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FISH AND WILDLIFE SERVICE

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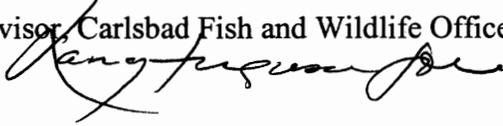
In Reply Refer To:
FWS-SB-4142.3

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Memorandum

To: Chief, Division of Conservation Planning, Region 1
Portland, Oregon

Chief, Endangered Species Division, California/Nevada Operations Office,
Sacramento, California

From: Assistant Field Supervisor, Carlsbad Fish and Wildlife Office
Carlsbad, California 

Re: Intra-Service Section 7 Consultation for the Issuance of an Endangered Species Act
10(a)(1)(B) Permit for the Valley Boulevard/Pepper Avenue Intersection Realignment
and Improvement Project, City of Colton, San Bernardino County, California (1-6-06-F-
4142.3)

This document transmits our biological opinion, in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*), based on our review of the Valley Boulevard/Pepper Avenue Intersection Realignment and Improvement Project Low-Effect Habitat Conservation Plan (HCP) and its effects on the federally endangered Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*, "DSF"). The HCP addresses impacts associated with construction activities for the proposed realignment and improvement of the Valley Boulevard and Pepper Avenue intersection in the City of Colton, San Bernardino County, California. The applicant for this permit is the County of San Bernardino (applicant).

This biological opinion is based on information provided in the *Habitat Conservation Plan for the Issuance of an Incidental Take Permit Under Section 10(a)(1)(B) of the Endangered Species Act for the Federally Endangered Delhi Sands Flower-Loving Fly for the Valley Boulevard/Pepper Avenue Intersection Realignment and Improvement Project, City of Colton, San Bernardino County, California*, dated January 24, 2006; listing documents, survey reports of species addressed in this opinion by permitted biologists, and other species reports; telephone conversations and electronic mail messages with the Service, the applicant, and persons representing the applicant; and other sources of information. A complete administrative record of this consultation is on file at this office.

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Consultation History

On January 26, 2000, the Federal Highway Administration (FHWA) initiated formal consultation regarding improvements to the Interstate 10 (I-10)/Pepper Avenue interchange and the Valley Boulevard/Pepper Avenue intersection. On July 13, 2000, the Service provided the FHWA and the County a draft biological opinion for the project; however, ongoing discussions regarding the scope of the proposed project and the conservation strategy for the project prevented finalization of the consultation.

On September 9, 2003, FHWA suspended formal consultation on the I-10/Pepper Avenue interchange and the Valley Boulevard/Pepper Avenue intersection projects. At this time, the Pepper Boulevard/Pepper Avenue intersection project was separated from the I-10 interchange projects, and the County became the applicant for the intersection project.

On February 12, 2004, the County submitted an application for an incidental take permit under section 10(a)(1)(B) of the Act. On February 14, 2006, the County submitted a final application that included a “low-effect” HCP. On April 21, 2006, we published a notice in the Federal Register requesting comments on the HCP (71 FR 20716).

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the issuance of an incidental take permit under section 10(a)(1)(B) of the Act. The permit addresses the incidental take of DSF from the realignment of the Valley Boulevard/Pepper Avenue intersection approximately 250 feet north of its current location in the city of Colton, San Bernardino County, California. The applicant submitted a low effect HCP and permit application requesting a permit for the duration of ten years.

The proposed project covers 16.84 acres and would impact 1.84 acres of DSF habitat that is considered to be occupied. Proposed minimization measures include: fencing off north edge of realignment to prevent encroachment into habitat, education if employees on DSF habitat avoidance and minimization, and bi-weekly monitoring to ensure construction activities do not extend beyond the project area and clearing and grading the 1.84 acres of occupied DSF habitat prior to the flight season (July 1). Mitigation will be either 1) a final conservation easement for the 2.04-acre Acquisition Parcel or 2) proof of purchase towards conservation of 5 acres at Vulcan Materials Inc. Colton Dunes Conservation Bank.

