San Francisco Bay Area
Wetlands Restoration Program

Letter of Review
March 31, 2003

Coyote Hills Wetlands Enhancement and Drainage Improvements
Fremont, California

IMPORTANT NOTICE: Please note that project review by the Design Review Group (DRG) does not constitute DRG endorsement of a project nor does it constitute a step in the regulatory and/or permitting process. Project proponents are free to pose questions to the DRG at their discretion and the DRG responds only to those questions deemed within its scope and realm of expertise. The Design Review Team does not intend to reach consensus in all of its feedback and dissenting opinions are included as expressed. All feedback is suggestive and non-obligatory; project proponents are not required to incorporate any or all of the feedback into their project design.

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1. Project Team:

a. Project Proponent(s): East Bay Regional Park District (Joe DiDonato, contact), Alameda Flood Control and Water Conservation District (Rick Baker, contact)

b. Project Presenter to Design Review Group: Joe DiDonato (East Bay Regional Park District)

2. Design Review Group Participants:

a. Dates Review Team met to discuss the project: The Design Review Group, including the Coyote Hills Wetlands Enhancement and Drainage Improvements Design Review Team, featured the first presentation of the project on February 10, 2003. Following the presentation, the Team discussed the project and inquired about further information.

The Design Review Group then met again on March 17, 2003, to finalize this Letter of Review.

b. Review Team: Peter Baye - Plants and ecology (Independent Biologist), Rachel Kamman - Engineering and hydrology (Kamman Hydrology), Phillip Lebednik - Engineering and Wetlands Function (LFR Levine-Fricke, Inc.), Karl Malamud-Roam - Tidal marsh design and function (Contra Costa Mosquito Vector and Control District), and Carl Wilcox -Wetland wildlife biology (California Department of Fish and Game)

All Review Team members were in attendance at the February 10, 2003 meeting.

c. Non-Review Team Meeting Attendees: (02/10/03) Hank Ackerman (Alameda County Flood Control and Water Conservation District), Rick Baker (Alameda County Flood Control and Water Conservation District), Bob Batha (San Francisco Bay Conservation and Development Commission), John Brosnan (Wetlands Restoration Program), Frank Codd (Alameda County Flood Control, Planning and Design), Josh Collins (San Francisco Estuary Institute), Joe DiDonato (East Bay Regional Park District), Terry Huffman (Huffman-Broadway Group), Jerry Kent (East Bay Regional Park District), Roger Leventhal (FarWest Engineering), Molly Martindale (U.S. Army Corps of Engineers), Mike Monroe (U.S. Environmental Protection Agency), Stuart Siegel (Wetlands and Water Resources), Moses Tsang (Alameda County Flood Control, Planning and Design), and Fred Wolin (Alameda County Flood Control and Water Conservation District)

3. Review Process:

a. Assistance requested by project sponsor: Joe DiDonato, on behalf of the project's planning team, presented a list of issues to the Design Review Team. The list consisted of those issues on which he sought Design Review Team input. Some questions were listed within the completed Project Summary form and some were presented during the presentation. Where applicable, some questions are grouped together. Items included:

i. What are the best means of controlling the cattail population?
ii. What should be the mosaic of wetlands habitat types at the park?
iii. Should we attempt to restore seasonal wetlands that have been converted to perennial wetlands?
    a) What about filling some of the site?
    b) What are some other options for restoring seasonal wetlands?
iv. Should the restoration of tidal action be considered?
v. Is the plan for a flow-through system of perennial ponds at the base of the hills, a mosaic of seasonal-fresh wetlands to the east, and the seasonal-saline wetlands to the north, suitable?
    a) Should we keep the Demonstration Urban Stormwater Treatment (DUST) marsh?
    b) Should we bypass the DUST marsh and route water directly into the flood control channel?
vi. If it turns out that surface discharge of groundwater is more plentiful and dependable, how should it be incorporated into the mosaic?
vii. Should the p-line be maintained, abandoned, or re-routed?
    a) Do we need to cut new channels?

b. Materials reviewed:
- Completed Design Review Group Project Summary Form
- Project presentation to DRG, February 10, 2003

c. Additional Information Requested by the Design Review Team: The Review Team did not request any additional items.

4. Design Review Group Findings and Comments:

The Design Review Team provided numerous suggestions and all of those suggestions are captured in this section. The Team does not intend to reach consensus in all of its feedback and dissenting opinions are included as appropriate.

The following represents the professional opinions of the Design Review Team and select Design Review Group members, as identified. These opinions are provided for the benefit of the project proponent in direct response to those questions posed by the proponent. The project proponent is in no way obliged to incorporate any or all of the feedback herein into their project design.

a. Consistency with Habitat Goals: The Coyote Hills Area comprises Segment R in South Bay subregion within the *Baylands Ecosystem Habitat Goals Report* (page 134 of the document). Specific to the project area within Segment R, as listed under "Unique Restoration Opportunities", the *Goals Report* states: "On the eastern side of Coyote Hills, there are seasonal wetlands and willow grove habitat that could be restored or enhanced." The *Report* recommends the following actions:

   i. On the eastern side of Coyote Hills, enhance and expand muted tidal areas with improved water management;
   ii. Protect and enhance existing willow groves and seasonal wetlands;
   iii. Consider reintroducing coyotes into Coyote Hills to restore natural predator/prey relationships and to control the introduced red fox;
   iv. Consider removing the flood control levees in the lower reaches of the Alameda Creek Flood Control Channel as part of restoration planning for this area; and,
   v. Control smooth cordgrass (*Spartina alterniflora*) before restoring large diked areas to tidal marsh.

   The *Habitat Goals Report* recognizes flood protection considerations in Segment R may pose constraints to restoration in exact accordance with the document's prescriptions for this segment.

