

EXHIBIT. E

ENVIRONMENTAL ASSESSMENT

For The
Issuance of an Incidental Take Permit
Under Section 10(a)(1)(B) of the Endangered Species Act

For The
Natomas Basin Habitat Conservation Plan

To
CITY OF SACRAMENTO

Prepared By:

U. S. Fish and Wildlife Service
3310 El Camino Ave., Suite 130
Sacramento, California 95821

December 1997

FINDING OF NO SIGNIFICANT IMPACT

Environmental Assessment for Issuance of an Endangered Species Act Section 10(a)(1)(B) Permit to Allow Incidental Take of 26 Covered Species During Urban Development Activities in the City of Sacramento's Portion of the Natomas Basin, Sacramento County, California

PROPOSED ACTION

The Fish and Wildlife Service (Service) proposes to issue an Endangered Species Act section 10(a)(1)(B) permit to the City of Sacramento (City) for the incidental take of 26 covered species as a result of urban development and other activities in the City's portion of the Natomas Basin, Sacramento County, California. In support of the application for this permit submitted by the City in January 1997, the City (and other potential permittees) have prepared a Natomas Basin Habitat Conservation Plan (NBHCP or Plan), detailing the urban development activities proposed under the Plan together with the conservation measures proposed to mitigate for any impacts to the covered species that will result from those activities. Other activities covered by the proposed permit are rice farming, operation and maintenance of the Basin's water conveyance systems, and such take as may occur during management, enhancement, and scientific study within the habitat reserve system proposed by the Plan.

These activities may result in the incidental take through the direct killing or injury of individuals and through habitat modification of 8 animal species listed pursuant to the Act. Several listed plant species would also be adversely affected by these activities. These species are the federally endangered American peregrine falcon (*Falco peregrinus anatum*), Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool tadpole shrimp (*Lepidurus packardii*), and Sacramento Orcutt grass (*Orcuttia viscida*), and the federally threatened giant garter snake (*Thamnophis gigas*), Aleutian Canada goose (*Branta canadensis leucopareia*), valley elderberry longhorn beetle (*Desmocercus californicus dimorphus*), vernal pool fairy shrimp (*Branchinecta lynchi*), Colusa grass (*Neostapfia colusana*), and slender Orcutt grass (*Orcuttia tenuis*).

The NBHCP also addresses 15 unlisted plant and animal species and the City seeks coverage under the proposed section 10(a)(1)(B) permit for these species should they be listed in the future. These unlisted species are the Swainson's hawk (*Buteo swainsoni*), white-faced ibis (*Plegadis chihi*), bank swallow (*Riparia riparia*), greater sandhill crane (*Grus canadensis tubida*), tricolored blackbird (*Agelaius tricolor*), northwestern pond turtle (*Clemmys marmorata marmorata*), delta tule pea (*Lathyrus jepsonii* ssp. *jepsonii*), Sanford's arrowhead (*Sagittaria sanfordii*), loggerhead shrike (*Lanius ludovicianus*), burrowing owl (*Athene cunicularia*), California tiger salamander (*Ambystoma californiense*), western spadefoot toad (*Scaphiopus hammondii*), midvalley fairy shrimp (*Branchinecta* n. sp.), Bogg's Lake hedge-hyssop (*Gratiola heterosepala*), and legenera (*Legenere limosa*). The listed and unlisted species described above are collectively referred to in the Plan as "covered species." In addition, and consistent with the Department of the Interior's "No Surprises" policy, the Service proposes to grant assurances that no additional mitigation will be required for the 11 listed and 15 unlisted species addressed in the City's NBHCP.

The proposed action is the issuance of a section 10(a)(1)(B) permit by the Service to allow incidental take of the covered species listed above resulting from urban development within the Natomas Basin on lands within the jurisdiction of the City, consistent with the City's 1994 North Natomas Community Plan Update and the City's other applicable plans for South Natomas and Natomas West. The section 10(a)(1)(B) permit will also allow for the incidental take of the covered species that occurs during rice-farming activities within the permit area, operation and maintenance of the Basin's water conveyance systems, and any incidental take of the covered species that may occur during management of the Plan's habitat reserve lands. The NBHCP is designed to cover the entire Natomas Basin and includes the City, the Counties of Sacramento and Sutter, Reclamation District Number 1000 (RD 1000), and the Natomas Central Mutual Water Company (NCMWC) as potential permittees. This permit application, however, is for the City's portion of the NBHCP only.

The City and other land use agencies (i.e., Sacramento and Sutter Counties) propose to allow up to 17,500 acres of urban development in the Natomas Basin over the 50-year term of the NBHCP and its associated permits. This 17,500-acre figure represents a maximum, since the precise amount of urban development that actually would occur over the entire permit area, especially within Sacramento and Sutter Counties, is uncertain. Development projections in the City are fairly well understood, however, and would total approximately 7,600 acres in the North Natomas Community Plan area, South Natomas, and West Natomas. Projected development in Sacramento County includes 1,600 acres at the Metro Air Park project and an unspecified amount of development at the Sacramento International Airport. Of the Sutter County portion of the plan area, accurate predictions of the extent of future development are difficult because of the absence of a recent general plan amendment; however, the Plan assumes that a maximum of 12,000 acres could be urbanized in Sutter County over the life of the permit.

Of the Plan's 26 covered species, the most likely to be seriously affected by urbanization in the Natomas Basin are the giant garter snake and Swainson's hawk. Under the City's and Counties' general plans, several thousand acres of giant garter snake habitat will be converted to urban uses (according to the NBHCP's analysis, total snake habitat converted would be a minimum of 14% and a maximum of 37% of currently existing habitat). Most of this would occur when agricultural lands utilized by the snake as habitat (primarily rice) and their associated water conveyance systems are converted to urban uses. The most important negative consequences of urban development on Swainson's hawks in the Basin are habitat loss, adverse edge effects on the remaining nesting and foraging habitat, and disturbance and destruction of nest sites. Much of Swainson's hawk habitat loss as a result of urban development under the NBHCP would occur on non-rice agricultural lands, which serve as foraging habitat for Swainson's hawks. While Swainson's hawks use many of the Basin's agricultural lands for foraging, the most important areas to the species' welfare are presumed to be within one mile of the Sacramento River. This area is referred to in the Plan as the Swainson's hawk zone and contains the majority of known Swainson's hawk nests within the plan area.

The NBHCP's remaining 24 covered species will be affected by urban development and other activities addressed in the Plan to varying degrees. Some (e.g., the peregrine falcon) are expected to be subject to minimal take levels because they probably will not come into significant conflict with urban development activities. Others are not currently known to occur within the Basin (e.g., the bank swallow, Aleutian Canada goose, and greater sandhill crane) or occur in restricted areas not subject to currently projected development plans (e.g., the vernal pool species), and, consequently, are also expected to be subject to minimal take levels.

The NBHCP proposes a variety of conservation strategies to mitigate for the loss of covered species and their habitats resulting from urbanization in the Natomas Basin. The Plan will be implemented primarily through the collection and use of fees to protect and manage 0.5 acres of habitat land for each 1.0 acres of urban development that takes place in the Basin (a mitigation ratio of 0.5 to 1.0). The main feature of the conservation program is the establishment of a system of wetland and upland reserves, managed for the species covered by the Plan. As currently conceived, the wetland reserves will be a mosaic of habitat elements, including rice fields, managed marshes, water delivery canals and their associated levees, and irrigation ditches and drains managed for the giant garter snake and other wetland-associated species covered by the plan. The upland reserves, most of which will be located adjacent to the Sacramento River, are projected to contain grasslands, pasture and fallow fields, and irrigated croplands which will be managed to provide foraging and nesting opportunities for the Swainson's hawk and other upland-associated species. The Plan also proposes a variety of measures to minimize or avoid take of the covered species during urban development and other activities covered by the Plan.

The Service published a Notice of Receipt of an incidental take permit application from the City and Notice of Availability of an Environmental Assessment (EA) for the NBHCP in the *Federal Register* on January 15, 1997. Publication of the notice initiated a 45-day public comment period that closed on March 1, 1997. Copies of the notice, NBHCP, Implementation Agreement (IA), and EA were mailed or provided upon request to all interested parties. Numerous such requests were received. Based on resulting public comments, the Service recommended numerous revisions to the NBHCP which were incorporated into a draft Plan dated June 1997. A second notice announcing availability of the revised NBHCP, EA, and IA was then published in the *Federal Register* on June 18, 1997. Publication of this notice initiated a 21-day public comment period, later extended to 30 days, that closed on July 18, 1997. Copies of the notice and the revised NBHCP documents were again mailed or provided upon request and numerous additional comments were received. Based on the comments, the Service recommended additional changes to the Plan; these were incorporated into a final NBHCP dated November 1997.

ALTERNATIVES AND ENVIRONMENTAL EFFECTS

The Service has analyzed four alternatives for the project: (1) the Preferred Alternative (issuance of the permit); (2) Variable Mitigation Ratio; (3) Increased Proportion of Marsh Habitat; and (4) No Action Alternative. The proposed action (issuance of the permit), including the NBHCP and IA, was selected over the other three alternatives for the following reasons.