STATUS OF THE SPECIES

Listing Status

The Delhi Sands flower-loving fly, *Rhaphiomidas terminatus abdominalis* (Diptera: Mydidae), was listed as endangered on September 22, 1993, pursuant to section 4 of the Act. The DSF was listed because widespread loss and degradation of its habitat had proceeded to the point where extinction was imminent. Critical habitat for DSF has not been proposed or designated. A recovery plan was completed for the DSF in 1997 (Service 1997).

Species Description

The DSF is one of 19 *Rhaphiomidas* species and 5 recognized subspecies, all of which are restricted to southwestern United States and northwestern Mexico (Cazier 1985; Peterson 1981; Rogers and Mattoni 1993). DSF adults are relatively large insects (approximately 2.5 centimeters in length) with elongate bodies. An important distinguishing character is the DSF's long proboscis, which it uses to extract nectar while hovering next to flowers. The DSF is a strong, fast flyer capable of dispersal flights in which animals fly so rapidly that observers quickly lose visual contact (Kingsley 1996).

Habitat Affinities

The DSF is generally found in areas containing Delhi fine sands soil type or windblown soils. The areas covered by these Delhi soils make up the Colton Dunes system, which historically covered an estimated 88 square kilometers (40 square miles) within southwestern San Bernardino and northwestern Riverside counties (Woodruff 1980).

The dominant physical characteristic of the Colton Dunes ecosystem is a series of dynamic windblown (aeolian) dunes, subject to repeated ground surface changes during periodic, seasonal, high winds. "Santa Ana" winds normally occur during autumn and winter and facilitate transportation and maintenance of sand and provide periodic endogenous disturbance. The system has been exposed repeatedly to this type of disturbance through evolutionary time (McIntyre and Hobbs 1999). The endogenous disturbance of the dune system by high winds may be an essential component of ecosystem function for the DSF.

Characteristic plants associated with the DSF include California buckwheat (*Eriogonum fasciculatum*), telegraph weed (*Heterotheca grandifolia*), and California croton (*Croton californicus*). Increased cover of introduced vegetation appears to reduce DSF abundance (Ballmer 1989). Suitable habitat ideally contains only sparse vegetative cover, usually less than 40 percent. The Colton Dunes also support a number of other rare plants and animals including the legless lizard (*Anniella pulchra*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), Delhi Sands metalmark butterfly (*Apodemia mormo nigrescens*), Delhi Sands Jerusalem cricket (*Stenopelmatus* undescribed species), convergent apiocerid fly (*Apiocera*

convergens), and the potentially extinct Pringle's monarchella (*Monardella pringlei*). The Delhi Sands metalmark butterfly was recently described from the area (Emmel and Emmel 1998).

Life History

The life history of the DSF is largely unknown. Oviposition (egg laying) generally occurs within loose, sandy soils in late summer months and may primarily occur near telegraph weed (Rogers and Mattoni 1993; Kingsley 1996). Larval stages develop completely underground and emerge as adults from July through September. Larval food sources are unknown. Most larvae within the Mydidae family are predacious (Borror *et al.* 1989), but DSF larvae failed to feed when presented with a variety of potential prey sources in laboratory trials (Rogers and Mattoni 1993). Adults are most active during the warmest, sunniest parts of the day, and both males and females extract nectar from California buckwheat (Kingsley 1996). It is not clear if nectar feeding is essential for adult survival or reproduction.

Status and Distribution

As of 1989, Ballmer estimated that over 97 percent of the Colton Dunes system had been developed or severely modified (Ballmer 1989). This loss of Delhi soils was primarily attributed to conversion of land to agricultural uses and development for urban or commercial use (Service 1997). Based on a preliminary GIS analysis of mapped soils and updated aerial photography, the loss of potentially suitable habitat may be closer to 90 percent (U.S. Fish and Wildlife GIS mapping 2003). This difference is a reflection of the fact that DSF are now known to utilize moderately disturbed habitats such as the Fontana Business Center site, located northeast of the intersection of Santa Ana Avenue and Sierra Avenue in the city of Fontana, San Bernardino County, CA.

