EXHIBIT A

DEPARTMENT OF THE ARMY PERMIT

Permittee:

Dorothy C. Dolan
Pima County Department of Transportation and Flood Control District
201 North Stone Avenue, 3rd Floor
Tucson, Arizona 85701

Permit Number: 974-0474-RJD

Issuing Office: Los Angeles District

Note: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To construct and maintain/reconstruct; 1) an upstream diversion structure with maximum dimensions of 300 feet long by 30 feet wide by 4 feet high, 2) a downstream diversion structure and intake pipe, and 3) if necessary, a channel to redirect effluent flows toward the upstream diversion structure. Additional details are shown in the enclosed figures.

Project Location: In Santa Cruz River at (Sections 3 and 4, T12S, R11E and Section 33, T11S, R11E), Marana, Pima County, Arizona.

Permit Conditions

General Conditions:

1. The time limit for completing the authorized activity ends on October 15, 2004. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the
above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification from this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished with the terms and conditions of your permit.

Special Conditions: See attached sheet.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

   ( ) Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403).

2. Limits of this authorization.
   a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
   b. This permit does not grant any property rights or exclusive privileges.
   c. This permit does not authorize any injury to the property or rights of others.
   d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
   a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
   b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
   c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
   d. Design or construction deficiencies associated with the permitted work.
   e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
   a. You fail to comply with the terms and conditions of this permit.
b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measure ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give you favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

\[Signature\] 10.28.99
(Permittee) Dorothy C. Dolan
Project Manager, Deputy Director

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

\[Signature\] 11.3.99
Richard J. Schubel
Chief, Regulatory Branch
(for the District Engineer)

When the structures or work authorized by this permit are still in existence at the
time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE)  (DATE)
SPECIAL CONDITIONS
PERMIT NO. 974-0474-RJD

a. The permittee shall comply with all requirements and conditions in the state water quality certification that the Arizona Department of Environmental Quality signed on August 23, 1999. This certification demonstrates that the permittee has complied with Section 401(a) of the Clean Water Act. A copy of this letter is enclosed.

b. The permittee shall fence archeological site AZ AA:12:127 and confine all construction or other project activities to the floodplain east of the fence.

c. The permittee shall conduct monitoring and implement adaptive mitigation measures to control the bird-strike safety threat to aircraft using the Avra Valley Airport. The permittee shall follow the bird-strike safety measures mentioned in the enclosed pages 23-26 taken from the Marana High Plains Effluent Recharge Project, Final Environmental Assessment.
UPSTREAM DIVERSION
(not to scale)

DOWNSTREAM DIVERSION
(not to scale)

CROSS-SECTIONAL VIEWS

Applicant: Pima County Flood Control District
201 N. Stone Avenue, 4th Floor
Tucson, Arizona 85701

PROPOSED EFFLUENT DIVERSIONS FOR THE HIGH PLAINS EFFLUENT RECHARGE PROJECT
SANTA CRUZ RIVER
PIMA COUNTY, ARIZONA

Pima County Department of Transportation and Flood Control District
974-0474-RJD
Figure 3 of 3
If mosquitoes become a problem, the Pima County Health Department will be consulted regarding the use of larvicidal bacteria. Bat boxes will be added to the site due to their lack of utilization by bats at other sites in Pima County. Arizona Game and Fish Department (AGFD) believes that bats may not use the boxes because of excessive heat build-up in the boxes during the summer (Mayor and Council memorandum, March 6, 1997).

Potential Bird-Strike Hazard Issues

The Project area is less than 1 mile north of the nearest runway at the Avra Valley Airport. Birds can pose a safety threat to aircraft. Birds may congregate on runways, or birds may use the same airspace as airplanes. When aircraft collide with birds (bird strikes), considerable damage to aircraft can occur (Solomon, 1973). This recharge project is near an airport, vegetation will be increased slightly, and given that birds are attracted to fresh water for drinking, there is concern over the potential to increase bird strikes.

Pima County owns and operates the Avra Valley Airport (AVA). The Real Property Division (RPD) oversees airport planning, construction, maintenance, and operation. The PCFCD has fully informed the Pima County RPD about the Project. The RPD also reviewed an early version of this EA and provided comments. These comments have been incorporated, and the PCFCD continues to consult with the RPD to help assure the continued safe operation of the AVA. In response to comments on the draft EA, the PCFCD, in consultation with the RPD, the Federal Aviation Administration (FAA), and a consulting biologist, has prepared a bird-strike analysis and mitigation plan (Entranco, 1997). Because of many unknown variables, the potential change in bird-strike risk between existing conditions and the proposed action has not been quantitatively assessed. However, the information below summarizes key issues related to bird strike hazards.