   At present, the plans for the Coyote Hills Wetlands Enhancement and Drainage Improvement project are very conceptual. Given that the proposed project's timeline for construction of new alternatives for habitats and floodwater management has not been established, some of the above recommendations within the *Habitat Goals Report* may be outside of the scope. However, these points have been provided as information for the benefit of the project proponent and could be incorporated into the project as the project progresses. The stated objectives of the project include the restoration of flood storage capacity, creation of a variety of wetland types and a reduction in cattail dominance on the site.

   The Design Review Team concurred that the whole of the project has the potential to be consistent with the *Habitat Goals Report*.

b. Issues Addressed by the Review Team, Discussion and Findings:

The Design Review Team providing feedback on all of those questions posed. That feedback is provided in aggregate with general comments up front and more specific comments itemized below.

General Comments:

Rachel Kamman suggested that identifying the causes for changes in the hydrologic regime is the critical issue that needs to be addressed first. Before beginning a restoration design, the sources of water to the site (current and past) should be identified and their contributions characterized. Significant water sources that should be characterized include artesian and subsurface groundwater sources (see below), irrigation water, and tidal and surface water detention.

Rachel asked about potential opportunities (using microtopography or modifying drainage patterns) for keeping summer low flow discharges out of tidal areas and some seasonal wetland areas to improve habitat value and diversity.

Phil Lebednik stated that the water quality of the P-line input should be quantified. Phil also asked if the sediments were anoxic and stated that the current wisdom is that anoxic sediments lead to the methylization of metals.

Phil Lebednik stated the project proponents have made a good effort at considering how ground and surface water management can be integrated into the restoration activities at the site. He recommends that the same "system" approach be employed in examining the ecological functions (i.e., habitat mix and objectives) for the project. As they did for water management, they should consider the "landscape" aspects of potential habitat restoration opportunities (and limitations – see comments by Peter Baye) for the site, taking into account the Habitat Goals information quoted above. Although it may be impossible to fully re-create the historical setting, the project should consider developing a "vision" of the major ecosystem functions that could be established at the site that, as closely as possible, reflects the original "mix" of ecosystem functions, taking into account the water management objectives. Historically, this site provided certain ecological functions within this region of the Bay. Under today's conditions, how many of these functions can be enhanced or re-created, and to what extent? This vision can serve as a framework that may help establish the project objectives related to movement of water through the site, salinity regimes, and the placement and extent of upland transition. The framework can also help integrate the numerous detailed comments provided by the Review Team. Perhaps the most productive approach would be to establish the ecosystem vision, and then evaluate how the vision needs to be modified to accommodate the water management objectives and the soil condition limitations described by Peter. The detailed habitat and species information provided by Peter elsewhere in this document can also assist in this process.

Peter Baye stated the formation of perennial cattail marsh indicates: (a) accumulation of fibrous organic matter (young peat), reducing soil bulk density; (b) accumulation and storage of mineral nutrients in organic matter, particularly nitrogen; (c) waterlogged soils with anaerobic, reducing soil conditions, likely to cause accumulation of sulfides. Partial dewatering of perennial cattail marsh is likely to result in:

- partial dieback of cattails, at least in drought years;
- rapid decomposition of accumulated waterlogged organic matter;
- release of stored nutrients; exposing organic-enriched low bulk density soils to colonization by seasonal wetlands plants; and,
- oxidation of reduced sulfides to acid sulfates.

Peter added these are familiar conditions for managed seasonal wetlands of Suisun Marsh, and other managed marsh impoundments in the eastern U.S. East Bay Regional Parks District (EBRPD) will be conducting preliminary sampling of groundwater, installing piezometers over the site. Because the site has received urban runoff with potentially high nitrate loads from fertilized landscaping (runoff, groundwater), it would be valuable to determine the porewater concentrations of total nitrogen (ammonium, nitrate, organic N) and total salts in the root zone (top 10-20 cm) of the marsh during growing season, and at the beginning of the growing season. Similarly, it would be valuable to determine soil sulfide concentration at these depths in multiple samples. The potential value of these data would be to assess whether current surface and groundwater inputs would constrain the diversity of perennial freshwater marsh vegetation, and whether dewatering the site (partial conversion to seasonal wetlands) would cause acid sulfate soils and excessively high soil fertility, favoring a tolerant narrow weedy non-native vegetation.

i. <u>What are the best means of controlling the cattail population?</u>

Carl Wilcox stated that the culverts at 4' are too high and that lowering the elevation of the culverts seemed to him the means of managing the problem. Phil Lebednik suggested introducing saline water into the North Marsh, preferably naturally during high tides, for use as a *Typha* control mechanism.

Peter Baye suggested determining the summer pore water/surface water quality while the cattails are dying back. He stated that seasonal salinity is an important factor to consider in tandem with tidally-influence salinity. He suggested wedding the hydrological and vegetation management. Peter also suggested monitoring the peat thickness and the salinity of the summer pore water. He suggested removing the cattails when the ground is wet, as removal during a dry period will not fully extirpate the plants.

Peter added control efforts should not be viewed narrowly in terms of short-term reduction of one vegetation type, but in context of overall vegetation management. If cattails are reduced, planning must cover what vegetation would regenerate in their place, if not more cattails. Mowing, crushing, dredging, herbicides, or other means of killing stands will probably provide only temporary reduction in biomass. Cattail dominance is favored by brief periods of soil emergence, high nutrient availability, and rapid new colonization of perennial marsh (favoring fast-dispersing, rapidly growing, abundant seed-producers like cattails). Salinity can limit cattail growth and establishment, but variable salinity effects depend on both life-history stage (seedling, juvenile plants, adult clones) and seasonal development (rapid growth, acclimation to gradual decrease in moisture/increase in salinity,

formation of dormant resistant turions, dormancy). Local populations may be naturally selected for increased salinity resistance in various growth attributes. Similarly, water depth and duration of flooding affect different life-stages differently: adult clones are highly tolerant of persistent deep flooding, while seedlings and juveniles are not. Timing and rapidity of summer dewatering and desiccation similarly affects cattails according to stage of physiological and morphological acclimation, and life-history stage. Cattails are likely to re-invade sites of eradication by clonal expansion or seedling colonization unless the flooding and salinity regime are significantly altered.

