

**DRAFT**  
**PIMA COUNTY REGIONAL FLOOD CONTROL DISTRICT'S REGULATED**  
**RIPARIAN HABITAT**  
**OFFSITE MITIGATION GUIDELINES**

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## 1.0 INTRODUCTION AND BACKGROUND

Chapter 16.30 of the Floodplain and Erosion Hazard Management Ordinance No. 2010-FC5 (Ordinance) stipulates that an applicant (private property owner, government agency, land developer, or builder) can mitigate for unavoidable impacts to regulated riparian habitat (RRH) through onsite mitigation. If onsite mitigation is investigated and deemed not feasible for the applicant, then offsite mitigation may be proposed, per Section 16.30.050.D:

*“Mitigation banking or other alternative mitigation measures as approved by the board. At the request of the property owner, and with board approval, the mitigation plan requirement under this chapter may be waived by contributing funds to an account established and administered by the district for the purpose of offsetting damage to riparian habitat.”*

As outlined in the Ordinance, any offsite mitigation proposal will require Pima County Regional Flood Control District (District) and the Flood Control District Board of Directors (Board) review and approval. Currently, there are three offsite compensatory mitigation options available, including:

- (1) Restoration of disturbed or degraded RRH on another parcel of land that provides comparable or “in-kind” biological function to the RRH proposed for disturbance and appropriate long-term protection measures.

(2) Land exchange proposals.

(3) In-lieu monetary fee.

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It should be noted and stressed that offsite mitigation opportunities become an option only after the applicant has shown that avoidance is not possible, impacts to RRH have been minimized, and the ability to mitigate entirely onsite has proven infeasible. Compensation for RRH loss (in-lieu fee) is not meant to replace avoidance and minimization.

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Previously, the offsite compensatory mitigation option was applied without guidance that specified how each option would be implemented. The goal of the new Offsite Mitigation Guidelines (Guidelines) is to inform the regulated community on available offsite mitigation options, in-lieu fee (ILF) program administration, and expenditure of funds obtained through the ILF program. The following key issues were identified and addressed throughout the revision process:

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- Understand the true cost of mitigation and long-term management of riparian habitat;
- Formulate a method for the valuation of RRH and appraisal methods;
- ILF fee determination method should be easily understandable and costs defensible;
- Determine a process for obtaining sufficient ILFs;
- Process needs to be easy to use, implement, and manage;
- Establish an administrative process for expending ILF funds received;
- Develop site selection criteria for new mitigation or receiving areas; and
- Consider tools and opportunities for partnering and leveraging funds.

The Guidelines will provide an avenue for development interests, property owners, and public projects to allow offsite compensatory mitigation for negative impacts to RRH when preservation or other onsite mitigation is deemed not feasible. ILFs obtained by the District will be used toward the

purchase of property with high value riparian habitat, or towards District projects that may include restoration, enhancement, and/or preservation of RRH, with the overall objective of improving or establishing riparian habitat in one area to compensate for negative impacts to RRH that occur elsewhere in Pima County (the County). This process is anticipated to provide a higher degree of permitting certainty and design flexibility while a development or public project is still in the planning stage.

The following document describes steps taken to develop the ILF program, how the program will function and be administered, and provides additional guidance for alternative offsite compensatory mitigation options. Finally, the discussion is followed by a summary of the District's overall process to revise the offsite mitigation guidelines.

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## 2.0 PROCESS FOR DETERMINING MITIGATION IN-LIEU FEES

The District is proposing to revise the ILF portion of the offsite compensatory mitigation option allowed by the Ordinance. Revising the ILF program would allow the District to collect appropriate fees from projects impacting RRH and use these fees to purchase, enhance, restore, establish, and/or maintain riparian habitat elsewhere in the County. Under current guidelines, ILFs are assessed by estimating the cost of onsite mitigation for the project. The current ILF program has fallen short of expectations in the amount of fees collected and has not been effective in achieving the District's goal of offsetting impacts to RRH occurring from development, therefore, the District explored various methods for assessing ILF's to determine if an alternative method would better achieve the District's goals.

In order to address issues with the District's current ILF structure, an attempt was made to better understand actual mitigation costs. Cost data for completed riparian projects was compiled from a variety of sources, including County projects, online searches, and descriptions of existing projects. Data requests were also solicited from a number of entities including landscape architect and consulting firms, Southern Arizona municipalities, the Bureau of Land Management, and the U.S. Army Corps of Engineers. Requests were mailed to 24 entities, with a total of seven responses received (Appendix A). A literature search of 19 projects was conducted and data compiled from the literature was used to explore calculation methods for assessing the ILF. Specific data gathered for each project included total project costs, acreage of the project, annual operations and maintenance (O&M) costs, and annual water costs. Annual costs were extrapolated to a period of five years, based on the current maintenance period requirement adopted by the Board.

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## 2.1 SUMMARY OF OPTIONS EXAMINED FOR ASSESSING IN-LIEU FEE COSTS

During the District's revision process for the Guidelines, a number of alternative methods were considered for determining an appropriate method for calculating ILF for riparian impacts, but were soon discarded due to various reasons. Some of those reasons included 1) because they were too complex to be usable; 2) they would not apply equitably to both large and small developments; 3) they were not scientifically or fiscally defensible; and/or 4) a number of other minor reasons. In general, most were simply not practical. Some of the alternative methods considered and the reasons for not considering them further are described below.