The AVA is a general aviation airport with two paved runways. In 1996, there were an estimated 1,665 aircraft operations annually, composed of 71 percent local general aviation and 25 percent transient general aviation. Small amounts of air taxi and military flights comprise the remainder. The majority of aircraft operating from AVA are piston-engine powered. About 10 percent of the aircraft are turbine powered. There have been six reported bird-strike incidents at the airport during the period 1990-1997, resulting in minor property damage only (see Entranco, 1997). The airport has not taken wildlife control measures at this time.

The Water Resources Research Center (1996), University of Arizona, prepared a report for Reclamation that discussed the various risks of bird-strikes in the area. Most bird strikes do not result in loss of life but can result in considerable property damage (Burger, 1983). The 1996 study concluded that bird-strike risk is dependent upon many factors including type, size, altitude, flight phase, and flight path of the aircraft; and types, numbers, and behavior of birds present. Water at the end of runways is considered a risk factor. This proposed recharge project is not sited at the end of a runway but is beneath the flight path. Turbo powered aircraft and military aircraft are generally at highest risk for bird strikes. Most aircraft using the AVA do not fit into these categories. Birds most likely to be involved in collisions with airplanes are geese, ducks, gulls, shorebirds, owls and and small-sized flocking species such as starlings, sparrows, swallows, and buntings. It was reported that gulls pose the most serious threat to aircraft (Murton and Wright, 1968).

Various birds already occur in the general area, in the existing riparian habitat, and in existing areas of open water (see Entranco, 1997). Existing habitat includes the Avra Valley recharge project, located 2000 feet north of the AVA, which began operation in August of 1996. Existing bird populations would include waterfowl, shorebirds, and birds attracted to agricultural fields. Very few gulls occur in the area. Existing bird populations fluctuate seasonally and may also
change when surrounding agricultural lands change cropping patterns. There is no indication at this point in time, that the existing Avra Valley recharge project, which is larger than the proposed project, significantly altered bird-strike risk. The proposed Project is not likely to significantly increase bird populations because the existing riparian area is not likely to expand, and because the Project is small. This proposed Project could, however, temporarily redistribute local, existing populations of waterfowl and shorebirds to the recharge basins.

Environmental enhancements associated with this Project are relatively small and local, and, therefore, are not expected to attract birds in large numbers. The intent of the enhancement included choosing vegetation that would attract neotropical birds like tanagers that do not pose a bird-strike hazard. The frequency of wet-dry cycling at this recharge project will likely discourage new resident bird populations at the recharge basins. Based on the bird-strike analysis (Entrancio, 1997) and consultations with the FAA and RPD, monitoring and adaptive mitigation measures for potential bird-strike hazards were developed and are described in the following mitigation section. FAA reviewed these monitoring and adaptive mitigation measures and had no further comment. (See letter dated March 3, 1998, in Appendix C).

Monitoring and Adaptive Mitigation Measures for Potential Bird-Strike Hazard

The PCFCD will implement a bird mitigation program based on frequent bird monitoring observations of the project basins and grounds. The purpose of bird monitoring is not an attempt to prove or disprove an increase in bird numbers locally as a result of the Project. The purpose of bird monitoring will be to gather data upon which mitigation actions will be based.

Workers who visit the project site regularly will be trained twice yearly in a standardized data gathering method for making and recording bird-use observations. Birds observed will be classed into one of the FAA categories and identified to species if possible. Bird behavior (e.g., roosting, feeding, soaring, etc.) will also be recorded as a check-off on a standardized form. Data gathered will be compiled and summarized on a weekly basis by the PCFCD project manager to determine the number and types of birds using the site. During compilation, the data will be examined to assure that workers are using the standardized method and to insure that birds are assigned to the correct class.

Weekly data compilations (the action standard) will be filed with the RPD, who manage the airport. Quarterly reports on bird data, action taken, and results will be sent to FAA, the RPD, the AVA Fixed Base Operators and Central Arizona Water Conservation District. Bird observers will receive refresher training at least once each year, or if regular analysis of field data forms indicates poor performance. Near the end of the 2-year life of the pilot project, the project manager will discuss any plans for continuation of the project with the RPD and the AVA Fixed Base Operators.

