworked by wind, resulting in significantly different materials. Analysis of aerial photos (1938, 1955) (Figures 4 and 5) indicates that the "dune" in question was not present at the time the photos were taken. The USGS topo (San Bernardino South 1967, photo revised 1980) shows "crossed shovels" at the location of the occupied habitat indicating that the "dune" is a result of surface mining activity, not aeolian process. Three zones are recognized in this area and are discussed below.

Zone 1 is characterized by a dense non-native grassland. According to the Soil Survey Report (1980), the soil series associated with this part of the site are Delhi series. Direct site observations made on November 13, 1993 resulted in the collection of data which contradicts the Soil Survey Report (1980) and identifies the soil of this area not as Delhi but shows the soil type to be Tujungua soil series. The field description and samples collected from this zone indicate that the soil is an extremely young soil with a loamy sand A1 horizon that is between 5 to 8" thick and no sub-surface horizon developments. The surface horizon of this soil was defined as:

A1 - 0-5", pale brown (10YR 6/3), loamy sand, brown (10YR 5/3) when moist; friable, loose when dry, with abundant very fine roots. The particles exhibit cohesion when wet.

This zone is not habitat for the Delhi Fly (G. Ballmer pers. comm.). These soils in this zone are well established with little susceptibility to wind erosion. The surface is densely vegetated with 80-95% cover. The author (Thomas Olsen) and Dr. D. Bakhtar (EST Associates) visited this area during the windy day of November 14, 1993, with gusts up to 40 mph and did not observe any kind of movement of particles.

Zone 2 is transitional zone between zones 1 and 3. It lacks non-native grasses and has a vegetative cover consisting of *Eriogonum* spp., *Croton* spp. and *Heterotheca* spp. Some individuals of these species were observed in zone 1. The soil is a loamy fine sand and is very similar to what was found in zone 1. A very thin layer of medium to coarse sand sheet is present on the surface of zone 2. This layer is not thick, but it distinguishes zone 2 from zone 1. This zone is the habitat for the Delhi Fly and is isolated to the southeastern portion of the project site. The soil of this zone is well established, and is not susceptible to wind erosion, although its vegetative cover is not as dense as that of zone 1.

Zone 3 is a dune apparently formed by mining activity and internally subject to aeolian process. This zone is characterized by a wavy surface with little or no vegetative cover and with micro primary mounds formed around the wind blown plant residues on the top of the dune. The dune exhibits a convex surface on the south that continues to a concave, wind reworked sandy alluvium on the north. This zone consists of pale brown, single, fine to medium sized sand particles.

The samples collected from zone 3, indicate no evidence of soil formation. The particles are loose and are susceptible to movement by wind within the microsite of the dune toward the south side of the dune. The evidence of wind activities can be seen in the presence of micro mounds around the vegetative residues and the wavy, convex surface of the dune.

Two photo images of the sand dune (1980 Soil Conservation Service soil report photo and a 1991 aerial photo) were compared. It appears from this analysis that the size and shape of the dune has not changed significantly during the last 10 years (Figures 7 and 8, Appendix III).

HABITAT PRESERVATION AT THE HOSPITAL SITE

The best scientific information available suggests that the following measures will succeed in preserving for the long term the biological integrity of the approximately two-acre area of the Hospital property which the Delhi Fly is known to occupy. As a relict population separated by 2500 feet from the nearest known population of the Delhi Fly, there is a chance that the Delhi Fly will not continue to exist at the Hospital property regardless of whether or how the Hospital is constructed. Even leaving the Hospital property completely alone would not eliminate that possibility given surrounding land uses, habitat degradation, and population separation. The close management of the habitat area made possible by the Hospital project, may actually improve chances that the on-site population will survive for years to come. The following elements are key components to habitat preservation at the site.

Hospital Footprint Reconfiguration: The County has completely avoided direct impact to the entire area identified as occupied or suitable Delhi Fly habitat by moving the Hospital complex footprint 250 feet north from the original design location and moving parking out of the identified preserve area. The resulting Hospital footprint leaves a rectangular area 8.35 acres in size which encompasses the 1.92-acre occupied Delhi Fly habitat. The Site Plan shows the modified Hospital footprint and preserve areas (Figure 3, Appendix III).

Preserve Area Security Barrier: Long term protection of occupied habitat and the preserve area will be assisted by installation of fencing, vegetative barriers and erosion and run-off control structures. All on-site surface runoff will be collected and directed to the interim desilting basin via underground storm drains. These measures are designed to prevent human activities and encroachment within the habitat preserve area. A secure barrier will be used during the construction phase to ensure no entry of machinery and/or personnel into the habitat area. A biologist construction monitor will be on site during initial grading activity. Following construction activities, a combination of fencing and vegetation will provide an aesthetically pleasing and secure barrier around the Delhi Fly habitat. Final design of the fencing/vegetation barrier will be submitted to the FWS for review and input. Regular policing of the preserved habitat area for litter and other human disturbances will be provided.

Dune Stabilization: The Hospital will have no effect on dune-forming activity on site. Based on review of aerial photos (1938, 1955, 1969, 1991 and 1992) and the USGS 7.5' quadrangle map (San Bernardino South 1967, photo revised 1980), it is apparent that the dune is a result of sand mining activities circa 1956 and that the size of the dune area has been constant for at least 10 years. Soil particles observed as airborne on windy days

throughout the area are not Delhi sand but rather, fine silts and clay. Wind action resulting in sand movement is localized and confined to the internal, unvegetated area of the habitat. Urban development to the west, north and east have halted present-day dune formation.

Erosion and sand migration, if any, of the occupied habitat area will be studied annually to determine whether steps are needed (e.g., wind barriers, sand stabilizing structures) to maintain geologic integrity of the occupied habitat. New sands will be imported if necessary.

DELHI SANDS FLOWER-LOVING FLY RESEARCH

INTRODUCTION

The purpose of this study is to learn more about the life history and biological requirements of the Delhi Sands Flower-loving Fly (Delhi Fly), and to determine the impacts, if any, of the planned hospital construction and the benefits, if any, of the proposed habitat enhancement measures. This section is based upon the research needs and proposals initially described in the Habitat Preservation, Habitat Enhancement, and Impact Avoidance Plan for the Delhi Sands Flower Loving Fly at the San Bernardino County Medical Center Replacement Site prepared by Thomas Olsen Associates (December 1993) and meetings between Olsen Associates Inc., and FWS in January, 1994. This effort is limited in time, cost and area of study. The time period of study will be five (5) years beginning in February 1994. The area of study will be limited to the 11.37 acres on the southern boundary of the County Medical Center Replacement Site.

Almost no data are available regarding the life history of the Delhi Fly. The FWS decision to list the species was based on an extrapolation of percent habitat lost to a corresponding but undocumented percent decline in the population. The available literature generally addresses the family (*Apioceridae*) or the genus (*Rhaphiomidas*) rather than the species. The genus *Rhaphiomidas* was revised by Cazier in 1985. At that time, *R. abdominalis* was relegated to a subspecies of *R. terminatus*.

The purpose of this project is to determine how the Delhi Fly uses its currently occupied habitat and what habitat variables are important to the fly. Because we currently have inadequate knowledge of what variables are necessary to constitute suitable fly habitat and how the fly uses resources available to it, we can only speculate which variables must be measured and mapped. Therefore, we propose to measure and map a wide range of environmental characteristics of the currently occupied habitat and the same variables for areas that appear to be suitable to us (but apparently are not used by flies (in order to determine what variables make a particular habitat good for flies. Direct observations of Delhi Flies will then be correlated with each of the habitat variables, to separate out the variables that are important to the fly from those that are of less or no importance. Knowledge derived from this will be essential in understanding how to mitigate for impacts to the Delhi Fly by creating new habitat or restoring and protecting occupied habitat. All observations and data collection will be done in a scientifically valid manner. Tasks detailed below were selected to sample the variables we currently believe may be important to the Delhi Fly.

The foundation of the study is to conduct annual observations of adult flies every year for five years during the six week period of adult activity in the several discernable habitats (occupied, habitat enhancement area, open space area) at the site. Conventional censuring of this species is probably impossible because of biological characteristics of the species. Suitable census techniques for this species have not been previously developed and tested over time. It is evident that difficulties in observing the species will result from:

1. brief period of emergent activity of the adult flies
2. little current understanding of the use of habitat by adult flies
3. difficulty in the capture/mark/recapture of adult flies
4. little current understanding of the effects of weather on fly behavior.

It will be necessary to develop new techniques of surveying specifically for this species, and to use an adaptive strategy rather than to become obligated to an untested technique or approach that is rigidly imposed. New techniques will be developed, field tested, and modified during the course of this project.