Of the approximately 29,337 acres of Delhi soils that existed historically within San Bernardino and Riverside counties (the presumed original range of DSF), approximately 5,881 acres of Delhi soils outside of "dairy" areas were still vacant or undeveloped in 1999. Of the 5,881 acres, about 2,861 have a moderate or high potential to support DSF based on survey results (U.S. Fish and Wildlife GIS mapping 2003). Only 12 known locations of the DSF have been identified in areas that are not developed, and the status of many of these populations is unknown. Virtually all populations occur in small, isolated habitat patches surrounded by incompatible land uses and are highly vulnerable to extirpation. Nearly all areas with extant populations have been proposed for development at some time, and almost all remaining habitat is privately owned.

The number of individuals observed at known occupied sites is extremely low in comparison with population sizes of related species with similar ecological and life history strategies (Rogers and Mattoni 1993). Due to the cryptic nature of the DSF and existing regulations that do not allow mark-recapture techniques, it is not possible to accurately estimate population sizes for the DSF (Kingsley 2002). However, few DSF surveys report five or more individuals from occupied sites, and this supports Rogers and Mattoni's (1993) assertion that no more than a few hundred

individuals existed in 1989. It is possible that even fewer DSF exist today than in 1989 due to continued habitat loss and fragmentation. In addition, the quality of habitat and the area of Delhi soils now available to sustain breeding colonies at the 12 known occupied sites are variable. The highest quality and largest contiguous block of available Delhi sands are found within the Colton recovery unit. Lands currently in conservation for the DSF include limited areas within five of the seven known breeding sites and two additional sites where DSF have been observed, but no reproduction has been documented. A total of 141.05 acres of land throughout the three recovery units identified in the DSF recovery plan (Ontario, Jurupa, and Colton Recovery Units, Service 1997; see *Conservation Needs* section below) is currently conserved for the DSF, and an additional approximately 147 acres have been proposed for conservation.

Ontario Recovery Unit

DSF have been observed at 3 locations within the Ontario recovery unit.

1. *Mira Loma Location* - Evidence of breeding was observed in an approximately 32-acre site near Mira Loma (Impact Sciences 1998; Thomas Olsen Associates Inc. 1999; Ecological Sciences 2001; P. Sorenson pers. comm. 1997; R. Rogers pers. comm. 1998; K. Osborne pers. comm. 1999). Much of this area has subsequently been developed, and adjacent three and ten acre parcels have been set aside for DSF conservation. These conserved parcels are located northwest of the intersection of Greystone Drive and Milliken Avenue in Ontario.
2. *SCE Easement in Ontario* - Evidence for breeding was also observed in an approximately 40-acre Southern California Edison (SCE) easement in Ontario (Wilcox 1998a, b). SCE purchased 1 acre of credit from the Vulcan Materials Conservation Bank as mitigation for a renovation project that affected 0.96 acres within their easement (FWS-SB/WRIV-782.3).
3. *Shaw Property* - A single male DSF was observed in a 30-acre parcel north of State Route 60, south of Philadelphia Street, east of Dulles Drive and west of the San Sevaine Storm Drain Channel in Mira Loma (Ecological Sciences 2000). As mitigation for the development of 5.02 acres within this parcel, Shaw Mira Loma LLC purchased 2 acres of credit within the Colton Dunes Conservation Bank (FWS-1968).

Jurupa Recovery Unit

Within the Jurupa recovery unit, DSF have been observed at six sites.

