

## **Plan to Minimize Impacts on Adjacent Landowners for the Miner's Ravine Off-Channel Detention Basin Facility**

### Program Background

The Flood Protection Corridor Program (FPCP) was created by the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act of March 2000 (Proposition 13). The Program is authorized to fund projects providing nonstructural approaches to flood management, including the acquisition and restoration of wildlife habitat, and agricultural land preservation. Proposition 13 requires the grant applicant, in conjunction with the Department of Water Resources (DWR), develop a plan to minimize the impacts on adjacent landowners prior to acquiring any interest in land. The code states:

### California Water Code

*"79041. Prior to acquiring an easement or other interest in land pursuant to this article, the project shall include a plan to minimize the impact on adjacent landowners. The plan shall include but not be limited to, an evaluation of the impact on floodwaters, the structural integrity of affected levees, diversion facilities, customary agricultural husbandry practices, and timber extraction operations, and an evaluation with regard to the maintenance required of any facilities that are proposed to be constructed or altered."*

The grant applicant for this project is the Placer County Flood Control and Water Conservation District (District). The FPCP will be contributing a total of \$1,033,612 to assist the District with land acquisition activities, granting of a permanent conservation easement, project implementation activities, and post project operation and maintenance activities. The land being acquired and improved consists of approximately 26 acres of property along Miner's Ravine at Sierra College Boulevard (see Attachment A). The property includes three adjacent parcels owned by James and Carol Dowling and lies within the City of Roseville in Placer County and has been appraised at \$178,000. The land is characterized as supporting several habitat types and lies approximately 65 percent within the Federal Emergency Management Agency (FEMA) recognized 100-year floodplain, and 35 percent outside of the floodplain. The habitat types include annual grassland, perennial creek, riparian woodland, seasonal marsh and seasonal wetland. Miner's Ravine is a major tributary within the Dry Creek watershed encompassing approximately 18 square miles.

The project includes purchase of the 26-acre site, set back of an existing levee, re-grading basin areas behind the levee for off-channel floodwater storage, protection and enhancement of wetlands, removal of non-native and invasive plant species, replanting with native plant species, establishment of a trailhead and recreational trail system and habitat improvements within the riparian corridor and creek channel. The setback levee will be reconstructed to meet DWR's Division of Safety of Dams (DSOD) minimum design standards as a jurisdictional dam.

At this time there are no substantial uses of the Dowling property. The site was utilized from the 1950s through 1986 as a sewage lagoon treatment facility serving 200 homes in the Granite Bay area. However, the site has since been abandoned, investigated, remediated, backfilled, and confirmed free of remaining soil contaminants through a Phase II type soil investigation conducted in 2001. The surrounding current land uses include a large private church development (Bayside Church) to the southeast, rural residential to the east and northeast, and new or planned dense single-family residential development to the north, west and southwest (see Attachment B). There are no commercial or industrial facilities in the immediate site vicinity.

Neighboring property owners were notified of a public hearing held on October 20, 2003 for the proposed project via a letter, as well as public postings within the newspaper and local community. Approximately 10 persons from the local community were in attendance and 4 raised specific concerns. These included questions regarding the project limits, the project schedule, proposed basin operations, plans for bridge culvert additions beneath Sierra College Boulevard, and whether the project might be impacted by the proposed Auburn Dam project on the American River. District staff explained that the project is limited to the 26-acre site and that the project schedule is for the facility to be constructed within three to four years. Further, box culvert additions beneath Sierra College Boulevard would be evaluated concurrent with surrounding development plans and the basin will detain flood waters for up to 24 hours without raising existing flood stage elevations. Staff explained that because the proposed Auburn Dam project is located within a separate watershed, there is no potential for project impacts.

#### Evaluation of the Impact of the Land Acquisition on Floodwaters

During the first year after the acquisition of the Dowling property the site will undergo extensive analysis and study before plans are developed and the California Environmental Quality Act (CEQA) and other permitting processes are completed.