1. It best satisfies the purpose and needs for the project.
2. It best ensures that mitigation for habitat loss will be efficiently and reliably obtained.
3. It best provides the flexibility needed to ensure that the mitigation program in the Natomas Basin will be responsive to future biological information and other needs.
4. It best minimizes and mitigates the impacts to the 26 covered species through conservation, creation, and enhancement of habitat and through other measures set forth in the NBHCP and IA.

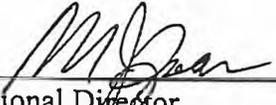
Implementation of the NBHCP will or potentially could impact geology, air quality, botanical resources, fish and wildlife, cultural resources, recreation, transportation, public services, and human health. However, based on the analysis contained in the EA and other environmental documents cited in the EA (herein incorporated by reference), issuance of the permits and implementation of the NBHCP are not expected to result in significant adverse environmental effects with the incorporation of the mitigation measures set forth in the EA, NBHCP, and EA. Implementation of the NBHCP is expected to provide overall beneficial effects for wildlife using the Plan's habitat reserve system. However, these effects are not considered significant within the context of continuing habitat loss as a result of urban development that would occur within the Natomas Basin over the term of the permit.

Pursuant to Section 7 of the Act, the Service has prepared a biological opinion on the proposed action of issuing an incidental take permit to the City of Sacramento and the signing of the IA. The biological opinion includes the Service's assessment of the 11 listed and 15 unlisted species that would receive coverage under the proposed action. In its biological opinion (herein incorporated by reference), the Service concluded that the proposed action would not jeopardize the continued existence of any of the NBHCP's 26 covered species.

DETERMINATION

Based on review and evaluation of information contained in the supporting documents, I have determined that proposed issuance of an incidental take permit for the federally listed American peregrine falcon, Aleutian Canada goose, giant garter snake, valley elderberry longhorn beetle, Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool tadpole shrimp, vernal pool fairy shrimp, Sacramento Orcutt grass, slender Orcutt grass, and Colusa grass, and signing of the IA

for covering the 15 unlisted species addressed by the NBHCP in the Natomas Basin, California, is not a major Federal action significantly affecting the quality of the human environment within the meaning of section 102(2)(c) of the National Environmental Policy Act. Therefore, preparation of an Environmental Impact Statement is not required.



Regional Director
Fish and Wildlife Service
Portland, Oregon

12/31/97
Date

Supporting Documents

- City of Sacramento. 1997. Natomas Basin Habitat Conservation Plan. HCP developed in cooperation with Sacramento and Sutter Counties, dated November 1997. Sacramento County, California.
- U.S. Fish and Wildlife Service. 1997. Biological opinion on proposed issuance of an incidental take permit (PRT-823773) to the City of Sacramento for urban development in the Natomas Basin, Sacramento County, California, dated December 17, 1997. File number 1-1-97-F-12.
- U.S. Fish and Wildlife Service. 1997. Findings and recommendations, regarding issuance of an incidental take permit (PRT-823773) to the City of Sacramento to allow incidental take of covered species resulting from urban development in the Natomas Basin, Sacramento County, California, dated December 19, 1997
- U.S. Fish and Wildlife Service, California Department of Fish and Game, Natomas Basin Conservancy, and City of Sacramento. 1997. Implementation Agreement for the Natomas Basin Habitat Conservation Plan.
- U.S. Fish and Wildlife Service. 1997. Final environmental assessment for the issuance of an incidental take permit under Section 10(a)(1)(B) of the Endangered Species Act for the Natomas Basin habitat conservation plan, dated December 1997.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

911 NE. 11th Avenue
Portland, Oregon 97232-4181

IN REPLY REFER TO:

MEMORANDUM

To: Regional Director

From: Assistant Regional Director, Ecological Services

Subject: Findings and Recommendations Regarding Issuance of an Incidental Take Permit (PRT-823773) to the City of Sacramento to Allow Incidental Take of Covered Species Resulting From Urban Development in the Natomas Basin, Sacramento County, California.

I. DESCRIPTION OF PROPOSAL

The City of Sacramento (City) has applied to the Fish and Wildlife Service for a permit to incidentally take the federally endangered American peregrine falcon (*Falco peregrinus anatum*), Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool tadpole shrimp (*Lepidurus packardii*), and Sacramento Orcutt grass (*Orcuttia viscida*), and the federally threatened giant garter snake (*Thamnophis gigas*), Aleutian Canada goose (*Branta canadensis leucopareia*), valley elderberry longhorn beetle (*Desmocercus californicus dimorphus*), vernal pool fairy shrimp (*Branchinecta lynchi*), Colusa grass (*Neostapfia colusana*), and slender Orcutt grass (*Orcuttia tenuis*) under the authority of section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) (ESA).

Such take is expected to occur during urban development, rice farming, and operation and maintenance of water conveyance systems within the City's portion of the Natomas Basin in Sacramento County, California. As part of its permit application, the City has submitted a Natomas Basin Habitat Conservation Plan (NBHCP or Plan) (City of Sacramento, November, 1997) describing these activities in detail, together with the conservation measures that will be implemented to minimize and mitigate the anticipated take of these species. The proposed permit would be in effect for 50 years.

In addition, and consistent with the Department of Interior's "No Surprises" policy, the City is seeking assurances for future incidental take, should it ever become necessary, for 15 unlisted species: the Swainson's hawk (*Buteo swainsoni*), white-faced ibis (*Plegadis chihi*), bank swallow (*Riparia riparia*), greater sandhill crane (*Grus canadensis tubida*), tricolored blackbird (*Agelaius tricolor*), northwestern pond turtle (*Clemmys marmorata marmorata*), delta tule pea (*Lathyrus jepsonii* ssp. *jepsonii*), Sanford's arrowhead (*Sagittaria sanfordii*), loggerhead shrike (*Lanius*

ludovicianus), burrowing owl (*Athene cunicularia*), California tiger salamander (*Ambystoma californiense*), western spadefoot toad (*Scaphiopus hammondi*), midvalley fairy shrimp (*Branchinecta* n. sp.), Bogg's Lake hedge-hyssop (*Gratiola heterosepala*), and legenere (*Legenere limosa*). The listed and unlisted species described above are collectively referred to in the NBHCP as "covered species." Finally, consistent with the "No Surprises" policy, the City is seeking assurances of no further mitigation requirements for all these covered species (see Section IV of these findings).

Project Description

The NBHCP is a regional plan encompassing the entire Natomas Basin and the jurisdictions of three local land use agencies: the City, Sacramento County, and Sutter County. It is designed to address the impacts of proposed activities within each of these jurisdictions and to support permit applications from each jurisdiction as well as two irrigation districts: Reclamation District Number 1000 (RD 1000) and the Natomas Central Mutual Water Company (NCMWC). However, the incidental take permit application under consideration in these findings is for the City only. The other parties to the NBHCP are expected to apply for separate incidental take permits in the near future.

The Natomas Basin is part of a larger, low-lying flood basin in the Sacramento Valley which is often referred to as the American Basin. The Natomas Basin lies east of the Sacramento River, just north of its confluence with the American River. The NBHCP area is bounded on the west by the Sacramento River, on the north by the Natomas Cross Canal, on the east by the Natomas East Main Drain Canal, and on the south by the Garden Highway. The plan area encompasses about 53,000 acres, of which approximately 36,500 acres lie in Sacramento County and approximately 16,500 acres lie in Sutter County. Of the Sacramento County portion of the NBHCP plan area, approximately 11,000 acres lie within the boundaries of the City.

The City and other land use jurisdictions propose to allow up to 17,500 acres of urban development in the Natomas Basin over the 50-year term of the permit. This 17,500-acre figure represents a maximum, since the precise amount of urban development that actually would occur over the entire permit area, especially within Sacramento and Sutter Counties, is uncertain. Development projections in the City are fairly well understood, however, and would total approximately 7,600 acres in the North Natomas Community Plan area, South Natomas, and West Natomas. Projected development in Sacramento County includes 1,600 acres at the Metro Air Park project and an unspecified amount of development at the Sacramento International Airport. Of the Sutter County portion of the plan area, accurate predictions of the extent of future development are difficult because of the absence of a recent general plan amendment; however, the Plan assumes that a maximum of 12,000 acres could be urbanized in Sutter County over the life of the permit. In addition to urban development, the NBHCP addresses rice farming activities, operation and maintenance of the Basin's water conveyance system, and take of listed species during scientific study and management activities on the Plan's habitat reserve lands.

The NBHCP proposes a variety of conservation strategies to mitigate for the loss of covered species and their habitats resulting from urbanization in the Natomas Basin. The Plan will be implemented primarily through the collection and use of fees to protect and manage 0.5 acres of habitat land for each 1.0 acres of urban development that takes place in the Basin (a mitigation ratio of 0.5 to 1.0). For purposes of the NBHCP, all of the Natomas Basin not already in an urban land use is assumed to be wildlife habitat of one type or another. The NBHCP emphasizes conservation of the overall ecosystem of the Natomas Basin by maintaining and enhancing a combination of wetland and upland habitat values, and by ensuring that all the covered species are protected by the provisions of the Plan. It is expected that the measures described in the Plan will provide benefits for both those species that are listed under the ESA and the California Endangered Species Act and for other unlisted species, some of which may become listed in the future.