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1. **Traditional Mitigation Bank.** A method discussed in prior years was the use of a traditional mitigation bank (in contrast to an ILF). The mitigation bank would be comprised of protected riparian areas located in each watershed of the County in which developers and property owners would purchase banking credits to mitigate for impacts during the development

review process. The purchase of banking credits would only be allowed once riparian habitat was avoided and disturbance minimized. However, the creation of a mitigation bank was deemed not feasible due to the initial cost outlay that would be required by the District. Additionally, it was determined that the District could not ensure that impacts and compensatory mitigation would coincide in a timely manner or fall within the same watershed and/or RRH type. Lastly, it would be impossible for the District to predict the classes of riparian habitat that would be impacted by development and, consequently, provide available mitigation banking credits within each classification.

**2. Simple, Across the Board ILF:** Another method considered was to simply charge the developer or property owner a certain set amount of money per square foot of riparian habitat impacts. While attractive for its simplicity, this method does not differentiate between various types of riparian habitat and thus does not direct impacts toward lower-value riparian areas. It also fails to account for the natural resource value of a site (hydrology, vulnerable species, diversity of habitat for flora and fauna, etc.).

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**3. Biological Value Adjusted ILF:** One considered method started with a set fee per square foot of impacts based on RRH type, then adjusted for onsite ecological functions and values. This system allowed for mitigation ratio adjustments for such factors as: streams (intermittent vs. perennial), flow regimes of washes (>2,000 cubic feet per second [cfs] vs. >10,000 cfs), the relative value of a particular watershed, land use intensity (i.e., high-intensity urban vs. medium-intensity rural), Harris Riparian Area designations, diversity of flora and fauna, diversity of adjacent habitat types, contributing area of the watershed, and SDCP zoning (i.e., biological core habitat, slated growth areas). It was quickly determined that 1) one could adjust for infinite factors; 2) a massive effort would need to be undertaken to understand the complexities and interactions of the various factors; 3) such a system would be far too complex; and 4) the Conservation Land System (CLS) already takes core factors into account in a scientific manner. Similarly, the use of the CLS mapping data and mitigation ratios was discussed but ultimately discarded given the method would inflate mitigation costs to such a degree to be seen as fiscally indefensible. Furthermore, the biological value of the RRH is already accounted for in the RRH classification types.

**4. Real Estate Value-Based ILF:** There was also discussion of including the appraised value of impacted land in the ILF. However, it was decided that appraised values of one piece of land would not correlate well with land elsewhere in the County that would be used for mitigation. Additionally, the value of riparian land could be interpreted anywhere between low-cost grazing land and high-cost land for development. Equity could not be achieved using this parameter; therefore, this option was discarded.

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## 2.2 DEVELOPMENT OF THE OFFSITE MITIGATION IN-LIEU FEE OPTION

The District's goal in revising the method for determining ILF's was to create a simple, predictable, and structured process that would allow for collection of fees commensurate with the District's actual costs to offset damage to RRH. After examining several methods for calculating ILFs, four stood out as viable options from which the final ILF will be based. Per the Ordinance, the mitigation ratios would remain the same as before; a mitigation ratio of 1:1 for Xeroriparian impacts and a ratio of 1:1.5 for Hydroriparian/Mesoriparian (Class H) or Important Riparian Areas (IRA) classifications. The options for ILF calculation methods examined are as follows:

1. *Property value method:* This method bases the ILF on the Full Cash Value (FCV) of subject, or nearby properties' FCVs if the subject property has no or nominal FCV assigned. The

applicant would divide the applicable FCV by the parcel size to get an FCV per square foot. Then the FCV would be multiplied by a 1.25 factor, targeted at 80 percent of market, to adjust the FCV to full market price per square foot. Lastly, the price per square foot would be multiplied by the size of the disturbed RRH area to get the price of the underlying land affected and the total to assign the ILF.

2. *Riparian Classification method*: This method bases the ILF solely on the assigned cost per square foot per RRH type (based on collected actual project data) as defined in Section 2.0 of Appendix A. The applicant would calculate the proposed square foot of impact to each RRH type, multiply each by the assigned cost per square foot, and then calculate the total to assign the ILF.

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3. *Combination of the Property Value and Riparian classification methods*: This method is a combination of the first two proposed methods. The applicant would calculate costs based on both the first and second methods and then reduce by 50 percent to assign the ILF.

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4. *Modified version of the current method, based on an estimated cost to mitigate onsite*: The revised method would standardize costs, provide disincentives for disturbing higher value riparian habitat (Important Riparian Areas and Class H habitat), and increase cost to mitigate as the percentage of RRH impacts increased by providing a sliding scale fee based on percentage of impacts to habitat.

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## 2.3 PREFERRED IN-LIEU FEE OPTION

### 2.3.1 Preferred ILF Option

Following examination of the various options, District staff found that attempting to develop a fee structure that incorporates many variables resulted in a fee calculation that was convoluted and oftentimes financially indefensible. The basic criteria for revision of the ILF program were ease of use, implementation, and consistency. A simplified fee determination method that is defensible, consistent and easy to use is needed. Use of the Riparian Classification Maps to determine the fee provides a scientifically defensible classification system that incorporates biological value of riparian habitat. The preferred ILF option is a variation on the current fee calculation method, and is based on riparian classification, standardized costs (based on real project costs) for onsite mitigation, including monitoring and long-term maintenance and a consideration of inflation adjustment.