1. *SCE Easement in Fontana* - At an approximate 20-acre site south of Jurupa Avenue along a Southern California Edison right-of-way easement approximately 0.5 miles south of the Fontana Business Center project site and south of Jurupa Avenue, one male DSF was observed in 1998; however, no additional sightings were recorded in seven subsequent

- visits (Wilcox 1998a). This easement may serve as an effective corridor for movement of DSF between populations, but it is unlikely to support a stable DSF population in isolation.
2. *Santa Ana/Locust* - A single DSF was observed at the corner of Santa Ana Avenue and Locust Avenue (Sprague 1998) within a residential area east of the Empire Center site. This observation was not near any undeveloped area thought to be suitable for a DSF breeding colony; thus, this DSF was likely dispersing in search of suitable habitat patches.
 3. *NW Slover/Locust* - At least one DSF was observed in a 17-acre parcel northwest of the intersection of Slover Avenue and Locust Avenue in unincorporated San Bernardino County (K. Osborne, pers. comm. 2004). This parcel, however, was subsequently impacted by heavy machinery (e.g., scraped, graded, or disced), rendering it heavily disturbed.
 4. *Rio Vista/Rattlesnake Mountain* - Adult and emerging pupae DSF were observed within a 3.63 acre site along the northwest slope of Rattlesnake Mountain. This site is located 0.08 miles east of the intersection of Loveland Drive and Nadeau Lane in the city of Riverside (AMEC Earth & Environmental, Inc. 2005).
 5. *Jurupa Hills/Southeridge* - The Jurupa Hills/Southeridge site is part of the Jurupa Hills population of DSF. Outside of the Colton recovery unit, the Jurupa Hills population of DSF is the only population that the recovery plan specifically identifies for conservation in order for the DSF to be considered for down-listing (Service 1997). The Jurupa Hills/Southeridge site consists of approximately 30 acres of conserved DSF habitat in Riverside County (FWS-1-6-00-F-09) and an adjacent 22 conserved acres in San Bernardino County (FWS-SB-1788.9). These locations are south of Riviera Lane in the city of Fontana. There have been numerous observations of DSF, over multiple years, at the Jurupa Hills/Southeridge site, and a pupal case was found in 1995 demonstrating reproduction (G. Ballmer pers. comm.).
 6. *Empire Center* - The Empire Center site was roughly 200 acres of suitable and potential DSF habitat east of Sierra Avenue and north of Santa Ana Avenue in the city of Fontana. Several DSF were observed at the Empire Center site including a teneral (or newly emerged) adult, thus demonstrating that reproduction of DSF occurred on this site (Osborne 2002a; Goodlett 2002). Incidental take of all DSF at this site was authorized on February 5, 2004, through section 7 consultation and issuance of a biological opinion to the Corps of Engineers (FWS-SB-1788.9). Loss of this habitat was mitigated through conservation of the 22 acre site within the Jurupa Hills/Southeridge site (see above).

Colton Recovery Unit

The Colton recovery unit supports six known DSF locations. Two additional locations where DSF were observed have already been developed.

