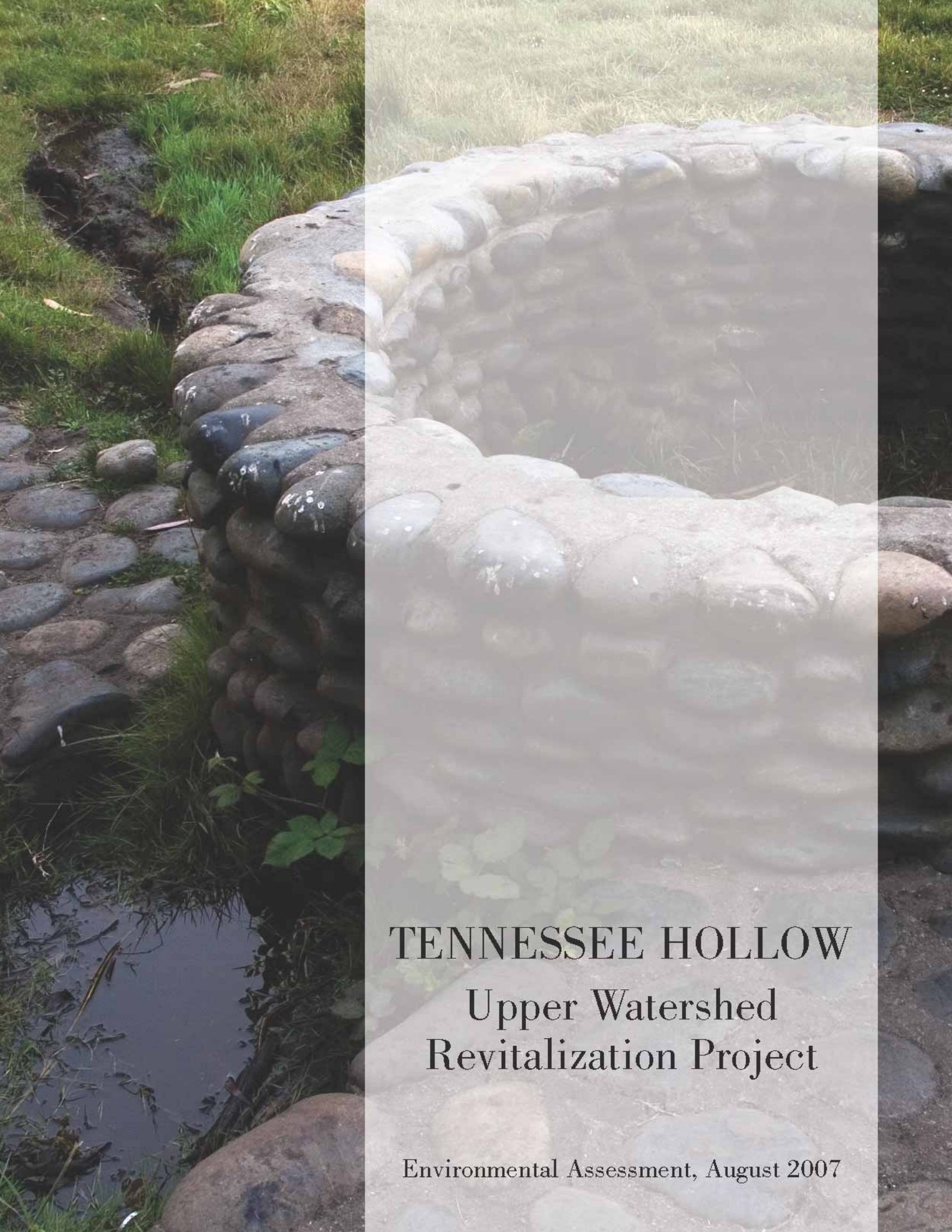


TENNESSEE HOLLOW

Upper Watershed Revitalization Project

Environmental Assessment, August 2007

VISION

Imagine discovering the very beginnings of a creek–watching water seep from the ground, and tracing the watercourse as it travels downhill to the Bay and Pacific Ocean.

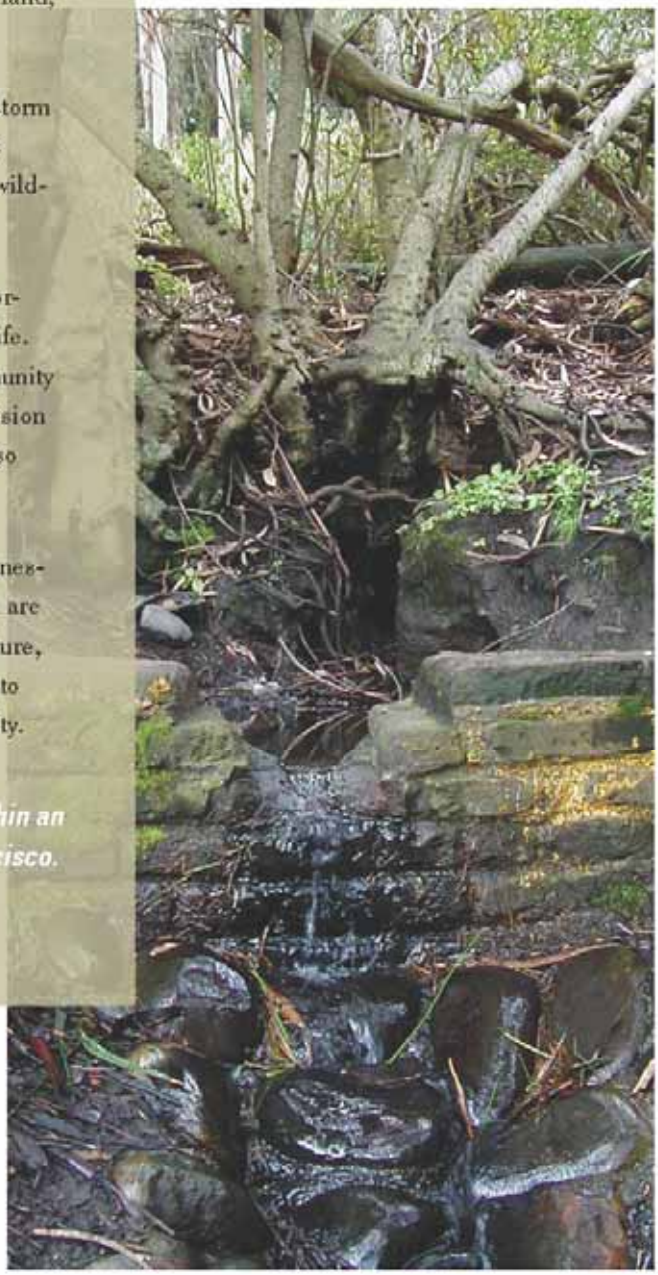
Along the way, legacies of the past—an old brick bridge, historic dams, an adobe site occupied two centuries ago by colonial families—tell the story of this water, this land, and the many lives that have shaped it.

Though mainly hidden today beneath roadways and storm drains, the flow of the creek persists. The small areas where it surfaces support some of the most valuable wildlife habitat in San Francisco.

The watershed is framed by historic Presidio neighborhoods and serves as a home to both people and wildlife. Its forests, trails and playgrounds welcome the community and provide respite from the urban landscape. Our vision is to revitalize, interpret, and care for the watershed so that future generations can also enjoy it.

Restored with the help of community volunteers, Tennessee Hollow is envisioned as a vibrant place where all are welcome. A place where children can experience nature, learn about history, or simply play outdoors. A place to find solitude or explore the beginnings of our great city.

Now imagine being able to experience all of this within an afternoon hike a few miles from downtown San Francisco. Imagine the Tennessee Hollow Watershed.



August 10, 2007

Thank you for your interest in the Tennessee Hollow Upper Watershed Revitalization Project. The project has benefited from substantial public input, and we encourage you to participate in review of this Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI).

WRITTEN COMMENTS

Please submit your written comments no later than **October 9, 2007.**

By Mail:	Presidio Trust Attn: Tennessee Hollow Project 34 Graham Street P.O. Box 29052 San Francisco, CA 94129-0052
By Fax:	(415) 561-2790
By Email:	thproject@presidiotrust.gov

PUBLIC MEETING

If you prefer to provide your comments in person, please join us:

Tuesday, October 2 at 6:30 p.m.
Presidio Officers' Club
50 Moraga Avenue, Presidio

OTHER ACTIVITIES

Tours: Guided walking tours of the project area will be provided in September – see our website for more information as well as a map that can be used for self-guided exploration: http://www.presidio.gov/trust/projects/tenn/.

Volunteer Day: Come get your hands dirty and help us restore an area of the creek! **Saturday, September 22** from 9 a.m. until 12 noon. Please RSVP to 561-5414.

Executive Summary

THE PROJECT

The Presidio Trust is proposing to revitalize up to 28 acres within the upper reaches of the Tennessee Hollow Watershed in the Presidio of San Francisco, a National Historic Landmark (NHL) District and national park site. Proposed enhancements include creek and habitat restoration, new trails, an interpretative garden, reorganization and rehabilitation of playing fields, picnic areas, and other visitor amenities such as a public restroom. The project represents one phase in a broader effort to restore the Presidio's largest watershed – from headwaters to bay – a cornerstone in the plans to transform the Presidio into one of the nation's premier national park sites.

This Environmental Assessment (EA) tiers from the Trust's adopted *Presidio Trust Management Plan* and corresponding Environmental Impact Statement (EIS). Three alternatives are evaluated. In summary, they are:

> ***No Action*** – Maintains status quo – only required cleanup of designated environmental remediation sites occurs.
>
> ***Alternative 1*** – Daylights and restores the Eastern Tributary of the creek; enhances and interprets the area surrounding El Polín Springs; relocates Morton Street Field to Pop Hicks Field and builds a new Little League field at Fill Site 1 (pending completion of remediation); enhances habitat in upper Western Tributary and converts a portion of Barnard Avenue to a multi-use trail.
>
> ***Alternative 2 (Trust Preferred)*** – Similar to Alternative 1, with the following exceptions: maximizes habitat enhancements in the Eastern Tributary and converts Morton Street to a multi-use trail; relocates Morton Street Field to Julius Kahn Playground and proposes parking enhancements; builds a new practice field and restores habitat at Fill Site 1 (pending completion of remediation).

Refer to Chapters 1 and 3 for a description of the project area, alternatives, and corresponding maps.

SUMMARY OF IMPACTS

The Trust has determined that no significant environmental impacts or adverse effects on the Area of Potential Effects (APE) or Presidio NHL District would occur as a result of the project. A draft Finding of No Significant Impact (FONSI) is being circulated with this EA (Appendix A). An overview of predicted impacts is provided in the following table; refer to Chapter 4 for additional detail.

IMPACT CONCLUSIONS

RESOURCE	NO ACTION	ALTERNATIVE 1	ALTERNATIVE 2 (Trust Preferred)
Archaeological Resources	No change in existing conditions. Only required environmental remediation would occur.	Both alternatives have the potential to disturb unknown archaeological resources and would be subject to the existing protocols and practices to minimize or avoid potential adverse effects. Proposed interpretive enhancements would increase public awareness of the Presidio's archaeological resources and have a beneficial effect.	
Cultural Landscape	*Same as above.*	Neither alternative would have an adverse effect on the APE or on the Presidio NHL as a whole. Both alternatives would have positive effects on the cultural landscape of the Tennessee Hollow Watershed.	
Water Resources	*Same as above.*	Following implementation of best management practices (BMPs) and mitigation, both alternatives would improve water quality and have lasting benefits on the Presidio's water resources.	
Biological Resources	*Same as above.*	Non-native vegetation removal would temporarily impact wildlife, and potentially affect existing wetlands and native plant communities. Following restoration, there would be a substantial long-term benefit for biological resources.	Similar to Alternative 1, with slightly greater long-term benefits.
Visual Resources	*Same as above.*	Both alternatives would open up vistas within the project area, and revitalize areas that are currently in disrepair. Overall, the long-term visual benefits would be comparable under either alternative.	
Air Quality & Microclimate	*Same as above.*	There would be a temporary increase in fugitive dust and other emissions during construction of either alternative. The impact would be less than significant. Tree removal may result in a slight increase in local wind velocities pending the maturation of replacement plantings. Given the existing wind conditions, however, the increase would be negligible.	
Noise	*Same as above.*	Predicted construction-related noise levels would be reduced to a less-than-significant under both alternatives.	
Transportation & Circulation	*Same as above.*	During construction, both alternatives would increase traffic and require temporary detours. The impacts would be less than significant. Over the long term, both alternatives would result in minor changes in local circulation patterns. The effect on the levels of service at surrounding intersections would be less than significant. Parking demand at new/upgraded playing fields would be accommodated on site. New pedestrian trails would increase access and would be considered a beneficial effect of both alternatives.	

PUBLIC COMMENTS

The alternatives and scope of the environmental analysis presented in this EA have benefited from substantial public input. The Trust is now seeking public comments on this document (see cover page).