Computer-based data tracking system for the multivariate statistical analysis will be used for correlating and mapping all data derived from all tasks. Such a system will facilitate tracking of observations and manipulation of variables to derive the clearest possible understanding of how the species relates to its environment. A computer-based system is essential to enable sifting through the large amount of data on a wide range of variables in order to determine which variables are truly important to the fly, thereby enabling the research to arrive at reliable conclusions on the effects of habitat manipulations and anthropogenic impacts as well as the most efficient sampling and observation techniques. The amount of data to be derived from this study is expected to exceed the analytic capacity of human beings unaided by a computer-based system. Use of a computer-based system will significantly reduce cost and increase accuracy of the multivariate statistical analysis.

A series of tasks is outlined below, together with estimated person-power level of effort. Because of unknown variables, person-power level of effort and cost may require re-estimation after the first season, and may require revision upward or downward. It is understood that an adaptive management approach will apply to the research effort.

Task 1 Description of Biological and Geomorphological Characteristics of Habitat Currently Occupied by the Delhi Fly

The two-acre occupied habitat will be divided into approximately 81 10m x 10m quadrants and plotted on a map. Permanent reference points will be installed at the corners of each quadrant.

All macroscopically observable characteristics (surface soil types, plant species, slope, aspect, vertebrate and invertebrate species and their sign) will be noted and plotted as appropriate. Vegetation cover will be measured by line-intercept transects. All individual perennial plants will be characterized by height and canopy cover and plotted.

Soil trenches, each one-half meter long, one parallel and two perpendicular to the prevailing wind direction will be dug in representative micro habitats. A soil profile will be prepared for each distinct micro habitat. Soil samples to the depth of one (1) meter will be taken to characterize the soil profile including structure and organic composition. This effort will be undertaken two times each year for three years in the pre-emergent and emergent season. Soil temperature and other variables will be reviewed in the literature.

Samples of subsurface biota (living organisms) for macroscopic species will be taken in the trenches. The biota will be identified to the lowest practical taxonomic level, without relying on taxonomic specialists.

A recording weather station will be erected on the study site to measure temperature, humidity, and wind speed and direction at 6 inches and 3 feet above ground level and rainfall.

Initial effort projected for February/March 1994 will involve setting up the plots and mapping, installation of the weather station, geomorphological measurements, identification and measurement of all perennial plants, soil trenches and root biota sampling. In addition, appropriate scientific take and collection permits will be applied for in February 1994. It is expected that the initial set-up will require a full month of work by the Principal Investigator (P.I.) and one assistant, with approximately four weeks additional work by another assistant to assist in field work and mapping.

Resampling of surface biota and geomorphology, will be done in May, August, and November for the first year (1994), and February, May, August, and November for two more years (1995, 1996). This resampling will record data at 100 points to determine changes, if any, over time.

A limited trenching resample will be obtained 2x/year in the pre emergent and emergent seasons for two additional years (1995, 1996). To the extent practicable a statistically valid sample will be collected in February and August of each year. Samplings will be limited to avoid direct impacts to the Fly. This effort is expected to require two full days each sample month by the P.I. and assistant. Servicing of weather equipment will be performed during the resample effort.

Data collection sheets will be developed and used throughout the study to ensure consistency of observation and recordation of data.

Appropriate collecting permits will be necessary to allow collection, whether accidental or intentional, of the larvae of Delhi Fly or any other special status species. Scientific collecting permits will be obtained by Olsen Associates in coordination with USFWS.

Task 2 Behavioral Observation of Delhi Flies

During the period of adult fly activity in August and September, detailed observations will be made of fly behavior within the study areas. This task will be undertaken for five years. Observations will include:

- a. number of flies observable over time
- b. positions within the plots
- c. interactions between individual flies and interactions between flies and other organisms
- d. time budgets
- e. evidence of territoriality
- f. mating and oviposition behavior and site selection
- g. any other observable behavior.

This will require four full days each week for the P.I. and one assistant during the six-week period of expected greatest fly activity, for a total of 48 person-days. An additional two weeks effort for the P.I. and assistant are anticipated for data entry and analysis (20 person days).

Because of the degree of variability of environmental conditions, it will be necessary to conduct these observations through a period of five years if behavioral correlations with environmental variables are to be made.

Task 3 Census of Flies

Because the more accurate mark-release-recapture technique of population estimation is reduced in its effectiveness due to biological characteristics of the Delhi Fly and the federal constraints associated with handling a listed species, a time-limited observational census technique will be used¹. During the course of the behavioral observations described in Task 2, at hourly intervals during at least one day each week, the observer will count all detectable individual flies within a five-minute time span from a consistent observation point within a circle of defined radius (based on the maximum effective detectable distance of Delhi Fly at the specific point). These observations will be made at one point selected to be near the center of occupied Delhi Fly habitat and at two points near the edges of occupied habitat but determined to be within the area used by flies. Succession of points will be randomly rotated, so that each point will be sampled equally and with equal probability of disturbance by the investigator. These data can subsequently be correlated with temporal, weather, and habitat variables to provide information on how some of these variables affect fly activity and perceived numbers. Tightening of precision of population estimates and a reduction in the effort necessary for censusing, as optimum conditions are determined will result.

The work effort for this task is included in the work plan covered by Tasks 1 and 2, and therefore has no separate time estimate.

Task 4 Environmental Resource and Behavioral Correlation

Using data acquired during Tasks 1, 2 and 3, correlations will be sought between fly observations and environmental variables. It is anticipated that no additional field work will be needed for this task. Four weeks of effort by the P.I. and assistant are anticipated for data analysis.

¹ Southwood, T.R.E., 1978. Ecological methods with particular reference to the study of insect populations. 2nd ed. London and New York. Chapman and Hall (pp. 236-237).

Southwood cited: Hughes, R.D., 1977. The population dynamics of the bush fly, the elucidation of population events in the field. Aust. J. Ecol. 2: 43-54.

The technique is similar to that described (for birds) in: Reynolds, R.T., J.M. Scott, and R.A. Nussbaum, 1980. A variable circular-plot method for estimating bird numbers. Condor 82:309-313.

Task 5 Development of Habitat Enhancement and Open Space Area*

This effort is to be viewed in an experimental, adaptive, management context. The goal of this effort may be to measure the effectiveness of habitat enhancement, restoration and creation. The areas will be set aside and fenced. Practicable goals will be established for these areas in 1994 based on the best available scientific practices at the time of the initiation of the research. A task activity plan will be developed each year at the annual project review based on baseline data collected in year one of the study.

It should be noted that the interim desilting basin (approximately 1.6 acres) shown on the Site Plan (Figure 3, Appendix III) as lying within the 8.35 acre habitat enhancement area and outside the occupied habitat area does not pose a threat to the Delhi Fly. The siltation basin is required by National Pollution Discharge Elimination System (NPDES) and San Bernardino County Flood Control District to control surface runoff during Hospital construction until the off-site storm drains are on-line. It would receive construction storm water runoff only, and it will not be used after the off-site storm drain system is installed. Once the interim use is abandoned, the area will be incorporated into the adaptive management planning for the Habitat Enhancement Area.

Task 6 Annual Report

Results of the research and data collection will be summarized in an annual report. Research data will be tabulated and included in an Appendix to the Annual Report. This report will be submitted to San Bernardino County and USFWS, by December 31st each year for review and comment. Recommendations for changes to research design and further research will be made. Additionally, at a minimum of two times/year, research staff, County staff and USFWS will meet to discuss results and recommendations.

IMPACT AVOIDANCE

The County's habitat avoidance and preservation program will eliminate direct impacts to the Delhi Fly habitat on the Hospital property, and the habitat enhancement area will provide an effective barrier to outside disturbances which may result from land uses adjacent to the Hospital. The County does not own or control any of the properties adjacent to the Hospital property. The County has, however, identified the adjacent property owners and the property zoning, and will work with those owners to educate them about the County's Delhi Fly preserve and the consequences of the ESA if they impair the preserve program or impact the Delhi fly. Nevertheless, the County has taken the following additional steps to assist in recovery and to eliminate any potential secondary impacts from the Hospital's operation.

Open Space Area An area 100 feet wide will be provided along the southern property line from the west edge of the preserve to Pepper Avenue (Figure 3, Appendix III). This area will be established to provide the opportunity for potential linkage to the colony west of Pepper Avenue. An additional area, approximately 30' wide, extending approximately 700' north adjacent to Pepper Avenue along the west edge of the site will be reserved for landscape planting suitable for the Fly. The area will not become available for this use until sometime in 1997 when off-site and on-site street improvements are scheduled.

*These areas are delineated in Appendix III of the Plan.

Parking Area Buffer: The only Hospital operations abutting the Delhi Fly preserve area will be parking. Of all the Hospital's operations, parking presents the least possibility of impact to the Delhi Fly. All parking areas will be zones of low speed vehicle travel (typically less than 15 miles per hour). Note that the helipad area, where wind is often intense, is located at the North end of the Hospital site with structures between it and the Delhi Fly preserve.

Public Education: The County believes that increased public awareness of the Delhi Fly preserve area will help avoid unintended disturbances and will increase public knowledge and appreciation of endangered species. The Hospital will construct a kiosk educational center near the preserve area with information about the Delhi sands ecosystem, the Delhi Fly, and the Hospital's research, habitat preserve and enhancement programs. Although public access to the preserve area will be restricted, viewpoints will be provided.