Peter also pointed out that a relatively small change in flooding and salinity regime, following an initial "reset" of vegetation (mass disturbance, dieback) could result in replacement of many cattail stands with alkali bulrush (*Scirpus maritimus*) or tule (*S. acutus*, *S. californicus*), potentially along a gradient. Intermittent pulses of saline or brackish water intake from Alameda Flood Control Channel could achieve this during the growing season. Sprigging alkali-bulrush rhizomes into areas of cattail dieback would benefit this process, since seed dispersal sources are not abundant in this subregion.

Peter wanted to remind the project proponent that freshwater cattail marsh is potentially very valuable for recover of California red-legged frogs and other freshwater wildlife, and should not be viewed exclusively as nuisance vegetation for flood control or waterfowl management.

Peter stated willow riparian thickets could be used to suppress cattails along new or rehabilitated channels. If channels are excavated in nonsaline parts of the wetland complex, side-cast spoil piles may be used to establish willows from vegetative dormant cuttings (stakes) along channels. Seedling establishment would be unreliable because of wetland weed competition. Shading of willow canopies overhanging the channels would eventually suppress cattail growth and regeneration below them. Cattail regeneration would also be delayed if re-excavated channels were made with steep, near-vertical banks, and depths near or exceeding 3 feet. Willows would be established on and above the banks. Mulching willow-staked spoil piles with shredded or matted cattails would reduce competition with establishing willows. Rapid willow growth (canopy development to suppress early colonization by *Typha* in channel banks) could be accelerated by localized nitrogen fertilizer directly below plantings. Willows would be restricted to parts of the marsh where summer pore water/ground water salinity is less than 2 ppt most years.

Rachel Kamman commented that the ability to manage (reduce) surface water inflows to the site during non-flood stage conditions will likely be critical to controlling cattail populations and establishing a variety of seasonal and transitional habitats. The abundance of groundwater in the area

will likely preclude groundwater extraction as a means for reducing saturation periods (see note).

Note: Historically the Alvarado well field was one of the most prolific in the East Bay. This field provided more the fifty percent of the groundwater used in the Oakland area. Many of the wells were artesian, with local water levels 5 to 6 feet below ground surface at the turn of the century. Pumping began around 1908 to increase well yields. At that time the estimated safe yield was 6 million gallons per day. By 1915, under a yield of 8 MGD water levels had dropped to 10 - 12 feet below sea level. Use of the field was discontinued in the 1930s when the Sierra water supply was adopted (Norfleet Consultants, 1998). Long-term trends/changes in groundwater table elevations associated with pumping of the Alvarado well field and nearby mining activities should be evaluated. The associated subsidence of ground surface elevations may make accurate assessments difficult if vertical control points located on bedrock features are not available.

ii. <u>What should be the mosaic of wetlands habitat types at the park?</u>

Phil Lebednik suggested looking at increasing the populations of willows in the area by decreasing the elevations of ponds.

In response to this question, Peter Baye submitted the following comments:

The existing nontidal wetland complex appears to be in flux, from predominantly seasonal wetland grasslands, brackish pickleweed marsh, to fresh-brackish perennial marsh dominated by cattails. These seasonal wetlands are young and recent in origin, regenerated since the 1960s in derelict croplands (farmed, drained wetlands). These are located in diked historic tidal marsh at the edge of a large alluvial fan (transition to historic terrestrial lowlands/riparian woodland and marsh). The presentation by Joe Didonato indicates a trend of transition from seasonal wetlands (summer-desiccated surface soils) to perennial marsh, and minimal or declining influence of soil salinity.

Based on the desire for floodwater conveyance functions, and the restrictions imposed by the surface roughness of extensive cattail marsh, there appears to be some prejudice against freshwater perennial marsh, or at least extensive stands of tall emergent perennial marsh vegetation. Even a more "diverse" native freshwater marsh vegetation (*Scirpus acutus*, *S. californicus*, *Carex spp.*, multiple species of *Typha* and intergrades, occasional stands of tall emergent broadleaf hydrophytes [*Cicuta*, *Sium*, spp. etc]), would provide naturally high roughness in the marsh, and could conflict to a substantial degree with maximal efficiency of flood conveyance.

The regional biological conservation value of fresh-brackish nontidal or microtidal marsh, however, is substantial. In terms of regional rarity, it may be compared with estuary-margin vernal pool grasslands. *Extensive fresh-brackish tidal marshes, riparian woodland, and associated ponds (and lagoons) were most likely a major component of the so-called "upland transition" along the Alameda shoreline*. This is indicated by historic localities of freshwater marsh species described in herbarium specimens (UC/JEPS), regional historic floras, and descriptive accounts (J.B. Davy, 1880s, acc. R. Grossinger, SFEI, pers. comm.). Some of this freshwater marsh habitat type may have been classified into "moist grassland" or "riparian" habitat categories, as well as artificial "diked wetland" and "agricultural bayland" in the Goals Project (1999), and some may have been assigned to saline habitats based on the assumption that all "transitional pans" were primarily hypersaline or saline, not dominated by surface and groundwater discharges at estuary margins.