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APPENDICES

TABLES

FIGURES

ACRONYMS

ACHP	Advisory Council on Historic Preservation
AMA/MP	Archaeological Management Assessment and Monitoring Program
APE	Area of Potential Effects
BAAQMD	Bay Area Air Quality Management District
BMPs	Best Management Practices
CARB	California Air Resources Board
CEQ	Council on Environmental Quality
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CLR	Cultural Landscape Report
CTMP	Construction Traffic Management Plan
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ºF	degrees Fahrenheit
FESA	Federal Endangered Species Act
FONSI	Finding of No Significant Impact
GGNRA	Golden Gate National Recreation Area
GMPA	General Management Plan Amendment
KHE	Kamman Hydrology & Engineering, Inc.
MBTA	Migratory Bird Treaty Act
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHLD	National Historic Landmark District
NHPA	National Historic Preservation Act
NPS	National Park Service
PA	Programmatic Agreement
$PM_{2.5}$	fine particulate matter
PM_{10}	respirable particulate matter
PTMP	Presidio Trust Management Plan
RAP	Remedial Action Plan
RWQCB	Regional Water Quality Control Board
SFCTA	San Francisco County Transportation Authority
SFLL	San Francisco Little League
SHPO	State Historic Preservation Officer
TDM	Transportation Demand Management
U.S. EPA	U.S. Environmental Protection Agency
USACE	U.S. Army Corps of Engineers
VMP	Vegetation Management Plan
WPA	Works Progress Administration

Chapter 1. Introduction

This Environmental Assessment (EA) identifies the environmental effects of the proposed Tennessee Hollow Upper Watershed Revitalization Project ("project"). The project is located in the Presidio of San Francisco, a National Historic Landmark District and a national park site. The Presidio Trust (the Trust) is the project proponent and Lead Agency under the National Environmental Policy Act (NEPA).

The project proposes to revitalize approximately 27 acres of land within the upper Tennessee Hollow Watershed as one phase in an ongoing effort to the transform the watershed, as described below. Proposed enhancements include creek and habitat restoration, new trails, an interpretative garden, reorganization and rehabilitation of playing fields, picnic areas, and other visitor amenities such as a public restroom.

1.1 PROJECT BACKGROUND

1.1.1 The Site

Tennessee Hollow is the Presidio's largest watershed, occupying 270 acres or roughly one fifth of the park (Figure 1.1). It was named after the 1st Tennessee Regiment, a group of volunteer soldiers who made camp in the low ground east of Funston Avenue in 1898 just before shipping out to the Philippines during the Spanish-American War. The watershed was home to many tent encampments, or cantonments, during that period; later serving as temporary housing for San Franciscans displaced by the Great Earthquake. Today, it contains some of the Presidio's oldest neighborhoods and is home to more than 1,200 people – over a third of the park's residential population.

A central feature of the watershed is a creek system, which has three branches or "tributaries." The tributaries are situated in three small valleys and are named the Eastern, Central, and Western Tributaries, based on geographic orientation (Figure 1.1). The Eastern and Central Tributaries are spring-fed and flow year round. The Western Tributary is an ephemeral drainage that flows primarily when it is raining. The three creek branches flow from south to north, merging into one channel at a mid-point in the watershed near Lovers' Lane Bridge – a historic brick bridge along one of the Presidio's oldest trail alignments. From there, a single channel continues north where it eventually drains to the Crissy Field Marsh and San Francisco Bay.

The Tennessee Hollow Watershed and its creeks once served as an important resource for native peoples as well as early explorers. During more than two centuries of military occupation, the watershed underwent extensive alterations. Springs were dammed to provide water for people and livestock, and native vegetation was cleared; segments of the creek/floodplains were converted to agricultural uses (greenhouses); the historic forest was planted; and segments of the creek were later filled to make way for houses or for other military needs including waste disposal. Today, approximately half of the creek system is buried in storm drains or contained in concrete channels. Only small, isolated pockets of remnant wetlands and riparian habitat remain

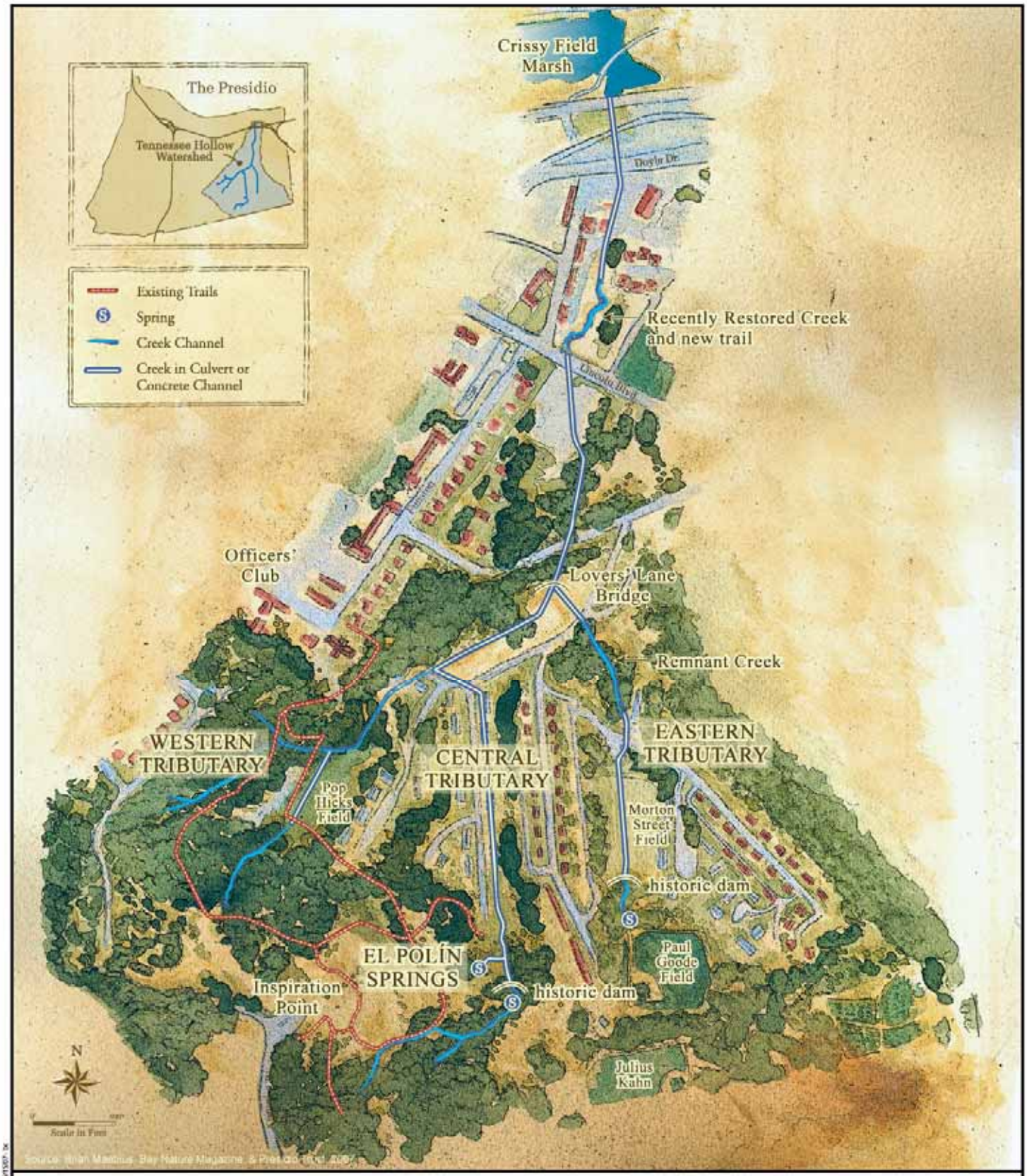


Figure 1.1
Tennessee Hollow Watershed

– and those areas provide some of the richest and most diverse habitat within the Presidio and northern San Francisco peninsula.

Project Area

The focus of the proposed project is on the Eastern Tributary and the upper areas of the Central and Western Tributaries; El Polín Springs and Pop Hicks Field (Figure 1.2).

The **Eastern Tributary** has the greatest year-round surface water flow and the longest stretch of exposed creek and riparian habitat still found in the watershed (Figure 1.2). Approximately half of the creek, however, is in a storm drain buried under Morton Street Field. The area surrounding the spring that feeds the creek is dominated by non-native invasive plants and the native habitat is degraded.

El Polín is the only named spring at the Presidio and is located near the headwaters of the Central Tributary (Figure 1.2). The springs have a rich past, spanning prehistoric, Spanish-colonial, Mexican, and United States epochs of history. Evidence for the origin of the spring name is unclear – it may be Native American or possibly early Spanish. Today the springs support important habitat for resident and migratory birds, and many other wildlife species. The area has one the park's few picnic areas, which also serves as a forum for outdoor education programs.

Pop Hicks Field was named in honor of M/Sgt. Carus S. Hicks who served at Letterman Hospital and was instrumental in establishing youth recreation leagues at the Presidio. This field located near the headwaters of the Western Tributary and is closed pending remediation of the underlying Landfill E. A portion of the Western Tributary is contained within a storm drain that flows beneath the parking lot at Pop Hicks Field (Figure 1.2).

Julius Kahn Playground is located in the upland areas of the watershed along the southern boundary of the Presidio. This historic playground is included within the project area because one of the alternatives considers improvements at this site.

1.1.2 Planning Context

The Trust is the federal agency charged with protection and management of the 1,168-acre inland portion of the Presidio known as Area B[1] including Tennessee Hollow. The Trust's mission is to preserve the Presidio as an enduring resource for the American public.

The Tennessee Hollow Watershed is central to transforming the Presidio into one of the nation's premiere national parks. Every major planning effort conducted since the Presidio was transferred to the national park system has identified a prominent role for Tennessee Hollow in the park's future. Beginning with the National Park Service's *Presidio General Management Plan Amendment* (GMPA) in 1994, followed by the *Vegetation Management Plan for the Presidio of San Francisco* (VMP) (NPS and Trust) in 2001, and again in 2002 when the Trust adopted the *Presidio Trust Management Plan* (PTMP) (Trust, 2002), the vision for the watershed

[1] The Presidio Trust is responsible for management of the non-coastal areas of the Presidio (roughly 80 percent of the park) which is referred to as "Area B." The NPS manages the coastal areas – "Area A." The proposed activities evaluated in this EA are entirely within Area B.

Figure 1.2
Project Area

August 2007
Tennessee Hollow Upper Watershed Revitalization Project EA

has remained unchanged. That vision embraces an ambitious plan to enhance the watershed, restore and connect a creek system from headwaters to the bay, and interpret its rich cultural and natural history.

The roadmap for achieving this vision is the result of years of planning and diverse public input, and is captured in PTMP and the associated Environmental Impact Statement (EIS). PTMP is the primary plan guiding land use decisions for Area B of the Presidio. An overview of PTMP guidance is provided below. Refer to PTMP Chapters 1 through 3, as amended in the Record of Decision, for additional detail.

Broad PTMP Guidance:

- Restore and connect the watershed's three creek tributaries and associated riparian habitats, El Polín Springs, Inspiration Point grasslands and other important native plant and wildlife corridors.
- Protect, preserve, and interpret historic and cultural resources, and preserve the integrity of the National Historic Landmark District.
- Enhance existing recreation facilities, add play opportunities, and complement outdoor areas.

Specific PTMP Guidance:

- Maintain the historic residential character of the East Housing District, and consider the removal/replacement of some non-historic housing to facilitate creek/habitat enhancement.
- Consider the removal/replacement of Morton Street Field to accommodate creek restoration.
- Consider removal of redundant roadway segments to enhance Tennessee Hollow restoration; improve pedestrian connections throughout the watershed including those between neighborhoods, playing fields, and other park destinations.
- Maintain historic views and view corridors.
- Maximize natural processes where feasible.
- Restore Pop Hicks Field to active play pending remediation of Landfill E.

PTMP acknowledges that plans to revitalize the watershed will necessarily be implemented in phases and will require years to complete.

The 2001 *Vegetation Management Plan* provides specific guidance on the management of the park's vegetation. The VMP designates three vegetation "zones" in the park and establishes guidelines for the planting and ongoing vegetation management of each zone. The majority of the project area is contained within the Native Plant Communities Zone, as discussed in Section 3.3.

1.1.3 Public Input

The Trust began soliciting public comment on this project in November 2002, shortly after PTMP was adopted. The intent was to gather early input on the project goals, alternatives, environmental issues of concern, and implementation priorities. There was substantial public interest in the project; nearly 450 comments letters were received. Almost half of the letters addressed a single issue – playing fields.

The disposition of playing fields, both in the watershed and more broadly in the Presidio, was highlighted as a major issue of public concern. Subsequent public discourse led the Trust to place this project on hold in an attempt to address and resolve these concerns. All of the public input received to date has helped shaped the alternatives and scope of analysis presented in this EA (see Chapters 2 and 5 for more information). Public comments on this EA and draft Finding of No Significant Impact (FONSI) will similarly play an important role in the Trust's decision-making process.

1.2 PHASING

The watershed covers a large area and the enhancements envisioned in the Trust's adopted plans will take years to fully implement. The Trust plans to adaptively manage the implementation of habitat restoration, using pre- and post-project monitoring of various physical parameters and applying lessons learned from each phase towards future projects. Adaptive management is a fundamental strategy for implementation of all restoration work in the watershed, and also plays an important role in engaging and sharing information within the scientific community and with other land managers.