The studies to be completed are included in the following table:

**Table 1: Project Studies**

CEQA	Engineering Analysis	Aquatic-Ecosystem Restoration
<p>Areas identified in the initial study as needing further analysis and possible mitigation</p> <hr/> <p>Vegetation and Wildlife                      Fisheries                      Water Quality                      Air Quality                      Noise                      Cultural Resources                      Public Utilities                      Hydrology                      Water Resources                      Visual Resources                      Aesthetics</p>	<p>Topography                      Hazardous Substance Review                      Geology and Soils                      Geotechnical Studies                      Geomorphology</p> <ul style="list-style-type: none"> <li>• Historic Setting</li> <li>• Anthropogenic Impacts</li> <li>• Current Conditions</li> <li>• Expected Future Conditions, Hydraulics and Sediment Transport</li> </ul> <p>1.) Hydrologic Model Development                      2.) Hydraulic Model Development                      3.) Bed Material Sediment Transport – Project Reach and Upstream Supply                      Review of Existing Water Quality Data</p>	<p><b><u>Related Studies and Reports</u></b></p> <ul style="list-style-type: none"> <li>• Jurisdictional wetlands and vernal pools</li> <li>• Baseline Geomorphic, Hydraulic and Biological Studies, including inventory of sensitive species</li> <li>• Geotechnical Analysis</li> </ul> <p><b><u>Existing Conditions</u></b></p> <ul style="list-style-type: none"> <li>• Habitat Loss and Degradation</li> <li>• Mapping of Exotic Species</li> <li>• Changes in Structure, Function and Dynamic Processes of the Creek</li> <li>• Vector surveys</li> </ul> <p><b><u>Restoration Opportunities</u></b></p> <ul style="list-style-type: none"> <li>• Availability of Water for Wetland and Riparian Habitat Creation</li> <li>• Feasibility of Wetland Types to Support Threatened and Endangered Species</li> <li>• Creation, Restoration, and Conservation in Perpetuity to Benefit Wildlife Including Threatened and Endangered Species</li> <li>• Benefits to Migratory Birds</li> <li>• Cumulative Benefits to Other State and Local Conservation Initiatives</li> <li>• In-channel Habitat Restoration for Endangered Fish Species</li> </ul>

Mitigation of peak flow increases due to rapid development in the area will be addressed through this regional off-channel detention basin project and will provide approximately 55 percent of the regional 600 cubic feet per second (cfs) peak flow reduction goal identified by the District. The project will create approximately 36 acre-feet of additional transitory storage for flood flows within the off-channel basin area and reduce peak flows in a critical portion of the watershed by approximately 330 cfs. Future hydraulic designs will evaluate several basin operation alternatives including the potential to address a range of both small and large storm events by incorporating multiple basins separated by overflow weir structures. Alternative inlet and outlet drainage designs will be evaluated to identify the most efficient method for basin operation assuming a 24-hour regulatory basin drain requirement. Low maintenance, non-mechanical operational designs will be preferred. The project's hydraulic design will include requirements for little or no change to the existing limits of the FEMA 100-year floodplain limits immediately upstream of the project site. Through the project limits and downstream of the project site, a beneficial lowering of the current 100-year floodplain water surface elevations and accompanying narrowing of the floodplain footprint is anticipated. Future hydraulic studies will model and predict the degree of this beneficial downstream effect and identify the need for a regulatory change to the recognized FEMA floodplain limits, which if necessary, will be documented through FEMA's letter of map revision (LOMR) process.

The District has prepared a separate hydrology and hydraulic evaluation with alternatives and failure analysis for DSOD consideration (RBF Consulting 2004). This evaluation examined the proposed function of the basin and assessed the potential risks from an extreme failure type scenario. The preferred off-channel basin operation assumes that temporary, short-term storage of floodwaters within the existing 100-year floodplain will occur with an additional inlet/outlet culvert to the basin providing for both floodwater ingress/egress (see Attachment A). The water level rise in the basin would therefore be controlled by stream stage at the location of the inlet/outlet connection to the stream. The expected depth of water stored would exceed 4 feet for less than 16 hours during the design 100-year storm event and for less than 6 hours during the design 10-year event. Overtopping failure was found to be highly unlikely because at least 1 foot of freeboard would exist in an extreme 1000-year event. A 200-year sudden embankment failure analysis indicates that only a 6-inch rise in peak stage would be observed in the vicinity of the first potentially impacted structures, located approximately 3 miles downstream of the project.