The habitat value of the present, young, dynamic freshwater marshes on site probably under-represent their potential habitat value to key wetland species of concern. This may be due to (1) restrictions on species dispersal to the site (isolated from source populations from which species may disperse); (2) very recent origin of the freshwater marsh habitat; and (3) dominance by few efficient colonizers in a rapid period of establishment. The types of fresh-brackish perennial marsh present indicate high potential suitability for the following native key species of concern:

California red-legged frog. CRLF today breed in local abundance in fresh-brackish perennial marsh within coastal lagoons adjacent to tidal embayments (Drakes Head, Drakes Estero; backbarrier lagoon marshes, western Tomales Bay; Pescadero Marsh). Analogous habitats appear as backbarrier lagoons of stream mouths in early historic San Francisco Bay (Richmond-Berkeley shoreline, SF peninsula, Richardson Bay). CRLF are documented to tolerate up to 4.5 ppt salinity, and may tolerate more in locally adapted populations (e.g. south Abbotts Lagoon, occasionally reaching 7 ppt). The Coyote Hills freshwater marsh is highly similar to the principal modern remaining CRLF habitat west of Hwy 101 at the SF Airport, but much larger. It could potentially support the population of CRLF in the east bay, if not the entire estuary. The apparent lack of CRLF may be due to youth and isolation of the marsh. **I recommend that EBRPD confer with CDFG and USFWS on the potential suitability of at least part of the site as a planned CRLF reserve (reintroduced and managed population)**. I assume that surveys for this species have already been performed at the site, and have been negative. If not, the marsh should be surveyed.

Most of the wetland complex seems to have all essential habitat features for California red-legged frogs. The isolation of the site from source populations, and urban barriers to dispersal, may be the limiting factors for natural colonization. The site seems highly feasible for successful

reintroduction even without habitat enhancement. If CRLF re-established in only half the wetlands of the complex, it would still be one of the largest reserves for the subspecies in the Bay region.

Western pond turtle. Western pond turtles breed and persist in the fresh-brackish tidal sloughs of northwestern and eastern Suisun Marsh. The shallow, warm fresh-brackish ponds and adjacent marshes also represent potential habitat for western pond turtles, which are presumably uncommon or extirpated in most of the urbanized watershed. The site could provide a large, relatively stable habitat reserve for this species.

California black rail, sora, Virginia rail, moorhen. There are currently no other areas in SF Bay where *extensive* pickleweed marsh (full tidal range or otherwise) occur adjacent to fresh-brackish emergent marshes and shallow open ponds. The fresh-brackish converted tidal sloughs of the Santa Clara Valley are narrow strips between levees, and their pickleweed marshes are rapidly being displaced by perennial pepperweed. The presence of California black rails at the Coyote Hills marsh site (acc. Joe Didonato) is very important, and indicates **perhaps the best forseeable potential habitat for California black rails, sora, moorhen, and Virginia rails in the south bay**. Low elevations in the Santa Clara Valley baylands make the habitat mix of persistent, high pickleweed marsh and freshwater marsh/pond areas unlikely for many decades. Common moorhen were not detected at Coyote Hills in the late 1970s, before the freshwater marsh expanded to its current extent (Bousman: Goals Project Species and Community Profiles, 2000).

Salt marsh common yellowthroat. This ecological race would benefit from adjacent riparian woodland and brackish marsh.

Salt marsh harvest mouse. The nontidal pickleweed salt marsh may persist even in low salinity, but would be more valuable as habitat with at least occasional soil salt recharge. The value of the site may be constrained if flood detention functions require even occasional submergence of the pickleweed vegetation canopy, unless emergent flood refugia are frequent and well-distributed.

Regionally rare fresh-brackish plants. Many of the now-rare tidal marsh plants restricted in the estuary to Suisun Marsh were components of brackish-fresh marshes of SF Bay before extensive diking, and physical segregation of nontidal fresh and tidal salt marshes. Freshwater marsh, or damped or intermittent tides allowing a brackish-fresh marsh gradient, would be compatible with re-establishment of many rare to uncommon plants native to the East Bay, such as Suisun aster (*Aster lentus*), slim aster (*Aster subulatus* var. *ligulatus*), marsh baccharis (*Baccharis douglasii*;

present in small populations at Coyote Hills); Bolander's water-hemlock (*Cicuta maculata* ssp. *bolanderi*).

There is ample opportunity (suitable potential habitat) for many uncommon to rare marsh plants on the site, and much opportunity to facilitate dispersal of remnant marsh and marsh ecotone plant species already present in Coyote Hills. This would be a valuable component of a wetland enhancement project.

Submerged aquatic vegetation (SAV). Fresh-brackish ponds may be suitable sites for establishment of native SAV with high value to diving ducks (esp. canvasback in deeper ponds), particularly *Potamogeton pectinatus*. These would be compatible with alternatives involving deepening of ponds or slow-flowing perennial channels.

In addition to fresh-brackish perennial marsh, the site has potential to restore important **seasonal wetland plants of native grassland vegetation**. Native grassland swales near the East Bay shores would be dominated variably by creeping wildrye (*Leymus triticoides*; present in Coyote Hills seeps and SFBNWR marsh edge), and numerous rushes and sedges (*Juncus*, *Carex* spp.), or forbland species associations similar to those described by W.S. Cooper (1926) for alluvial fans of Palo Alto. Depressions alternating between winter-spring inundation and summer desiccation would support typical vernal pool plants, as in the Warm Springs (Fremont) area. Both plant associations would probably have occurred in the immediate vicinity of the park, if not in the park itself, outside historic willow groves, along with wetter areas supporting perennial marshes. This rich flora, including now-rare species **and endangered plants (Contra Costa goldfields, *Lasthenia conjugens*; historically recorded at Mt. Eden)** could potentially be restored by grassland management and appropriate summer/winter hydrology. **Other than the Warm Springs/Pacific Commons reserve, Coyote Hills Park currently represents the only other major opportunity to restore this vegetation and flora in San Francisco Bay.**

iii. <u>Should we attempt to restore seasonal wetlands that have been converted to perennial wetlands?</u>

Karl Malamud-Roam stated the need to accurately characterize the present salinity.