Over the past eight years, more than 17 acres of the watershed have been revitalized (Figure 1.3). Activities have included daylighting a section of the creek, as well as stewardship efforts in the upland areas to restore rare serpentine grasslands, renew the historic forest, improve trails, and rehabilitate historic residential landscapes.

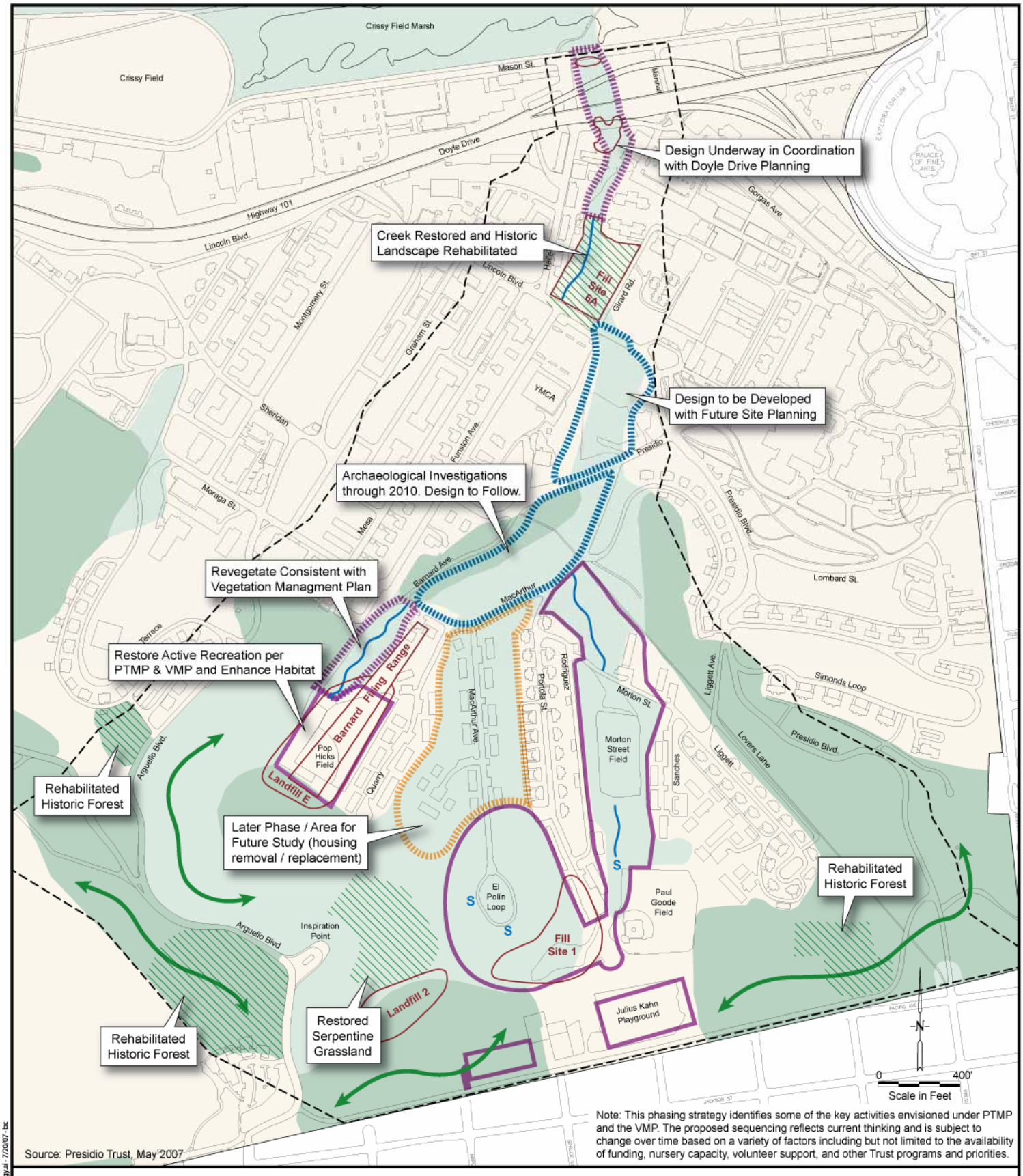
This EA is focused on the next phase of enhancement activities which are anticipated to occur over the next five years. The project area was prioritized for the next phase of implementation because of the significant ecological, historic, and interpretative values, as well as public input regarding phasing priorities. The Trust is committed to achieving the larger watershed-based vision, and plans over time to continue revitalizing the areas along the creek zone, as well as the upland areas in accordance with both the PTMP and VMP. Figure 1.3 identifies current thinking about the phasing of these activities. The actual timing for implementation will be contingent upon the availability of local seed and plant materials for restoration, available funding, volunteer capacity, and other Trust programs and priorities.

1.3 INTENDED USE OF EA

The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act allow federal agencies such as the Trust to prepare an EA to assist agency planning and decision-making (40 Code of Federal Regulations [CFR] 1501.3). An EA provides evidence and analysis to determine whether an EIS is required, aids a federal agency's compliance with NEPA when an EIS is not necessary, and facilitates preparing an EIS if one is necessary (40 CFR 1508.9(a)).

This EA tiers from the PTMP EIS[2] which evaluated various approaches to revitalizing the Tennessee Hollow Watershed, including the "Final Plan Alternative" that was subsequently adopted by the Trust. This EA

[2] The PTMP EIS is available online at www.presidio.gov and in the Trust Library located at 34 Graham Street in the Presidio.



Note: This phasing strategy identifies some of the key activities envisioned under PTMP and the VMP. The proposed sequencing reflects current thinking and is subject to change over time based on a variety of factors including but not limited to the availability of funding, nursery capacity, volunteer support, and other Trust programs and priorities.

Source: Presidio Trust, May 2007

- Focus of EA
- Other Near Term
- Mid Term
- Long Term
- Areas Already Restored / Rehabilitated
- Ongoing Restoration / Rehabilitation
- Remediation Site
- Watershed Boundary

VMP Zones

- Native Plant Communities
- Landscape Vegetation
- Historic Forest
- S Spring
- Existing Creek

Figure 1.3
Tennessee Hollow Watershed Phasing Strategy

August 2007
Tennessee Hollow Upper Watershed Revitalization Project EA

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incorporates relevant information and mitigation measures from the PTMP EIS and focuses on site-specific impacts of the project.

The Trust has determined that no significant environmental impacts, or adverse effects on the Area of Potential Effects (APE) or Presidio NHL would occur as a result of the project. This EA serves as the factual basis for the draft FONSI presented in Appendix A.

1.4 NEXT STEPS

This EA and draft FONSI will be circulated for public review and comment. Written comments will be accepted up to **October 9, 2007.** The Trust will also hold a public hearing on **October 2, 2007**, along with a series of guided hiking tours and other activities within the project area. (See the EA cover page for details.)

Other permitting and compliance activities that may be required for the project are identified in Section 5.2. Following the completion of the public comment period, the Trust will review and consider public input before making a final determination whether to prepare an EIS, adopt a project alternative, or not take further action with respect to the project.

Chapter 2. Purpose and Need

2.1 PROJECT PURPOSE

The purpose of this project is to substantially improve the ecological health of the Tennessee Hollow Watershed, enhance opportunities for public interpretation and engagement, and ensure the Trust's goal is met of maintaining or slightly increasing the number of playing fields in the park.

2.2 NEED FOR PROJECT

The revitalization of Tennessee Hollow will play an important role in achieving the Trust's vision for the Presidio as a great and enduring national park site. With the help of park volunteers and partners, Tennessee Hollow will be transformed into a fully functioning riparian ecosystem within the urban setting of San Francisco; a peaceful refuge where people and wildlife thrive; a place where children come to explore the birthplace of San Francisco; a place that welcomes and rejuvenates visitors from around the City and the world. Tennessee Hollow will become a place befitting of the Presidio's national stature.

The project will contribute to this larger vision by making substantial improvements in the upper areas of the watershed. These improvements will revitalize ecological health, and enhance opportunities for visitors to learn about, explore, and enjoy their park.

2.2.1 Ecological Health

San Francisco Bay and its adjacent uplands once supported extensive wetlands, coastal plains, riparian and oak woodland forests, and grasslands. It is estimated that more than 80 percent of the Bay Area's wetlands and upland habitat have been lost. Pressures from a growing population and the effects of pollution continue to threaten the remaining habitat. The Presidio's history as a military base has, in part, protected it from these pressures. Today as a national park site, the Presidio is an oasis for more than 500 species of plants and wildlife.

Recent wildlife surveys indicate that the small pockets of remnant habitat within Tennessee Hollow are ecologically rich and diverse. These isolated areas serve as small oases for plants, birds, butterflies, and other wildlife that depend on increasingly limited habitat for survival. The project will substantially enhance these areas in the watershed and further efforts to establish a continuous habitat corridor connecting the watershed's headwaters to Crissy Field Marsh. The project will also contribute to regional efforts to restore and improve the viability of wetland and upland habitats along the Pacific Flyway, and offset past and ongoing habitat loss and degradation in the region. The proposed project stands out in this regional effort because of its location on the densely urbanized San Francisco peninsula where opportunities for restoration are significantly limited.

In addition to the substantial habitat values of the project, there will be an increase in water quality. All precipitation falling within the watershed is directed into the creek system that drains to Crissy Field Marsh and San Francisco Bay. During storms, water runs off of roads, parking lots, and open areas into this system (most of which is contained in storm drains and concrete channels), carrying with it oils, pet waste, sediment, and other pollutants. Natural creek channels increase infiltration and help attenuate storm flows. The associated vegetation acts as a natural filter, improving the quality of the water as it flows downstream. By reducing impervious surfaces and substantially increasing the amount of natural creek channel and associated habitat in the watershed, this project will improve the quality of water entering Crissy Field Marsh and San Francisco Bay.

2.2.2 Education and Interpretation

The Tennessee Hollow Watershed is located within a national park setting in the heart of the San Francisco Bay Area. It is accessible to 7 million people living in the region, including hundreds of thousands of school children, and to millions of visitors from across the country and the world.

Unlike most watersheds, Tennessee Hollow is relatively small and its entire hydrologic system – from springs to bay – are contained within the park boundaries. Once it is restored, visitors will be able to explore this system in an afternoon hike – from fractures in the bedrock where groundwater seeps mark the beginning of the creek, to the marsh at Crissy Field, and to the sandy shore of the bay where the Golden Gate and Pacific Ocean are in view. The educational and interpretive values that will be created by this project are immense.

As a National Historic Landmark District, the Presidio provides a wonderful opportunity for the public to explore and interpret the historic events and people who lived in the area before Spanish colonization, as well as those who helped shaped the Presidio and City of San Francisco. The year-round availability of fresh water in Tennessee Hollow, such as the waters at El Polín Springs, played a pivotal role in the history of this area. Recent archaeological investigations near the springs uncovered the foundations of adobe structures which date from the early 1800s. This site is thought to be the home of the two locally prominent families, the Briones and Miramontes, and is one of the first colonial settlements outside of El Presidio (the original outpost that existed within what we know today as the Main Post). Ongoing research and investigations will explore this and other sites in the watershed and will increase public understanding of the complex interactions between colonial and native populations, and trace the emergence of the City of San Francisco from its origins at the Presidio. Through creative use of interpretive facilities in the landscape, the project seeks to provide new, meaningful opportunities for public learning and exploration.

2.2.3 Visitor Use and Enjoyment

The Presidio is a public place. Great effort is being invested to preserve and protect it for future generations. The watershed already provides an array of visitor use opportunities – hiking trails, bird watching, active sports, contemplative picnic areas, and stewardship activities. The proposed project is intended to enhance and expand these opportunities.

New trails and boardwalks will allow visitors to explore and appreciate newly revitalized landscapes in a planned and environmentally sound manner. Benches, picnic areas, and public restrooms at key destinations

will make visitors comfortable and support other outdoor activities such as educational programs. These park facilities are currently limited in the Presidio's open space areas.

The implementation of the project itself would provide increased and new opportunities for the public to experience the Presidio through stewardship and volunteerism. Whether through the Presidio Nursery, Park Stewards Program, Trails Forever, Presidio Archaeology Laboratory, or Park Docents Program, volunteers will play a critical, hands-on role in the transformation and interpretation of the watershed.

Playing Fields

Organized sporting activities were an integral component of a soldier's life and playing fields and other active recreational facilities are part of the Presidio's military heritage. These sites also have a long history of serving the nearby community, a tradition which continues today. Implementation of the creek restoration envisioned in PTMP will require the removal/relocation of one of the Presidio's playing fields, Morton Street Field. This aspect of the proposed project triggered an outpouring of public comment; nearly half of the 450 scoping comments letters received addressed this issue. Most commentors expressed opposition to the removal of any Presidio playing fields, a few supported the concept, and some encouraged the Trust to go beyond PTMP by considering removal of additional fields as a means to maximize habitat restoration. The ensuing public discourse created a rift in the community and raised more global concerns and questions about the fate of all Presidio playing fields.

In response to public requests, the Trust placed the creek project on hold to engage the community in a comprehensive discussion about the park's playing fields. The outcome was the development of a park-wide vision for the playing fields. While consensus was not reached on every point, substantial progress was made (refer to Chapter 5 more information). Through that process, the Trust reaffirmed PTMP's commitment to active recreation by stating it will "maintain or slightly increase" the number of playing fields in the Presidio. The Trust also made a specific commitment to replace Morton Street Field as part of this project. That commitment has been incorporated as one of the stated goals for this proposed project, and was a key factor in shaping and defining the project alternatives evaluated in this EA.