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The current method of fee calculation places the burden of estimating costs for onsite mitigation on the applicant or property owner. This results in cost estimates that vary from project to project, based upon the person assessing the fee and source of the cost information. The new fee structure will be based on the cost to mitigate onsite, similar to how the current fee structure is calculated, with standard costs determined by the District. The revised method will standardize costs for each onsite mitigation component and incorporate these costs into an easy to use spreadsheet (Appendix D), whereby the user can input certain parameters, resulting in an ILF cost output. The following components will be incorporated into the spreadsheet:

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- RHMP design (cost/acre of restored habitat),
- Plant material (container trees and shrubs),
- Labor for installing plant material,
- Hydroseed (seed, mulch, water, cost for machinery, and labor to apply seed) (cost/sq ft),
- Irrigation system (materials and labor for installation) (cost/acre?),

- Five years of maintenance and monitoring (removal of noxious/invasive weed species, water, replacement plants, etc.), and
- Other miscellaneous work, such as grading and/or construction of water harvesting basins.

A standard value will be assigned for each mitigation component and will be based on average cost estimates obtained from local vendors and consultants. The spreadsheet will allow each component of the mitigation plan to be calculated separately so that total mitigation costs can be accurately assessed for each project. For example, a single-lot property owner will typically pay a smaller fee than the developer of a commercial or residential property since they have the ability to minimize design and irrigation costs.

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For commercial and residential developments undergoing the development review process (subdivision plat or development plan), an additional factor will be applied to the ILF based upon riparian habitat classification and percentage of riparian habitat to be disturbed to encourage avoidance and minimization of impacts to high quality habitat. The following requirement will apply:

1. For impacts to Class H habitat or Important Riparian Areas, an additional 10 percent surcharge will be applied to the base ILF.
2. In addition to Item No. 1 above, the following sliding scale shall be applied to the base ILF when the percentage of impacts to total mapped riparian habitat, by classification, is exceeded:

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**Class H and Xeroriparian Classes A and B, within and outside of IRA**

- 5% exceeded = 10% surcharge added to the base ILF
- 15% exceeded = 30% surcharge added to the base ILF
- 30% exceeded = 50% surcharge added to the base ILF

**Xeroriparian Classes C and D within IRA**

- 25% exceeded = 10% surcharge added to the base ILF
- 50% exceeded = 20% surcharge added to the base ILF
- 100% exceeded = 30% surcharge added to the base ILF

**Xeroriparian Classes C and D**

No surcharge applied

Additional preferred method fee calculation details TBD based upon input from MWG stakeholders.

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### 3.0 IN-LIEU FEE PROGRAM ADMINISTRATION

#### 3.1 ADMINISTRATIVE PROCESSING OF IN-LIEU FEES

##### 3.1.1 FEE COLLECTION

###### *Single-lot Residential Development.*

A single-lot residential development proposal disturbing more than 1/3 acre of RRH requires a Floodplain Use Permit (FPUP), which must be obtained prior to issuance of the building or grading permit. When onsite mitigation occurs, a RHMP is approved prior to issuance of the FPUP with mitigation occurring after construction is completed. When an ILF is proposed, fees are collected prior to issuance of the FPUP. This process ensures that a property owner compensates for disturbance of RRH prior to impacts occurring.

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###### *Collection Procedure*

Fees will be collected prior to issuance of the FPUP. Under special circumstances, the property owner may request that payment of the ILF be delayed until prior to final inspection. If this option is chosen, a hold will be placed on the final inspection until the fee is collected.

###### *Residential and Commercial Development*

For projects following the development review process, i.e. subdivision plats or development plans, ILF proposals are approved prior to Final Plat or Development Plan approval. However, depending upon the project, many months or years may pass from the time of project approval to construction, delaying disturbance of RRH. In these situations, it may be appropriate to collect the fee prior to approval of the grading or paving plan.

###### *Collection Procedure*

Fees are requested at the time of final plat or development plan approval; however, if existing circumstances prevent payment at the time of final plat or development plan approval, the applicant may request to defer payment prior to approval of the grading or paving plan.

###### *Fines collected from RRH violations*

On May 4, 2010, the Board adopted Ordinance No. 2010-FC5. The new Ordinance allows the District to impose civil penalties for violations of the code, including violations related to the unpermitted disturbance of RRH. The District proposes depositing fines obtained from RRH disturbance violations into the ILF bank.

###### *Administrative Processing*

When a check for the ILF is submitted, the applicant and/or property owner is issued a receipt, detailing the amount of the check, check number, and project or FPUP number. This information is then input into the ILF tracking database and deposited into the ILF program bank account.

### 3.1.2 FEE DISBURSEMENT PROCEDURE

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### 3.1.3 ANNUAL REPORTING

An annual report, documenting the total amount of funds collected and disbursed throughout the year will be prepared at the end of each fiscal year. The annual report will document annual income deposited into the ILF bank, annual withdrawals for expenditures, a summary of property acquisitions by parcel number and provide a brief section on funds spent for land stewardship activities and low-tech restoration.

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### 3.2 DISTRICT EXPENDITURE OF IN-LIEU FEE PROGRAM FUNDS TO COMPENSATE FOR HABITAT LOSS

District priorities for expenditure of ILFs are:

#### Acquisition and Preservation

Preservation of high value habitat is best achieved through acquisition. Acquisition in fee title of land containing riparian resources is an effective method for protecting and preserving intact habitat. Additional methods for the preservation of riparian resources is by protecting shallow ground water sources through acquisition or transfer of water rights, and protection of hydrologic functions and key features located in the watershed upstream of riparian areas.