Peter Baye stated that perennial pepperweed (*Lepidium latifolium*) is locally abundant at the brackish northern end of the marsh, along channel edges and seasonal wetland plains. Any sidecasting of marsh soils in the vicinity of *Lepidum latifolium* would very likely result in rapid invasion and dominance of disturbed soils by this species. Even left undisturbed, much of the remaining seasonal wetland will probably become more heavily invaded by this species. The suggested salinity pulse technique of controlling cattails

would probably only inhibit the growth of *Lepidium latifolium* unless soils became hypersaline in summer (over 35 ppt) for several years.

Peter added that a slower, but equally significant, invasion of a salt-tolerant non-native bunchgrass, tall wheatgrass (*Elytrigia pontica*) probably introduced with seed mixes to stabilize levees long ago is also spreading into brackish seasonal wetlands. Ten years ago, it was primarily restricted to the levees and upstream brackish fringing marshes along the banks of the Alameda Flood Control Channel. It is now moving into seasonal wetlands. Mowing to reduce seed spread would be useful even if seasonal wetlands are not enhanced; it would have similar effects as Harding grass (*Phalaris aquatica*) in the long term.

Peter Baye stated, traditionally, "seasonal wetlands" in SF Bay have been valued (or under-valued) primarily as waterfowl and shorebird habitat. Many of these habitat functions are not unique to natural seasonal wetlands (grassland swales, vernal pools, back-marsh pans), but are supplied also by managed salt ponds and similar impoundments in diked baylands. The specific value of seasonal wetlands in restored natural grassland vegetation, however, for native plants cannot be replicated by other managed wetlands. The native vernal pool flora of the East Bay was so diminished by the time vernal pool classification was initiated in the 1970s, that it was not assigned a distinct floristic subregion. Today it is represented only by Warm Springs/Pacific Commons, recognized only recently (early 1990's). Because of the recovery potential for federally endangered Contra costa goldfields, and associated species of concern, *restoring at least some of the seasonal wetlands that have become converted to freshwater marsh would be justifiable in terms of balanced, regional habitat conservation*.

In addition, please see iv., below.

a) <u>What about filling some of the site?</u>

Rachel Kamman noted that at several locations around the bay (e.g. adjacent to the Corte Madera Ecological Reserve and on Port of Oakland parcels around Arrowhead marsh) compacted fill sites are functioning well as seasonal wetland and panne habitat.

b) <u>What are some other options for restoring seasonal wetlands?</u>

Rachel Kamman suggested, given the high management costs associated with working on site under current (wet) conditions, the DRG provide thoughts on dewatering the site (completely or in phases) as part of restoration efforts. Peter Baye stated that cattails invade where they will succeed and that even dewatering and removal might not prevent them from reestablishing. Carl Wilcox said the only way to deal with water is to reengineer the

way that the site drains; this site will take significant intervention to make it drain well.

Karl Malamud-Roam suggested contacting the local mosquito control district, as they might have good historical records of water and salinity. He added that good topographical surveys in relation to local tidal datums, and in particular Alameda Creek invert (bed elevation) and culvert heights, were necessary to characterize the site's hydrology and to predict the hydraulic consequences on proposed project elements [avoid data gaps relative to tidal datums. He stated the need to accurately characterize Alameda Creek invert heights].

Peter Baye submitted the following comment: Regarding the question about whether filling to create seasonal wetlands is advisable: probably not. Most of the available surface soil locally seems to be porous and peaty. Clay-rich subsoil (parent material) would be needed for good restriction of surface water and the most desirable, low-growing seasonal wetland vegetation of swales and pools. Filling perennial marsh with permeable peaty surface soil would make seasonal wetlands dependent on groundwater, and would encourage rank, tall seasonal wetland vegetation, including many weeds. If clay subsoils become available in large volumes, this could be revisited. The best use of fill may be to create low side-cast berms or domes for planting willows along re-excavated channel banks to suppress cattail regrowth.

iv. Should the restoration of tidal action be considered?

Peter Baye stated, in the near-term, tidal restoration of the site could result in rapid expansion of a noxious hybrid swarm of Atlantic smooth cordgrass (*Spartina alterniflora x foliosa*), which would dominate all restored tidal areas near mean sea level to near mean higher high water. This may have at least temporary benefits to California clapper rail populations, but could jeopardize long-term habitat quality for this and most other native salt marsh wildlife and plants. Because of this risk, it would be prudent to consider tidal restoration only after the long-term fate of the regional effort to eradicate the hybrid swarm is reasonably confirmed. Since the majority of salt ponds acquired for public ownership are proposed for tidal restoration, the unique geographic attributes of this Coyote Hills site (edge of historic alluvial fans, extensive freshwater marsh) do indicate a higher priority for other regionally rarer habitat restoration opportunities (native seasonal wetland grasslands, fresh-brackish marsh).

Peter also said that salinity of channel water draining from the marsh to the culverts was fairly high for March in a wet winter, but in fresh-brackish range: just over 4 ppt, well below limits of tolerance for cattails. Water was nearly fresh in the large ponds.

v. Is the plan for a flow-through system of perennial ponds at the base of the hills, a mosaic of seasonal-fresh wetlands to the east, and the seasonal-saline wetlands to the north?

a) Should we keep the Demonstration Urban Stormwater Treatment (DUST) marsh?