The main feature of the conservation program is the establishment of a system of wetland and upland reserves, managed for the species covered by the Plan. As currently conceived, the wetland reserves will be a mosaic of habitat elements, including rice fields, managed marshes, water delivery canals and their associated levees, and irrigation ditches and drains managed for the giant garter snake and other wetland-associated species covered by the Plan. The upland reserves, most of which will be located adjacent to the Sacramento River, are projected to contain grasslands, pasture and fallow fields, and irrigated croplands which will be managed to provide foraging and nesting opportunities for the Swainson's hawk and other upland-associated species.

Conservation Strategy for Wetland Habitats. The objective of the wetland portion of the reserve system is ensuring the long-term survival of the giant garter snake and other covered wetland-associated species in the plan area. To achieve this, a network of reserves (at least 400 acres in size and connected by a network of canals) will be established. The reserve system will also include at least one parcel that is a minimum of 2,500 acres in size. Wetland reserve lands will consist of rice lands, managed marshes, and associated uplands in proportions dictated by Chapter IV, Sections C.1.a and H of the NBHCP. Habitat enhancements on the reserve lands are expected to increase the amount and quality of habitat available to the giant garter snake through time as the NBHCP is implemented. The specific locations for wetland reserves have not been identified; instead, wetland reserve lands will be acquired based on selection criteria described in the Plan. Chapter IV, Sections C.1.a and C.1.b describe the conservation objectives for the giant garter snake and these selection criteria in detail. The NBHCP also allows for reserve lands to be acquired both inside and outside the Natomas Basin according to conditions set forth in the Plan (Chapter IV, Section C.1.b), and provides for measures governing the acquisition schedule for reserve lands (Chapter IV, Sections G.2-G.3).

Conservation Strategy for Upland Habitats. The primary objective of the upland portion of the reserve system is ensuring the long-term protection and enhancement of nesting and foraging habitat for Swainson's hawks that nest in and around the Natomas Basin, as well as habitat protection for other covered upland-associated species. The main method of achieving this goal is the establishment of upland reserves inside the Swainson's hawk zone, defined as a corridor

beginning at the Sacramento River levee and extending eastward for one mile (see Figure 4 of the NBHCP). Beyond identification of the Swainson's hawk zone, no specific locations for upland reserves are identified in the NBHCP. Instead, upland reserves will be selected and established based on conservation objectives for the Swainson's hawk and upland reserve acquisition criteria described in Chapter IV, Section C.2.a and C.2.b of the NBHCP.

Conservation Strategy for Other Covered Species. The NBHCP also describes conservation strategies for the other covered species. These are only summarized here but are described in detail in Chapter IV, Section C.3 of the Plan, and in the December 17, 1997, biological opinion prepared by the Service for the proposed action. With respect to the Plan's vernal pool species, little or no urban development is expected to occur within the relatively small areas of vernal pool grasslands present along the eastern borders of the Plan area; however, if the participating jurisdictions ultimately approve development within this area, the Plan requires: (1) notification to the regulatory agencies; (2) pre-construction surveys to determine what, if any, vernal pool species are present; and (3) mitigation for any impacts to vernal pool species according to then-applicable Service standards. With respect to the valley elderberry longhorn beetle, the NBHCP proposes to implement the standard mitigation requirements described in the Service's "Mitigation Guidelines for the Valley Elderberry Longhorn Beetle," dated September 19, 1996. With respect to the remaining covered species, the Plan assumes these species will benefit generally from the wetland and upland reserve system, and also provides for additional measures described in Chapter IV, Sections C.3.c, C.3.d, and C.4.

The NBHCP also establishes numerous procedures for ensuring that the Plan is implemented properly and for making adjustments and corrections, both major and minor, to its conservation program during its 50-year life. It establishes the Natomas Basin Conservancy (NBC) as the Plan Operator (see the NBHCP, Chapter IV, Section B.4), which will be responsible for acquisition and management of habitat reserve lands under the Plan. In addition, the NBC is required to establish a Technical Advisory Committee (TAC) comprised of representatives from the Service, California Department of Fish and Game (CDFG), the City and other land use agencies, and other permittees (i.e., RD 1000 and NCMWC) to advise it in making and carrying out habitat purchase and management decisions. Other qualified biologists, experts on covered species, and administrative and legal personnel will also be invited, as needed, to assist the NBC and TAC.

To ensure that the NBHCP can adjust to new circumstances and correct for new information, the Plan proposes the following: (1) a monitoring program to track the status of the covered species within the plan area generally and reserve system specifically, and to determine the success of the various habitat enhancement and management measures (see Chapter IV, Section F of the NBHCP); (2) an Adaptive Management program designed to respond to information from the Plan's monitoring program and new information on the covered species resulting from other research (Chapter IV, Section E); (3) a recovery plan adaptation provision to allow adjustments to the NBHCP when and if new Service or CDFG recovery plans are approved for the giant garter snake or Swainson's hawk (Chapter IV, Section H); and (4) a comprehensive, mid-course review process (to be initiated when 9,000 acres of development have occurred)

designed to evaluate the Plan's success at meeting its conservation objectives and other conditions and to implement corrective measures, if needed.

Analysis of Effects

Through participation in the development and preparation of the NBHCP, and these findings, the Service has determined that the impacts to the covered species that may occur as a result of proposed issuance of the incidental take permit and approval of its associated Implementation Agreement (IA) would be fully mitigated through implementation of the conservation measures described in the Plan and in the section above. Further, in its December 17, 1997, biological opinion (Service 1997), the Service assessed the effects of the activities described in the Plan on the 26 covered species and determined that the proposed action would not appreciably reduce the likelihood of the survival and recovery of these species in the wild. The analysis of effects in the Service's biological opinion is summarized below.

Of the Plan's 26 covered species, the most likely to be seriously affected by urban development in the Natomas Basin are the giant garter snake and the Swainson's hawk. The following sections discuss the effects to these and other covered species of the Service's issuance of an incidental take permit to the City for urban development in the Natomas Basin.

Giant garter snake. Under the City's and County of Sacramento's currently approved general plans, several thousand acres of habitat for the giant garter snake will be converted to urban uses (according to the NBHCP's analysis, total snake habitat converted would be a minimum of 14% and a maximum of 37% of currently existing habitat). Most of this conversion will occur when agricultural lands utilized by the snake as habitat (primarily rice) and their associated water conveyance systems are converted to urban uses. In addition, urban development could tend to fragment this habitat and reduce or eliminate dispersal opportunities between remaining habitat patches, potentially leading to population isolation. Adverse edge effects on remaining habitat patches (e.g., impingement of incompatible land uses) could further reduce their ability to support giant garter snakes in the future. The NBHCP proposes to offset these effects through creation of the wetland reserve system described above and the take avoidance measures described in Section III below.

The Service's December 17, 1997, biological opinion concludes that the NBHCP's mitigation program is adequate to address the adverse effects of urban development and other activities in the Natomas Basin on the giant garter snake. However, it cites several uncertain aspects of the NBHCP that could influence the scope of its effects on the giant garter snake as well as the other covered species, or the outcome of its conservation program. One such problem is that it is difficult to predict with certainty how much land will be developed under the Plan, exactly where the development will occur (see discussions in Chapter III, Section B.1. of the NBHCP), and how much habitat will be preserved and managed for the Plan's covered species over the term of the permit. However, regardless of how much urban development occurs, the terms of the NBHCP require that mitigation keep pace with and contribute to an overall balance between habitat

converted and habitat protected. Furthermore, while the full extent of the reserve system might not be assembled if development does not ultimately occur at the levels contemplated in the Plan, neither would the impacts of that urban development be incurred. Furthermore, it is unlikely, based on the City's and Counties' development projections, that development levels would be such that significant impacts would be incurred. Thus, despite some uncertainty about actual development levels over the life of the Plan, the Service believes that the NBHCP contains the mechanisms necessary to ensure that whatever development does occur in the Natomas Basin will be fully mitigated, and that any accompanying uncertainty will not significantly affect the success of the Plan's proposed mitigation program.

The biological opinion cites several additional uncertainties that could affect the ability of the Plan's wetland reserve system to support giant garter snakes over the long term. These include the Plan's reliance on willing sellers to assemble its habitat reserve system, the fact that the Plan's requirements for setbacks between wetland reserve lands and incompatible urban uses are not enforceable (since no explicit control over setback lands are present and their status could change over time to uses not compatible with the reserve system), and the fact that the Plan's requirement for hydrological connections between the wetland reserve's habitat blocks via irrigation ditches and canals might not be satisfied if agricultural practices in the Basin change significantly through time.

These uncertainties could have significant consequences for successfully implementing the NBHCP's conservation program, but, to a large extent, are also inherent in the land use realities within the NBHCP plan area and are difficult to fully avoid. However, the NBHCP recognizes these potential difficulties and incorporates a wide array of adaptive and corrective features designed to respond to them. As described above, these include its monitoring program, Adaptive Management program, recovery plan adaptation provisions, and program review process at 9,000 acres of development. These Plan elements are designed to address many future changes and uncertainties within the plan area, both major and minor. In its biological opinion for the proposed action, the Service concludes that these features of the Plan would provide the flexibility, individually and collectively, for the NBHCP to respond effectively to these future uncertainties and thus would allow for the long-term survival of the garter snake in the plan area.