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#### Restoration and Enhancement

Restoration and enhancement of riparian vegetation can be a viable and desirable option for the use of ILFs. The receiving area for restoration and/or enhancement of habitat must be able to support restoration efforts over the long term. Physical site characteristics, restoration objectives and design, and legal mechanisms that lead to long-term self-sustaining habitat must all be taken into account. Other restoration activities under this priority include stewardship practices that allow degraded habitat to heal and naturally restoring ing processes that protect riparian habitat or water supply.

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Cons: Managing and protecting the biological resources on the property becomes the responsibility of Pima County. Staff to properly manage and monitor the property may or may not be available. Conservation easements require a third party to manage, either internal to the County (NRPR) or external (Arizona Land and Water Trust, The Nature Conservancy, other). ¶

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#### 3.2.1 OPTIONS FOR EXPENDITURE OF IN-LIEU FEE FUNDS: ACQUISITIONS, LAND STEWARDSHIP, AND LOW-TECH RESTORATION

Several options are available to the District for expenditure of ILF funds to compensate for impacts to RRH. Options include the following: acquisitions (land, water rights, conservation easements), land stewardship, and low-tech restoration.

##### 3.2.1.a ACQUISITIONS

Funds are used for the acquisition of riparian resources. Several types of acquisitions could be made with funds received through the ILF program, and may include land, water rights, and/or conservation easements.

3.2.1.a.1 Land. Land would be selected based upon the resource value as determined by the MapGuide "Riparian Acquisition" layer (Section 5.0). Funds would be used to purchase land in fee-simple. Water, mineral, and other rights may or may not be included in the purchase. The land will be offered long-term protection through the use of a conservation easement or other restrictive covenant.

3.2.1.a.2 Water Rights. Water rights adjoining sensitive riparian areas would be purchased using ILF funds.

3.2.1.a.3 *Conservation easement.* Conservation easements on lands containing high value riparian habitat would be purchased using ILF funds.

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### 3.2.1.b. LAND STEWARDSHIP

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In this option, funds would be distributed for stewardship of existing Pima County owned lands. Stewardship activities would include fencing to prevent unauthorized access by off-road vehicles and livestock, long-term monitoring, and invasive species control.

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Cons: Managing and protecting the biological resources on the property becomes the responsibility of the County or a third party (Arizona Land and Water Trust, The Nature Conservancy, other). Ensure language within the Conservation Easement is well written to prevent abuses by the land owner. ¶

### 3.2.1.c. LOW-TECH RESTORATION

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Low-tech, low-cost restoration techniques will be implemented on existing Pima County owned lands. Low-tech restoration techniques may include hydroseeding disturbed areas, incorporating water harvesting features, installation of check dams, or other methods to enhance and restore existing riparian habitat.

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## 4.0 ALTERNATIVE OFFSITE MITIGATION OPTIONS

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Several alternative offsite mitigation options are available to projects undergoing the development review process (subdivision plats and development plans). Options include mitigation of an offsite parcel of land, land exchange, or other offsite compensatory mitigation options. Any alternative offsite mitigation proposal will need to document the relationship between the ecosystem functions being impacted on the project site and the functions which are compensated for by the mitigation site.

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Cons: Accounting for the expenditure of funds would be more complicated.¶

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The only alternative offsite mitigation option available to single-lot property owners is mitigation of an offsite parcel of land in accordance with the onsite mitigation guidelines.

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## 4.1 MITIGATION OF AN OFFSITE PARCEL OF LAND

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### 4.1.1 Basic Requirements

Mitigation in accordance with the onsite mitigation guidelines may be performed on another parcel of land with approval of the District. The proposed parcel must contain comparable riparian habitat, or may be used if the parcel is suitable for enhancement or restoration of degraded riparian habitat. The alternate parcel may be under the same ownership as the parcel impacted by development or may be under different ownership. In either case, a deed restriction that protects the mitigated area(s) in perpetuity must be recorded. Additionally, the parcel must adhere to the following mitigation standards, adapted from standards drafted and approved by the Multi-Species Conservation Plan (MSCP) Implementing Agreement (IA) Committee:

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- If the proposed mitigation land will be split off from an existing parcel of land, the mitigation land shall be located and consolidated in the most biologically sensitive portion(s) of the property;
- Mitigation land should be configured to minimize harmful edge effects;
- Mitigation land should be contiguous with any conserved land on adjacent properties;

- Preferably, mitigation land shall be located within the same watershed, as that impacted by development;
- Mitigation land should be free of all significant harmful land use practices that impair mitigation values (e.g., off-road vehicle use, livestock use/grazing, etc.), or if harmful land use practices have occurred in the past, the land may be restored and protected from future harmful land practices.

As an option to the onsite guideline requirement for mitigation of an offsite parcel of land, an applicant may propose mitigation through use of a Riparian Habitat Preservation Plan (RHPP).