Phil Lebednik felt more information was necessary before the DRG can respond to this question. What are the feasible alternatives to "keeping" the DUST marsh that proponents are contemplating? What purposes are the DUST marsh currently serving and how would these be replaced? Is there contamination at the site? What is the condition of the soils at the DUST marsh? What are the current habitat values?

[NOTE TO PROJECT PROPONENT: The Design Review Team did not respond to this particular question at this time due to need for further information.]

b) Should we bypass the DUST marsh and route water directly into the flood control channel?

Please see response to a., above.

[NOTE TO PROJECT PROPONENT: The Design Review Team did not respond to this particular question at this time due to need for further information.]

vi. If it turns out that surface discharge of groundwater is more plentiful and dependable, how should it be incorporated into the mosaic?

Rachel Kamman suggested conducting water quality tests as part of the groundwater monitoring program. The proper suite of parameters can be used as a "fingerprint" to identify surface and groundwater sources. She stated the need to know where water comes from in order to effectively manage/utilize it.

Rachel stated available ground water could be used to create self-sustaining open water habitat. The appropriateness of such perennial ponds would need to be addressed.

Phil Lebednik felt, if there is significant continuous discharge of ground water across the site, proponents should consider how such discharge could be employed to create permanent fish habitat as ponds and/or as freshwater/estuarine interface channels. Species potentially benefiting from such habitat could include threespine stickleback, Pacific staghorn sculpin, etc., as well as nursery areas for many estuarine species. Key elements of

such habitats include open migration routes to the Bay, fluctuations in water conditions, protection from predators and food availability.

vii. Should the p-line be maintained, abandoned, or re-routed?

Rachel Kamman stated, given the overabundance of water on site, it may be worthwhile to consider replacing the P-line in a subsurface conduit to reduce the impacts of perennial freshwater discharges on the site.

a) Do we need to cut new channels?

[NOTE TO PROJECT PROPONENT: The Design Review Team did not respond to this particular question at this time due to need for further information.]

See also responses to i., above.

c. Issues Not Addressed by the Review Team and Rationale:

The Design Review Team did not respond to questions about retaining the DUST marsh, bypassing the DUST marsh, or cutting new channels. At this time, Design Review Team members felt that more information was needed before providing feedback on these three points.

d. Phasing and Coordination:

e. Other issues:

5. Disclaimers:

a. The recommendations of the Restoration Program are not binding on any permitting agency and they will not restrict any agency's authority.

b. The Wetlands Restoration Program's Design Review Group makes every effort to provide guidance; we cannot guarantee issuance of permits by any regulatory agency.

c. The Wetlands Restoration Program's Design Review Group is intended to provide comments and feedback on plans and designs. This assistance will necessarily be limited, and should not be expected to substitute for professionally prepared site evaluations, hydrological studies, final designs, and construction plans.

d. The Restoration Program and the participating agencies will not be liable for the failure of any project.

e. Project review by the Design Review Group does not constitute an endorsement of the project by the Design Review Group or by the Wetlands Restoration Program.

ATTACHMENT A

PROJECT DESCRIPTION

i. Project objectives:

There has been a substantial increase in the availability of surface water In the Coyote Hills Regional Park in Fremont, California. The excess of freshwater on the site and its contribution to a monotypic cattail population; these factors negatively affect the necessary flood storage capacity of the site. Local development, expected in the near future, is anticipated to increase the flood capacity demand for the site. Only a few deeper water open habitats remain. Between 1987 and 2002, the site changed from a mix of seasonal wetlands with pickleweed populations and open grasslands to the majority of site being dominated by cattails.

Water conveyance on the site is through two main corridors: the P-line, which is an open, flood water conveyance channel, and the DUST marsh, or Demonstration Urban Stormwater Treatment marsh just south of and parallel to the Alameda Creek Flood Control channel. The DUST marsh was installed as an ABAG stormwater/flood control project to capture urban runoff. The P-line channel was designed as a 3-foot deep channel with a 10:1 slope that traverses the site from the southeast to the northwest; the P-line was designed to pond water until the water level in the main flood control channel goes down. The water level in the P-line is managed, as there are four 48" gates at Alameda Creek that separate it the P-line. The Park District is now considering an alternative P-line alignment and cutting new channels (the flood basin is considered everything below 5' elevation). The concept would feature flood storage covering the bulk of the site during the winter and low flow channels providing a conduit for surface water drainage during the summer.

The project proponents are developing alternatives for both long-term wetland enhancement and floodwater management to accommodate these changes in the water supply. Goals of the project are to restore the flood storage capacity, create a variety of wetland types, and reduce cattail dominance. The ultimate goal is to have a habitat mix close to that found on-site in 1987.

ii. Project location and map:

The project is located along the eastern edge of San Francisco Bay, within the Coyote Hills Regional Park In Fremont, California. The Park covers approximately 1,000 acres. The focus area of the project is the wetlands area along the P-line, east of the Coyote Hills and south of the Alameda Creek Flood Control channel. [A map of the project location suitable for inclusion in this document was not provided.]

iii. Type and acreage of habitats to be created or restored:

The proposed project seeks to restore flood storage capacity, create a variety of wetland types, and reduce cattail dominance. Due to the early stage in the project planning process,

specific target acreages and proposed mix of habitats have not yet been established or defined.

iv. Past use and current condition of the site:

Tidal influence at the site was interrupted in the late 1950's and 60's. As a part of the original park design, freshwater perennial wetlands were excavated and supplied with groundwater within the historical reach of tidal marsh. Much of the seasonal wetlands within the park correspond to the historical upland transition from tidal marsh to grassland. There are Indian shellmounds within a remnant of a large willow grove within the park.