Swainson's Hawk. The most important negative consequences of urban development on Swainson's hawks in the Natomas Basin are habitat loss, adverse edge effects on the remaining nesting and foraging habitat, and disturbance and destruction of nest sites. Much of the habitat loss as a result of urban development under the City's and Counties' approved general plans will occur on non-rice agricultural lands, which, although highly altered compared to more natural habitats, serve as foraging habitat for Swainson's hawks. While Swainson's hawks use many of the Basin's agricultural lands for foraging, the most important to the species' welfare are presumed to be the area within one mile of the Sacramento River. This area is referred to in the NBHCP as the Swainson's hawk zone and contains the majority of known Swainson's hawk nests within the plan area. The NBHCP proposes to offset these effects primarily through

creation of the upland habitat reserve system described above and the take avoidance measures described in Section III below.

However, as described above, it is difficult to predict with certainty how much land will be developed and how much will be preserved and managed for the NBHCP's covered species over the term of the permit. With respect to the NBHCP plan area overall, establishment of mitigation lands is required to keep pace with development at the 0.5 to 1 mitigation ratio, which should provide an overall balance between habitat converted and habitat protected. However, with respect to the Swainson's hawk zone, under the Plan's 0.5 to 1 mitigation ratio it is theoretically possible that up to two-thirds of this zone could be lost, since no other explicit limits on development in this area are required. Considering the importance of this area to Swainson's hawks nesting within the Basin, such a loss could result in loss of all or a significant portion of the Basin's nesting population of this species. The NBHCP acknowledges this problem but states that development in the Swainson's hawk zone will be much more limited than the theoretical two-thirds for several reasons, including the fact that the City's and Counties' general plans do not currently designate this area for development and that the NBHCP requires the protection of sufficient foraging habitat to support successful Swainson's hawk nesting in the zone.

Furthermore, irrespective of these and other measures inside and outside the Swainson's hawk zone, much of the Natomas Basin's agricultural lands are expected to remain in agricultural production, providing ongoing foraging opportunities for Swainson's hawks. Thus, anticipated ongoing land use patterns in the Basin, together with the Plan's mitigation measures, are expected to support the long-term survival of the Swainson's hawk within the Plan area. The Service, in its biological opinion for the proposed action, generally agreed with these NBHCP conclusions.

The Service's biological opinion cites two additional features of the NBHCP's upland reserve acquisition program that could significantly affect whether or not the Plan meets its conservation objectives for the Swainson's hawk. First, unlike the proposed wetland reserve system, the NBHCP establishes no minimum reserve size requirements for upland reserve lands. There are, therefore, fewer assurances that upland reserves will be established in the proper sizes and configuration to maximize their conservation benefits. Second, the Plan establishes no specific methods for determining the extent to which the NBC should devote resources derived from development in other parts of the Basin to the acquisition and management of upland reserves in the Swainson's hawk zone, as well as elsewhere in the Basin. This could result in conflict, in the form of competition for resources, between this important component of the Plan's Swainson's hawk conservation strategy and the Plan's wetland reserve system.

With respect to the first problem, while the NBHCP does not provide minimum habitat block size requirements, it does require the NBC to maximize connectivity of upland reserve sites selected for acquisition or protection. This, together with the Plan's direction to focus upland reserve acquisition in the Swainson's hawk zone, and its other criteria for upland reserve land

acquisition (see Chapter IV, Section C.2.b), should prevent excessive fragmentation of upland reserve lands and ensure upland reserve designs that meet the Plan's objective's and satisfy the Swainson's hawk's biological needs. With respect to the second problem, although the NBHCP provides no explicit measures for allocating resources between wetland reserves and upland reserves, the Plan does direct the Plan Operator (the NBC) to work with its Technical Advisory Committee, any future giant garter snake or Swainson's hawk recovery plans, and researchers and species experts to ensure that sound reserve land acquisition decisions will be made with respect to upland and wetland habitats. The NBHCP also cites the factors that may enter into such decisions, including, but are not limited to, the relative proportions of wetland habitats and upland habitats that are converted to urban uses, and the relative status of the giant garter snake and Swainson's hawk in the NBHCP plan area and throughout their respective range.

Also, as described above, the NBHCP incorporates a wide array of adaptive and corrective features designed to respond to such future uncertainties, including its monitoring program, Adaptive Management program, recovery plan adaptation provisions, and the program review process which will be initiated at 9,000 acres of development. In its biological opinion for the proposed action, the Service concludes that these features of the Plan would provide the flexibility, individually and collectively, for the NBHCP to respond effectively to such future uncertainties.

Other Covered Species. The NBHCP's remaining covered species will be affected by urban development and other activities addressed in the Plan to varying degrees. Some (e.g., the peregrine falcon) are expected to be subject to minimal take levels because, based on their life histories and use patterns in the Natomas Basin, they probably will not come into significant conflict with urban development activities. Others are not currently known to occur within the Basin (e.g., the bank swallow, Aleutian Canada goose, and greater sandhill crane) or occur in restricted areas not subject to currently projected development plans (e.g., vernal pool species), and, consequently, are also expected to be subject to minimal take levels. Nevertheless, the Plan describes a variety of conservation measures for these species (see the NBHCP, Sections C.3 and C.4). In light of these considerations, the NBHCP is not expected to significantly adversely affect these species or to appreciably reduce the likelihood of their survival and recovery in the wild.

Other Effects. The NBHCP was developed to support permit applications from each of the five affected land use agencies or irrigation districts in the Natomas Basin (the City, Sacramento County, Sutter County, Irrigation District No. 1000, and Natomas Central Mutual Water Company). In substance, the NBHCP is expected to be similar when submitted with permit applications by each of these other agencies and districts. Furthermore, each of these land use agencies and districts in the Natomas Basin are expected to adopt the NBHCP and apply for ESA section 10(a)(1)(B) permits based on the NBHCP. However, it is possible that some or all of these other entities may ultimately elect not to obtain permits. This possibility raises the question of what effects partial participation under the NBHCP would have on the Plan's overall conservation program. The NBHCP states that the Plan may be implemented independently by

some individual permittees without adversely affecting the conservation program as a whole. This is because the conservation strategy developed under the Plan (e.g., the 0.5 to 1.0 mitigation ratio and take avoidance measures) must be implemented by each permittee independently of the actions of the other permittees. The Plan also requires that habitat parcels set aside as mitigation for development impacts be of sufficient size and configuration to maximize the conservation of the covered species, irrespective of how many of the potential permittees actually obtain permits. Thus, the Plan would be self-sufficient within each permit area, to the extent that each permittee must mitigate for impacts to the covered species that occur as a result of development within its respective jurisdiction (though the mitigation itself can occur outside the jurisdiction), and the mitigation must meet the Plan's basic biological standards.

If the irrigation districts do not participate in the NBHCP as permittees, the status quo would be maintained in the water conveyance system. In such a case, the irrigation districts' primary contribution to the Plan's conservation program that would not occur is the implementation of the best management practices on the Natomas Basin's canal systems as described in the Plan (see Chapter IV, Section C.1.e). While not optimal, current maintenance practices on the canal systems generally support and are expected to continue to support giant garter snakes. Therefore, the Service believes that elimination of the modest benefits to giant garter snakes that would follow from non-participation by the irrigation districts would not significantly threaten the success or functioning of the Plan's overall conservation program.

II. PUBLIC COMMENT

The Service published a Notice of Receipt of an incidental take permit application from the City and Notice of Availability of an Environmental Assessment (EA) for the NBHCP in the *Federal Register* on January 15, 1997. Publication of the notice initiated a 45-day public comment period that closed on March 1, 1997. Copies of the notice, the NBHCP, the EA, and the IA were mailed or provided upon request to all interested parties. Numerous such requests were received. Based on resulting public comments, the Service recommended numerous revisions to the NBHCP which were incorporated into a draft Plan dated June 1997. A second notice announcing availability of the revised NBHCP, EA, and IA was then published in the *Federal Register* on June 18, 1997. Publication of this notice initiated a 21-day public comment period, later extended to 30 days, that closed on July 18, 1997. Copies of the notice and the revised NBHCP documents were again mailed or provided upon request and numerous additional comments were received. Based on these comments, the Service recommended additional changes to the NBHCP; these were incorporated into a final NBHCP dated November 1997. A summary of these public comments is provided as Attachment 1 to these findings.

III. INCIDENTAL TAKE PERMIT CRITERIA - ANALYSIS AND FINDINGS

Findings

1. The taking will be incidental.

The taking of the giant garter snake, Swainson's hawk, and other covered species would be incidental to the otherwise lawful activities of urban development, rice farming, operation and maintenance of the Natomas Basin's water conveyance system, and management and enhancement of the NBHCP's habitat reserve system. The NBHCP also describes certain scientific activities associated with research of the covered species within the Plan's reserve system (e.g., trapping for scientific study), and other activities designed to enhance survival of the covered species (e.g., trapping to relocate from development sites to other suitable locations). Technically, take resulting from these activities is not incidental but must be authorized by a recovery or scientific permit pursuant to section 10(a)(1)(A) of the ESA. As explained in Chapter V, Section E.1 of the NBHCP, the permit issued in association with the NBHCP will be considered a joint section 10(a)(1)(B)/10(a)(1)(A) permit for these purposes.