1. *Slover /Pepper* - The largest location currently occupied by DSF is roughly 480 acres of contiguous habitat at the intersection of Slover Avenue and Pepper Avenue south of Interstate 10 and north of Agua Mansa Road in Colton, and this site is known to be occupied by DSF (Ballmer 1989; Osborne 2003a; Goodlett 2004a; Service, unpublished data 2004). Evidence of breeding has been observed at this site (Wilcox 1998b, 2002; Goodlett 2004), and a 7.5-acre site has been acquired for conservation through the Colton Substation Terminal Habitat Conservation Plan (HCP) (FWS-SB-898). Vulcan Material Inc. has established a conservation bank (Colton Dunes Conservation Bank) that covers over 150 contiguous acres of this area.
2. *“King Is Coming” Dune Subcomplex* - Excellent DSF habitat is found in two 30-acre sites, which are connected by potentially suitable habitat, south of San Bernardino Avenue between Riverside and Pepper Avenues. Evidence of breeding has been observed in this area (Osborne 1999; Goodlett 2003; Service 2004 unpublished data; K. Osborne pers. comm.). A total of 14.8 acres have been set aside for conservation in this location through the Laing Homes (FWS-SB-760) and Reichel HCPs (Service 1996). While the DSF habitat in this area is highly fragmented by existing development, it is likely that the resident DSF population survives within the relatively small (5 to 40-acre) patches of habitat with frequent dispersal among these patches.
3. *“Hospital Preserve” Subcomplex* - Evidence of breeding and recent occupation have been observed in the 10-acre Hospital Preserve, which has been set aside for DSF conservation, south of Arrowhead Regional Medical Center in Colton (Kingsley 1996; Service 2004 unpublished data). This site is contiguous with occupied 20-acre and 18-acre sites to the east (Osborne 2002b; Osborne 2003b). It is likely that the existing DSF in this area survive in small patches with frequent dispersal similar to the *King Is Coming Subcomplex*. It is also likely that DSF occasionally disperse between the *King Is Coming* and *Hospital Preserve Subcomplexes* in the Colton recovery unit. Hence, these subcomplexes may act together as one large complex.
4. *Randall Basin* - Several DSF were observed on this approximately 18-acre San Bernardino County Department of Transportation, Department of Flood Control detention basin northeast of the intersection of Pepper and Randall Avenues (Thomas Olsen and Associates 1998). Approximately 13 acres of this site are within a detention basin that experiences frequent disturbance. A 4.25 acre parcel within the Randall Basin was established for conservation in 2005 (FWS-SB-3247.5). This preserve is bound by Randall Avenue to the South, Pepper Avenue to the west, a SCE utility easement to the east and residential housing to the north. Unlike the 13 acre basin, the preserve is not

subject to frequent, flood-related disturbance.

5. *Angelus Block* - A site generally surrounding Industrial Avenue in Rialto was judged to be approximately 265 acres of habitat in 1989 (Ballmer 1989), and DSF have been observed several times with no evidence of breeding (Ballmer 1989; RB Riggan and Associates 1996; Larry Munsey International Inc. 1998; Wilcox 1998a; B. Drake, pers. comm. 2004; Goodlett 2004b). A total of 36.5 acres have been set aside for DSF conservation in this site through the Angelus Block HCP and Agua Mansa MOU side agreements (FWS-1-6-97-F-12; FWS-SB-771).
6. *Agua Mansa Industrial Area* - Two male DSF were observed with no evidence of breeding in the Agua Mansa Industrial Center where Agua Mansa Road crosses the San Bernardino and Riverside County line (Thomas Olsen and Associates 1996).
7. *Sycamore/Alru* - DSF have been observed near the intersection of Sycamore Avenue and Alru Street in Rialto (Osborne 2003c).

In total, approximately 111.05 acres of habitat have been acquired for DSF conservation in San Bernardino County and 30 acres in Riverside County. Thirteen acres of DSF habitat were acquired for conservation in the Ontario Recovery Unit. In the Colton Recovery Unit, approximately 29.05 acres are conserved north of Interstate 10 and 47 acres south of Interstate 10. In addition, there are 147 acres of DSF habitat reserved for conservation within the Vulcan Materials Inc. Colton Dunes Conservation Bank in the Colton Recovery Unit. Within the Jurupa Recovery Unit, 52 acres of DSF habitat are conserved (22 in San Bernardino County and an adjoining 30 acres in Riverside County). In most cases, substantial additional lands will need to be acquired to ensure long-term conservation of existing populations. In addition, habitat corridors will need to be established and protected to allow for dispersal among sites.

Threats

The primary cause for the decline of the DSF is degradation of its habitat for agricultural and dairy uses and, more recently, the conversion/destruction of habitat through urban and commercial development. Increasingly, areas of low density or rural development are being converted to high-occupancy residential or commercial developments resulting in the continued loss and fragmentation of DSF habitat patches on private lands. Nationwide, this conversion and fragmentation represents a major threat to ecosystem health and conservation of biological diversity (Meffe and Carroll 1997). Development has led to the direct loss of DSF habitat and populations and resulted in indirect impacts to habitat through fragmentation and associated edge effects, including disruption of aeolian wind movement of sand throughout the Colton Dunes ecosystem.