Concerns were also raised regarding the reactivation of Pop Hicks Field and future opportunities for habitat restoration. While PTMP directs that the field will be reactivated following remediation of the underlying landfill, it does not specify what type of field or how habitat enhancements may be incorporated into the post-remediation design. This area was subsequently included in the scope of the project to further evaluate and encourage public input on this issue.

2.3 PROJECT GOALS

As for all projects at the Presidio, the Trust must attempt to balance and integrate multiple and sometimes competing interests. A successful project is one that achieves balance. The following project goals were derived from PTMP and public input. While these goals apply specifically to the upper watershed revitalization project, many will be applicable to future phases of watershed enhancement.

- Maximize the restoration and enhancement of natural processes, including revitalization of diverse wetland, riparian and upland habitats and corridors.

- Improve water quality.
- Preserve and interpret cultural and historic resources.
- Promote and encourage public education.
- Provide diverse opportunities for public enjoyment.
- Ensure timely and comparable replacement of Morton Street Field prior to its removal.

Chapter 3. Alternatives

Three alternatives are evaluated in this EA: the required "No Action" and two project alternatives. The project alternatives tier from guidance provided in the *Presidio Trust Management Plan* (Trust, 2002a), as well as the project goals and public input (see Chapters 1, 2, and 5).

The location of the creek and the availability of water are limiting factors in the development of habitat restoration alternatives. Through hydrologic modeling, the Trust tested how various land management decisions (e.g., fill removal, vegetation changes, irrigation practices) could affect the amount of water available for wetland creation, and thus influence the design of project alternatives. Both of the project alternatives presented in this EA were designed to optimize wetland restoration to the greatest degree feasible. The alternatives differ primarily in their approach to following variables: location of playing fields, treatment of roadways and circulation patterns, and the extent of the project footprint.

The Trust has identified Alternative 2 as its preferred alternative based on its responsiveness to the project goals, established policy guidance, and public input.

3.1 NO ACTION ALTERNATIVE

The No Action Alternative assumes that no major physical changes would occur within the project area, other than those associated with the Presidio Environmental Remediation Program. Morton Street and Morton Street Field would be maintained in their current location and condition, as would the dirt parking lot below the field (Figure 3.1). No buildings, structures or other infrastructure would be removed or relocated. Approximately half of the Eastern Tributary of the creek would continue to be contained within a storm drain below Morton Street Field. No habitat enhancement, new trails, or interpretative facilities would be provided. Non-native vegetation surrounding the spring that feeds the Eastern Tributary would go unmanaged and would continue to invade adjacent native habitat areas. The nearby historic dam would remain obscured by vegetation and no attempt would be made to interpret this feature. The area surrounding El Polín Springs would similarly remain as it exists today. No interpretative or habitat enhancements would be made. The historic adobe foundations would remain obscured with no interpretation beyond the occasional (existing) docent tour. Vehicle traffic would persist around the Loop/Springs. Non-native vegetation surrounding the springs and existing visitor amenities, including the unimproved picnic area and the portable toilet, would remain in their current location and condition.

The only activities within the project area would occur at the three remediation sites: Landfill E, Fill Site 1, and the Barnard Firing Range (Figure 3.1). The two landfill sites are currently slated for remediation in 2011-2012. Remediation activities will involve ground-disturbing activities; following completion both sites would be replanted and reused in accordance with adopted plans and policies. At Landfill E, Pop Hicks Field would be restored to active use as a playing field consistent with the PTMP and VMP. None of the changes would be implemented in the field orientation or parking location to enhance habitat connectivity at Pop Hicks

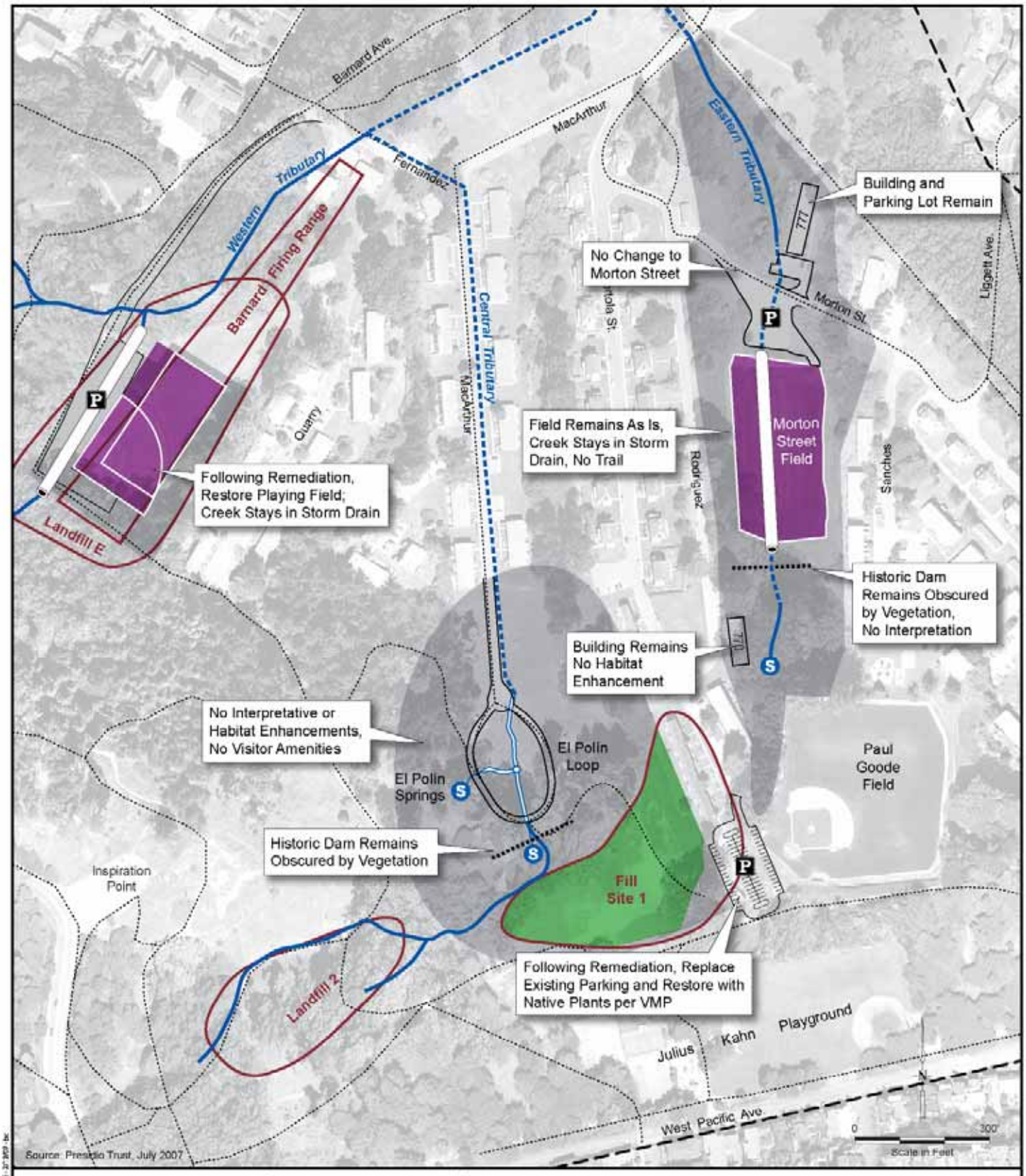

Figure 3.1
No Action Alternative

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Field, as proposed under the project alternatives. A small portion of the Western Tributary would continue to be contained in a pipeline beneath the playing field parking lot.

At Fill Site 1, the post-remediation treatment of the site would include the reconstruction of the existing parking lot within the VMP Landscape Vegetation Zone (needed to serve ongoing use at Paul Goode Field and nearby trails). The remainder of the site would be planted with native plant communities, also consistent with the VMP. The Barnard Firing Range, which overlaps the project area and a portion of Landfill E (Figure 3.1), is undergoing further characterization by the Trust Remediation Department at this time. A site remedy will be determined in a Remediation Action Plan (RAP) scheduled for release in 2008. The entire site is located within the Landscape Vegetation Zone and would be replanted, as needed, consistent with the VMP.

3.2 PROJECT ALTERNATIVES

3.2.1 Components Shared by All Project Alternatives

Several programmatic elements, practices, and physical improvements would be implemented as part of any project alternative selected by the Trust. These "components" are either standard practices in the implementation of Trust projects or are so fundamentally linked to the purpose and intent of the project that they would be implemented as a matter of course, regardless of the project alternative selected.

- **Adaptive Management.** Adaptive management entails pre- and post-project monitoring of various physical and environmental parameters, and subsequent application of the lessons learned from these activities towards future projects. It is a fundamental strategy for implementation of all restoration work in the watershed and also plays an important role in engaging and sharing information within the scientific community and other land managers.

- **Best Management Practices.** As with all Presidio projects, best management practices (BMPs) would be implemented during construction and integrated into project design to protect resources and minimize potential negative effects. Many of the BMPs were established in the PTMP EIS or other applicable plans, and are presented in Table A-1, Appendix A.

- **Education and Interpretation.** As described in Chapter 2 (Purpose and Need), one of the primary objectives of the project is to enhance and improve opportunities for public learning and exploration. Education and interpretation would be a key component of any alternative selected by the Trust. Many of the physical improvements contemplated in this EA are designed specifically for this purpose. An overview of interpretative and educational themes is integrated into the following discussion, as well as the text in Chapter 2. These concepts will be refined using public comments on this EA, as well as input from various environmental, cultural, and educational groups, and the Trust's partners at the Golden Gate National Parks Conservancy and National Park Service.

- **Public Stewardship.** Implementation of any alternative would rely on the generous support of public volunteers through the Presidio Park Stewards Program, the Presidio Nursery, and the Presidio Archaeology Laboratory. Volunteers currently contribute tens of thousands of hours in the Presidio planting and tending native plant restoration sites; collecting and cultivating native seed crops; and assisting with archaeological research, artifact recovery, collection, management, and conservation. All of these functions would be an integral part of project implementation.

- **Playing Fields.** As described in Chapter 2, all project alternatives propose the removal *and* replacement of Morton Street Field, and assume that Pop Hicks Field will be returned to active play following remediation of Landfill E as directed in the PTMP and VMP. Both project alternatives assume that Pop Hicks will be rehabilitated, but go further than the No Action Alternative by also proposing habitat enhancements that encroach into the VMP Landscape Vegetation Zone (see below).

- **El Polín Springs.** Both action alternatives propose the same site enhancements for the area surrounding El Polín Springs. This is an area of historic and ecological significance. The resources that exist at this site are for the most part fixed in their location, and the options for enhancement which are also protective of these resources are limited. As described below, these improvements represent the Trust's best attempt to preserve and interpret these values for the public, satisfy the project goals, and be responsive to public input.

El Polín Springs/Loop Enhancements

Both project alternatives will rehabilitate the historic stone channels and a well located in the center of El Polín Loop. These features provide an elegant reminder of the role water played in this area and were likely constructed in the 1930s as part of the Works Progress Administration (WPA). Since the time these channels and well were constructed, historians and archaeologists have been searching the surrounding area for evidence of adobe houses that were believed to have been sited near El Polín Springs. Early maps of the Presidio (dating from the 1800s) indicate that two locally prominent families, the Briones and Miramontes, lived near the springs. For more than 70 years, no one had been successful in locating these rumored sites, and the early settlement area remained legend. In 2003, a Stanford University field class led by Dr. Barbara Voss discovered the foundation of a Spanish-colonial/Mexican period adobe house at this site which is now believed to have been a home of the Briones family. Subsequent field investigations will continue to deepen understanding of this early settlement and the complex relationship between these colonists and the native peoples. Under both project alternatives, these archaeological discoveries would be made available to the public. The adobe foundations will be preserved in place (buried) and interpreted through surface features, including an interpretative garden (Figure 3.2).

The proposed garden would include plantings of crops that were likely cultivated or consumed in the area during the Spanish and Mexican periods, circa 1790 through the 1850s. During archaeological investigations at El Polín Springs, a macrobotanical analysis of soil samples was conducted to provide insight into the plant materials that may have been exploited by inhabitants of the area, and to determine whether there was evidence of subsistence and gardening (Popper, 2005). The samples showed an evolving use of the El Polín Springs landscape. Many native and non-native plants were identified in the samples collected. Based on this analysis, it appears that corn, peas, barley, and beans were some of the plants consumed at the site. These and other species would be considered for use in the interpretative garden.

In addition, the study also identified more than 20 species of native (non-domesticated) that were likely to have grown in the area, including wax myrtle, wild cucumber, various sedges, oak, blackberry, brome grass, red maids, and bulrush. These species are associated with a diverse array of vegetation communities, which is consistent with the archaeological and geoarchaeological investigations that indicate there were likely several

Source: Presidio Trust, May 2007

Figure 3.2
El Polin Enhancements - Alternatives 1 & 2

different landforms (sand dunes, bedrock hillslopes, alluvial deposits) supporting a mixed palette of native plants within a relatively small area (Meyer, 2004). This diversity, along with the presence of water, would have made this an ecologically rich area, abundant with plants and wildlife.