2. The Applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking.

The City has developed an HCP pursuant to the incidental take permit requirements provided in section 10(a)(2)(A) and section 10(a)(2)(B) of the ESA and its implementing regulations. Measures to mitigate for the impacts to covered species resulting from habitat loss have been described above. In addition, the City would minimize the impact of the proposed taking of individual specimens of the covered species by implementing the measures described below.

Giant garter snake. The following measures will be implemented for the giant garter snake: (1) between April 15 and September 30 (the snake's active period), all ditches, canals, rice fields, and other aquatic habitats potentially occupied by giant garter snakes that are present on a construction site will be dewatered for a minimum of two weeks prior to ground disturbance to allow any snakes present to leave the vicinity; (2) to the extent practicable, initial grading and other ground disturbing activities in areas known to support giant garter snakes will be limited to the period between April 15 and September 30 to avoid taking garter snakes in their winter retreats; and (3) at least one week prior to planned dewatering of any aquatic habitats on a development site, the Service and CDFG shall be notified of such plans to allow the agencies to evaluate the potential for trapping and removal of giant garter snakes from the site and relocation to other habitat.

Swainson's hawk. The following measures will be implemented for the Swainson's hawk: (1) Swainson's hawk nests will be protected from the effects of urban development either by (in order of descending priority) avoiding the nest altogether (e.g., by designing the project to maintain the nest's integrity), avoiding disturbance of the nest during the nesting period, or

temporarily avoiding disturbance of an active nest site during the nesting season and then, if unavoidable, destroying the nest during the non-nesting season; (2) prior to commencement of construction activities, surveys will be conducted on all development sites to determine whether any active Swainson's hawk nests occur on the site or within 1/4 mile of the site; and (3) annual Swainson's hawk surveys will be conducted within the plan area (especially the Swainson's hawk zone) during the Swainson's hawk nesting season and the information will be used to assist the NBC, developers, and other landowners to avoid take of Swainson's hawks and unnecessary impacts to the hawks during their nesting cycle.

Other Covered Species. The NBHCP provides for a variety of measures to avoid take of the other covered species. These include avoidance of impacts to valley elderberry longhorn beetle habitat whenever possible (pursuant to the Service's mitigation guidelines for this species; see Project Description above), and, to the maximum extent practicable, avoidance of nest sites or colonies of the tricolored blackbird, white-faced ibis, loggerhead shrike, bank swallow, and burrowing owl during construction activities and during reserve management activities. Take of northwestern pond turtles will be avoided by dewatering aquatic habitats on development sites prior to construction. Take of vernal pool species will be avoided according to the take avoidance strategies specified at the time of any construction in the vernal pool areas and as described within then applicable mitigation guidelines (see Project Description above).

3. The Applicant will ensure that adequate funding for the Habitat Conservation Plan and procedures to deal with unforeseen circumstances will be provided.

The NBHCP specifies the funding to be provided by the landowners, urban development proponents, the City, and other potential permittees under the NBHCP to carry out the Plan. These are described below.

Mitigation Fee. The Plan will be funded primarily through collection of a mitigation fee for all urban development activities that occur within the plan area (except to the extent that such development is mitigated through other means, for example, the dedication of land). The fee will be applied on a per acre basis and be consistent with the Plan's 0.5 to 1 mitigation ratio (i.e., the total acreage for which the fee must be paid equals one-half of that portion of the acreage subject to development that is not otherwise fee exempt because of previous development or because it is set aside as habitat).

The NBHCP sets the "base" (or starting) mitigation fee at \$2,240 per acre. This base fee includes the following components: land acquisition (\$1,829), restoration/enhancement/monitoring (\$142), administration operations and maintenance (\$150), an endowment to support habitat operations and maintenance (\$75), and a portion for fee collection administration (\$44). The Plan also provides for fee increases as necessary to allow for revisions to the Plan as a result of any recovery plan recommendations (see Chapter IV, Section H of the NBHCP), and to ensure adequate funding for the acquisition,

management, and monitoring of habitat reserve lands at the 0.5 to 1 ratio. However, the Plan also imposes certain limits on fee increases. With respect to recovery plan adaptations and certain of the Plan's Adaptive Management features (see Chapter IV, Section G.5.b), the fee can increase by no more than 50% above the base fee throughout the term of the permit. However, with respect to maintaining the basic 0.5 to 1 mitigation ratio, fee increases are uncapped and must rise as necessary to meet this fundamental requirement.

Other Funding Sources. The Plan also provides for several supplemental funding sources. These are potential revenues that may be derived from the lease of hunting rights on some reserve system lands (e.g., managed marsh or uplands) and the lease of other reserve lands for rice farming. The amount of income these sources will actually generate for the Plan is uncertain for several reasons (e.g., because the extent to which hunting will be consistent with other reserve activities and the extent of rice land acreage that ultimately occurs within the reserve system is not precisely known). Nevertheless, funding from these sources are expected to generate some support for the Plan's mitigation program, and this, in turn, will help reduce or avoid increases in all or certain components of the mitigation fee described above. However, the Service emphasizes that, irrespective of the funding amounts actually provided by these sources, the City is required under the Plan to increase the mitigation fee as necessary to maintain the Plan's basic mitigation requirements. In other words, failure of hunting and rice farming to generate significant amounts of income for the Plan would not result in funding shortfalls.

Unforeseen Circumstances. Pursuant to the Department of the Interior's "No Surprises" policy (see Section IV of these findings), in the event of unforeseen circumstances affecting the 26 species covered by the NBHCP, the City would not be required to provide the commitment of additional land or financial compensation beyond that specified in the NBHCP.

4. The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

The ESA's legislative history establishes the intent of Congress that this issuance criterion be identical to a regulatory finding of "no jeopardy" under section 7(a)(2) [see 50 CFR § 402.03]. Pursuant to its obligations under section 7(a)(2) of the ESA, the Service reviewed proposed issuance of this section 10(a)(1)(B) permit to determine whether such issuance would jeopardize the continued existence of any of the covered species. In its biological opinion (Service 1997), incorporated herein by reference, the Service concluded that issuance of the incidental take permit to the City for urban development and other activities in the Natomas Basin is not likely to jeopardize the continued existence of the giant garter snake, Swainson's hawk, or other covered species addressed by the NBHCP.

5. Other measures, as required by the Director of the Service, have been met.

The HCP has incorporated all elements necessary for issuance of a section 10(a)(1)(B) permit and otherwise required by the Service.

6. The Director of the Service has received the necessary assurances that the plan will be implemented.

The permit applicant has prepared an IA for the HCP which will, prior to permit issuance, be signed by the applicant, the Service, and the CDFG. The IA is a legally binding agreement assuring the performance of the signatory parties. Compliance with the HCP and the IA would be included as a condition of the section 10(a)(1)(B) permit. Failure to perform the obligations specified in the HCP and IA would be grounds for suspension or revocation of the permit.

Alternatives Analyzed

Pursuant to section 10(a)(2)(A)(iii) of the ESA, the City analyzed three alternatives to their planned actions in the NBHCP: Alternative 1 (No Action); Alternative 2 (Alternative Reserve Management); and Alternative.3 (Alternate Proportions of Marsh and In-Basin Land).

Alternative 1. Under the No Action alternative, the City would not apply for or receive an incidental take permit. This would mean either that take in the City's portion of the Natomas Basin would need to be avoided by canceling most or all development plans, or that such development would be addressed under individual HCPs. The former is not considered feasible or necessary because: (1) the City and Counties have indicated their intent, through their general plans, to allow development in the Natomas Basin, and the City considers development in the North Natomas Community Plan Area to be necessary to provide an adequate housing mix for the City; and (2) the Service's March 11, 1994, biological opinion, as amended, on the Sacramento Area Flood Control Agency flood control project stated that the project would not jeopardize the continued existence of federally listed species provided that the affected jurisdictions develop an HCP to address development made possible by the project. This condition has now been satisfied. The other possible result of Alternative 1 (individual HCPs) is not considered advantageous for species affected by urban development in the Basin because case-by-case review would likely result in inefficient, piecemeal mitigation approaches, not the regionally integrated conservation program represented by the NBHCP. Alternative 1 was rejected by the City and other jurisdictions for these reasons.

Alternative 2. Under this alternative, the NBHCP would not allow hunting and/or rice production on any of the Plan's reserve lands. This would mean that supplemental revenues for the Plan's funding program potentially derivable from these sources would not be available, and that the Plan would be funded solely through its mitigation fee. While the latter is possible, and the City has made commitments to ensure adequate funding through the fee irrespective of any

supplemental funding sources, Alternative 2 was rejected as financially unacceptable. This is because even modest revenues from these activities can help fund the NBHCP's conservation program and help prevent the mitigation fee from rising to excessive levels (under the Plan, the mitigation fee is capped with respect to revisions resulting from future recovery plans but not with respect to maintaining the 0.5 to 1 ratio). In addition, the collection of revenues for hunting or rice production would help distribute the costs of funding the NBHCP across the community. Further, these activities would be allowed only if they are consistent with the reserve system's goals and objectives. In fact, rice farming is not only consistent with the Plan's objectives, but is considered an important habitat component for the giant garter snake. To summarize, allowing hunting and rice farming on reserve lands and collecting a fee for these activities would provide the NBHCP with several potential benefits (e.g., a funding source and habitat for the giant garter snake) without imposing any currently foreseen adverse consequences. The Plan thus retains these activities as part of its funding and conservation program.