At present, there are 455 acres of uplands on the site and 512 acres of wetlands. Of the 512 acres of wetlands within the Park, about 300 acres are perennial wetlands dominated by cattails (*Typha spp.*). Some seasonal wetlands remain in small quantities and only a few deeper water open habitats remain.

v. Description of any special features or issues:

a) Public access

The site enjoys abundant visitor use for passive recreation. There are several public access trails and a public Visitor Center.

b) Flood control

The Alameda Flood Control District is responsible for floodwater management at the site. The Alameda Creek Flood Control channel serves as the site's northern boundary. Water conveyance on the site is through two main corridors: the P-line, which is an open, flood water conveyance channel, and the DUST marsh, or Demonstration Urban Stormwater Treatment marsh just south of and parallel to the Alameda Creek Flood Control channel. The DUST marsh was installed as an ABAG stormwater/flood control project to capture urban runoff. The P-line channel was designed as a 3-foot deep channel with a 10:1 slope that traverses the site from the southeast to the northwest; the P-line was designed to pond water until the water level in the main flood control channel goes down. The water level in the P-line is managed, as there are four 48" gates at Alameda Creek that separate it the P-line. The Park District is now considering an alternative P-line alignment and cutting new channels (the flood basin is considered everything below 5' elevation). The concept would feature flood storage covering the bulk of the site during the winter and low flow channels providing a conduit for surface water drainage during the summer.

c) Subsidence

Subsidence has not proven to represent a problem at the site.

d) Mitigation

The Coyote Hills Wetlands Enhancement and Drainage Improvement project is not a mitigation-based project.

e) Other adjacent/nearby projects

The proposed project is not associated with adjacent or nearby habitat projects.

f) Opportunity for transitional habitats

The project offers the potential for the creation of a mosaic of habitats that includes marsh, grassland, and transitional and upland habitats.

ATTACHMENT B

Completed Project Summary Form

The project proponent desiring to have a project considered by the Design Review Group (DRG) shall provide the following information in full. The summary itself should not exceed a length of four pages. Please include a map and **the titles** of all available information, reports, and documents in the provided checklist. If the project is selected for review, additional information, including hard copies of project documents, may be requested from the proponent.

1. **Project Name:** Coyote Hills Wetland Enhancement and Drainage Improvement

   Project Proponents:
   - **a. Alameda County Public Works Agency (ACPWA):**
     Rick Baker, Hank Ackerman, Fred Wolin.
   - b. **East Bay Regional Park District (EBRPD)**:
     Joseph DiDonato, Jerry Kent
     Consultants: Joshua Collins (SFEI), Phillip Williams & Associates

2. **Project Objectives** There has been a substantial increase in the availability of surface water in the Coyote Hills Regional Park in Fremont, CA. The increase seems to be a lasting effect of changes in land use around the Park. The proponents are developing alternatives for both long-term wetland enhancement and floodwater management to accommodate these changes in water supply.

3. **Status of Project Planning**: The project is still in the stage of conceptual design. To inform these designs, ACPWA has surveyed several segments of the area gathering information on water surface elevations and invert elevations of channels and culverts. ACPWA has also designed and mapped alternative channels for floodwater conveyance, and reviewed the historical use patterns of the site. The EBRPD has compiled past conceptual plans, historical photographs and construction documents, mapped the vegetation and water management structures in the marsh, reviewed past reports, and has initiated a groundwater monitoring project.

   In the short-term, there are drainage inhibitions on the site that need to be corrected for the sake of adjacent land uses. For example, EBRPD has contracted to mow cattails along the southern segment of one of the main drainage channel (the P line) that cuts across the Park, and the ACPWA has contracted to use an Aquamog to remove vegetation from that section of the P line, in order to improve flow through the line during this year.

   The proposed timeline for construction of new alternatives for habitats and floodwater management has not been established but preliminary intentions are to start construction of the preferred alternatives in fall of 2004.

   Sources of funding are being sought from within the two agencies and also through grants, outside mitigation funds and potentially, fine money.

4. **Project Description**: Coyote Hills Regional Park is located In Fremont, CA, north of HWY 84, along the San Francisco Bay shoreline (see map). The Park is approximately 1000 acres and contains about 500 acres of wetlands and 500 acres of upland habitat. The park is jointly owned by the EBRPD and the ACPWA. The wetlands within the park are part of a managed storm water flood basin. Of the 512 acres of wetlands, approximately 300 acres are perennial wetlands dominated by cattails (typha spp.). Storm waters are conveyed through several key channels within the park to empty into the Alameda Creek flood control channel. Invasion of cattails into these channels has reduced their capacity and ability to convey floodwaters. Cattails and other freshwater wetland plants have spread across large areas that used to be seasonal and salt-influenced. There is a proposal to develop the private property to the east of the Park Into residential housing.

5. **Special Features or Issues:** The site enjoys abundant public use for passive recreation. There are several public access trails and a public Visitor Center. The Park exists where the historical grassy plain met tidal marsh at the base of the Coyote Hills. As a part of the original park design, freshwater perennial wetlands were excavated and supplied with groundwater within the historical reach of tidal marsh. Much of the seasonal wetlands in the park correspond to the historical upland transition from tidal marsh to grassland. There are Indian shellmounds within a remnant of a large willow grove in the park. The marsh supports two listed species: the salt marsh harvest mouse and CA black rail. One concern is that seasonal wetlands are being converted into perennial wetlands due to the increase in water supply. This is reducing the overall diversity of the wetlands mosaic in the Park.

6. **Available Information** – See attached checklist.

7. **Desired Feedback** – The proponents are seeking advice and feedback on some basic overall habitat design concepts. Some questions that might be addressed are listed below.

   General questions:
   - What should be the mosaic of wetland habitat types at the park?
   - Should we attempt to restore seasonal wetlands that have been converted to perennial wetlands?
   - Should the restoration of tidal action be considered?