DSF populations are at risk mainly because of their small size. Small populations have higher probabilities of extinction than larger populations because their low abundance renders them

susceptible to inbreeding, loss of genetic variation, high variability in age and sex ratios, demographic stochasticity and other random naturally occurring events (e.g., wildfires, floods, droughts, or disease epidemics) (Soulé 1987). Owing to the probabilistic nature of extinction, some small populations will survive in the short term when faced with these demographic, environmental, and genetic stochastic risks, but will likely eventually disappear.

Another factor that renders populations vulnerable to stochastic events is isolation, which often acts in concert with small population size to increase the probability of local extinction. Urbanization and land conversion have fragmented the historic range of the DSF such that remaining blocks of occupied habitat may now function more independently of each other than they did when there were fewer barriers to between-habitat dispersal. Isolated populations are more susceptible to long-term/permanent extirpation by accidental or natural catastrophes because the likelihood of recolonization following such events is negatively correlated with the extent of isolation. The extirpation of remnant populations during local catastrophes will continue to become more probable as land development eliminates habitat and further constricts remaining populations. For these reasons, preservation of remaining occupied sites alone will not ensure DSF survival. Restoration of degraded and disturbed sites will be necessary for the survival of the subspecies, so that populations are robust enough to sustain themselves through stochastic events and remain viable despite the indirect effects of surrounding development. Because the DSF has moderate movement ability in the adult phase (flying), different types of surrounding non-habitat, such as a vacant field versus commercial development, will have different effects on dispersal potential between habitat fragments (Ricketts 1999).

Fragmentation of habitat and the consequent edge effects often lead to increased vulnerability to introduced predators and competitors. For example, Argentine ants (*Linepithema humile*) are invading native California ecosystems. These non-native ants may have adverse direct or indirect effects on DSF populations. Argentine ants are known to exclude native ant species upon invasion (Holway *et al.* 2002), and they are known to reduce Dipteran richness and abundance in urban southern California habitat fragments (Bolger *et al.* 2000). Argentine ants could adversely affect DSF individuals directly by preying on larva and teneral (newly emerged) adults, by affecting the ecosystem prey base or seed plants, or by disrupting key ecosystem functions typically carried out by native ants. Invasion of these ants is expected with development and associated irrigation adjacent to areas occupied by DSF and can have cascading effects through the ecosystem.

Edge effects also facilitate the introduction of invasive, alien weeds that degrade DSF habitat by out-competing and supplanting native vegetation. Additionally, these weeds alter the amount of soil moisture or otherwise alter the soil substrate. These opportunistic alien species displace native plant communities. Native plants cannot compete with drought-tolerant annual grasses in many parts of the Colton Dunes ecosystem once these grasses are established. The diversity and abundance of arthropods have been found to be significantly reduced in coastal dune areas containing non-native plants versus native vegetation (Nagano *et al.* 1981; Nagano and Hogue 1982; Slobodchikoff and Doyen 1977). Similar effects are expected within the Colton Dunes

ecosystem.

Conservation Needs

The recovery plan for the DSF describes actions that would lead to the down-listing of the subspecies and would prevent its extinction (Service 1997). The plan established that the DSF can be considered for reclassification to threatened status when at least eight populations spread across three recovery units (*i.e.*, Colton, Jurupa, and Ontario) are permanently protected with dispersal corridors that are managed to maintain sand supply and sparse native vegetation. All three recovery units are experiencing rapid growth through commercial, industrial, and urban development. Populations within the three recovery units must be conserved in order to maintain the subspecies' distribution and genetic diversity. The criterion in the recovery plan for the Jurupa recovery unit is that the Jurupa Hills population of DSF in Fontana must be secured. The criterion for the Colton recovery unit is the permanent protection of at least four DSF populations, including two populations north of Interstate 10 and two south of Interstate 10, including the largest block of Colton Dunes located south of Interstate 10 and north of Agua Mansa Road. The locations of the remaining DSF populations that would have to be protected were not specified in the recovery plan, although at least one population would need to be conserved in the Ontario recovery unit since the eight populations must be spread across the three recovery units. The recovery plan also specifies management and monitoring guidelines and outreach efforts as part of the strategy to reach the conservation goals identified therein.