Alternative 3. This alternative would allow mitigation lands established under the NBHCP's conservation program to be converted to managed marsh in larger proportions than currently specified (25%), and a higher percentage of out-of-Basin mitigation lands than currently specified (20%). These proportions were agreed to by the Service, the CDFG, and the City and Counties as a balance between biological factors and local economic, political, and social needs. According to local authorities, local acceptability of the Plan required a reasonable mitigation fee, limited uncertainty, minimal interference with existing agriculture, and minimal loss of tax revenue (see the NBHCP, Chapter V, Section F.3). Higher proportions of managed marsh and in-Basin mitigation land might exacerbate loss of productive agricultural land and potentially increase the economic impacts of the Plan (since in-Basin mitigation lands might cost more than out-of-Basin areas and result in some lands being taken off the tax rolls). On the biological side, these percentages may not be optimal but are considered by the Service to be within acceptable limits. However, all parties to developing the NBHCP agreed to a productive compromise on these issues. This compromise specifies that the proportion of managed marsh in the Plan's reserve system may, in the future, be increased to a maximum of 75% and that out-of-Basin mitigation land may be increased to a maximum of 50%, if a future Giant Garter Snake Recovery Plan approved by the Service makes any recommendations with respect to these issues (however, any increase in the mitigation fee as a result of these features is limited to 50% above the base, or starting, mitigation fee). Thus, while Alternative 3 was rejected, at least initially, the NBHCP allows its relevant features to be adopted, within limits, at a future time, if specified by any future Giant Garter Snake Recovery Plan and if biologically warranted.

IV. SPECIES ASSURANCES - ANALYSIS AND RECOMMENDATIONS

In addition to obtaining authorization for incidental take of the giant garter snake, American peregrine falcon, Aleutian Canada goose, Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool tadpole shrimp, vernal pool fairy shrimp, and valley elderberry longhorn beetle, the City is seeking assurances from the Service for incidental take coverage under the section 10(a)(1)(B) permit for 15 unlisted wildlife species (including the Swainson's hawk, white-faced

ibis, bank swallow, tricolored blackbird, greater sandhill crane, loggerhead shrike, burrowing owl, western spadefoot toad, northwestern pond turtle, and California tiger salamander), should they be listed pursuant to the ESA in the future. It is clear from the legislative history that HCPs may cover both listed and unlisted species [see H.R. No. 835, 97th Cong., 2nd session 30-31 (1982) (1982 Endangered Species Act Amendments Conference Report)]. Unlisted species covered in the NBHCP are subject to the same substantive requirements under the ESA as listed species.

Further, the City is seeking assurances from the Service of no additional mitigation for the covered species addressed under the NBHCP in the event of unforeseen circumstances in the future. The purpose of the Department of Interior's "No Surprises" policy, dated August 11, 1994 ("No Surprises/Assuring Certainty for Private Landowners in Endangered Species Act Habitat Conservation Planning"), is to provide assurances to non-Federal landowners participating in habitat conservation planning that the Service will not require the commitment of additional land or financial compensation beyond the level of mitigation which was otherwise adequately provided for a species under the terms of a properly functioning HCP. Moreover, the Service will not seek any other form of additional mitigation from an HCP permittee except under extraordinary circumstances. Species are considered to be adequately covered if all HCP requirements under the ESA have been included and if all ESA section 10 issuance criteria have been met. In biological terms, this means that for an applicant to receive assurances, an HCP must allow for the long term survival of the affected species. Allowing for long term survival will ensure that progress towards recovery of listed species is being made and that threats to unlisted species are being removed.

In its December 17, 1997, biological opinion, the Service concluded that the proposed action of issuing an incidental take permit to the City would not jeopardize the continued existence of the 26 covered species addressed by the NBHCP. The measures proposed in the NBHCP to mitigate take of the 11 listed species are expected to ensure that the Plan's activities will allow for the long term survival of these species. The measures proposed in the HCP to mitigate take of the 15 unlisted species are expected to ensure that the Plan's activities will not contribute to the need to list these species in the future.

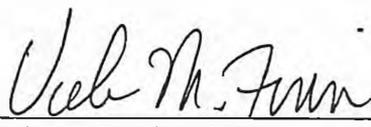
V. GENERAL CRITERIA AND DISQUALIFYING FACTORS - FINDINGS

The Service has no evidence that the permit application should be denied on the basis of criteria and conditions set forth in 50 CFR 13.21(b)-(c).

VI. RECOMMENDATION ON ISSUANCE OF PERMIT

Based on our findings with respect to the permit application and the NBHCP, the Service recommends issuance of the section 10(a)(1)(B) incidental take permit PRT-823773 to the City for incidental take of the federally listed giant garter snake, American peregrine falcon, longhorn fairy shrimp, Conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp,

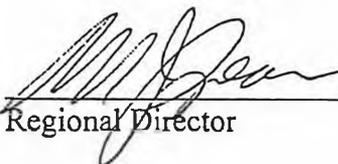
valley elderberry longhorn beetle, and Aleutian Canada goose in accordance with the NBHCP. The Service also recommends providing permit coverage for the unlisted Swainson's hawk, white-faced ibis, bank swallow, tricolored blackbird, greater sandhill crane, loggerhead shrike, burrowing owl, northwestern pond turtle, California tiger salamander, and western spadefoot toad should these species be listed in the future, effective upon listing, and permit coverage for Colusa grass, Sacramento Orcutt grass, slender Orcutt grass, delta tule pea, Bogg's Lake hedgehyssop, Sanford's arrowhead, and legenera, should any destruction of these plants during urban development and other activities in the Natomas Basin be regarded as take under the definitions of take in the current or any future ESA. Further, I recommend assurances of no further mitigation requirements from the permittee for the 26 species listed above pursuant to the "No Surprises" policy.



Acting Assistant Regional Director

12/31/97
Date

Concur:



Regional Director

12/31/97
Date

REFERENCES CITED

City of Sacramento. 1997. Natomas Basin Habitat Conservation Plan. HCP developed in cooperation with Sacramento and Sutter Counties, dated November 1997. Sacramento County, California.

U.S. Fish and Wildlife Service. 1997. Biological opinion on proposed issuance of an incidental take permit (PRT-823773) to the City of Sacramento for urban development in the Natomas Basin, Sacramento County, California, dated December 17, 1997. File number 1-1-97-F-12.

**ATTACHMENT 1
RESPONSE TO COMMENTS ON THE
NATOMAS BASIN HABITAT CONSERVATION PLAN**

Fish and Wildlife Service
December 30, 1997

Introduction

The Service provided two public comment periods for the Natomas Basin HCP (NBHCP or Plan). A 45-day comment period was announced in the *Federal Register* on January 15, 1997, and closed on March 1, 1997. Based on the comments received, the Service recommended numerous revisions to the NBHCP; these changes were incorporated into a June, 1997, draft of the Plan. A 21-day comment period, later extended to 30 days, was subsequently announced in the *Federal Register* on June 18, 1997, and closed on July 18, 1997. A final NBHCP was completed in November, 1997; this version addressed numerous additional comments that were received during the second comment period.

Public comments received during these two comment periods were voluminous and, in many cases, highly detailed, filling many hundreds of pages. Based on our review of these comments, the Service identified six major issues that are representative of comments questioning or opposing the proposed action.

Response to Comments

Issue 1: Funding

Numerous commenters objected to the reliability of the NBHCP's funding mechanisms, particularly with respect to the following concerns: (a) that the 50% cap on increases to the Plan's mitigation fee could prevent full implementation of the terms of the Plan; (b) that the cost estimates for creating managed marsh wetlands are unrealistic and that their true costs will not be met by the Plan (commenters cited an analysis by the Center for Natural Lands Management stating this opinion); (c) that the Plan depends too much on revenues from hunting programs on reserve lands, which will be severely constrained by limitations resulting from airport safety considerations (see comment 1.c below); (d) that costs for monitoring have not been adequately considered in the fee or the Plan; and (e) that the fee will increase dramatically in the later years of the permit and become unaffordable to later landowners who wish to develop at that time.

Response:

(a) There was confusion in the November, 1996, draft NBHCP documents as to what aspects of the conservation program were subject to the fee cap and which were not. The June, 1997, draft and final NBHCP clarify this situation as follows. Fee increases as a result of significant modifications to the Plan due to any future giant garter snake or Swainson's hawk recovery plans (e.g., the proportion of rice lands to managed marsh), and certain Adaptive Management

provisions (e.g., any significant modification to marsh configurations or design as described in the Plan) are subject to the 50% cap. However, the fee is uncapped with respect to the City's obligation to acquire, manage, and monitor mitigation lands at the basic 0.5-to-1.0 mitigation ratio; it is also uncapped with respect to any technical modifications to management and monitoring strategies that arise as a result of ongoing monitoring and research programs that are incorporated under the Plan's Adaptive Management program.