This plan has been prepared by the following individuals who are serving as a consulting team to the County of San Bernardino Hospital Design Group.

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APPENDIX I

DESIGN MODIFICATIONS TO ORIGINAL HOSPITAL PLAN TO AVOID DIRECT AND SECONDARY EFFECTS TO THE DELHI FLY

1. Modification of the property lines at the North end of site, through negotiations with the Colton Joint Unified School District. The school site needed to be reconfigured to allow us to move the Hospital.
2. Move all five (5) buildings (Mental Health, Nursing Tower, Diagnostic and Treatment, Clinics and Central Plant), 250' North to provide space for the Delhi Fly habitat preservation area.
3. Confirm ability to relocate helicopter pads with Heliport Consultants and Federal Aviation Administration. Make the necessary adjustments to flight paths.
4. Determine which existing power poles must be underground to accommodate the new helicopter flight path.
5. Confirm ability to cross the high tension cross country electrical distribution lines and negotiate a new easement agreement if required.
6. Provide a temporary fence around the habitat area.
7. Relocate all primary utility locations and negotiate new points of connection to trunk line companies. This includes water, sewer, storm drain, telephone, cable and power.
8. Investigate and verify locations for water storage tank, fuel storage, test well, permanent well and sewage storage tank. Relocate those being moved, which is all but the wells.
9. Confirm adequacy and safety of new road locations with traffic consultants and road departments.
10. Reconfigure all site grades for relocation of buildings, parking areas, walls, road entrances and exists. Rebalance excavation cuts and fills.
11. Confirm no impact on adjacent cemetery.
12. Relocate parking, eliminate 158 stalls and adjust site to accommodate new configuration.
13. Define location of permanent fence and determine access gates.
14. Redesign the landscape concepts at the south half of site to enhance habitat compatibility.
15. Analyze site drainage impacts to assure no new impacts on adjacent properties or to Delhi Fly habitat preservation area.
16. Relocate site office of construction manager existing on the site. Replan owner, architect, engineer, inspector and contractor office sites and staging areas.

APPENDIX II

SAN BERNARDINO COUNTY MEDICAL CENTER
DELHI FLY HABITAT FINANCIAL IMPACT *

Design & Engineering

Architect Fees	\$ 20,000
Landscape Consultant	Unknown
Roadway Consultant	Unknown
Helicopter Consultant	Unknown
Re-Engineering Fee	\$ 20,000
Construction Management	\$ 20,000

Owner Direct Costs

Fly Habitat Land Cost	\$1,552,174
Colton School District Lot Line Adjustment	\$ 5,000
County Administrative	\$ 15,000
Special Consultants	\$ 70,000
Legal Fees	\$ 10,000
Habitat Maintenance	Unknown

Construction Costs

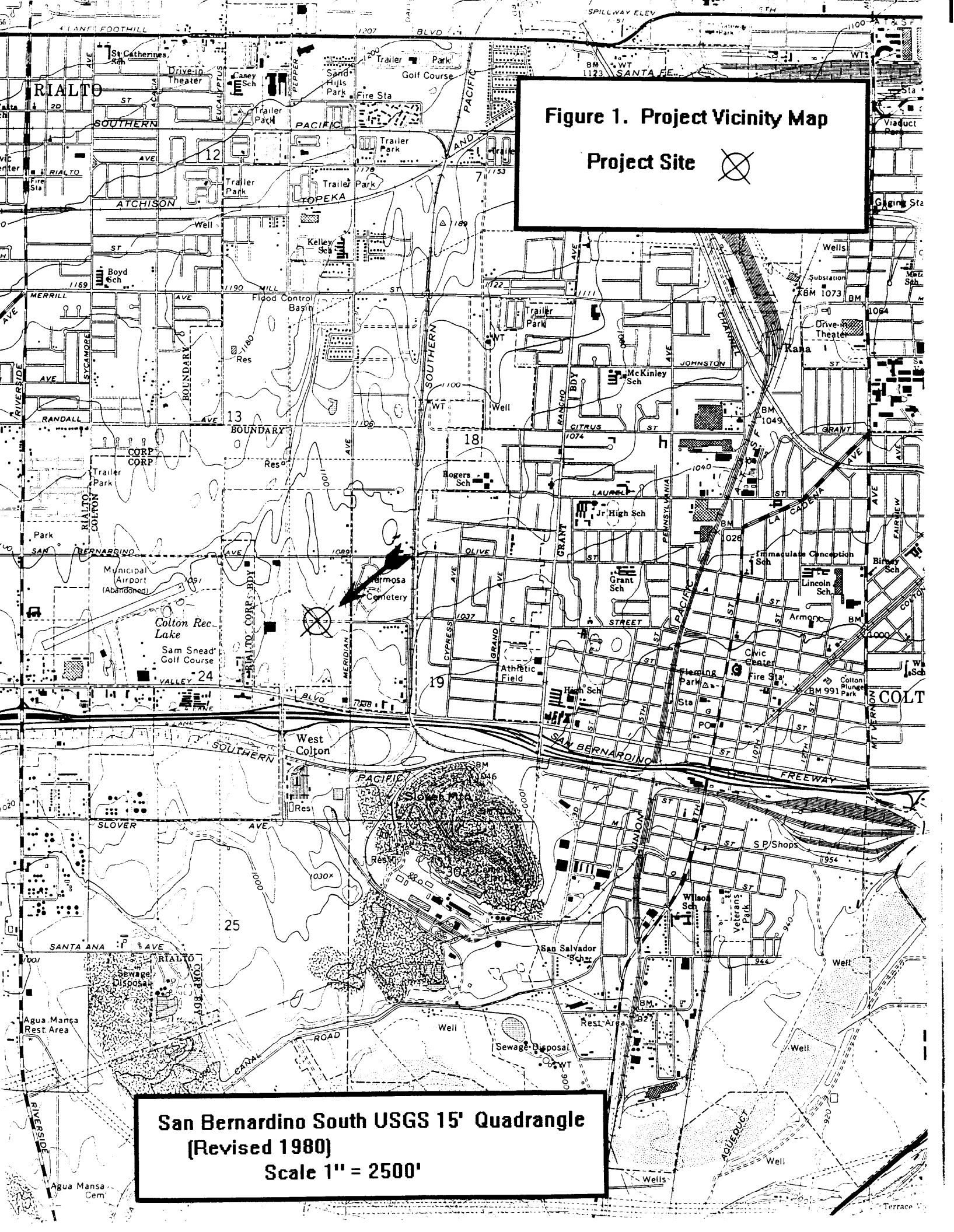
Increased Grading Quantity	\$ 205,900
Site Fencing	\$ 13,000
Retaining Wall at Central Plant	\$ 141,000
Landscaping	\$ 66,120
Hardscape	\$ 15,000
Temporary Construction Trailer Relocation	\$ 14,000
Temporary Power and Phone Relocation	\$ 5,000
Power Pole Relocation (San Bernardino Ave.)	\$ 6,000

Total	<u>\$2,178,194</u>
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* Preliminary Cost Estimates as of 12/1/93

Figure 1. Project Vicinity Map

Project Site



San Bernardino South USGS 15' Quadrangle
(Revised 1980)
Scale 1" = 2500'

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

NATIONAL ASSOCIATION OF HOME BUILDERS)	
OF THE UNITED STATES, ET AL.,)	
)	
Plaintiffs,)	
)	
v.)	C.A. No.1:95CV01973 RMU
)	
BRUCE BABBITT, Secretary,)	
UNITED STATES DEPARTMENT OF INTERIOR)	
)	
and)	
)	
MOLLIE BEATTIE, Director,)	
UNITED STATES FISH AND WILDLIFE SERVICE)	
)	
Defendants.)	
)	

AFFIDAVIT OF KENNETH A. TAYLOR, JR.

Kenneth A. Taylor, Jr., having first been duly sworn, does hereby attest and affirm as follows:

1. I am a citizen of the State of California. I am over 18 years of age and am not suffering from any mental disability.

2. I have worked for the San Bernardino County Architecture Building and Engineering Department ("Department") for seven years. The Department is a subdivision of the Government of San Bernardino County, California ("County"), a political subdivision of the State of California. I am currently employed as a Chief Building Construction Engineer with the Department. My office is located at the County Government Center, First Floor, 385 North Arrowhead Avenue, San Bernardino

County, California, 92415-0181. I am familiar with the County's organization and operations.

3. The County is building a new County Medical Center ("Hospital") in Colton, California. From 1991 until March 1996, I was employed as a Building Construction Engineer for the Hospital.

4. As a Building Construction Engineer, I managed the bidding and contract award process for all major contracts associated with the Hospital project and was particularly involved with the seismically-resistant aspects of the project. I am aware of the U.S. Fish and Wildlife Service ("Service") Endangered Species Act ("ESA") listing of the Delhi Sands Flower-Loving Fly ("Fly"). I am familiar with the mitigation measures that the County has been forced to take due to the Service's demands as they relate to the Hospital project.