Mitigation measures to deter bird use will be triggered at defined thresholds of bird type and numbers (Table 4). Each weekly data compilation will determine the mitigation action. Thus, mitigation actions will be implemented on a weekly basis, depending on the data gathered and the threshold action criteria (see below). Once implemented, a given mitigation action will be continued for at least a 2-week period to determine its effectiveness in reducing bird use. If, after 2 weeks of mitigation action, the numbers of a target bird group are not reduced to below the threshold, the next action level will be implemented. A given mitigation level will not be discontinued until the target bird numbers are below the action threshold. Should bird use reach higher action thresholds during the 2-week period, the next level of mitigation will be implemented as soon as it is triggered.
Action thresholds will vary seasonally in response to the more active runway at AVA and the seasonal nature of some bird occurrences (e.g., waterfowl and wading birds). This plan takes into account the active runway at AVA, given local wind conditions. Birds that do not pose a threat are not harassed. If birds are routinely (always) forced to move from the Project, despite the active runway at AVA, they may move to other locations that pose a greater hazard for the active runway, for example, the Avra Valley Recharge Project or nearby agricultural fields. Bird control efforts in the entire AVA area (e.g., this Project and the Avra Valley Recharge Project) need to be coordinated in such a way that birds are not frightened from one facility only to move to another, increasing the bird-strike threat there. Where possible, operational features of the project may be adjusted to mitigate bird use depending on the experimental observations of recharge rates and basin conditions.

Mitigation Level 1

Mitigation level 1 includes passive actions to discourage bird use. Most of these methods mimic natural enemies of birds, evoke avoidance responses, or are frightening to birds. These include models of predators (hawks, owls, mammals), wind-generated, moving scare devices (foil, scarecrows, etc.), and mechanical movement devices. Birds habituate rapidly to these methods, therefore, variation in their use and timing is important for maximum effect. These devices and methods do not require State or Federal permits.

Mitigation Level 2

Mitigation level 2 includes passive and active means of interfering with bird use of an area. Active measures include: physical barriers (e.g., wires strung across water or perches), removal of attractive features (e.g., perches, posts and etc.), and manipulating operational features of the project (e.g., basin wet/dry cycle) where feasible and consistent with the project goals. Level 2 measures may cause bird injury or fatalities, and, therefore, will require State and Federal permits for “take” of migratory birds. Migratory Bird Permits are issued on an annual basis from the Service and AGFD by application. Federal and State Permits will be acquired by the PCFCD, in advance, for all potential actions under this plan.

Mitigation Level 3

Mitigation level 3 includes level 2 measures and active means of frightening birds from an area. These may include: pyrotechnic devices, noise making devices, high-pressure water sprays, and disrupting lights and sounds at night. Included in this level are adjusting operational aspects of the project outside of the planned recharge mode, including adjusting wet/dry cycles and water depths, and drying out the basins. Level 3 measures may require State and Federal permits, as outlined above. Some of these measures (e.g., pyrotechnic devices) may conflict with local ordinance.

No Action

Under the No Action Alternative, the riparian area would continue as it is unless the existing diversion is removed. If this occurred, then the riparian area would eventually dry up. The habitat value of the surrounding area is not particularly high and would remain unchanged. The potential environmental benefits associated with this particular recharge design would not occur. Potential issues associated with bird strikes and mosquitoes would remain unchanged (i.e., there are now birds and mosquitos in the area using the existing habitats).
Table 4. Mitigation action thresholds and mitigation level for the High Plains Effluent Recharge Project

<table>
<thead>
<tr>
<th>BIRD TYPE</th>
<th>ACTION NUMBER</th>
<th>SUMMER (Runway 12 less active)</th>
<th>WINTER (Runway 12 more active)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterfowl</td>
<td>≤6</td>
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<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;6&lt;12</td>
<td>none</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>≤12</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Wading Birds</td>
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<td>none</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;10&lt;16</td>
<td>none</td>
<td>2</td>
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<tr>
<td>Blackbirds</td>
<td>≤20</td>
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<td>1</td>
</tr>
<tr>
<td></td>
<td>&gt;20≤30</td>
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<td>2</td>
</tr>
<tr>
<td></td>
<td>&gt;30</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Dove</td>
<td>&lt;20</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>≥20&lt;30</td>
<td>none</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>≥30</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Raptors</td>
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<td>none</td>
</tr>
<tr>
<td></td>
<td>&gt;3&lt;6</td>
<td>none</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>≥6</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

E. Endangered Species

Reclamation initiated informal Section 7 consultation on April 16, 1997. We received a list of threatened and endangered species on April 17, 1997. None of the species on the list, including southwestern willow flycatcher and cactus ferruginous pygmy-owl, were deemed likely to occur regularly within the project area based on habitat surveys and consultations with biologists (e.g., Rex Wahl, consulting biologist with onsite experience). The species listed in Table 1 are not likely to occur in the project area because there is no suitable habitat on or near the site; preferred and required habitat features for each species do not occur. This is partly due to grazing, habitat fragmentation, and hydrologic changes. Reclamation has concluded that the proposed action would have "no effect" on any threatened or endangered species or any critical habitat. The following paragraphs provide more detailed information on southwestern willow flycatcher and cactus ferruginous pygmy-owl.