(b) Various cost estimates for acquiring, enhancing, and managing mitigation lands, especially managed marsh wetlands, have been submitted to the Service. These vary from a minimum of \$315 per acre (Service Refuges Division estimate) to a maximum of \$7,994 per acre (Center for Natural Lands Management estimate). The Service believes that, in fact, the exact costs are difficult to estimate because land values in the Natomas Basin may change significantly over the life of the Plan, and, regarding the cost of constructing wetlands, the marsh design best suited for the giant garter snake is not well understood. The NBHCP does not specify marsh designs but establishes general guidelines and otherwise allows the Plan Operator, the Natomas Basin Conservancy (NBC), in consultation with the Service, the California Department of Fish and Game (CDFG) and species experts, to develop marsh designs during Plan implementation. In any case, the Service believes the Plan's funding structure is adequate to acquire, enhance, and manage its required mitigation lands for the following reasons. First, the City is required to raise the mitigation fee as necessary to acquire, manage, and monitor reserve lands at the 0.5-to-1.0 ratio; thus, the fee must respond to whatever conditions, economic or otherwise, that exist at the time the Plan is being implemented. Second, the Plan allows up to 20% (50%, if recommended by the any future Giant Garter Snake Recovery Plan) of mitigation lands to be purchased outside the Basin, where land values may be cheaper. Third, the Plan currently requires only 25% of wetland mitigation lands to be in managed marsh (the other 75% in rice), and rice lands will require little restoration; however, the restoration component of the fee will be collected for each acre of mitigation land established. This means the funds available for constructing managed marsh will be effectively much higher than the value of the restoration component of the fee alone (\$284 per acre), since that portion of the fee that would otherwise be used on rice lands can be applied to restoration costs for managed marsh.

(c) The emphasis in earlier Plan drafts on marsh lands that can support waterfowl populations and reliance on waterfowl hunting revenues has been significantly revised. First, the Plan now clearly cites the recently released Federal Aviation Agency Advisory Circular on avian hazards and requires the NBC to coordinate with the Airport Manager prior to approving any reserve management plans. Second, the NBHCP de-emphasizes reliance on hunting revenues and requires increases in the mitigation fee to meet all of the Plan's cost requirements (with the exceptions noted in comment 1.a above). The NBHCP still cites hunting revenues as potential funding sources, but they are now supplemental to its fee program and in no way substitute for the fee.

(d) The NBHCP's monitoring costs will be paid through the mitigation fee as discussed under "Restoration/Enhancement/Monitoring" in Chapter IV, Section G.5.a of the Plan. Exact

monitoring costs under the Plan are difficult to predict, since they have been made adaptable to circumstances and needs not determinable until Plan implementation. However, the City is required to raise the fee as necessary to meet the costs of the Plan's monitoring requirements as described in Chapter IV, Section F. Although it is true that monitoring costs were not included in cost estimates within earlier drafts of the Plan, the fee structure discussed above is flexible enough to correct for this. The Service therefore concludes that the NBHCP's monitoring costs will be satisfied under the Plan.

(e) Whether or not the mitigation fee increases dramatically over the term of the permit will depend on many factors, including, but not limited to: (1) land values in the Natomas Basin; (2) the actual costs of constructing managed marshes; (3) the amount of mitigation land allowed to be purchased out-of-Basin; (4) the amount of mitigation land to be in managed marsh versus rice; and (5) Plan revenues that may be available through rice farming and hunting leases. It is extremely difficult to predict how any of these factors may play out over the term of the permit. Thus, the possibility must be recognized that the fee might increase to levels that would strain the resources of some landowners. However, the NBHCP contains numerous adaptive features that can influence and limit the costs of the Plan, including the mitigation fee caps and other measures discussed throughout this section. Thus, the Service believes the fee can be expected to remain within reasonable limits throughout the term of the permit.

Issue 2: Swainson's hawk mitigation

Several commenters on the November, 1996, and June, 1997, drafts of the NBHCP expressed concerns about the adequacy of the Plan's mitigation program for the Swainson's hawk. The following specific issues were raised: (a) that the Plan (November, 1996, version) generally fails to evaluate adequately the impacts of development in the Natomas Basin on the Swainson's hawk, and that the Plan's assumption (June, 1997, draft) that a "probable level" of 5,000 acres of Swainson's hawk foraging habitat could be developed is underestimated; (b) that development levels in the Swainson's hawk zone are unspecified in the Plan, raising the possibility that, based on the 0.5-to-1 ratio, up to two-thirds of this crucial nesting area could be developed; (c) that mitigation obtained only in the Swainson's hawk zone, and not elsewhere in the Plan area, would not be adequate to sustain the Basin's Swainson's hawk nesting population in the future; (d) that the Swainson's hawk zone does not include up to 22 Swainson's hawk nests that occur west of the Sacramento River levee (which is outside this zone, as previously defined in the Plan); (e) that the NBHCP does not adequately explain how loss of Swainson's hawk nest trees will be prevented; and (f) that the NBHCP does not adequately describe survey activities that have been conducted in the past or required survey activities needed in the future to adequately determine take levels during NBHCP implementation.

Response:

(a) The analysis of urban development impacts in the Natomas Basin on the Swainson's hawk has been expanded and improved in the final NBHCP, but the amount of hawk habitat likely to

be lost under the Plan remains subject to some uncertainty. The NBHCP acknowledges that estimating the amount of hawk habitat likely to be lost to urban development is difficult because the foraging ranges of Swainson's hawks nesting in the Basin and the precise location of future urban development in the Basin are unknown. However, the Plan assumes that the greatest adverse impact to the Swainson's hawk that could occur under the Plan (i.e., development of significant portions of the Swainson's hawk zone) is unlikely to occur (see response to comment 2.b below). It also assumes that urban development outside the Swainson's hawk zone will be adequately mitigated for (see response to comment 2.c below). As to the 5,000 acres referred to in earlier drafts of the Plan as the amount of Swainson's hawk habitat likely to be lost to development in the Basin, this figure was erroneous and has been removed from the Plan. In addition, regarding the likely impacts of the NBHCP on the Swainson's hawk, and the uncertainties associated with the amount and location of development in the Basin, the Service believes that the Plan's many corrective features (e.g., its Adaptive Management and monitoring programs discussed under Chapter IV, Sections E and F of the NBHCP, respectively; Swainson's Hawk Recovery Plan adaptation provisions in Chapter IV, Section H; and the 9,000-acre midpoint review process described in Chapter IV, Section I) will ensure that the status of Swainson's hawks in the Natomas Basin will be appropriately tracked and monitored, that mitigation for effects of urban development on the hawk will be commensurate with the extent of those effects, and that the NBHCP will continue to provide for the long-term habitat needs of the Swainson's hawk in the Natomas Basin.

(b) Although it is true that development in the Swainson's hawk zone is not explicitly limited by either the NBHCP, the permittee (the City of Sacramento), or potential permittees (Sacramento County or Sutter County), the Plan has been revised to increase assurances that the Swainson's hawk zone will not be developed at the two-thirds level theoretically allowed by the mitigation ratio. The Plan now states that development in the Swainson's hawk zone will be more limited than the theoretical two-thirds because: (1) the City's and Counties' general plans do not currently designate this area for development; and (2) the Plan requires that the Plan Operator (the NBC) track urban development in the Swainson's hawk zone in order to minimize the loss of foraging habitat there, acquire or protect sufficient foraging habitat to support successful Swainson's hawk nesting in the zone, and prevent a net loss of nesting habitat in this zone. The Plan also sets as a top priority the acquisition of upland habitats in the Swainson's hawk zone. Thus, although protection of the Swainson's hawk zone at some explicit level is not absolutely ensured by the NBHCP's terms, the Plan provides clear direction as to its goals and intent toward this area, and provides for corrective measures should problems develop in meeting these goals (see response to comment 2.a above).

(c) The NBHCP's conservation objectives for the Swainson's hawk include the retention and creation of sufficient quality nesting and foraging habitat to maintain existing Swainson's hawk population levels in the entire Plan area, not just the Swainson's hawk zone, and the prevention of disturbance to Swainson's hawk nest trees throughout the Plan area. The Plan also prevents acquisition of Swainson's hawk mitigation lands outside the Natomas Basin (i.e., all Swainson's hawk mitigation must occur in-Basin), and provides a priority system for selection of mitigation

sites in which sites outside the Swainson's hawk zone are listed as the third priority out of four options (see page IV-28 of the Plan). Thus, although the NBHCP properly focuses mitigation within the crucial Swainson's hawk zone, it by no means ignores mitigation options outside the Swainson's hawk zone.

(d) The NBHCP's definition of the Swainson's hawk zone (see Chapter IV, page IV-26) has been revised to include all Swainson's hawk nest trees along the Sacramento River that are outside of, but immediately adjacent to, the NBHCP plan area. Thus, all Swainson's hawk nest trees within the NBHCP's formal boundaries, or that have all or part of their foraging ranges within the plan area, are now included within the mitigation and protections of the Plan.

(e) The NBHCP has been revised to expand and clarify its Swainson's hawk nest protection measures. These now include pre-construction and other surveys to determine nest presence and status (see comment 2.f below), specific nest site protection measures and priorities that seek to preserve nest trees wherever practicable (see page IV-39 of the Plan), and, where necessary, establishment of buffer zones around nests to limit the effects of construction-related disturbances to Swainson's hawk nests.