Habitat restoration would return some of the former ecological richness to the site, providing an opportunity for the public to view, within a relatively small area, a high diversity of native plants. Indigenous people and other interested groups will be invited to participate in the development of possible ethnobotanical or other interpretative concepts for the area. Potential themes that may be considered include traditional land management practices and use of native plant materials for weaving, food, and medicines. Species such as willow, dogwood, buckeye, stinging nettle, sedge, soap plant, bracken fern, horsetail, blue dicks, Ithurial's spear, wild onion, red maids, and strawberry were all likely important to the people inhabiting this area. Over time, as additional areas of the watershed are restored, the Trust would continue to work with interested groups to explore opportunities to interpret the natural and cultural heritage of the area.

Other improvements proposed include replacing the asphalt road surface along El Polín Loop with a trail/boardwalk (Figure 3.2). The boardwalk would follow the historic alignment of the loop and would allow visitors to experience and walk through the enhanced wetland area surrounding the spring without trampling through saturated soils and sensitive habitat. While not a reconstruction, the boardwalk would reflect the type of feature that was historically common in the area. Existing informal picnic facilities would be upgraded and relocated outside of the loop on the northeastern slope. Other proposed improvements include construction of an orientation kiosk and visitor parking. One non-historic building (Building 860) would be removed or adapted to accommodate a public restroom. The Trust will ensure that substantial notice is provided to residents affected by the proposed removal of any building, and will work cooperatively to identify other housing options available in the park.

3.2.2 Alternative 1

In summary, **Alternative 1** restores the Eastern Tributary and relocates Morton Street Field to the site of Pop Hicks Field, enhances the Western Tributary, and builds a new little league field at Fill Site 1. This alternative seeks to respond to the project goals by reorganizing playing fields and restoring the Eastern Tributary. Given timing constraints associated with reuse of Pop Hicks Field, however, restoration of the Eastern Tributary would be deferred until 2011-2012 under this alternative. An overview of the design elements of this alternative is provided below, and summarized in Table 3.1 and Figure 3.3.

Removing Morton Street Field from its current location creates a significant opportunity for habitat and creek restoration along the Eastern Tributary. Fill materials underlying the field would be excavated to daylight the section of creek contained in a storm drain. (Proposed fill removal under both project alternatives optimizes wetland creation along the Eastern Tributary.) Water that currently flows in the drain would be directed into a surface channel and floodplain that would be planted with freshwater emergent and riparian habitat. The new section of creek would extend approximately 800 feet in length, with a wide floodplain (approximately 200 feet), surrounded on either side by upland habitat. A section of the planned Tennessee Hollow Trail would be sensitively designed along one side of the corridor to encourage public enjoyment of the area, while protecting wildlife and habitat.

Table 3.1: Summary Comparison of Alternatives

Description of Activity/Feature	No Action	Alternative 1	Alternative 2 (Trust Preferred)
El Polín Springs/Loop Area	No changes	Alternatives 1 and 2 propose the same habitat and site enhancements as described in detail in Section 3.2.1.	
Habitat Enhancement*	Less than 1 acre	21 acres	22 acres
Playing Fields (net new)**	1.7 acres	2.87 acres	2.66 acres
Morton Street Field	No change	Relocate to Pop Hicks Field	Relocate to Julius Kahn Playground
Est. Fill Removal (cubic yards)	None	40,000 cubic yards	40,000 cubic yards
Morton Street	No change	Retain; install new culvert for creek crossing	Convert to multi-use trail; install bridge at creek crossing
Fill Site 1	Following remediation, restore with native plants and replace parking lot consistent with VMP	Following remediation, build new little league field and parking lot	Following remediation, build practice field and parking lot, and restore with native plants, consistent with VMP
Historic Earthen Dam	No change (remains obscured by vegetation)	Preserved and exposed for interpretation	Preserved and exposed for interpretation
Pop Hicks Field	Following remediation, return to active use as a Little League field; a portion of Western Tributary remains in pipeline beneath parking lot	Following remediation, build a high school soccer field, redesign site to accommodate creek and habitat enhancement	Same as Alternative 1, although the field would be designed to accommodate Little League (with an overlapping multi-use field).
Non-Historic Building Removal	None	Buildings 860 & 777	Buildings 860, 777 & 770

* Refer to Section 4.4 for additional detail.

** Playing field acreage does not include the footprints of the existing Paul Goode Field and Julius Kahn Playground.

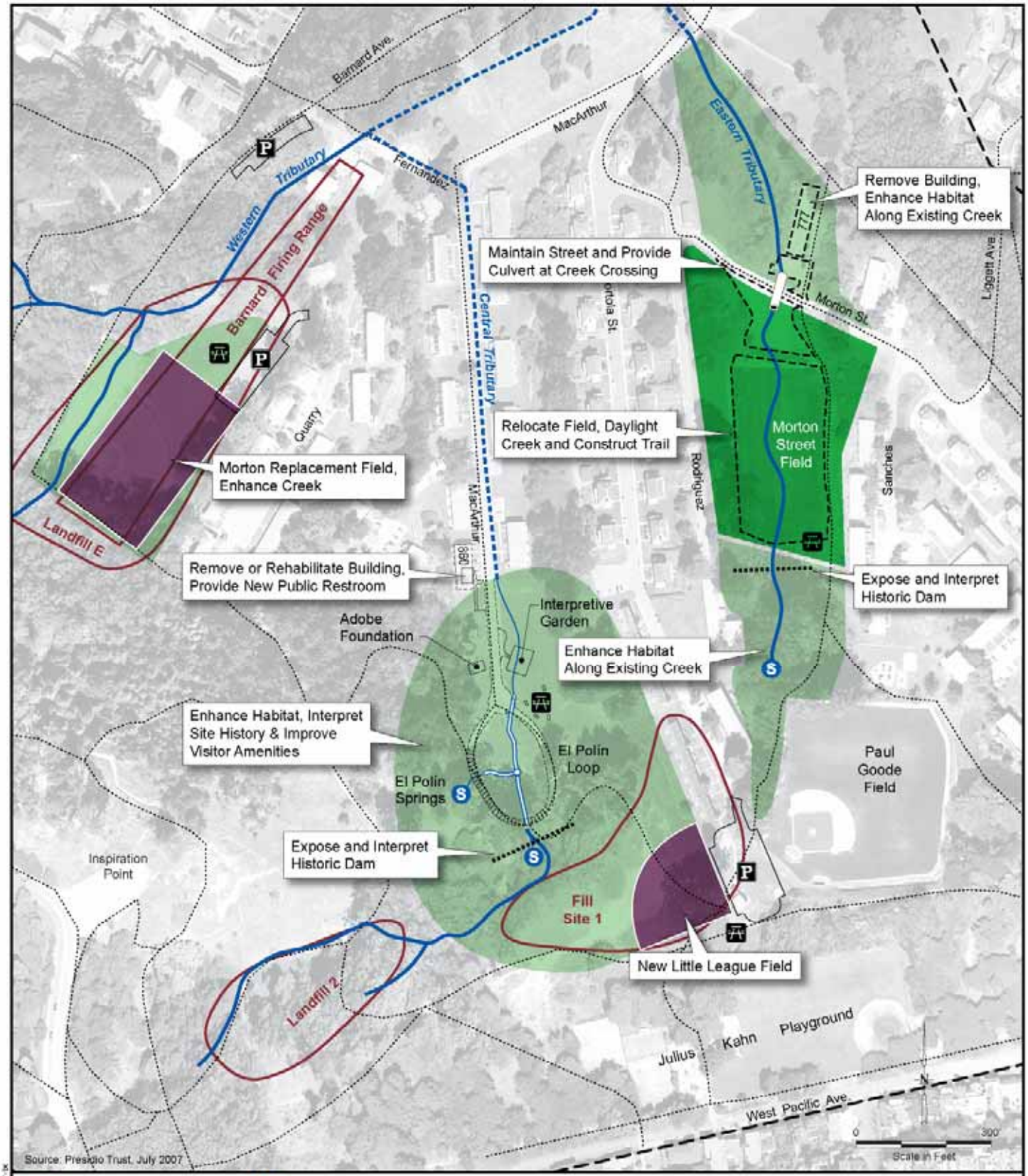

Figure 3.3
Alternative 1

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The 2+acre area surrounding the spring that feeds the Eastern Tributary would be converted to native vegetation. A diverse suite of native plants and trees, including oaks, buckeyes, willows, and other native riparian and woodland plants, would be established at this site. The nearby earthen historic dam would be revealed, preserved, and interpreted. An interpretative kiosk and new bench/overlook area would be established just below the historic dam.

Consistent with the PTMP, Alternative 1 also contemplates removing a non-historic structure located within 75 feet of the creek (Building 777). As previously noted, the Trust will ensure that substantial notice is provided to residents affected by the proposed building removal, and will work cooperatively to identify other housing options available in the park. Following building demolition, the site would be replanted with native vegetation, and an additional section of the Tennessee Hollow Trail would be constructed.

Under Alternative 1, Morton Street (the roadway) would remain as it currently exists. A culvert would be installed to allow the restored creek to pass under the roadway.

Pop Hicks Field is currently closed pending remediation of the underlying landfill, which is scheduled for 2011-2012. Following remediation, the field would be restored to active play as a high school soccer field comparable to Morton Street Field. The field would be reoriented to the east, and the existing parking lot would be relocated to the northeastern edge of the field with access from Quarry Road. This would allow for a portion of the Western Tributary to be redirected into a surface water channel[3] and associated habitat enhancement. This section of creek currently runs under the existing parking lot in a storm drain. The proposed habitat enhancement would encroach into the Landscape Vegetation Zone as designated in the VMP (refer to Section 3.3). Once the parking lot is relocated, Barnard Avenue would be converted to a multi-use trail that would remain accessible to emergency vehicles.

To replace the Little League field displaced at Pop Hicks Field, a new field would be constructed upland of the creek zone atop Fill Site 1. The site currently functions as an informal dirt parking lot serving Paul Goode Field and nearby trails. Following remediation, a parking lot and new Little League field would be constructed at Fill Site 1 (Figure 3.3). Construction of a Little League field in this location is anticipated to require import of some fill material. A portion of the fill excavated from the Morton Street Field site would be recycled and reused, to the extent possible, to meet this need. Some native plant communities would be provided along the western/northern edge of the field as the slope descends down to El Polín Springs/Loop; however, the dominant use of this area would be active recreation. The proposed field at Fill Site 1 would encroach into the VMP Native Plant Communities Zone as described in Section 3.3.

3.2.3 Alternative 2 (Trust Preferred)

In summary, **Alternative 2** maximizes habitat restoration within the Eastern Tributary, expands Julius Kahn Playground to serve as a replacement field for Morton Street Field, enhances the Western Tributary, returns Pop Hicks Field to active play, and restores native plant communities and builds a practice field at Fill Site 1. This alternative was developed and refined in response to public comments and seeks to strike a balance among the project goals. Unlike Alternative 1, restoration of the Eastern Tributary would not be constrained

[3] The proposed surface channel would be located to the west of the consolidated (capped) landfill material, and is subject to review under the Landfill E remedial design process and corresponding stakeholder input.

by the timing of remediation activities at Landfill E. An overview of this alternative is provided below, and summarized in Table 3-1 and Figure 3.4.

Under Alternative 2, the Eastern Tributary would be restored as described under Alternative 1, with the following exceptions. Alternative 2 proposes to further maximize habitat enhancement by removing an additional non-historic building (770) located adjacent to the spring. As previously noted, the Trust will ensure that substantial notice is provided to residents affected by the proposed building removal, and will work cooperatively to identify other housing options available in the park. Once this building is removed, the surrounding area would be replanted with native plants to create a larger, more continuous habitat and buffer area between the spring and nearby historic neighborhoods. This expanded footprint would encroach into the VMP Landscape Vegetation Zone as discussed in Section 3.3.

Under Alternative 2, Morton Street (the roadway) would be closed to vehicles and converted into a multi-use trail. A small bridge would traverse the creek (Figure 3.4). Access to the Liggett neighborhood would be provided via the recently completed Liggett/Presidio intersection, which includes a four-way stop.

Under Alternative 2, the existing Julius Kahn playing field would be expanded to the east and resurfaced with synthetic turf to accommodate either high school soccer (comparable to Morton Street Field) or two Little League fields (available for simultaneous play). These enhancements would substantially improve the quality and flexibility for play. Alternative 2 also considers parking and access improvements in the Julius Kahn area. At present, vehicles park informally along the roadway and historic wall. Under Alternative 2, a new parking lot would be sited under the forest canopy west of the tennis courts (Figure 3.4). The lot would be constructed in coordination with planned replanting of the historic forest, and would be designed to fit appropriately within the forested, park-like setting. The parking lot would enhance pedestrian circulation and safety. In conjunction with the proposed parking lot, Alternative 2 evaluates two circulation variants for the Julius Kahn area; one maintains current circulation, the other contemplates the closure of West Pacific Avenue to pass-through vehicle traffic by converting a portion of the roadway into a multi-use trail. For additional background and analysis of these options, please refer to Section 4.8. The San Francisco Recreation and Parks Department manages Julius Kahn Playground and the Trust will coordinate with the City on proposed improvements in this area.