Status of Funding for New Hospital When the Fly was Listed

5. In September of 1993 when the listing of the Fly was published, the County had already obtained financing for the Hospital. A significant delay at that point would have adversely affected the project. The County had to file completed plans and specifications for the Hospital by June 30, 1994, to qualify for state reimbursements.

6. Specifically, the County had issued \$283 million of debt of which the County had expended a significant portion. The County received no Federal funds to construct the hospital.

Costs Which the Service Has Caused the County to Incur

7. The new Hospital is a \$470 million, state-of-the-art health care facility. Without the Service demands associated with the Fly, the Hospital would have cost taxpayers about \$3.5 million less than this amount.

8. The County was forced to shift the Hospital 250 feet north and completely revise its site plans for the Hospital to take into consideration the impact of the Fly. Thus far, Service enforcement associated with protecting the Fly have added about \$3.5 million dollars to the cost of the Hospital.

9. Specifically, the County was required to incur redesign and consulting services for the Hospital in the amount of \$1,093,657. Of this amount, \$330,981 was spent on site redesign costs; \$98,396 on building relocation costs; \$159,562 on fees to Thomas Olsen Associates, Inc. for habitat analysis and conservation plan consulting services; \$479,649 on consulting fees to Kiyani Environmental Consultants, Inc., for monitoring for the Fly; \$1,726 to Delgado and Sons for contracting services;

and \$5,000 to readjust the Colton Unified School District lot line.

10. The County was required to spend an additional \$29,251 in construction management services costs to meet the Service's mitigation demands.

11. In response to Service demands to protect the Fly, the County was additionally required to set aside approximately 8.35 acres of Fly area on the Hospital site, which cost \$2,098,543.

12. The County was forced to incur Hospital construction costs of \$277,669 due to the Services demands for protection of the Fly. Of this amount, \$37,774 was spent for a new retaining wall for the Central Plant; \$5,000 for new stairs for the Central Plant; \$20,000 for a new Mental Health Building retaining wall; \$36,000 for additional water storage tank piping; \$88,550 for additional excavation; \$66,120 for additional landscaping; \$13,000 for new site fencing; \$14,000 for relocation of the construction trailer; and \$11,000 for power and phone relocation.

13. In total, as a result of the Fly, the County has spent \$3,499,120 as of February 12, 1996, in mitigation costs to construct the Hospital. Exhibit A hereto is a Table which illustrates the cost itemization described above.

14. Eight Fly sightings have been recorded for the Hospital site. That means that the County is paying \$437,390 in mitigation costs per Fly so that it can build the Hospital.

15. According to a report by Inland Action, attached as Exhibit B hereto, in 1993 the existing County hospital's cost per inpatient was \$6,695 and its cost per outpatient was \$140.

16. The Service has not paid, and is not proposing to pay, the County for additional land and other costs the County has had to incur to build the Hospital and accommodate the Fly.

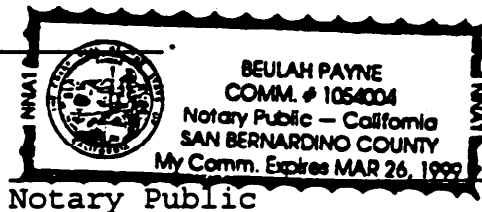
FURTHER AFFIANT SAYETH NOT.

Kenneth A. Taylor Jr.
Kenneth A. Taylor, Jr.

County of San Bernardino)
State of California)

Subscribed and Sworn before me this the day of 25th
March, 1996 by Beulah Payne.

My Commission Expires 3-26-99



DELHI SAND FLY COSTS

<u>DESCRIPTION</u>	<u>COST</u>
DESIGN AND CONSULTING SERVICES	
Site Redesign (Civil)	\$ 330,981.00
Building Relocation (MEP, Structural, Architectural)	98,398.00
Thomas Olsen	159,562.00
Planning Department	18,343.00
Kiyani Environmental	479,649.00
Delgado and Sons	1,726.00
School District Lot Line Adjustment	5,000.00
 Total Design and Consulting Services	 <u>1,093,657.00</u>
CONSTRUCTION MANAGEMENT SERVICES	
	<u>29,251.00</u>
FLY HABITAT LAND COSTS	
299,687 SF @ \$3.73/SF	1,117,883.00
49,770 SF @ \$10.00/SF	497,700
48,301, SF @ \$10.00/SF	483,010
 Total Fly Habitat Property	 <u>2,098,543.00</u>
CONSTRUCTION COSTS	
Central Plant Retaining Wall	37,774.00
Central Plant Stairs	5,000.00
Mental Health Retaining Wall	20,000.00
Additional Water Storage Tank Piping	38,000.00
Additional Excavation	88,550.00
Landscaping	68,120.00
Mental Health Storm Drain	<13,775.00>
Site Fencing	13,000.00
Construction Trailer Relocation	14,000.00
Power and Phone Relocation	11,000.00
 Total Building Construction	 <u>277,669.00</u>
 TOTAL COSTS	 <u>\$3,499,120.00</u>

0342

INTEROFFICE MEMO

DATE October 10, 1995

PHONE 387-2727

FROM ANTHONY GRAY, Chief
Transportation Design Division

MAIL CODE 0835

TO PETER WULFMAN, P.E. FOR FILING
Transportation Design Division

File: Yd. 5/Pepper Ave.

SUBJECT PEPPER AVENUE INTERSTATE 10 INTERCHANGE - W.O. #H12159

On October 3, 1995 a special meeting was held to discuss Alternate D going through the Delhi Flower Loving Sand Fly (FLY) corridor. In attendance were the following:

Al Hudgens	Caltrans	(909) 383-4037
Tom Olsen	Olsen Associates	(909) 766-4655
Gail C. Kobetich	Fish & Wildlife Services	(619) 431-9440
Jeff Newman	Fish & Wildlife Services	(619) 431-9440
Jerry Eaves	San Bernardino County Board of Supervisors	(909) 387-4565
Ken Miller	County of San Bernardino-Trans/Flood	(909) 387-2623
John Giblin	County of San Bernardino-Administration	(909) 387-5408
Randy Scott	County of San Bernardino-Planning	(909) 387-4146
Paul Mordy	County of San Bernardino-County Counsel	(909) 387-5442
Anthony Gray	County of San Bernardino-Transportation	(909) 387-2727

The following discussion was held:

Supervisor Jerry Eaves and Randy Scott presented Alternate D which realigns Valley Boulevard north of the existing alignment and goes through the FLY corridor and provides Caltrans latest standard of 125 meters or about 410' spacing between intersection lag lines. Alternate D modified had about 250' spacing between lag lines and it was laid out to be just south of the FLY corridor. It was mentioned that Alternate D will be a more efficient intersection because it will be easy to follow and maneuver and is the most desirable to Caltrans of the 40-plus alternate interchanges reviewed in which only Alternates C, D, 30, and 31 are acceptable to Caltrans.

Also mentioned is that this Alternate has about a \$5 million savings over any of the other alternates acceptable to Caltrans. Randy Scott indicated that during the environmental review for the hospital, this corridor was a questionable method of providing migration for the FLY from one area to another. Jeff Newman with Fish & Wildlife Services indicated that they realize very little is known about the FLY, but are trying to preserve it as best they can and therefore required the corridor. Gail Kobetich, who heads Fish & Wildlife Services for Southern California, indicated perhaps the County could look at realigning the 100' corridor strip north of the proposed alignment of Valley Boulevard which would reduce the parking. Jerry Eaves requested John Giblin to have someone review the hospital parking plans and John indicated that land in the area is about \$12.00 per square foot. The FLY corridor is about 300' long and 100' wide, which equates to about 3/4 acre, but the alignment of Valley Boulevard for Alternate D doesn't utilize the whole 3/4 acre and only uses perhaps about 1/2 acre, which would be the reduction of area of the parking lot.

OCT 11 1995

Memo to Peter Wulfman, P.E.
October 10, 1995
Page 2 of 2

It was pointed out there may be land east of Merrill Avenue that might be able to be picked up as additional parking, and also the area south of the new alignment of Valley Boulevard that would be the old Valley Boulevard and remnant remainders of parcels could also be used as alternate auxiliary parking area which could gain access to the hospital by going along the east side of Pepper Avenue.

Ken Miller questioned whether a screen type fencing would help the FLY to the elevation that they might fly over the Pepper Avenue traffic to reach the other side, and Fish & Wildlife indicated chain link fence fabric screening might be beneficial to help the FLY migrate to the west. Ken also asked whether planting might accomplish the same thing, and Fish & Wildlife indicated they are not sure if any types of planting could accomplish the same thing.

After the meeting I called Marie Marston and she indicated that she had completed the plan and cost estimate on Alternate D similar to the information on the other alternates. I indicated she should send it to Joe Hernandez and she said she will get it in the mail on October 5, 1995. The meeting with Marie and Joe was canceled with this phone call and we will meet next on October 19, 1995 for our regular meeting when Doug Graybeal returns from vacation. We will discuss the status of John Giblin having someone review the parking lot and see if there will be any problems realigning Valley Boulevard as Alternate D has it. It appears Alternate D is by far the least expensive alternate and the most efficient alternate for traffic and the most desirable to Caltrans; therefore, the most preferred alternate.