**4.1.2 Riparian Habitat Preservation Plan (RHPP)**

Mitigation of an offsite parcel may follow requirements of a Riparian Habitat Preservation Plan (RHPP) for larger projects (those that are required to go through the platting, specific plan, comprehensive plan, and/or rezoning processes). For these projects, an additional option to the basic requirements for mitigation of IRA, Class H, and Xeroriparian Classes A-D is available. Applicants may propose a RHPP as an alternative to the basic requirement: a Riparian Habitat Mitigation Plan (RHMP). A RHPP is designed to support the success of onsite preservation of riparian areas and the mitigation of disturbed habitat, as well as serve the special needs of a given project within the context of its natural resources, both upland and riparian. The minimum requirement for a RHPP is to meet the conservation goals and objectives of the Conservation Land System (CLS). The proposed RHPP must preserve, enhance, provide connectivity, overall function, and/or restore an impacted riparian system and/or its surrounding areas. Please be advised that proposal of a RHPP is subject to the discretion and approval of the District and the Board. A RHPP may be an available option when traditional mitigation does not address unique ecological or project conditions.

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Applicable conditions may include:

1. Highly fragmented and/or degraded riparian habitat;
2. Sites with other unique ecological functions where a blended preservation plan would be more functional or appropriate; and
3. Linear projects, such as roadways and sewers, or linear portions of projects where avoidance is not possible and linear mitigation options would provide limited value.

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A RHPP may include, but is not limited to:

1. Alternative options for restoring degraded riparian habitat;
2. Preserving or enhancing wash corridors containing riparian habitat and transition zones that were not mapped under the Riparian Classification Maps to increase connectivity;
3. Conservation of adjacent uplands along riparian habitat to maintain diversity and function;
4. Combination of onsite and offsite conservation or mitigation; and
5. Other conservation efforts that meet unique site ecological conditions including keystone species (e.g., ironwood and saguaro).

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The RHPP must be equivalent to or exceed the ecological value of a traditional RHMP. Determination of equivalent ecological value will require a biological assessment of the project site by a qualified professional to evaluate the site's biological resources and must reference and incorporate the unique features determined by the Natural Resource Assessment Report (NRAR) into the RHPP. The NRAR (Appendix B) must also address the overall connectivity and function of preserved riparian habitat on the offsite parcel and how the proposed RHPP will enhance the overall function of habitat.

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Degraded habitats located on an offsite parcel can be restored in a number of ways, which may include restoration of degraded habitat or restoring connectivity of habitat with techniques other than those outlined in the onsite mitigation guidelines. These techniques may include cattle exclusion and/or regulation of grazing intensity or season, exotic species control for the entire undeveloped RRH area and possibly upland areas (this option will depend upon the severity of the infestation and type of invasive species present, must be coincident with other restoration techniques, such as hydroseeding, and must not overlap with invasive species control required by other departments; basically, if a property owner has already been required to control invasive species, it will not be option for mitigation under Chapter 16.30), use of effluent for establishment of a mitigation area (i.e., spray fields to establish native seed mix), abandoning functioning wells in areas of shallow groundwater, obtaining water rights for a particular property and transferring the rights to Pima County, channel stabilization efforts, water harvesting, and other restoration techniques that have been demonstrated to have substantial riparian habitat benefits.

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A condition for use of a RHPP is that a proposal must show sustainability over the long term. For example, use of effluent may be used to establish seed mix; however, long-term use of effluent to artificially increase the density of existing riparian habitat and/or for use in the establishment of high water use plant species that would require irrigation for the duration of the plant's life, would not qualify as a suitable alternative option. Proposed RHPPs are subject to the discretion and approval of the District and the Board.

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## 4.2 LAND EXCHANGE

For projects undergoing the development review process (subdivision plats and development plans), exchange of land in-lieu of onsite mitigation may be allowed. Land exchange proposals must provide multiple benefits such as preservation of valuable habitat corridors, provide habitat connectivity and proximity to habitat preserved on public land, parks, preserves and habitat restoration projects.

Large-scale projects offer unique situations because they have the potential to affect relatively large areas of RRH. While protecting the RRH onsite is preferred and could well prove to be an asset to the development, the community, and the County's goals for long-term riparian protection, a need for offsite mitigation may still occur. To satisfy offsite RRH mitigation requirements for disturbance to RRH, a developer may choose to apply the option that will allow them to acquire land elsewhere in the County and transfer that land to the District for long-term protection of its riparian and biological resources. This option will be considered on a case-by-case basis for large developments only and is not available for smaller developments or single dwelling residential development on a single lot. All land acquisition proposals shall be subject to District and Board review and approval.

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To assist the applicant in locating desirable parcels for land acquisition, the District will provide a land acquisition layer in MapGuide indicating the general location of lands that would qualify for the land exchange compensatory mitigation option. This layer is called the Riparian Acquisition Map (see Section 5.0).

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For lands to qualify for RRH mitigation and transfer to the District, they must contain biological and hydrological value that is comparable to or of higher quality than the RRH that is disturbed. Values that need to be considered include, but are not limited to, water availability, vegetation density, and biological productivity. Therefore, an evaluation of the land proposed for transfer, performed by a qualified professional, shall be required as part of the developer's land acquisition proposal to the District. The purpose of long-term riparian protection is to promote stable flow conditions and natural functions along watercourses and floodplains County-wide by preserving and/or enhancing riparian vegetation and habitat. In order to meet the purpose and intent of protecting riparian habitat,

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selection of land appropriate for the land acquisition and transfer option shall be based on the information provided by the applicant's NRAR (Appendix B).