   More specific questions
   - Is the plan for a flow-through system of perennial ponds at the base of hills, a mosaic of seasonal-fresh wetlands to the east, and seasonal-saline wetlands to the north, suitable?
   - If it turns out that surface discharge of groundwater is more plentiful and dependable, how should it be incorporated into the mosaic?
   - Should the p-line be maintained, abandoned, re-routed?

Available Information for

PROJECT NAME: Coyote Hills Wetland Enhancement and Drainage Improvement
Date: 1-30-03

Completed by: Joseph DiDonato, EBRPD

Information Type	Date	Document/Item Description
Project Plans:		
Conceptual	Jan-03	Power Point presentation for the DRG
Preliminary	x	
Final		
Other:	Feb 1987	Proceedings of the Coyote Hills Workshop
Consistency with Habitat Goals Report Recommendations for your part of the Bay:		The site falls within the South Bay subregion
Photographs:		
Aerial		Numerous historical aerial photographs of the region and several recent aerials Including orthophotographs encompassing the site
Ground		Many recent and historical oblique photos covering the area, including time-series through the seasons.
Topography:		
Topographic Map		Several sources of topographic maps from ACPWA and EBRPD. Also, some recent topographic maps from consultants working on adjacent properties
Geodetic Elevation Survey Report		
Hydrology:		
Tidal Elevation Survey:		Past surveys for the Alameda Flood Control Channel levees. NOS benchmarks occupied in 1977 exist within a mile of the site.
Groundwater Height:		Recent consultants reports on near-surface groundwater.
Wetland Delineation		A formal wetland delineation has not been done for the site. The site is dominated by freshwater wetland, and includes seasonal wetland and perennial wetlands. Approximately 512 acres of wetlands occur within the site.
Soil Characterization		There are alluvial soils, colluvial soils, historical salt marsh and brackish marsh soils, historical tidal marsh panne soils, and historical

		vernal pool soils. There are seeps and springs at the base of the hills.
Biological Surveys:		
Vegetation Maps		Recent vegetation maps produced by EBRPD
Listed Species		The site contains (nesting) habitat for the State & Federally endangered Salt Marsh Harvest Mouse, the State-threatened CA Black Rail, the salt marsh yellowthroat and white-tailed kite. The site serves as foraging grounds for the peregrine falcon and numerous other raptors listed by the state as Species of Special Concern.
Invasive Species Presence		The site has historically had red foxes breeding. An active predator management plan is maintained by EBRPD. There are many invasive plant species.
Invasive Spartina presence?		There is no S. alterniflora within the site but the plant occurs in the Alameda Creek Flood Control Channel, just outside the project site.
Birds		The site serves as nesting, foraging, resting and a migratory stopover for numerous bird species especially wading birds, shorebirds and waterfowl. Terrestrial species utilize the site extensively.
Fish		The site supports little fish activity with the exception of mosquito fish and carp which have been introduced into the waterways.
Invertebrates		While the site contains many invertebrate species, there are no listed Invertebrates known to occur on site.
Mammals		The site contains the salt marsh harvest mouse
Please List Any Additional Pertinent Information, Items, Reports:		
		The park has been used extensively through the years for ecological and archeological/anthropological research. Numerous reports and published papers exist. EBRPD has a record of most of these.
		The Park includes the Demonstration Urban Stormwater Treatment marsh (DUST marsh) for which there are data on water quality.

SAN FRANCISCO BAY AREA WETLANDS RESTORATION PROGRAM DESIGN REVIEW GROUP

CONFLICT OF INTEREST STATEMENT

The San Francisco Bay Area Wetlands Restoration Program Design Review Group (the Group) attempts to have those reviewers who participate as members of the Group avoid any conflict of interest. Conflict of interest, as it relates to the Group, is distinguished into two categories: financial and personal/institutional. The two distinct types of conflict of interest warrant two distinct courses of action of the part of each Group member. All those members having a *financial* conflict of interest with a project will NOT be allowed to evaluate proposals for which they have a financial connection and/or provide guidance and comment on that project, without exception. However, those Group members having a *personal/institutional* conflict of interest are required only to disclose any relationship, yet are not disallowed from project review and comment.

Regardless of the type of conflict of interest, each Group member has the personal obligation to avoid a conflict as well as the personal obligation to disclose any such conflict, whether real or apparent, to the Group as a whole.

Financial Conflict of Interest. The Wetlands Restoration Program expects that Group members will not review proposals in whose development they have assisted or if they would receive a financial benefit from the funded project. A conflict of interest would be considered to exist whenever a member of the Group **or** a relative of a Group member (including, for instance, a spouse, sibling, parent or child) has a personal, material, or financial interest in a transaction or project under consideration by the Group.

Personal/Institutional Conflict of Interest. If a Group member has a personal or institutional connection with a project sponsor in any way, but there is no conflict of interest, the member will be allowed to participate in the project review provided that any connection is disclosed prior to project review. A personal connection with a project sponsor is considered worthy of disclosure if any of the following relationships were applicable during the **past four years**: collaboration on research, pilot, or implementation proposal or project; co-authorship; thesis or postdoctoral advisorship; and/or supervisor/employee relationship. An institutional connection – such as between employers and their employees – will be considered worthy of disclosure. For example, an employee of a state or federal agency is considered to have an institutional connection with a proposal submitted by that agency, even if the project sponsor is in a different division of the agency than the reviewing Group member. Similarly, a university faculty member is considered to have an institutional connection with a proposal submitted by that university, even if the applicant is in a different department of that university campus.

To avoid any problems with conflict of interest or appearance of bias, scientific and technical reviewers are expected to review proposals independently and without delegating the review task in whole or in part to any other person. Any efforts to delegate review will be considered a conflict of interest. If you are uncertain about a potential conflict of interest, please contact John Brosnan at (510) 622-5048.