The next regular meeting will be on Thursday, October 19, 1995 at 9:00 a.m. in the Citrus Room of the Government Center.

AJG:rb

cc: Gail Kobetich
Glen Wilson
Clayton Cabrinha/Don Graul
Tom Olsen
Doug Graybeal
Marie Marston
Wes Gleason
Joe Hernandez for distribution through Caltrans
Wes McDaniels for distribution through Sanbag
File
KAM/RM - Reading File

INTERCHANGE ALTERNATIVES

(UNIFIED COST COMPARISON)

September 12, 1995

D. G.

<u>ALTERNATIVE</u>	<u>DESCRIPTION</u>	<u>TOTAL COST</u>
C	Relocate WB on/off-ramps to Eucalyptus	\$13.2 M 14.6 M (10%)
	Roadway Items: \$7,027,561	
	Structural Items: 2,230,580	
	Right-of-Way: 3,979,974*	
D-Mod	Move Valley Blvd. to the north & move WB off-ramp to the south to provide additional stacking distance	\$10.4 M
	Roadway Items: \$6,176,387	
	Structural Items: 2,426,404	
	Right-of-Way: 1,750,665*	
30	Pepper Avenue / Valley Blvd. gradeseparation (Pepper over Valley Blvd. & with loop ramp)	\$16.3 M 22.0 M (26%)
	Roadway Items: \$8,812,632	
	Structural Items: 3,415,605	
	Right-of-Way: 4,037,304*	
30-A	Same as 30 (above), but without loop ramp	\$15.8 M 21.4 M (26%)
	Roadway Items: \$8,807,398	
	Structural Items: 3,066,791	
	Right-of-Way: 3,910,204*	
31	Off- and on-ramps placed under Valley Blvd, terminating at Pepper Ave	\$15.8 M 18.6 M (15%)
	Roadway Items: \$7,967,232	
	Structural Items: 3,066,791	
	Right-of-Way: 4,785,811*	

* These include allowances for Acquisition, Goodwill, Utility Relocation, Relocation Assistance, and Clearance/Demolition.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

NATIONAL ASSOCIATION OF HOME BUILDERS)	
OF THE UNITED STATES, et al.)	
Plaintiffs,)	
)	No.1:95CV01973 RMU
v.)	
)	
BRUCE BABBITT, Secretary,)	
UNITED STATES DEPARTMENT OF INTERIOR)	
)	
and)	
)	
MOLLIE BEATTIE, Director)	
UNITED STATES FISH AND WILDLIFE SERVICE)	
)	
Defendants.)	

I, JEFFERY M. NEWMAN declare:

1. I have ^{been} employed by the U.S. Fish and Wildlife Service ("Service") since May 1994.

2. Prior to my work at the Service, I was employed as a biological consultant (1986 to 1994) working with endangered species. I am currently stationed in the Carlsbad Field Office, serving as a Branch Chief for Conservation Planning for San Bernardino, Riverside, Orange and Los Angeles Counties. I am responsible for various endangered species issues regarding incidental "take" permits for non-federal lands, including Endangered Species Act ("ESA") Section 10(a)(1)(B) permits for Delhi Sands flower-loving fly (DSF), Stephens' kangaroo rat, coastal California gnatcatcher, and multiple species plans. I am also the lead contact on the multiple species habitat conservation planning effort for the San Bernardino Valley. This regional planning effort is its initial stages with the

DECLARATION OF JEFFREY M. NEWMAN - 1

16. The 100' wide portion of the corridor along the southern edge of the subject property is currently fenced as part of the DSF reserve area.

17. The County has asked for the Service's advice as to whether its preferred alignment for the redesign of Valley Boulevard/Pepper Avenue Intersection Valley Boulevard may cause a take. The County's preferred alignment will greatly reduce, if not effectively eliminate, the entire corridor area set aside as a critical part of the County's efforts to avoid a take of the DSF. The County's proposal to maintain a 18' wide corridor along the proposed alignment simply is not biologically justified, and will not function as a corridor. While the Service has pointed out that implementation of the proposed alignment could result in a violation of section 9 of the Act because loss of an effective corridor will increase the risk of extirpation of the local population, the Service ~~has~~ ^{HAS} not threatened civil or criminal penalties. The Service has been informing the County, its consultants and Caltrans since as early as February 1994 that loss of the corridor would likely require compensation.

18. The Service has never threatened to prevent improvements necessary for public safety, such as the Valley Boulevard/Pepper Avenue Intersection. The Service has stated that the County should address the loss of the migration corridor if it desires to avoid a likelihood of violation the ESA, but not that the project must be halted. Therefore, the Service has proposed a series of ways to mitigate for the loss of the

Memorandum of Understanding recently being signed by the Service (attached). One of the cornerstone species of this planning effort will be the Delhi Sands flower-loving fly.

3. I received my Bachelor of Arts degree from the University of California at Santa Barbara in 1982, and my Master of Science degree from San Diego State University in 1993. My course work included behavioral ecology, field zoology, parasitology, and wildlife ecology and management.

4. When a species is listed as endangered under the ESA, the prohibitions of Section 9(a) apply automatically. That is, once a species is listed, the Service undertakes no act to implement the statutes prohibitions, including the proscription against conduct that actually kills or injures a species through modification of its habitat.

5. The Service does inform parties in danger of violating ESA Section 9(a)(1)(B). In addition, Service biologists will provide informal advice to parties as to how they could modify their action to avoid the possibility of violating the ESA by taking listed species. When providing its advice, the Service biologists do not make demands of project proponents, rather they offer their biological opinion as to whether proposed actions may cause a take of listed species. Once the project proponent receives this advice, the decision whether and how to proceed is entirely up to that party.

6. If a party wishes to proceed with an activity that may result in a take of listed species, the party may apply to the

Service for a permit to exempt the take from ESA Section 9(a)(1)(B).

7. The Service has not halted any project because of the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) (DSF). Some project delays may have occurred, but usually these could be avoided by early contact with the Service in order to obtain advice on how to avoid a take or obtain a permit to exempt the take.

8. It is true that weed abatement activities, such as vegetation removal, could result in take of a listed species. However, the Service, to my knowledge, has not stopped any weed abatement activities. Rather, the Service has been working with the fire chiefs in the local area since the listing of the DSF to identify parcels with Delhi fine sands that could be of concern, and to explore means to maintain public safety, conduct weed abatement activities in such a way as to be compatible with occupied DSF habitat, and to avoid and minimize potential take of DSF.

9. For example, the Service has suggested that for areas mapped as Delhi sands that the fire chief's should recommend mowing or light discing instead of deep discing the weed abatement zones so as not to effect larvae which may be underground at the time of discing. Also, the Service has requested that the disturbance areas be kept to the minimum area necessary to maintain public safety. The Service also recommended that an agreement be prepared between the Fire

Districts and the Service to memorialize each parties' responsibilities.

10. Upon publishing the proposed rule for the DSF in the Federal Register in November, 1993, the Service informed the Agua Mansa Industrial Growth Association (AMIGA) (which includes the County of San Bernardino) of the potential listing of the DSF. Shortly thereafter, the Service began discussions with the Agua Mansa Industrial Growth Association (AMIGA) regarding development of a possible regional habitat conservation plan for the DSF that would eliminate the need for individual permits for incidental take for the DSF and provide certainty of mitigation requirements for future development projects. Surveys were conducted during the adult flight season of the DSF (August-September) in 1994 to identify occupied sites within the planning area. Talks between AMIGA and the Service continued until about November 1994 when the County initiated development of an agreement between 15 local jurisdictions, the Service, and the California Department of Fish and Game for a regional multiple species planning effort that would include the DSF as a target species. The agreement for the Valley Wide Multiple Species Habitat Conservation Plan has been signed by the County of San Bernardino, the Cities of Colton, Fontana, Rialto, and the other local jurisdictions and interested parties, and the Service (signed by Service on March 14, 1996). Unfortunately, funding for the planning stage of the Habitat Conservation Plan has not yet been made available, and the

planning effort is currently stalled, leaving individual developers to seek individual incidental take permits.

11. The Service first visited the site for the San Bernardino County's new hospital on May 13, 1993 with two San Bernardino County Planners. At that time, the Service advised the County that since the site for the proposed hospital was occupied by DSF, construction of the facility would likely take members of the species. In addition, the Service was not informed at that time that a project was being planned that would occupy 100 percent of the site.

12. Construction of the hospital site was delayed slightly from September 1993 until January 1994 while the County, with the advice from the Service, revised its project plans to avoid a take of the DSF.

13. The Service is unaware of any comments made by Linda Dawes, a former employee of the Service, to Mr. Gerdman demanding that Interstate 10 be closed during August and September, or enforcing a reduced speed limit to reduce the possibility of take. The Service does not now, nor did it ever, support such statements.