The survival and recovery of the DSF is dependent on the protection of occupied and restorable habitat. Occupied habitat contains individuals of the subspecies and associated habitat for breeding, feeding, sheltering, and/or habitat used for dispersal. Restorable habitat describes an area that does not currently support DSF, but contains Delhi soil, and could accommodate DSF recolonization through management. To maintain the subspecies' distribution and genetic diversity throughout its present range, conserved habitat is needed within the three recovery units. Because information is still lacking to determine the exact amount of habitat needed to sustain viable DSF populations within the recovery units, the recovery plan gives priority to protecting existing populations, including protection of dispersal corridors between populations. High priority is also given to establishing new populations of the DSF (Service 1997).

Another important component of the recovery plan is scientific research into the general biology of this subspecies. A basic understanding of the feeding requirements and dispersal capabilities will be necessary to effectively manage the DSF for conservation purposes. There are also important gaps in our understanding of specific habitat requirements for this subspecies.

The recovery plan also calls for public outreach aimed at instilling an appreciation for the Colton Sand Dune system. The outreach program is particularly important as a means for 1) increasing public knowledge and understanding about this inland dune system and the native plants and animals that inhabit the area, 2) describing accurately how economic development can coexist with endangered species conservation.

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of State and private actions that are contemporaneous with the consultation in progress.

According to 50 CFR § 402.02 pursuant to section 7 of the Act, the “action area” means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area. For this project we have defined the action area as the 16.84-acre proposed project site, the 2.04-acre acquisition parcel and the 150-acre bank area.

Project site and Acquisition Parcel

The 16.84-acre project site is centered at the intersection of Valley Boulevard and Pepper Avenue in the City of Colton and includes undeveloped areas such as road right-of-ways, utility transmission lines and privately-held vacant land. These areas are vegetated by non-native grassland, Riversidean sage scrub and rows of eucalyptus and pepper trees. The project site is north of Interstate 10.

The applicant chose to assume that 1.84 acres of the project site is occupied given its close proximity to high-quality occupied habitat. Therefore, no surveys for DSF were conducted and it is assumed that a low density of eggs, larvae and/or pupae exist in the soil at the project site. The vegetation of this area is indicative of low quality DSF habitat, but high quality DSF-occupied habitat does occur adjacent to this area in the Arrowhead Regional Medical Center Preserve (Hospital Preserve). The 1.84-acre area likely contributes to any existing habitat connectivity between the Hospital Reserve and other occupied sites.

The 2.04-acre acquisition parcel is adjacent to the existing Hospital Preserve and supports high-quality DSF habitat similar to that within the Preserve known to be occupied at relatively high densities (Carlsbad Fish and Wildlife Office Listing and Recovery database 2004).

Colton Dunes Conservation Bank

Vulcan Materials owns a 150-acre site within an approximately 500-acre habitat block, the largest remaining block of known occupied habitat for the DSF within the *Slover /Pepper* area of the Colton Dunes Recovery Unit. Vulcan Materials Colton Dunes Conservation Bank has been established for the DSF on the 150-acre parcel. According to the DSF Recovery Plan, DSF habitat within this 500-acre habitat block must be secured to achieve recovery. The bank

consists of open dune vegetation, California buckwheat dominated scrub, and ruderal/annual grassland vegetation (Goodlet 2004a). The bank is located south of the project site and Interstate 10 at Pepper Avenue.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action, are later in time, and are still reasonably certain to occur.