Alternative 2 proposes to construct a new practice field and parking lot along the eastern edge of Fill Site 1, within the VMP Landscape Vegetation Zone. The remainder of the site would be planted with native plant communities, consistent with the VMP. Under Alternative 2, Pop Hicks Field would be returned to active play following remediation of Landfill E. Similar to Alternative 1, Alternative 2 proposes to relocate existing parking, reorient the field, and convert Barnard Avenue to a multi-use trail to maximize habitat opportunities along the western edge of the field. Under Alternative 2, Pop Hicks Field would be restored to use as a Little League playing field with an overlapping multi-use field (Figure 3.4).

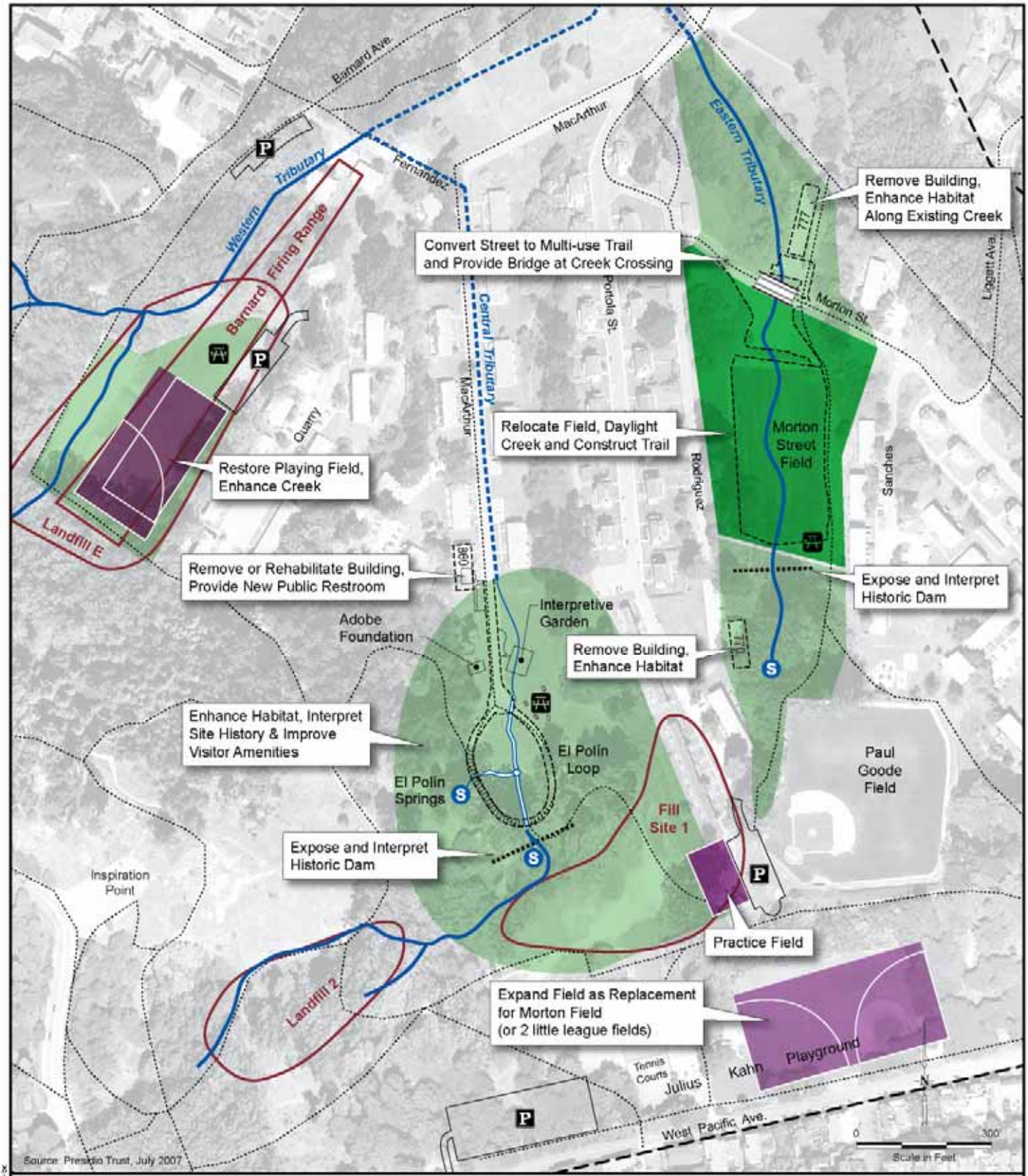

Figure 3.4
Alternative 2 (Trust Preferred)

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3.3 VEGETATION MANAGEMENT PLAN CONFORMANCE

The *Presidio Vegetation Management Plan* (VMP) is a 50-year management plan which divides the Presidio into three management zones and prescribes treatment guidelines for each. As shown in Figure 3.5, most of the project area falls within the Native Plant Communities Zone. Adoption of either project alternative would require slight adjustment to the VMP boundaries.

As shown in Table 3.2, both project alternatives propose to slightly expand the Native Plant Communities Zone, and correspondingly reduce the Landscape Vegetation Zone in the project area. Alternative 1 proposes a net increase of 1.52 acres in Native Plant Communities, while Alternative 2 proposes a slightly larger increase of 2.48 acres.

Table 3.2: VMP Zone Comparison (acres)

VMP Zone	No Action	Alternative 1	Alternative 2 (Trust Preferred)
Landscape Vegetation	8.06	6.54	5.58
Historic Forest	0.9	0.9	0.9*
Native Plant Communities	19.55	21.07	22.03

* Alternative 2 proposes the construction of a parking lot under the forest canopy. The parking lot would be designed to preserve the character of the forest, consistent with the VMP.

The VMP recognizes that the Presidio's landscape is a dynamic and evolving system. The plan specifically acknowledges the importance of adaptive management, and directs the Trust and NPS to consider boundary adjustments in the future as site-specific planning is completed. The Trust has determined that the changes contemplated under either project alternative would be minor and generally consistent with the spirit and intent of the VMP.

3.4 ALTERNATIVES CONSIDERED, BUT REMOVED FROM FURTHER EVALUATION

The following alternatives were considered by the Trust, but were not carried forward for additional evaluation in this EA, as explained below. These alternatives were derived from public comments.

The project alternatives evaluated in this EA tier from the guidance provided by the *Presidio Trust Management Plan* (Trust, 2002a). The Trust is not seeking to reopen the basic policy decisions for which a two-year public process was conducted five years ago. The intent is to examine alternative site-specific approaches to implementing PTMP identify alternatives which minimize environmental effects, and are most responsive to the project goals.

3.4.1 "Full Watershed" Alternatives

Several commentors requested that the Trust develop and evaluate detailed restoration alternatives for the entire watershed as part of this environmental review process. Restoration of the full watershed was

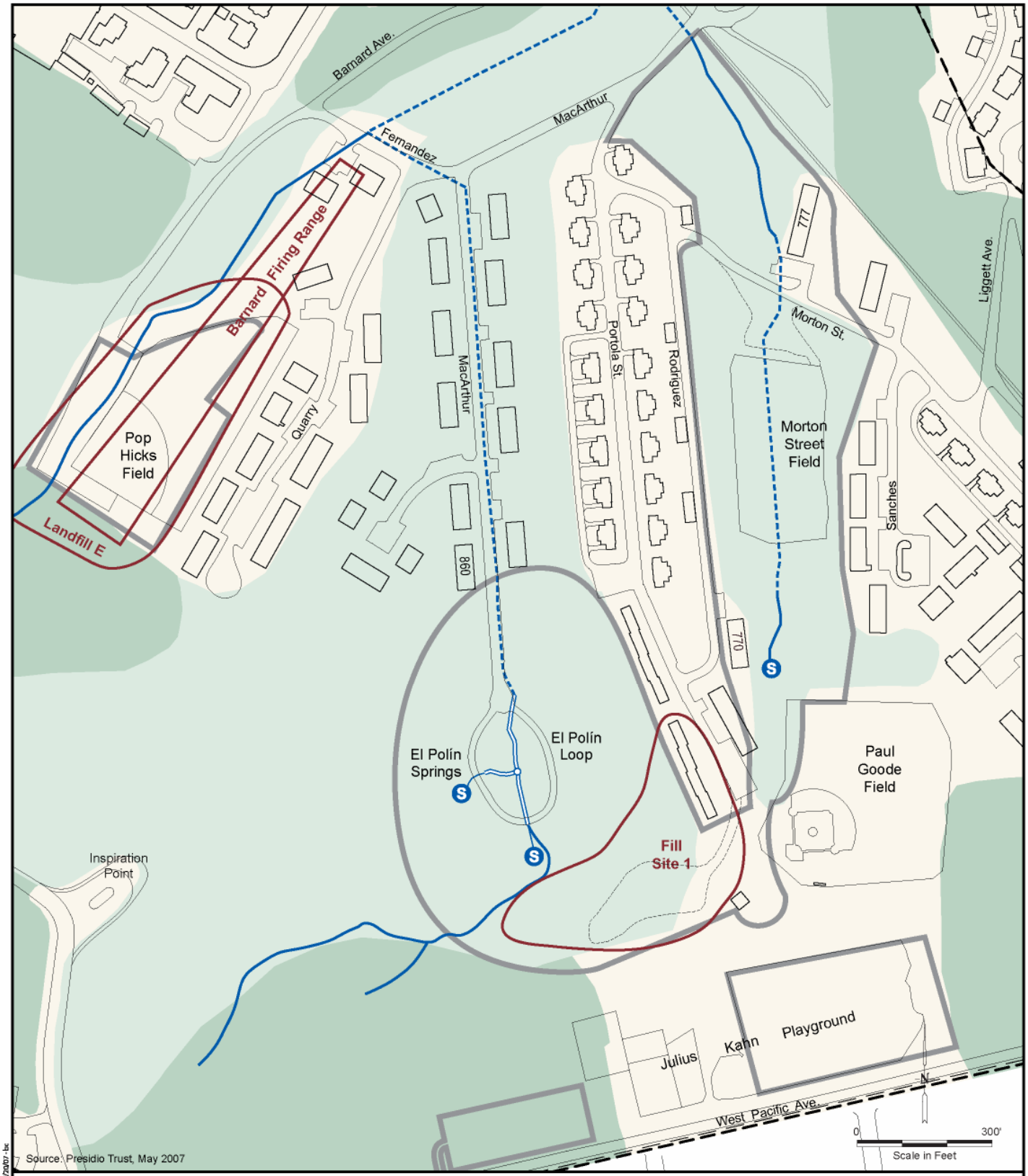

Figure 3.5
Vegetation Management Plan Zones

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considered, evaluated, and approved in the *Presidio Trust Management Plan* (PTMP) and PTMP Environmental Impact Statement (EIS) (Trust, 2002a and b). Full watershed restoration was also contemplated in the adopted *Vegetation Management Plan for the Presidio of San Francisco* (VMP) and corresponding NEPA documents.

The focus of this EA is on one phase in a larger effort to restore the full watershed as described in the PTMP and VMP. In general, the proposed project includes actions the Trust hopes to implement within the next 5 years and for which there is sufficient certainty about design and subsequent environmental effects. The Trust has determined that site-specific – tiering from the PTMP EIS – is warranted. In the future, the Trust will continue to review activities on a case-by-case basis and determine what type of additional environmental review, if any, is necessary.

It would be premature at this time to develop detailed plans for actions that the Trust will not contemplate for, in some cases, 15 or more years. Not only will conditions change between now and the time of implementation, but not enough specificity regarding the design is known to provide meaningful review and opportunities for public input. A good example of this is large-scale housing removal and replacement. The PTMP directs the Trust to consider the eventual removal and potential replacement of 66 units of non-historic housing in the watershed. These units are located directly on top of or adjacent to the creek, primarily the Central Tributary (along MacArthur Avenue and Quarry Road). As previously discussed in this EA, large-scale housing removal would be considered as one of the final phases of project implementation (see Section 1.2 for additional background). At that time, the Trust will determine whether replacement of these units, as specified in PTMP, is needed. If replacement is deemed necessary, the Trust would identify and evaluate specifically how and where the replacement would occur. The PTMP allows the Trust the flexibility to use sensitively designed infill (new) construction and/or convert larger existing units into multiple smaller units. It would be highly speculative at this time to predict whether replacement will be needed, and if so, how and where the replacement would occur, and subsequently what the environmental effects might be. Without this information, it would be impossible to provide meaningful review at this time.

3.4.2 Maximum Housing Removal

Some commentors suggest that the EA include an alternative that goes beyond the policy guidance established in PTMP by proposing the removal of all non-historic housing units in the watershed. PTMP identifies the removal of up to 66 units to accommodate creek restoration. Under the suggested alternative, an additional 122 units would be removed, for a total of 188 units. The majority of these units are located on the ridge between the Western and Central Tributaries along Quarry Road. Commentors state that removing the additional structures would enhance habitat benefits by establishing a more continuous band of native plant communities.

Removal of this housing was previously considered by the Trust under the Resource Consolidation Alternative in the PTMP EIS. For the reasons stated in the PTMP Record of Decision, this alternative was not selected by the Trust. No further consideration of this alternative is warranted at this time.