14. After the listing of the DSF, the County asked the Service's advice whether their revised hospital project would result in a take of DSF. Part of the County's proposed project was a 100-foot corridor to connect two populations of DSF. In a letter to the County dated December 20, 1993, (just three months after the Service's listing decision) the Field Supervisor for

the Carlsbad Office advised the County that the redesign of the proposed hospital site and implementation of its Habitat Preservation Plan and Avoidance Plan would not result in take of the DSF. A copy of this letter is appended as Attachment __. In that letter, Mr. Kobetich informed the County that his advice was contingent upon the County implementing the following proposals in the Habitat Preservation Plan and Avoidance Plan: 1) preserve and avoid disturbance in 8.35 acres; 2) preserve a 100' wide corridor along the entire south edge of the subject property and 700' up the west edge of the site in a 30' wide corridor; 3) engage in certain enhancement efforts in the preserved areas; and 4) conduct certain studies and monitoring and educational programs regarding the DSF at the site.

15. An important element in avoiding a take of the DSF is to not significantly interfere with the species ability to successfully breed. The County was made aware of the importance maintaining a link between the proposed DSF reserve at the hospital site with DSF occupied habitat to the west in order to avoid a take. A letter to the County from Dr. Greg Balmer, a DSF researcher, is appended as Attachment __. In this letter Dr. Balmer states that "Ultimately, preservation of the DSF colony at the [hospital] site will require linkage to at least one other stable colony." Therefore, the County proposed, as part of their plan to develop the hospital site, to maintain such a corridor as described in the previous paragraph.

DECLARATION OF JEFFREY M. NEWMAN - 6

corridor, including establishing a mitigation bank for use by future projects that may affect the DSF using funds already allocated for management of the DSF reserve at the hospital site. Contrary to the County's cost estimate of approximately \$350,000 to \$440,000 per acre to acquire DSF habitat, the Service is aware of property supporting DSF at a cost of \$35,000 per acre, and the acquisition cost for the City of Colton was approximately \$46,000 per acre.

19. The Service is willing to resolve issues regarding the intersection in a timely manner, and meet the necessary deadlines for completing the process so that the road could be finished prior to the opening of the hospital site.

20. The Service met with the City of Colton's consultant on October 12, 1994, and with the City of Colton staff and their consultants on November 2, 1994 to discuss their proposed substation project (Service letter dated October 24, 1994). At that time, the City informed the Service that the substation would be necessary to power the hospital site. As with the interchange project, it would have been much more efficient to have addressed their proposed impacts as part of the hospital project so that all impacts associated with the hospital could have been addressed at once.

21. In this meeting, the Service described the ESA 10(a)(1)(B) permit process and issuance criteria. The Service informed the City that its proposed substation and transmission line project was located in the best remaining habitat for the

DSF. In July 1995 the City submitted its permit application and Habitat Conservation Plan ("HCP") to the Service. The HCP proposed to incidentally take approximately 4 acres of DSF habitat. To offset the proposed impacts, the City proposed to acquire and manage a 7.5 acre site (acquisition costs at about \$350,000 and a management endowment of \$63,000). The plan also included measures to minimize take during the adult flight season of the DSF (August and September) by limiting construction and maintenance activities in DSF habitat to outside of this season. However, construction on other portions (non-DSF habitat) of the project was not limited to this season, nor was emergency access.

22. On November 1995, the Service issued the City a Section 10(a)(1)(B) permit to exempt take incidental to construction of the substation project and construction of the Substation project was initiated shortly thereafter.

23. The Service has informed the Agua Mansa Industrial Growth Association ("AMIGA") that projects within the area that affect DSF habitat could be in violation of the ESA, but has not warned Agua Mansa not to proceed with projects. To the contrary, the Service tried to educate AMIGA regarding what effects the listing of the DSF could have on development and discussed how a regional plan for the DSF could benefit both the DSF and AMIGA.

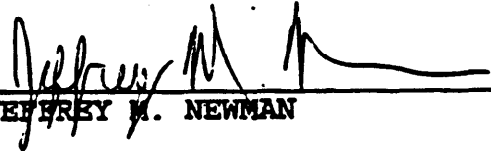
24. Neither E. L. Yeager, Jim Sullivan, or Ten-Ninety, Ltd have contacted the Service to either obtain advice on how to avoid a take or apply for an incidental take permit.

25. The Service has been providing advice to John Laing Homes on the likelihood of take resulting from its proposed development activities and alternatives to either avoid or mitigate for any incidental take.

26. While the Service has heard rumors that an out of state paper recycler was considering locating to Colton, no one has approached the Service with a definitive proposal to date. The same is true for the organizers of a proposed major league baseball team.

To the best of my knowledge, I declare the foregoing to be true and correct.

Dated: April 29, 1996, at Carlsbad, California.


JEFFREY M. NEWMAN



United States Department of the Interior



FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES
CARLSBAD FIELD OFFICE
2730 Loker Avenue West
Carlsbad, California 92008

December 20, 1993

Mr. John Giblin
Deputy Administrative Officer
County of San Bernardino
385 N. Arrowhead Avenue
San Bernardino, CA 92415-0120

Re: San Bernardino County Hospital Replacement Project

Dear Mr. Giblin:

As we discussed during our meeting of December 3, 1993, this letter serves to confirm the conclusion of the U.S. Fish and Wildlife Service (Service) regarding construction and operation by San Bernardino County (County) of a hospital facility (Project) on property located northeast of the intersection of Pepper Avenue and Valley Boulevard in the City of Colton (Project site). It is the Service's opinion that if project activities are conducted as outlined in the County's December 1, 1993 Habitat Preservation, Habitat Enhancement, and Impact Avoidance Plan (Conservation Plan), the project will not cause take of individuals of the federally listed endangered Delhi sands flower loving fly (Rhaphiomidas terminatus abdominalis). The Service also concludes that the County will not require a permit under section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended (Act) for the construction and operation of the Project, as described by the County in the Conservation Plan. The Service understands that the County plans to begin construction activity on the Project site as early as January 6, 1994.

The Service and the County's representatives have met over the past two months to discuss the potential impacts of the Project on the flower loving fly. The County's consultant has identified known occupied habitat of the flower loving fly on approximately 2 acres of dune habitat located in the southeast corner of the Project site. Pursuant to the Conservation Plan, the County has committed to:

- (1) preserve and avoid causing any disturbance in an approximately 8.35 acre area surrounding and including the identified occupied fly habitat;
- (2) preserve an additional area of disturbed, potential habitat extending from the dune area along the entire south edge of the Project site (100 feet wide), and then up the west edge of the Project site (30 feet wide) for approximately 700 feet;

(3) engage in certain habitat enhancement efforts at the preserved areas of the Project site; and

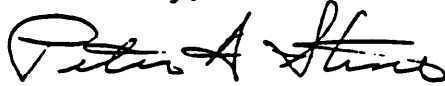
(4) conduct certain studies and monitoring and educational programs regarding the fly and its habitat at the Project site.

The Service has reviewed the County's proposed Conservation Plan and has concluded that, with its complete implementation, the County's construction and operation of the Hospital will not cause adverse impacts to the flower loving fly. Accordingly, it will not be necessary for the County to apply for a permit under section 10(a)(1)(B) of the Act to construct or operate the hospital. Nevertheless, in order to allow the County to implement, and the Service to monitor the studies, enhancements efforts, and other steps called for in the Conservation Plan in an organized, cooperative manner, we recommend that the Service and the County execute a memorandum of understanding (MOU) to specify how the Plan will be implemented and the schedules for such steps. We are prepared to enter into such an agreement by January 31, 1994.

Notwithstanding the foregoing, it is important for the County to bear in mind that the Service's conclusions are based on the Conservation Plan (and description of the Project) as submitted and other information that the County has supplied the Service, which we have assumed is complete and accurate. Information about endangered species and their habitat is subject to change as we study and learn more about them. This letter therefore does not authorize take of any endangered species, including the flower loving fly, if the Service or the County determines at any time during construction or operation that take of the flower loving fly or any other threatened or endangered species (including any species listed after the date of this letter) may occur as a result of such activities. It remains the County's responsibility to avoid such consequences or to seek authorization prior to engaging in such activity.

We appreciate the efforts the County has demonstrated to take into account the concerns of endangered species in connection with its plans for the hospital. If you have any questions regarding this matter, please contact John Bradley of my staff at (619) 431-9440.

Sincerely,


for Gail Kobetich
Field Supervisor

1-6-94-HC-031

cc: USFWS, Law Enforcement, Torrance, CA

16 November 1993

Mr. John W. Giblin
Deputy Administrative Officer
County Administrative Office
385 North Arrowhead Avenue
San Bernardino, CA 92415-0120

Dear Mr. Giblin:

I have been requested, as an expert on the Delhi Sands Flower-loving Fly (DSF), to comment on the plans by San Bernardino County for construction of a new County Health Services (CHS) facility in Colton on an approximately 70 acre parcel roughly bounded by Valley Boulevard on the south, San Bernardino Avenue on the north, Meridian Avenue on the east and Pepper Avenue on the west. My comments contained herein are made as a private citizen, without remuneration, and are not related to my employment at the University of California.