(f) The NBHCP has been revised to include expanded Swainson's hawk survey requirements. These include pre-construction surveys to determine whether any Swainson's hawk nesting or foraging activities occur on a proposed project site (see page IV-30 of the Plan); and annual Swainson's hawk surveys to determine numbers of Swainson's hawks nesting in the Natomas Basin, locations of nest trees, annual nesting success, estimates of prey densities at various locations within the plan area, and identification of agricultural fields providing good foraging habitat (see pages IV-29, IV-30, and IV-37 of the Plan). The NBHCP has also been revised to include descriptions of Swainson's hawk survey activities conducted between 1990 and 1992 by the Service and the Army Corps of Engineers; these survey results are expected to help establish a baseline for comparison of Swainson's hawk status prior to NBHCP implementation and post-NBHCP implementation (see page II-16 of the Plan).

Issue 3: Relative importance of rice lands versus managed marsh for giant garter snakes

One commenter objected that the NBHCP relies too heavily on use of rice lands as mitigation for giant garter snakes, stating that the Plan bases recovery of the giant garter snake almost exclusively on the acquisition of rice fields and considers habitats with more natural conditions to be of lesser value for this species. This commenter also criticized that the NBHCP lacks a scientific basis for these assumptions. Conversely, another commenter criticized that the NBHCP relies too heavily on open managed marsh lands, stating that the value of these habitats (i.e., constructed marshes) for giant garter snakes are unproven and that giant garter snakes have failed to colonize or inhabit locations where artificial marshes have been previously constructed. The latter commenter also objected that some design features suggested by the November, 1996, and June, 1997, versions of the NBHCP could result in conditions detrimental to the garter snake (e.g., year round pond habitats being surrounded by mudflats), and that the Plan proposed no

criteria for selecting or managing rice land habitats for giant garter snakes. Both these commenters also objected that the NBHCP's plans for waterfowl management and hunting may not be consistent with its plans for giant garter snake management.

Response:

The Service is fully aware of these differences of opinion about the relative value of rice lands versus managed marshes for giant garter snake survival and recovery. Furthermore, the Service acknowledges that the precise relationship between giant garter snake survival and its use of these two habitat types is unclear. However, the Service also believes that the NBHCP appropriately attempts to provide a balance, both between the relative value and use under the Plan of these habitat types, and between what is known now and what might be known in the future about this issue.

Specifically, under its current terms the NBHCP allows up to 75% of wetland mitigation lands to be in rice lands and 25% to be in managed marsh. However, it also allows this proportion to be revised to include up to 75% managed marsh and 25% rice land, provided that the Service's Giant Garter Snake Recovery Plan, when approved, provides pertinent information on the relative value of these habitat types. This means that the proportions of rice lands versus marsh used under the Plan's mitigation program will be adjusted through time to account for new information on this issue, and that a critically important document, the species recovery plan, will be utilized in making any such future decisions. Furthermore, the NBHCP does not at this time specify an exact configuration or design for managed marsh wetland mitigation lands. Rather, it suggests guidelines for managed marsh construction, based on currently available information, but directs the Plan Operator, the NBC, to modify and adjust such designs based on any new information that may become available from the Plan's monitoring program, new research by species experts, the recovery plan, or any other appropriate source. Such design modifications could be incorporated into the Plan through its Adaptive Management provisions or through the 9,000-acre mid-point review process. In conclusion, the Service believes the NBHCP is both realistic about the uncertainties associated with this issue and provides the flexibility to respond to these uncertainties through the incorporation of new information when necessary and appropriate.

As for the comment that the NBHCP lacks a scientific basis to support the above provisions, the Service disagrees. The Service notes, first, that the biological background section in the Plan (Chapter II) has been revised and expanded considerably to better discuss what is currently known and unknown within the scientific community about this particular issue. The Service also notes that the views of several giant garter snake or herpetological experts were solicited in its review of this Plan. These include the wildlife biologists who submitted the above comments, a herpetological expert on the Service's staff, and a researcher of the Biological Resources Division of the U.S. Geological Survey, who is currently undertaking critical research efforts on the giant garter snake. The latter individual spent several hours with Service staff discussing the results of his research and the merits of the NBHCP. Finally, the NBHCP takes into account all

or most currently available written reports on the giant garter snake that are pertinent to the effects of the NBHCP on this species and the associated mitigation measures included in the Plan.

Regarding the comments about specific managed marsh designs, those features objected to by the commenter (e.g., year round pond habitats being surrounded by mudflats) have been deleted from the NBHCP. Also, the Plan now includes criteria for selecting and managing rice land mitigation lands (see pages IV-18 to IV-19 of the Plan), and all references in the Plan suggesting that waterfowl management might take precedence over management of the covered species have been deleted.

Issue 4: Relative importance of irrigation ditches to giant garter snakes

Northern Territories, Inc., a consortium of landowners in the Natomas Basin, provided comments during both comment periods and also in a separate mitigation proposal. They believe that the NBHCP overestimates the value of rice lands to the giant garter snake and that it is the irrigation ditch component in the Natomas Basin that is most important to giant garter snakes. In April, 1997, Northern Territories submitted a mitigation proposal to Sacramento County in which a marsh configuration called "narrow channel marsh" was alleged to have greater habitat value than either rice lands or more open water marsh designs.

Response:

This issue is similar to that discussed in comment 3 above, in that professional differences exist about the relative importance of irrigation ditch versus other habitat types for the giant garter snake. The Service and the CDFG responded to Northern Territories' narrow channel marsh proposal in a joint letter dated July 15, 1997. In this letter the agencies stated that while the narrow channel marsh design has merit, its high cost (five to seven times more expensive than open water marsh) and unproven capabilities make it inadvisable to adopt the proposal as an alternative to the NBHCP. However, at the same time the Service recognizes that the relative value of irrigation ditch habitat compared to rice land and managed marsh habitat to giant garter snakes is not resolved. Existing data on the issue are somewhat ambiguous. On the one hand, giant garter snakes do not typically inhabit agricultural habitats where rice is not grown; on the other hand, giant garter snakes in the Natomas Basin spend much of their time in the irrigation ditches and drains.

The NBHCP (Chapter II, Biological Background) has been revised to include a more careful discussion of this issue. This Chapter now has separate sections addressing seasonal and permanent marsh, rice fields, and irrigation ditches and canals as distinct giant garter snake habitat types or components. It also states that the relationship of these garter snake habitat types to each other and their relative importance to the species is not fully understood, and that further studies are needed to clarify these relationships. The Plan's mitigation program (Chapter IV) also acknowledges the lack of certainty about optimum giant garter snake habitat designs. It

does so through the Plan's numerous corrective features, including its monitoring program, Adaptive Management provisions (including those allowing for revision of the marsh configurations and designs suggested by the Plan), recovery plan adaptation provisions, and its 9,000-acre program review. In short, these features not only allow but require the Plan to adapt to new information concerning the crucial issue of giant garter snake habitat needs and preferences.

Issue 5: Adequacy of the biological monitoring program

Several commenters objected that the NBHCP's biological monitoring program was highly inadequate, that certain statements about the susceptibility of covered species to adverse monitoring effects were inaccurate, or that some proposed monitoring proposals were unneeded or inappropriate.

Response:

The Service agrees that the monitoring program described in the November, 1996, and June, 1997, versions of the NBHCP was inadequate and sometimes inaccurate. To correct this, the Plan's monitoring section has been extensively re-written. It now requires two types of monitoring, periodic multi-species inventories across the Plan's entire system of reserve lands, and, when necessary, focused efforts to assess the effectiveness of specific management and enhancement programs. The Plan does not describe specific monitoring methodologies, but outlines scientifically valid monitoring parameters and suggests a variety of techniques. Beyond that, it allows the Plan Operator (the NBC) in consultation with its Technical Advisory Committee, to develop and establish specific details of the Plan's monitoring program. For more information, refer to Chapter IV, Section F of the NBHCP.

Issue 6: Adequacy of the covered species list

Several commenters questioned the NBHCP's covered species list, stating that the conservation measures described by the Plan for some covered species were inadequate, or that some species covered by the Plan were unlikely to occur in the Plan area.

Response:

The Service agrees. The November, 1996, version of the NBHCP was unclear as to what species were to be covered by the proposed State and Federal permits and what species were not to be covered. This was corrected in the June, 1997, draft of the Plan with a definitive list of covered species. In addition, discussion of conservation measures to be implemented for unlisted species proposed for coverage under the Plan was expanded in the June, 1997, draft. This process of refining the species list and improving the Plan's conservation program for its unlisted species was continued during preparation of the final NBHCP dated November, 1997. First, a number of plant species were deleted from the covered species list because the plan area is now thought to

be unlikely to contain their habitat. These species include the Hoover's spurge, bird's beak, Ahart's dwarf rush, Greene's tuctoria, and hairy orcutt grass. Second, conservation measures for the remaining unlisted species were expanded still further. In some cases, this involved the addition of specific measures (e.g., avoidance of nesting colonies); in other cases (e.g., the western spadefoot toad, California tiger salamander, and northwestern pond turtle), the NBC is now directed by the Plan to consult with its Technical Advisory Committee and species experts during implementation of the Plan to determine what, if any, conservation opportunities for these species may exist within the Plan's proposed reserve system, in addition to those already described. Such measures help ensure that the Plan will adapt to include conservation opportunities for all its covered species, as appropriate, throughout the life of the Plan and its associated permits.