3.4.3 Various Playing Field Alternatives

Some commentors recommended the EA include an alternative that removes all playing fields in the watershed. At the opposite of the spectrum, others suggest that one alternative maximize active recreation

throughout the watershed by locating new fields wherever practical, regardless of proximity to the creek or plans for restoration. Both of these extremes would directly conflict with the Trust's adopted plans and policies, as well as the stated project goals.

Several commentors specifically requested that EA include an alternative that removes both Pop Hicks and Morton Street Fields. Removal of both of these fields was previously considered and evaluated under the Final Plan Variant Alternative in the PTMP EIS. As explained in the PTMP Record of Decision, the Trust did not select this as its preferred alternative. No further consideration of this alternative is warranted at this time.

At least one commentor recommended that the Trust replace Morton Street Field outside of the watershed, and another suggested that the Trust look for opportunities within the City of San Francisco. Over the course of the last year, the Trust has explored, with public input, a variety of options for relocating Morton Street Field within the Presidio. One of the major constraints to finding suitable replacement sites is the size of Morton Street Field – it is the only high-school-sized soccer field in the Presidio. Given the large footprint, it is difficult to site this type of field within the park's complex landscape. That said, four options were identified through the recent public planning process. Two are carried forward for further consideration as part of this EA. The other two were removed from immediate consideration because they either were too far in the future (i.e., located on top of a tunnel to be constructed in the future as part of the Doyle Drive Retrofit Project), or would displace multiple existing fields and thus not further the Trust's commitment to maintain or slightly enhance existing fields. Refer to Section 5.1.3 for additional information.

With respect to relocating Morton Street Field within the City of San Francisco, the City is already challenged to meet current demand. Based on a 1994 *Recreation Needs Assessment* conducted by the San Francisco Recreation and Parks Department, the City determined that it needs more than 60 new playing fields to meet current demand. As a result, the City is aggressively pursuing opportunities to improve existing facilities and build new fields wherever possible.

3.4.4 Maintain Morton Field, Restore Creek

The Trust initially considered the feasibility of an alternative that maintains Morton Street Field while also restoring the creek. This concept was explored in response to strong public opposition to removing the field, as well as difficulties in finding suitable replacement sites elsewhere in the Presidio. One of the key issues raised by the public is the desire to maintain a field of similar size. In order to accomplish this and restore the creek in its current location, the creek corridor would be so narrow and the habitat so marginalized that it would not meet the spirit or intent of the project goals. Thus, this alternative was removed from further consideration.

Chapter 4. Environmental Analysis

INTRODUCTION

This chapter summarizes the resources that may be affected by the project. As described in the Executive Summary, the Trust has determined that no significant environmental impacts or adverse effects on the Area of Potential Effect (APE) or Presidio National Historic Landmark (NHL) District would occur as a result of the project.

This analysis tiers from the PTMP EIS and is supplemented by site-specific studies that address a range of topics, including ground and surface water conditions, archaeological investigations and research, analysis of the cultural landscape, and plant and wildlife surveys. These studies provided the basis for the impact analysis, guided the development of sustainable habitat restoration concepts, and informed potential interpretative themes and features of the project. Relevant studies are referenced throughout this chapter and are available for review in the Presidio Trust Library.

Within each section, information is provided on the Affected Environment, Regulatory Setting (as appropriate), Environmental Consequences, Mitigation Measures, and Cumulative Effects. Mitigation measures derived from PTMP EIS use the same numbering system as was used in that EIS (i.e., NR-12). New mitigation measures developed for this project are distinguished by the addition of a "TH" in front of each number (i.e., THNR-1). Unless otherwise noted, mitigation measures are applicable to both project alternatives. The full text of the mitigation measures, including monitoring and enforcement responsibilities, is provided in Table A-1, Appendix A (Draft FONSI).

4.1 ARCHAEOLOGICAL RESOURCES

An overview of the Presidio's archaeological resources and historic context is provided on pages 68 to 82 and 215 to 219 of the PTMP EIS. Since preparation of the PTMP EIS, additional archival research and field studies have been completed within the project area. Most notable is the ongoing Stanford University Tennessee Hollow Watershed Archaeology Project, which has focused on the area surrounding El Polín Springs where significant archaeological discoveries have been made. Information obtained through the research program will continue to be used to develop and refine future interpretative programs, as well as inform the physical design of proposed improvements in the watershed.

4.1.1 Affected Environment

Watershed History

The Tennessee Hollow Watershed has a rich history of human use and occupation. It is located within the traditional territory of the Ohlone (Costanoan) cultural group, who are thought to have migrated from the Central Valley sometime around 1000 BC to 500 AD. Known prehistoric sites have been discovered along the former bayshore estuary (currently referred to as Crissy Field) where Tennessee Hollow drains. It is speculated that inland areas, such as El Polín Springs, would have likely been important sites for gathering plants, hunting, and collecting fresh water (Voss, 2005). While no known pre-contact sites have been discovered within the immediate project area, there is substantial evidence to indicate that native peoples lived alongside early explorers near the site of El Polín Springs.

The watershed is adjacent to the original Spanish military fortification, El Presidio de San Francisco. El Presidio was established on June 27, 1776 by approximately 40 families who made the long journey from northern Mexico to establish the third military fortification in Alta California (Voss, 2005). Although detailed information regarding early explorer use of the watershed is limited, early records indicate that the area around El Polín Springs was settled by the Marco Briones family sometime in the early 1810s (Voss, 2005; URS, 2002). Recent discoveries of a stone foundation from a Spanish-Mexican period adobe house and an associated household waste deposit site confirm this early settlement as one of the first known residences outside the walls of El Presidio.

Following Mexican Independence in 1822, the Presidio declined in its strategic importance and only a small guard was left behind to maintain it. By 1835, Commander Mariano Guadalupe Vallejo had moved most of the garrison north to Sonoma. The Briones family, from their home at El Polín Springs, was believed to have played a prominent role in maintaining the Presidio during these interim years. They also played a pivotal role in establishing Yerba Buena, which became the City of San Francisco. The Briones family (and later, the Miramontes) appear to have lived at the El Polín Springs site until the U.S. Army assumed control of the Presidio in 1846 (Voss, 2005).

During the second half of the nineteenth century, the U.S. Army began to modify the watershed to hasten drainage and to maximize access to water resources. Impoundment structures and wells were constructed along several springs in the watershed's Central and Eastern Tributaries. The demand for water eventually exceeded available supplies and the Army abandoned these sources for the more prolific ones found at Mountain Lake and Lobos Creek. Many of the impoundment structures were left in place and were either backfilled with debris or overgrown by vegetation.

With the onset of the Spanish-American War in 1898 and the war in the Philippines, the Presidio became an important point of embarkation as thousands of volunteers passed through its gates en route to the Pacific. It was during this period that the watershed's role as a residential area became firmly established. Tent encampments were built along the watershed's ridges and valley edges to accommodate the large influx of troops. These same tents would later be used as emergency shelter for the citizens of San Francisco in the wake of the 1906 earthquake.

Some of the fertile floodplain areas were cultivated; greenhouses were constructed in the vicinity of Lovers' Lane to support the Panama-Pacific International Exposition. Agricultural uses were all but abandoned by the mid-twentieth century; many areas of the creek were either used as disposal sites or filled to make way for housing, roads, and in the Eastern Tributary, a golf course for the Letterman Hospital patients.

Known and Predicted Archaeological Features

Both known and potential archaeological resources are within the project area. The APE established through Section 106 consultation on the watershed project is the entire watershed area (Figure 4.1-1). However, the Trust anticipates that the effect will be localized to the "project area" (also shown on Figure 4.1-1) where ground-disturbing or other activities associated with the proposed undertakings could potentially affect archaeological resources.

The Presidio of San Francisco was designated a National Historic Landmark (NHL) in 1962. In 1993, the National Park Service updated the 1962 NHL documentation to take into account knowledge gained subsequent to the original designation. Recognition of archaeological resources as contributing elements to the landmark was new to the update. In the NHL update, archival research was used to identify areas of past land use. From this information, a series of polygons was developed that predicted the locations of potential archaeological resources. Historic archaeological features predicted within the project area delineated in the 1993 NHL update include:

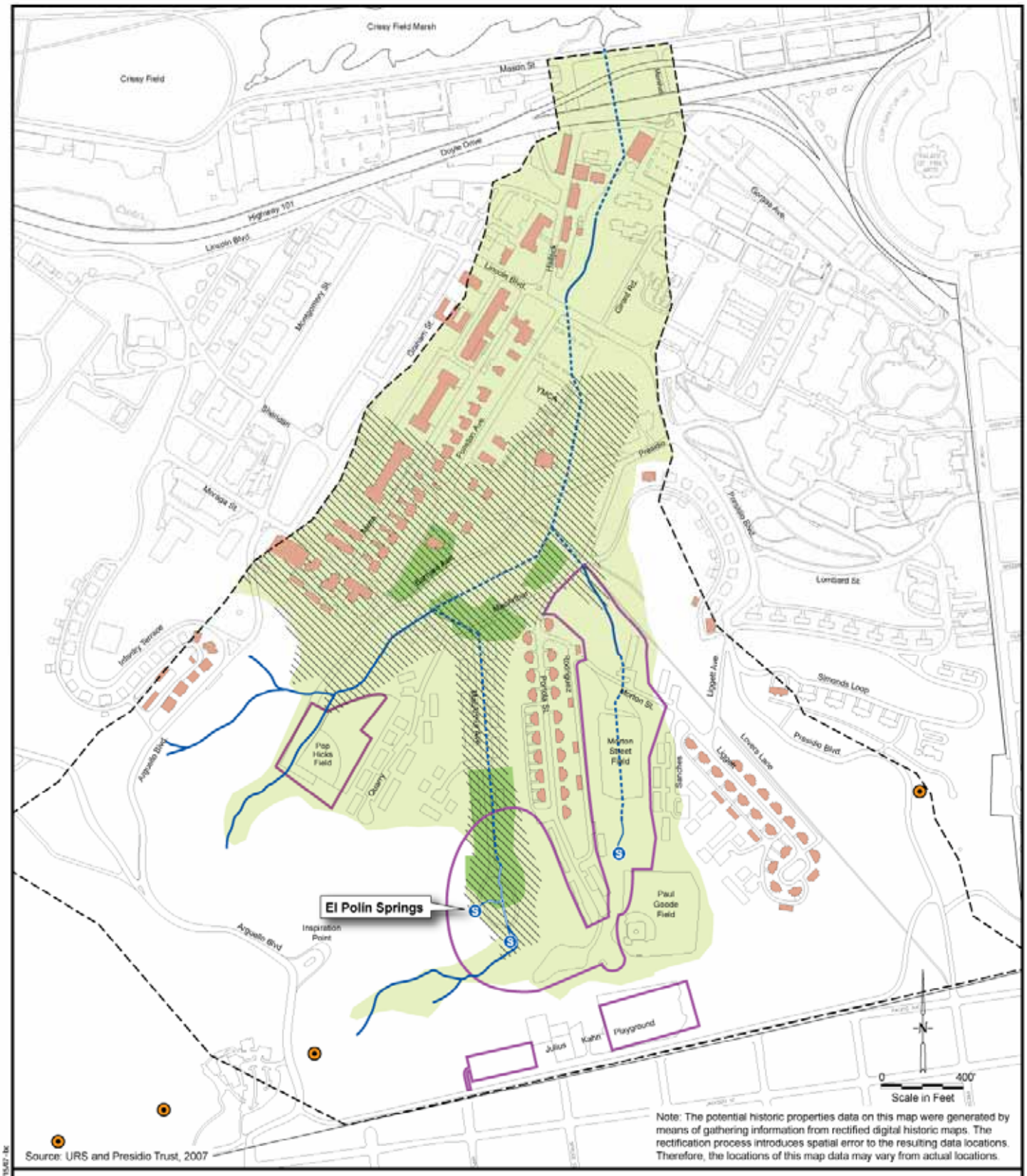
F3 – El Polín Springs—possibly consisting of an adobe structure, well, and associated land uses associated with the Hispanic occupation of the vicinity circa 1776-1846.

F12 – Queen Bee/El Polín Water control—possibly consisting of earthworks and wells circa 1857.

In addition to predicted historic archaeological features, the 1993 update also included "areas of known or predicted prehistoric archaeological potential." A number of cultural resource investigations conducted within the Presidio helped refine the archaeological sensitivity map contained in the NHL update, including archival review and ongoing research. The revised map maintained by the Presidio's Archaeology Laboratory represents the current delineation of known and suspected archaeological resources in the Presidio and is reflected in Figure 4.1-1.

El Polín Springs Deposit

The El Polín Springs Deposit retains intact deposits spanning the known history of the Presidio, and is the most intensively studied deposit within the Tennessee Hollow Watershed (Voss, 2001a, 2002, 2004, 2005). Since the 1930s (Bowman et al.), archaeologists and historians had been searching for evidence of adobe houses that were believed to have been sited near El Polín Springs. In 2003, a Stanford University field class led by Dr. Barbara Voss discovered the foundation of a Spanish-colonial/Mexican period adobe house at this site, believed to have been the home of the Briones family. Field investigations in 2004 discovered a second underlying foundation, which appears to have been destroyed by a fire, and then leveled to make way for construction of the overlying adobe. Evidence suggests that this earlier foundation may pre-date the known Briones occupation of the area (Voss et al., 2005).