By virtue of the recent federal designation of the DSF as an Endangered Species, activities which may result in 'take' of this species are prohibited under federal law. My knowledge of activities which may be construed as 'take' include outright killing, collecting, harassing, and disruption of reproductive activities; the latter may include direct or indirect modification of habitat in any manner which may lead to reduction in reproductive capacity and/or population size. It is sometimes difficult to anticipate what activities may result in 'take', especially in cases such as this in which the details of biology of the immature stages are poorly known. My comments in this regard must be considered an educated guess, based on personal knowledge of the various sites where I have observed the DSF, and my interpretation of the importance of local environmental conditions at those sites, including soil texture, moisture, and plant cover.

DSF Biology, Distribution, and Current Status

The DSF has been found only in association with sandy soils of the Delhi Series, irregular deposits of which occur in western Riverside and San Bernardino Counties in an arc extending from Chino north and east through Mira Loma, Ontario, Fontana, Rialto, and Colton to San Bernardino. Although it is presumed that the DSF once occurred throughout the distribution of Delhi Sands in Riverside and San Bernardino Counties, nearly all extant populations are located within an approximately 5000 acre patch of Delhi Sands which includes portions of the cities of Colton, Rialto, and San Bernardino. This area is bisected by the I-10/Union Pacific RR corridor and includes the proposed CHS site.

The current state of knowledge of the biology of the DSF is almost limited to the adults. Adult DSF are active during August and early September and have been found only in association with sandy soils belonging to the Delhi Series. These soils, which include occasional dunes, are aeolian deposits probably originating from the wind scouring of alluvial deposits below the mountain passes. Because DSF eggs are deposited in sand to a depth of about three inches, it is probably crucial that surface

sand be of relatively fine texture and loose enough for females to penetrate during oviposition. Nothing is known about the habits of DSF larvae other than that they live below the soil surface. The larval growth period lasts about one year (or possibly multiple years) with maturation in mid- to late summer. Mature DSF pupae move to the soil surface just prior to adult emergence. Adult life span in nature is probably about one week, although under ideal conditions in captivity they have been kept alive for up to two weeks.

The reduction in range of the DSF is related primarily to alteration of habitat for human-oriented uses such as agriculture, urbanization, mining, and transportation infrastructure. These activities have eliminated habitat or otherwise made it unsuitable for the DSF over large areas. Elsewhere, blocks of occupied habitat have become fragmented by the same activities.

Habitat fragmentation is one of the most pernicious effects of human activity because it results in smaller, isolated populations which, in turn, are more vulnerable to mortality factors. The smaller the population, the greater the likelihood that a local environmental catastrophe (fire, flood, disease, etc), or genetic inbreeding will lead to local extirpation. For this reason, good environmental planning often incorporates wildlife linkages (habitat corridors) to connect patches of habitat which separately may be too small to maintain populations of the organisms of concern.

The relatively small quantity of habitat remaining, coupled with a trend toward continuing losses and fragmentation has prompted the Department of Interior to list the DSF as Endangered. Fragmentation of DSF habitat has been intense in the region north of I-10 surrounding the proposed CHS facility and has resulted in relatively small patches of occupied habitat separated by streets, homes, and other structures. Not only will it be difficult and costly to preserve these colonies intact, but without maintaining habitat linkages between them, it is likely that environmental stochasticity will eventually lead to their demise. Undoubtedly, more critical habitat for DSF in terms of quantity, quality, and defensibility lies south of the I-10 freeway, where relatively minor fragmentation has occurred; without protecting this portion of DSF habitat, it is likely that extinction cannot be avoided.

The County Health Facility Site

Surveys for DSF on the CHS site during 1993 disclosed a localized colony in proximity to the southwest corner of the property; no DSF was found elsewhere on the CHS site. Current plans offered by San Bernardino County for protecting the DSF population on the proposed CHS site call for avoidance of the known occupied acreage with an additional buffer zone totaling 8.5 acres. The U S Fish and Wildlife Service has also recommended additional actions including preservation of a habitat corridor to link this population with the next nearest one to the west (west side of Pepper Avenue).

The DSF population on the proposed CHS site is small, although perhaps of somewhat higher density than at other sites. This population is apparently localized around the perimeter of a 'blow-out' sand deposit in a soil transition zone between coarse sand virtually devoid of plant cover and loamy sand with a relatively rich

vegetative cover dominated by weedy exotic grasses (chiefly *Bromus* and *Avena*). It is not clear whether this localization of adult activity is specifically and directly related to the soil properties or to the vegetation, which is dominated by scattered low woody perennials such as California buckwheat (*Eriogonum fasciculatum*) and California croton (*Croton Californicus*). Another factor which may have limited the local distribution of DSF is the annual dicing of the remainder of the site, which may have eliminated DSF through mechanical soil disturbance and alteration of vegetation. That this might be possible is suggested by the similarity of soils and native perennial plant species (*Ambrosia*, *Croton*, and *Heterotheca*) already recolonizing this area to those at other sites where DSF has been found.

The apparent absence of DSF over most of the CHS site suggests that use of that land for construction purposes will not pose a direct threat to the species as a whole or to the local population to be conserved on-site. Nevertheless, conversion of the remainder of the CHS site to a built landscape will have indirect effects (loss of potential future habitat, loss of potential dispersal avenues, etc.), which may require mitigation.

Preservation of the DSF population at the CHS site will probably require a long-term management commitment, especially if it becomes more isolated from other populations. Because the DSF colony on this site is localized in the transition zone between loose blow-sand and more consolidated loamy sand, maintenance of this population may require periodic replenishment of sand, which is currently being lost as it is blown gradually off-site to the south. Sand replenishment may also provide an opportunity for studying methods of creating and/or improving habitat within the conserved DSF site.

Isolation of the DSF site can be expected to have other consequences which may be difficult to foresee and even more difficult to rectify. These include imbalances in populations of herbivores (chiefly rabbits and rodents) and predators (chiefly coyotes) which may play important roles in maintaining the proper plant community structure in the DSF habitat. Thus, without predators the herbivores might destroy the plant community, but without herbivores the plant community might become imbalanced as some plant species are likely to become more dominant at the expense of others. Changes in plant density and/or community composition might adversely affect the quality of DSF habitat.

Even if the habitat quality for DSF could be maintained in isolation at the CHS site, loss of this population may be inevitable without some linkage to another DSF site. In-breeding, alone, will eventually lead to diminished genetic capacity of DSF to overcome environmental stresses. Thus, long-term survival of DSF at the CHS site is unlikely without physical linkage to another site.

The DSF occupied habitat patch west of Pepper Avenue is the largest one remaining north of I-10, but is partially fragmented by commercial structures and roads and heavily impacted by illegal dumping and off-road recreational vehicles. The proximity of recently built residential tracts can also be expected to contribute to habitat degradation through invasion by cats and dogs and perhaps weedy exotic plants.

These invaders may directly affect DSF density or, more likely, will alter ecological conditions and thereby degrade the habitat quality for DSF. The large and irregular perimeter of this habitat patch, coupled with incompatible surrounding land uses, will make it difficult to protect and maintain DSF on this site. Nevertheless, a corridor linking it to the CHS site would improve the viability of both populations.

Currently the DSF population at the CHS site is separated from the population west of Pepper Avenue by about 1/4 mile of previously disturbed land (currently lacking DSF) and Pepper Avenue. Pepper Avenue probably constitutes a moderate but not insurmountable barrier to dispersal. The most critical aspects of maintaining linkage across Pepper Avenue will be provision of sufficient habitat interface on both sides of the road and provision of a sufficiently broad corridor leading to the known DSF population on the CHS site. Because of the concentration of traffic near the Pepper Avenue/Valley Boulevard intersection (and possible future enlargement of this intersection), both the corridor and habitat interface along Pepper Avenue should be located some distance removed from this intersection.

There is some question as to whether the proposed corridor between the occupied DSF site and Pepper Avenue can be considered suitable for a dispersal corridor. The answer to this question hinges on the dispersal capacity of DSF and the nature of vegetational conditions which promote or hinder dispersal. Presently these factors can only be surmised by correlation of soil and vegetational factors which predominate at other sites where DSF occurs or did occur in the past. Certainly the discontinuous distribution of Delhi Sands and former occurrence of DSF in areas many miles apart suggests that dispersal can occur across expanses of non-habitat or low quality habitat. The DSF population at the CHS site may have arrived there by just such dispersal. Alternatively, the currently non DSF-occupied land surrounding the localized DSF population may have been occupied by DSF prior to disturbance.

Summary of Recommendations

In summary, construction on the CHS site can probably proceed more-or-less as planned by avoiding the occupied habitat and appropriate surrounding buffer lands. Preservation of the DSF colony at the CHS site will probably entail some active management at least to replenish sand lost over time. This activity could provide opportunities to study the biology of DSF and factors influencing habitat quality.