Key points to remember when selecting land for exchange include the following:

- A biological evaluation of the land, performed by a professional biologist, shall be required as part of the land acquisition proposal;
- Preference will be given to land within the same watershed as the RHH that is being disturbed. If land cannot be identified within the same watershed, exchange of lands outside the watershed will be an option;
- Land must have equivalent or higher quality riparian habitat values (biological and physical) than those that are being disturbed;
- Choose land within the same geographic locale as that being disturbed;
- Include mechanisms to protect resources and conservation values in perpetuity; and
- All land acquisition proposals are subject to District and Board review and approval. The applicant is strongly advised to consult with the District prior to purchase of mitigation lands.

Per the Multi-Species Conservation Plan (MSCP), exchanged property shall be evaluated for the properties' natural resource values, CLS status, contribution to County MSCP goals, and long-term costs of management and monitoring. The County may, at its discretion, request a monetary donation or endowment from the beneficiary to cover management costs.

#### **Protection of Mitigation Land (receiving area)**

Long-term protection of mitigation land is critical to success of the offsite mitigation program. Long-term protection can be achieved through receiving the mitigation land in fee title and placement of a conservation easement or other restrictive covenant on the mitigation lands. Example conservation easement language can be found in Appendix C.

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### **4.3 OTHER OFFSITE COMPENSATORY MITIGATION OPTIONS**

4.3.1 Purchase of Water Rights. A developer may purchase water rights that directly impact/support groundwater dependant riparian ecosystems. The District advises the applicant consult with staff prior to acquiring water rights.

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## 5.0 Land Acquisition Criteria

Riparian Acquisition Map (under development).

The intent in developing the Riparian Acquisition Map is to create a GIS data layer based on reports and data developed in support of the Sonoran Desert Conservation Plan. These reports spatially define biologically sensitive lands at a landscape level. The criteria will also include the location of these lands in relation to existing County-owned property, state parks, and federal lands (refuges, national forest, and BLM lands, etc.) and works toward preserving inter-connected corridors associated with watercourses throughout the County.

Lands that may qualify for acquisition under the offsite mitigation program shall be selected based on the following criteria:

Landscape Level:

- Landscape position (CLS categories)
- Covered species habitat (Priority Conservation Areas)

Watershed/Project Site Level:

- Adjacency to existing Preserves;
- Adjacency to major watercourses;
- Connectivity between riparian areas;
- Riparian Classification Maps – Riparian vegetation plant community (Class H vs. xeroriparian) and density (TVV);
- Water Availability (Class H, shallow groundwater/intermittent and perennial streams/springs);
- Hydrology/Hydraulics – ability to support riparian vegetation (FEMA floodplains, locally mapped floodplains);
- Adjacency to reaches of watercourses defined by the 2002 SDCP Report “Riparian Priorities” (available for viewing and download at <http://www.pima.gov/CMO/SDCP/reports.html>);
- Adjacency to existing District-/County-owned property; however, this criterion is subject to verification of future uses of the land prior to being considered. Certain Pima County owned lands are set-aside for future development;
- Within Habitat Protection Priority Areas or Private and state priority areas, pursuant to the Conservation Bond Program (2004 and 2010);
- Connectivity with parks, refuges, existing Pima County restoration projects, and undeveloped land;
- Adjacency to platted Natural Open Space;
- Special Elements (bosques, cottonwood/willow, springs, etc.);
- Historical perennial flows;

- Constructed vs. natural riverine systems; and
- Use of Transfer of Development Rights (TDR) Program and Sending Areas. Development rights are severed from these lands, which allows for higher density development in receiving areas (growth areas). TDR Sending Areas must have comparable RRH values.

## 6.0 CONCLUSIONS

Development of the Guidelines provides a necessary tool that will allow for RRH to be mitigated in a timelier manner with impacts, and funded at a level that adequately compensates for lost riparian habitat function. This document addresses problems with methods used or contemplated in the past and meets the goals of the District with respect to an offsite mitigation program. Furthermore, this document has assessed and addressed the true costs of mitigation and long-term management of riparian habitat. The options proposed are easy to understand, use, implement, and manage and are based on sound financial and scientific principles, providing an avenue for the regulated community to mitigate for negative impacts to RRH through offsite compensatory mitigation.

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**APPENDIX A**  
**SWCA REPORT – OPTION FOR ASSESSING IN-LIEU FEES**

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**APPENDIX B  
GUIDELINES FOR THE PREPARATION OF A NATURAL RESOURCE  
ASSESSMENT REPORT (NRAR)**

**(UNDER DEVELOPMENT)**

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**APPENDIX C**  
**CONSERVATION EASEMENT TEMPLATES**

**(LANGUAGE UNDER DEVELOPMENT)**

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APPENDIX D  
IN-LIEU FEE CALCULATION SPREADSHEET

(UNDER DEVELOPMENT)

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Pros: Would provide Pima County flexibility in distributing funds from the ILF program.

Cons: Accounting for the expenditure of funds would be more complicated.