Direct Effects

Project construction will permanently remove 1.84 acres of low-quality DSF habitat at the project site. Ground disturbing activities associated with project construction, such as grading and excavation, would kill any DSF eggs, larvae, and pupae at the 1.84-acre site by disturbing, compacting, and manipulating the Delhi Sand substrate. Any DSF eggs, larvae, and pupae not destroyed or killed by soil manipulation will be entombed under concrete, asphalt, or compacted top-soil. In the unlikely event that grading and construction are delayed and subsequently occur during the flight season of the DSF (July – September), adult DSF could be affected by the project. However, adult DSF are agile in flight and are not likely to be killed by equipment used in grading the site or by construction-related equipment.

Indirect Effects

A habitat corridor of approximately 100-feet in width was set aside west of the Hospital Preserve during construction of the Arrowhead Regional Medical Center in order to maintain habitat connectivity between the Hospital Preserve and any DSF-occupied habitat to the west of the area. The construction footprint will remove an approximately 0.62-acre portion of that corridor reducing the habitat area available to dispersing DSF between the Hospital Preserve and other habitat to the west of the area.

The 2.04-acre proposed conservation area would expand the existing Hospital Preserve. Both the 2.04-acre parcel and the Hospital Preserve support some of the highest quality DSF habitat that remains for the species. Expansion of the Hospital Preserve would improve the likelihood of persistence for DSF at the site, which is becoming increasingly isolated through time from other occupied and/or suitable habitat areas due to surrounding development.

Alternatively, purchase of 5 credits, or acres, within the conservation bank would help ensure conservation of the largest remaining block of occupied habitat throughout the range of the DSF,

which would contribute to the long-term survival and recovery of the species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We are unaware of any future non-Federal actions within the action area that may affect the DSF.

CONCLUSION

After reviewing the current status of the DSF, environmental baseline for the action area, effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the DSF. We reached this conclusion because 1) the project area is small with limited potential to support DSF development, reproduction and/or dispersal, and 2) the implementation of a final conservation easement for the 2.04-acre Acquisition Parcel or the purchase of 5 acres of habitat in a conservation bank of high habitat value for DSF will contribute to the recovery goal of establishing long-term conservation for DSF within its historic range.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act prohibits the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by us to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. We defined harass as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The proposed HCP, its associated documents, and this biological opinion clearly identify anticipated impacts to the DSF likely to result from the proposed taking and the measures that are necessary and appropriate to minimize those impacts. All conservation measures described in the proposed HCP and section 10(a)(1)(B) permit issued with respect to the proposed HCP, are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR §402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and

section 7(o)(2) of the Act to apply. If the applicant fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the HCP, associated reporting requirements, and provisions for disposal of dead or injured animals are described in the section 10(a)(1)(B) permit.

AMOUNT OR EXTENT OF TAKE

We anticipate the incidental take of all DSF eggs, larvae, and pupae and any adults at the project site, from grading and road construction on the site and implementation of the HCP. Incidental take of DSF is expected to be in the form of harm as defined in 50 CFR § 17.3, due to the permanent loss of 1.84 acres of low-quality DSF habitat.

EFFECT OF THE TAKE

In the accompanying biological opinion, we determined that this level of anticipated take is not likely to result in jeopardy to the DSF.

REASONABLE AND PRUDENT MEASURES

No reasonable and prudent measures beyond the conservation measures described in the HCP have been identified to further minimize incidental take of DSF.

TERMS AND CONDITIONS

No additional terms and conditions are necessary because no additional Reasonable and Prudent Measures have been identified.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, help implement recovery plans, or to develop information. We have not identified any additional conservation recommendations that should be implemented in association with the HCP or permit issuance.

REINITIATION NOTICE

This concludes formal consultation on the proposed action outlined in the request. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if:

1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the proposed action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this opinion or; 4) a species not covered by the HCP is listed or critical habitat is designated that may be affected by the proposed action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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