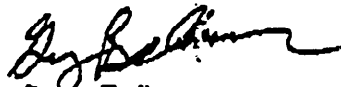
Ultimately, preservation of the DSF colony at the CHS site will require linkage to at least one other stable colony. A linkage corridor with a broad interface along Pepper Avenue should be maintained in order to facilitate genetic exchange with the population on the west side of Pepper Avenue and to help maintain populations of herbivores and predators, which in turn may be important components of the Delhi Sands community. The necessary width of this corridor is problematic but, as a rule of thumb for most organisms, the broader the better. A 100-foot wide swath including the power line corridor along the south boundary of the CHS site has been suggested and might suffice, at least as long as incompatible land uses are avoided along its margins. Other corridor alignments might also be feasible, including acquisition and dedication of

off-site lands bordering the southern boundary of the project site and extending northward some distance along Pepper Avenue (possible power line easement).

Even the recommended actions to preserve and manage the DSF colony at the CHS site may not prove sufficient to stave off local extirpation. The small size of this colony, poor condition of the nearest neighboring colony to which it might be linked, and encroachment of incompatible land uses surrounding all colony sites north of I-10 do not bode well. Efforts to preserve these colonies will be difficult and require a level of vigilance which may be unrealistic.

Ultimately, the most likely prospect for DSF species preservation will be designation and public acquisition of Critical Habitat in the context of a Habitat Conservation Plan (HCP). Such a plan should concentrate on protection of larger and more defensible patches of occupied habitat, all of which are south of I-10. Acquisition and protection of Critical Habitat (defined in an HCP) might be achieved through the Endangered Species Act's Section 10 permitting process. Section 10 permits 'take' of endangered species in return for adequate mitigations, including critical habitat acquisition and/or enhancement elsewhere. Once an HCP is produced for the DSF, the recommended actions to protect DSF at the CHS site, including sand replenishment and corridor linkage, might be considered irrelevant to the long-term survival of DSF. At that point the DSF colony might be allowed to die out naturally. However, in the absence of a Habitat Conservation Plan and a mechanism to acquire Critical Habitat, every effort must be made to protect all colony sites.

Sincerely,



Greg Ballmer
5894 Grand Ave.
Riverside, CA 92504

CC: Richard Zembal



November 20, 1995

Mr. Gail C. Kobetich, Acting Field Supervisor
 Carlsbad Field Office
 U.S. Fish and Wildlife Service
 2730 Loker Avenue West
 Carlsbad, CA 92008

*Eaves' address to Don
 Nov.*

Re: San Bernardino County I-10/Pepper Avenue Interchange

Dear Mr. Kobetich:

On October 2, 1995 you and Mr. Jeff Newman met in the San Bernardino County Administrative Offices with Supervisor Jerry Eaves and others to discuss potential effects of the northward realignment of Valley Boulevard on the "fly corridor". The corridor is located adjacent to the occupied habitat on the southern edge of County Medical Center Replacement Site (see attached map).

More specifically, the discussion targeted interchange Alternative "D". Alternative "D" involves "arching" Valley Boulevard northward to provide the minimum required Caltrans loading capacity (distance) of 125 meters between stop bars. The County has negotiated with Caltrans for at least three weeks regarding the minimum loading capacity distance between stop bars. Caltrans will not budge from their position that 125 m is the minimum distance necessary between stop bars for public safety.

Alternative "D" will infringe on a portion of the 100 foot "fly corridor" set aside as part of the original hospital mitigation agreement in 1992. Your suggestion to move the corridor parallel along the Valley Boulevard "arch" an additional 100 feet will seriously encroach into the hospital parking area and will have disastrous effects on parking that is critical to hospital operations. At the current time, the hospital is approximately 700 parking spaces short of what is optimally needed for patrons and employees. To compound the problem, the county has recently learned that the Medical Center will be the training ground for 800 additional students that were not anticipated when the site was master planned for parking. Drawings of impacts to parking will be made available upon request.

THOMAS O'BRIEN ASSOCIATES, INC.
 P.O. Box 1016 Flagstaff, AZ 86002 520-773-0127 FAX-773-0023
 2829 S. State St. Hemet, CA 92543 909-766-4655 FAX-766-4658
 P.O. Box 5301 Santa Fe, NM 87502 505-989-4365

0217

The following summarizes corridor width and parking impact/loss.


Corridor Width	Valley BLVD Maintenance ROW	Parking Impact/Loss
100'	12'	178
12'	12'	34
6'	12'	31

The County is committed to preservation of the species and to financially supporting the ongoing research on behalf of the Fly in accordance with their original agreement. In lieu of the 100' corridor, the County is proposing that in addition to the standard twelve foot roadway maintenance strip, a six foot corridor be set aside and revegetated as per existing agreements. The corridor would connect directly with the existing 30 foot wide strip of corridor set aside. This corridor extends 700 feet northward along the west edge of the property line (along the east edge of Pepper Avenue) to encourage potential linkage to the Fly populations farther northwest of the Medical Center Site.

The County feels that the existing set aside of land and monies authorized for study of the Delhi fly far exceed mitigation actions required of all others to date. To allow the I-10/Pepper Avenue Interchange planning and design process to proceed, the County would like to arrive at a mutually agreeable solution in the next few weeks.

We would appreciate a response within 30 days.

Cordially,



Thomas G. Olsen
President

cc: J. Eaves, Fifth District Supervisor
M. Walker, AAO, Public Works Group
J. Giblin, Deputy Administrative Officer
R. Scott, County Planning Department
D. Graybeal, Project Administrator

THOMAS OLSEN ASSOCIATES, INC.

**Board of Supervisors
County of San Bernardino**

JERRY EAVES
SUPERVISOR, FIFTH DISTRICT



Deer

January 16, 1996

Mr. Gail C. Kobetich, Acting Field Supervisor
Carlsbad Field Office
U.S. Fish and Wildlife Service
2730 Loker Avenue West
Carlsbad CA 92008

RE: I-10/Pepper Avenue Interchange for the San Bernardino County
Medical Center Replacement Project

Dear Mr. Kobetich:

The County's environmental consultant, Thomas Olsen, wrote to you by letter dated November 20, 1995 (copy attached) regarding the County's position concerning the referenced interchange. To date, neither the County nor Mr. Olsen has received a formal reply to that letter. I am getting quite frustrated with your office regarding our efforts to resolve the Delhi Sands Fly "corridor" modification that is necessitated by the interchange improvements for the Medical Center Replacement Project. The County is obligated to implement the improvements to the interchange as required mitigation in the Environmental Impact Report prepared under state law for the project.

The County can not afford to lose an additional 178 parking spaces at the medical center as a result of adding a 100 feet wide "corridor" northerly and parallel to the realignment of Valley Boulevard. As pointed out in Mr. Olsen's letter, the Medical Center is already short of the required parking for the facility. Part of this short fall was caused by the extra costs and the impacts of the redesign of the site plan for the Medical Center which resulted from the County's efforts to avoid "take" of the Delhi Sands Flower-loving Fly during construction of the facility. While the County consented to maintaining the 100 feet wide "corridor" as open space connecting the occupied habitat with the naturally vegetated strip along Pepper Avenue in the Habitat Preservation and Avoidance Plan, we felt that the "corridor" was of dubious merit. In the two years of monitoring activity on the fly's behavior within the occupied preserve area during its adult flight period in August and September, no observations of the Delhi Sand Fly have been made within the "corridor". Based on the monitoring results to date, we continue to question the value of the "corridor".

0219

The County has been working for over a year on a freeway interchange design that is acceptable to CalTrans. The current design that results in the encroachment into the "fly corridor" is the preferred alternative acceptable to the state transportation agency. The only other alternative that is acceptable to CalTrans would cost 5.4 million dollars more than the proposed design. The interchange design details were not known at the time the Habitat Preservation and Avoidance Plan was developed and therefore the current conflict between the interchange design and the "corridor" could not have been anticipated.

The County is of the opinion that considerable effort has already been imposed to protect the continued existence of the fly population at the Medical Center site in the form of 1.92 acres of occupied habitat, an additional 7.43 acres of buffer area and \$500,000 dollars committed to a five year monitoring and behavioral evaluation program. In addition, the County incurred substantial indirect costs from the redesign of the facility caused by the avoidance action.

Given the circumstances described above, I am asking that you accept a reduced "corridor" width so as to not delay construction of the interchange. I am hopeful that you will find our current avoidance commitment as adequate and that all reasonable and feasible fly protection measures have already been implemented by the County. In the event, that you find that you cannot agree with our proposal, I will have no alternative but to advance our case to the Portland and Washington offices in an attempt to win a favorable determination.

I am looking forward to your earliest possible reply on this matter.

Sincerely,


JERRY EAVES
Supervisor, Fifth District

cc: Michael Spear, Regional Director, Western Region
Board of Supervisors
James Hlawek, County Administrative Officer