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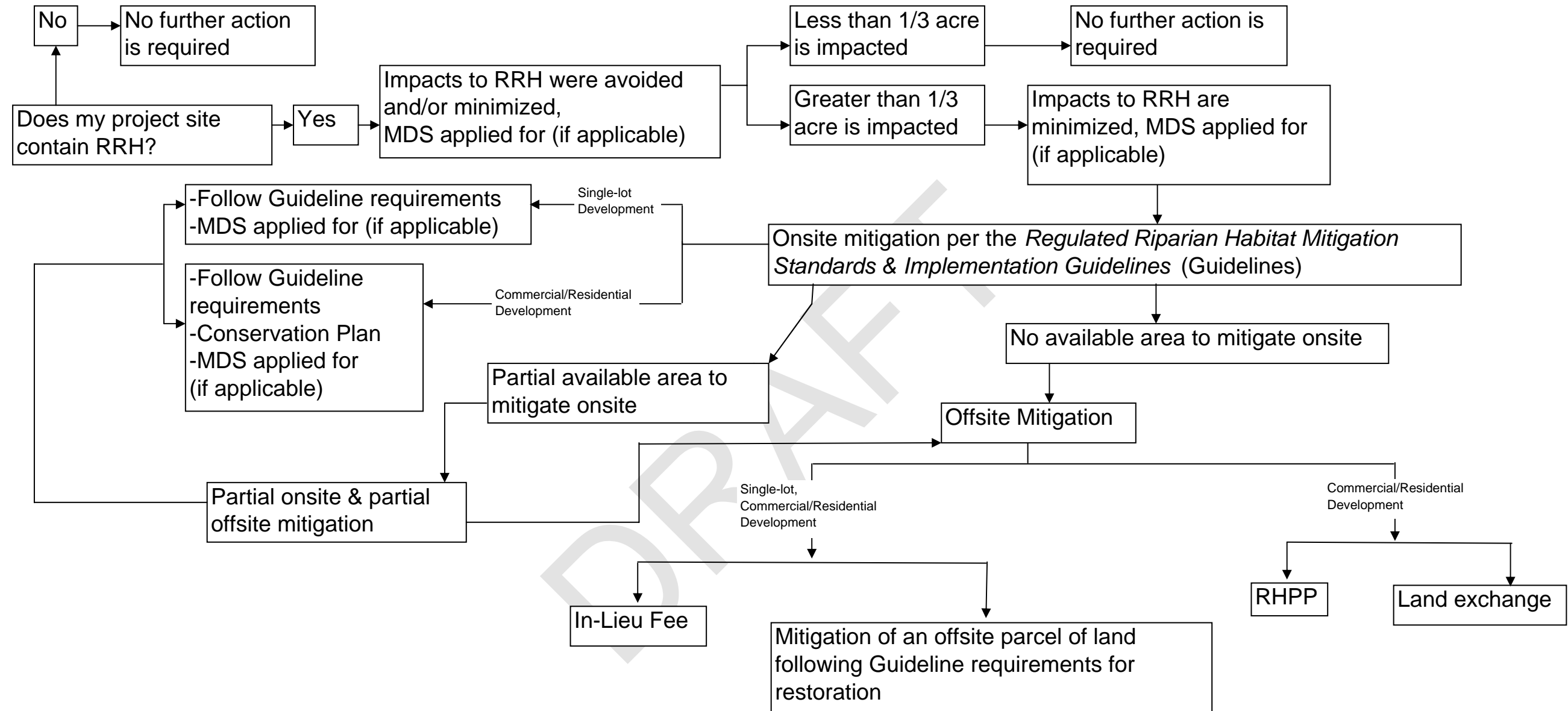
## Mitigation Options Available for Disturbance of Regulated Riparian Habitat

Mitigation Options	Single-lot Development		Commercial/Residential Development		Comments
	onsite*	offsite**	onsite*	offsite**	
Onsite mitigation	<b>X</b>		<b>X</b>		Enhancing or restoring onsite riparian habitat function by replanting with native vegetation
Partial onsite mitigation/partial offsite mitigation (see offsite mitigation options)	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	Allows more flexibility when riparian function can't be replaced entirely on the project site/subject parcel. See the "offsite" column to determine which offsite mitigation options would apply
Offsite mitigation		<b>X</b>		<b>X</b>	Includes mitigation at an "offsite" location for single lot development, or all the offsite mitigation options noted in the "offsite" column for commercial/residential development
Conservation Plan			<b>X</b>		Flexible tool to preserve the project site's (onsite) natural resources. Allows for alternative onsite mitigation measures such as: - stewardship to remove system stressors, such as invasive species - preserve unique ecosystem features - preservation of unmapped areas to provide buffer for high value riparian habitat - preservation of unmapped riparian habitat
In-lieu Fee		<b>X</b>		<b>X</b>	Monetary contribution used to preserve, protect, or restore habitat
Riparian Habitat Preservation Plan (RHPP)				<b>X</b>	Flexible tool offering opportunity to preserve the project site's (onsite) natural resources; offsite version of the "Conservation Plan", sharing many elements
Restoration of an offsite mitigation parcel				<b>X</b>	Enhancing or restoring riparian habitat function by replanting with native vegetation on a offsite parcel
Land exchange				<b>X</b>	Additional tool for protecting riparian habitat function. Land containing riparian habitat is acquired and conveyed to the District in exchange for impacts to regulated riparian habitat.
Other offsite mitigation options				<b>X</b>	Additional options allowing for the preservation of riparian function through: - purchase of water rights - other options?