Restoration plans and alternatives will be examined and models prepared to evaluate and mitigate all identified impacts on floodwaters. The scale and scope of this project also requires substantial review of project plans and alternatives by a project specific stakeholder committee composed of a variety of concerned agencies, local creek advocate groups, and the public. After full CEQA review and receipt of stakeholder input, a restoration plan will be chosen which maximizes restoration, natural stream functions, and flood control.

As a part of those analyses, a roughness coefficient will be developed for flow through the off-channel basin system. Long-term monitoring, maintenance, and management of vegetation will be undertaken by the District over the life of the project to ensure that a roughness coefficient is maintained at or below the predetermined level through selective vegetation thinning to avoid floodwaters backing up and adversely affecting adjacent properties for all but the most extreme flood events (100-year recurrence interval or greater). The effects on adjacent lands from backed up floodwaters should be less under post-project conditions than under pre-project conditions.

#### Evaluation of Impacts on the Structural Integrity of Affected Levees

An existing 1,680-foot-long and approximately 8-foot-tall earthen levee exists on site and was originally constructed to confine the creek from adjacent sewage lagoon waters. As part of the project, the existing levee is proposed to be set back in the range of 120 to 180 feet further from the creek channel. The existing levee and planned location of the setback levee has been surveyed and structurally analyzed through geotechnical studies. Based on geotechnical explorations in the field and soil laboratory testing, it appears that a suitable layer of existing substrate soils exists along the proposed setback levee location at a depth of five to seven feet below ground surface. The embankment substrate will be re-compacted in the field to meet design standards set by the DSOD and limit the possibility for a piping type embankment failure. The reconstructed setback levee will also be field tested during construction through material

and compaction testing to ensure conformance to structural specification requirements identified in future design documents. Based on the alternatives and failure analysis (RBF Consulting 2004), a piping failure of the levee would be extremely unlikely because the embankment would not be subject to long durations of saturation conducive to piping.

#### Evaluation of Impacts on Customary Agricultural Husbandry Practices

There are no agricultural uses on or adjacent to the project. Although no agricultural uses exist on the project, several parts of the project area are choked with invasive non-native Himalayan blackberry and a variety of other invasive non-native species. Developing riparian and upland habitats will be managed in such a way as to eliminate invasive non-native species. Standard practices on restoration sites include weed control during a three-year establishment period.

#### Evaluation of Impacts on Diversion Facilities

There are no diversion facilities on the site other than the proposed inlet/outlet weir which will allow floodwaters to flow into and out of the basin. The concrete inlet weir will be designed to withstand and convey anticipated flow volumes.

#### Evaluation of Impacts on other Facilities Within the Project Area

There are no significant utility facilities or other facilities owned by private entities on the site. A widening of Sierra College Boulevard as a condition placed on the developers of the planned Stoneridge residential development (immediately south of the project site) will be coordinated to provide for ingress/egress to the project as well as to provide required new water and electrical utility services. The failure analysis (RBF Consulting 2004) indicates that only a minor 6-inch rise in water surface elevations would occur at residences located approximately 3 miles downstream of the site in a 200-year extreme failure event (worst case scenario).

#### Evaluation of Impacts on Timber Extraction Operations

There are no timber extraction operations within or adjacent to the project area.

#### Evaluation of Required Maintenance Activities

A project specific Operations, Maintenance and Monitoring Plan (OMM) will be prepared prior to the close of construction activities to ensure and demonstrate the success of the project over the long term in terms of flood control benefits as well as water quality and habitat improvements. Both short-term (first three years only) and long-term (first three years and life of project) OMM related activities will be identified in the plan and performed at the site by District and/or organized volunteer efforts. The short-term OMM activities and frequency performed in the field include:

- Establishment and maintenance of restored vegetation under three-year warranty period - weekly
- Water chemistry sampling upstream and downstream – twice annually
- Fish surveys – once annually
- Benthic macro-invertebrate surveys – once annually

The long-term activities and frequency of performance will include:

- Spot elevation surveys of basin and embankment – once annually
- Channel morphology surveys – once annually
- Removal of sediment and debris from basin and inlet/outlet areas – once annually
- Monitoring and maintenance of two ALERT system stream level gages – twice annually
- Vegetation control in the basin and on the embankments (according to restoration guidelines) – once annually
- Rodent damage inspection and control – once annually
- Encroachment surveys and control – once annually
- Inspections and maintenance of parking lot, trail systems and related public facilities – once annually