\*"onsite" = mitigation occurring within the project boundaries and/or subject parcel

\*\*"offsite" = mitigation occurring outside the project boundaries and/or subject parcel

## Mitigation Options for Disturbance of Regulated Riparian Habitat (RRH)



MDS = Modified Development Standards per Zoning Code requirements  
 RHPP = Riparian Habitat Preservation Plan  
 RRH = Regulated Riparian Habitat

	Cost for 24" box tree installed (\$)	Cost for 15 gal tree installed (\$)	Cost for 5 gal tree installed (\$)	Cost for 5 gal shrub installed (\$)	Cost for 1 gal shrub installed (\$)	Hydroseed (\$/sq ft)	total irrigation costs (\$/ls)	irrigation (\$/ac)	irrigation (\$/sq ft)	fine grading (\$/sq ft)	5 year maintenance (\$/ac)
<b>Average costs (excluding outliers)</b>	na	\$90	\$35	\$33	\$11	0.10	na	700	na	na	no data

**example # 1 - Pima Canyon Estates Subdivision**

**Xeroriparian Class C habitat (XC)**

Total mapped habitat onsite (ac)		1.20 ac
Area of disturbed RRH (ac)		0.54 ac
Area of mitigation (ac)		0.54 ac
total number of trees required (45 trees/ac)	45	24 trees
total number of shrubs required (70 shrubs/ac)	70	38 shrubs

**ILF calculation**

15 gal trees	12	\$1,093.50	
5 gal trees	12	\$425.25	
5 gal shrubs	19	\$630.00	
1 gal shrubs	19	\$207.90	
hydroseed (sq. ft.)	23522	\$2,352.24	
irrigation (\$/ac)	0.54	\$378.00	
5 year maintenance (\$/ac)	0.54	\$437.00	taken from avg. for SFR ILF submittals
<b>total cost/ac</b>		<b>\$5,523.89</b>	

**example # 2 - Pima Canyon Estates Subdivision**

**Important Riparian Area with underlying Xeroriparian Class B habitat (IRA/XB)**

Total mapped habitat onsite (ac)		2.74 ac
Area of disturbed RRH (ac)		0.91 ac
Area of mitigation (ac)		1.37 ac
total number of trees required (60 trees/ac)	60	82 trees
total number of shrubs required (80 shrubs/ac)	80	109 shrubs

**ILF calculation**

15 gal trees	41	\$3,685.50	
5 gal trees	41	\$1,433.25	
5 gal shrubs	55	\$1,820.00	
1 gal shrubs	55	\$600.60	
hydroseed (sq. ft.)	59459	\$5,945.94	
irrigation (\$/ac)	1.37	\$955.50	
5 year maintenance (\$/ac)	1.37	\$437.00	taken from avg. for SFR ILF submittals
<b>total cost/ac</b>		<b>\$14,877.79</b>	

	Cost for 24" box tree installed (\$)	Cost for 15 gal tree installed (\$)	Cost for 5 gal tree installed (\$)	Cost for 5 gal shrub installed (\$)	Cost for 1 gal shrub installed (\$)	Hydroseed (\$/sq ft)	total irrigation costs (\$/ls)	irrigation (\$/ac)	irrigation (\$/sq ft)	fine grading (\$/sq ft)	5 year maintenance (\$/ac)
<b>Average costs (excluding outliers)</b>	na	\$74	\$27	\$23	\$12	\$0.08	na	\$2,661	\$0.06	na	\$3,730

**example #1 - Grupo Rio Office Development - ILF based on average costs**

**Xeroriparian Class D habitat (XD)**

Area of disturbed RRH (ac)		0.7 ac
Area of mitigation (ac)		0.7 ac
total number of trees required (30 trees/ac)	30	21 trees
total number of shrubs required (80 shrubs/ac)*	80	56 shrubs

\*determined by onsite plant survey

**Xeroriparian Class C habitat (XC)**

Area of disturbed RRH (ac)		0.08 ac
Area of mitigation (ac)		0.08 ac
total number of trees required (45 trees/ac)	45	4 trees
total number of shrubs required (100 shrubs/ac)*	100	8 shrubs

**ILF calculation**

15 gal trees	12	\$915.67
5 gal trees	12	\$337.37
5 gal shrubs	32	\$722.29
1 gal shrubs	32	\$376.00
hydroseed (sq. ft.)	33977	\$2,831.40
irrigation (\$/ac)	0.78	\$2,075.81
5 year maintenance (\$/ac)	0.78	\$2,909.21
<b>total cost/ac*</b>		<b>\$10,167.74</b>

\*actual cost calculated by consultant = \$10,109.00

**example #2 - Quail Call Estates**

**IRA w/ underlying Class H habitat (IRA/H)**

Total mapped habitat onsite (ac)		9.14 ac
Area of disturbed RRH (ac)		2.67 ac
% of mapped habitat disturbed		29%
Area of mitigation (ac)		4.01 ac
total number of trees required (90 trees/ac)	90	360 trees
total number of shrubs required (100 shrubs/ac)	100	401 shrubs

**ILF calculation**

15 gal trees		360	\$26,833.50
5 gal trees	na		
5 gal shrubs		401	\$9,039.86
1 gal shrubs	na		
hydroseed (sq. ft.)		174458	\$14,538.15
irrigation (\$/ac)		4.01	\$10,658.48
5 year maintenance (\$/ac)		4.01	\$14,937.65
<b>total cost/ac</b>			<b>\$76,007.64</b>
<b>IRA add 10% surcharge</b>			<b>\$83,608.40</b>
<b>25% exceeded (add 10% surcharge)</b>			<b>\$91,969.24</b>