Source: URS and Presidio Trust, 2007

Note: The potential historic properties data on this map were generated by means of gathering information from rectified digital historic maps. The rectification process introduces spatial error to the resulting data locations. Therefore, the locations of this map data may vary from actual locations.

- NHL Contributing Historic Properties
- Spanish/Mexican Sensitive Zones
- Voss (2002:290) Defined Archaeological Sensitive Zones
- NPS Defined Prehistoric Sensitive Zones
- Shafts
- Tennessee Hollow Watershed APE
- Project Area
- Spring
- Creek

Figure 4.1-1
Archaeological Sensitivity Map and Area of Potential Effect (APE)

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Field investigations have also explored the adjacent "yard" area where a large borrow pit and midden containing household refuse were discovered. To date, more than 250,000 artifacts have been recovered from the site, including Spanish-colonial/Mexican tile fragments, household ceramics, lithics, glass, metal, and various botanicals, shell, and faunal bone fragments. These artifacts, along with archival research, oral histories, and a series of additional technical studies including geoarchaeological and macrobotanical analyses continue to shed light on the historic use of this site.

As shown in Figure 4.1-1, the project area and the rest of the water course within the watershed have been defined as archaeologically sensitive for the discovery of prehistoric sites. Although little positive evidence of prehistoric archaeological resources has been identified within the project area, the presence of the El Polín Springs, the resulting stream, and associated wetlands suggest the likelihood for indigenous people to have used, if not occupied, this area.

Potential prehistoric archaeological deposits may remain beneath several meters of native soil. The Presidio was once part of a vast dune field that "originally stretched across the entire width of the peninsula" (Meyer 2004: 24). Dune fields, particularly when bordering natural water sources, have increased sensitivity for containing buried prehistoric archaeological deposits. Given the dynamic nature of dune fields (e.g., dune migration), it is possible that prehistoric archaeological deposits could be present several meters below the current ground surface. Any excavation into native soils (i.e., non-fill) has the potential to encounter prehistoric archaeological resources.

4.1.2 Regulatory Setting

The Presidio Trust is a federal agency and must comply with numerous laws, regulations, and statutes that protect cultural resources. Among these are the National Historic Preservation Act of 1966; Executive Order 11593 (Protection and Enhancement of the Cultural Environment); The Archeological Resources Protection Act of 1979; and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA). Together, these regulations and guidelines establish a comprehensive program for the identification, evaluation, and treatment of cultural resources.

During preparation of the PTMP, the Presidio Trust consulted with the Advisory Council on Historic Preservation (ACHP), the California State Historic Preservation Officer (SHPO), and the National Park Service (NPS), and executed a Programmatic Agreement (PA) for the Trust's management plan and various operation and maintenance activities within Area B of the Presidio. The National Trust for Historic Preservation and the Fort Point and Presidio Historical Association (now known as the Presidio Historical Association) also consulted on the PA and signed the final agreement as concurring parties. This PA establishes procedures by which the Trust will satisfy its responsibilities under the National Historic Preservation Act, including those associated with the proposed undertakings. A copy of the executed PA is available in Appendix D of the PTMP EIS, and is referenced throughout the following discussion.

4.1.3 Environmental Consequences

No Action Alternative

Under the No Action Alternative, none of the ground-disturbing or other construction activities or site enhancements proposed by the project alternatives would be implemented. Interpretation of archaeological resources at El Polín Springs would remain at the current limited level, consisting primarily of occasional ranger or docent-led walks.

Conclusion: *Because there would be no ground-disturbing activities, the No Action Alternative would have no effect on archaeological resources. There would also be no benefits from research or identification of unknown sites that would be associated with these activities or from interpretative enhancements.*

Consequences Shared by Both Project Alternatives

Both project alternatives propose the same activities within the El Polín Springs/Loop area. Ground-disturbing activities would be limited to the existing roadway alignment. Limited fill removal is proposed in two locations: (1) along the roadway near El Polín Springs; and (2) along the eastern edge of the road (north of the loop). No ground-disturbing activities would occur within the known boundary of the midden deposit along the western edge of MacArthur Avenue. In this area, both alternatives propose to interpret the adobe foundations and past use of the site by establishing a surface features which interpret and preserve the buried foundations (Figure 3.3). Both project alternatives propose to remove and/or adaptively reuse non-historic Building 860 to accommodate a new public restroom, while minimizing new ground disturbance.

Within the Eastern Tributary, the alternatives propose varying degrees of grading and construction activities. Although there are no known archaeological resources within this area, the entire site is situated within the prehistoric sensitivity zone. It is possible that ground-disturbing activities associated with the alternatives in this location could still affect unknown archaeological sites.

All fill removal or ground-disturbing activities within the project area would be subject to the requirements of the PA (Stipulations XII and XIII), and require an Archaeological Management Assessment and Monitoring Program to determine whether subsurface coring or trenching and/or test excavations are needed before ground disturbance. Ground-disturbing activities and construction would be closely observed (Mitigation Measures CR-8 and CR-9). If it appears that a previously unidentified property that could be eligible for inclusion in the National Register or that could contribute to the NHL District might be affected, or a known historic property might be affected in an unanticipated manner, the Trust would take all reasonable measures to avoid or minimize harm to the property until it concludes consultation with the State Historic Preservation Officer (Mitigation Measures CR-14 and CR-15).

Conclusion: *Both project alternatives have the potential to disturb unknown archaeological resources, and would be subject to the existing protocols and practices stipulated in the PA for ground disturbing activities at the Presidio. Implementation of these measures would seek to avoid or minimize adverse effect to these resources. Proposed interpretive enhancements would increase public awareness of the Presidio's archaeological resources and have a beneficial effect.*

4.1.4 Mitigation Measures

The following mitigation measures were derived from the PA and the PTMP EIS, and would apply to both project alternatives. Refer to Table A-1, Appendix A for a detailed description.

CR-8 – *Archaeological Management Assessment and Monitoring Program*
CR-9 – *Ground-Disturbing Activities*
CR-11 – *Excavation Permits*
CR-13 – *Curation of Archaeological Collections*
CR-14 – *Discoveries*
CR-15 – *Treatment of Discoveries*

PTMP EIS Mitigation Measures CR-10 *Archaeological Grid and Database* and CR-12 *Archaeological Management Plan for El Presidio* would not apply to the Tennessee Hollow Restoration Project, except that any records or excavated materials not subject to NAGPRA would become the property of the Trust and would be incorporated into the Presidio's archaeological grid map and database.

4.1.5 Cumulative Effects

The PTMP EIS identifies the potential cumulative effects associated with anticipated ground-disturbing activities within the Presidio, and establishes protocols to ensure that all future ground-disturbing activities and construction projects are closely observed in the vicinity of sensitive archaeological areas and that the archaeology stipulations in the PA are adhered to. As described above, these stipulations require an Archaeological Management Assessment and Monitoring Program (AMA/MP) prior to ground-disturbing activities. Because the proposed project would be required to comply with these stipulations, the project would seek to avoid or minimize adverse effects to archaeological resources. The likelihood that any unknown archaeological resources would be destroyed or damaged without appropriate evaluation and recordation would be minimized.

4.2 CULTURAL LANDSCAPE

An overview of the Presidio's cultural landscape, as well as predicted long-term effects associated with implementation of PTMP, is provided on pages 68 to 72 and 212 to 215 of the PTMP EIS. Information relevant to Tennessee Hollow is summarized in this section.

4.2.1 Affected Environment

The cultural landscape of Tennessee Hollow has been shaped by the people who occupied the land and adapted it to their needs. Several general periods of human occupation and development in this area include the Ohlone Indians dating back thousands of years, and the post-colonial contact era which includes the Spanish and Mexican periods (1776-1846), followed by the American Period which began with the occupation of the Presidio by the U.S. Army in 1846. Within the Tennessee Hollow Watershed, little remains from the Spanish and Mexican periods. Spanish and Mexican building and agricultural activities were concentrated around the El Polín Springs area with some limited activities at the confluence of the three tributaries. A more detailed description of the Spanish and Mexican periods within the watershed can be found in the *Tennessee Hollow Archival Research Study* (URS, 2002), the 2003-2005 *Tennessee Hollow Watershed Archaeology Project Annual Progress Reports for Excavation at El Polín Springs* (Voss et al., 2004-2005), *Defenders of the Gate* (Thompson, 1997), and various other documents in the Presidio Trust Library.

The U.S. Army arrived in 1847 and established an official U.S. Army post in 1850. Most of the initial building and development took place outside the Tennessee Hollow Watershed, taking advantage of the strategic locations of El Presidio and Fort Point, as the Spanish had before them. For much of the remaining years of the nineteenth century the U.S. Army used the open area of the watershed to support development elsewhere in the Presidio. Open areas were grazed and most likely what little if any wooded vegetation in the drainage swales was removed, again continuing a process that had been initiated by the Spanish. The earliest evidence of American building activities within the Tennessee Hollow Watershed are the earthen impoundment structures found in both the Eastern and Central Tributaries. These impoundment structures collected water from surface flows or possibly from waterworks connected with Mountain Lake. Little is known regarding the use and distribution of water or how long the structures were in use. However, they remain today barely visible, often obscured by either vegetation or later earthwork projects. The open undeveloped character of the watershed also allowed for quarry activities, and there was a rifle range in the Western Tributary. In the last half of the nineteenth century the watershed was also planted with eucalyptus trees, along with some Monterey cypress and Monterey pines. For the basic locations and extent of these plantings, refer to the "historic forest" zone presented in Figure 1.3.

There was little human habitation of the watershed upstream of Lincoln Boulevard through the end of the nineteenth century. It was not until the onset of U.S. Army activities in the Far East Pacific that a large numbers of soldiers were temporarily quartered in the West Cantonment, both before and after their assignments in Asia. Housing soldiers first in tents and then in light-framed structures, the West Cantonment gradually evolved into the network of streets that we see today. The hand-like pattern of streets on both the ridges and valleys of the watershed persists and is a character-defining feature of the cultural landscape. Wood-framed structures housing enlisted men as well as officers and their families sprung up along with a number of recreational facilities such as tennis courts and open landscaped areas. The light-framed buildings

and tents were gradually replaced with more permanent structures. The brick houses on Portola Street and Liggett Avenue represent the latest structures from the period of significance, while the non-historic structures on MacArthur Avenue and Quarry Road, constructed in the 1960s, replaced some of the earlier historic houses. Landscape features at El Polín Springs as well as various remnant built features from the West Cantonment are described in the NHL District 1993 Update. A more detailed description of the cultural landscape of the watershed is presented in the *Tennessee Hollow Cultural Landscape Report 1895-1945* (Lamb, 2007).

4.2.2 Regulatory Environment

As described in the PTMP EIS, compliance with the National Historic Preservation Act (NHPA) is of central importance to any project within the Presidio boundary that could have an effect on the National Historic Landmark District. Section 106 of the NHPA, as amended, requires federal agencies to identify cultural resources that may be affected by any undertaking involving federal lands, funds, or permitting. Section 110 of the NHPA sets out the broad responsibilities for federal agencies to integrate preservation into their ongoing activities, and requires agencies to "minimize harm" to National Historic landmarks such as the Presidio of San Francisco.

Consistent with the regulations implementing the NHPA (Title 36 of the Code of Federal Regulations, as amended), the Presidio Trust consulted with the Advisory Council on Historic Preservation (ACHP), the California State Historic Preservation Officer (SHPO), and the NPS, and has executed a Programmatic Agreement (PA) which establishes procedures by which the Trust would satisfy its responsibilities under the NHPA for Area B of the Presidio, including those associated with the proposed undertakings. The National Trust for Historic Preservation and the Fort Point and Presidio Historical Association (now known as the Presidio Historical Association) also consulted on the PA and signed the final agreement as concurring parties. Both project alternatives evaluated in this EA would be subject to the requirements set forth in the PA.

4.2.3 Environmental Consequences

No Action Alternative

Under the No Action Alternative, none of the Tennessee Hollow Watershed restoration activities associated with the proposed project would be implemented. Historic structures such as the impoundment structures and archaeological sites near El Polín Springs would not be revealed for interpretation. Portions of the forest that have escaped its original historic boundaries would remain and continue to obscure the historic pattern of forest and open spaces. Only the required environmental remediation would occur within the project area.

Conclusions: *The No Action Alternative would have no effect on historic resources and the beneficial impact of the project alternatives would be avoided.*

Consequences Common to Both Alternatives

El Polín Springs/Loop Improvements

The two project alternatives include the same treatment for the El Polín Loop area (see Figure 3.2). The asphalt roadway would be converted to a gravel-paved trail, with a section of boardwalk following the historic alignment of the loop. The boardwalk, although not a reconstruction, would reflect a type of feature that was common in the West Cantonment and elsewhere in the Presidio during the period of significance. The trail that would replace the loop road would closely mirror in both scale and alignment the condition of this area during the first part of the twentieth century. The historic cobblestone-lined drainage channel and the El Polín Springs structures in the immediate vicinity would be rehabilitated.

At the end of the period of significance, planting within the loop area was much more wooded than it is today. Planting during the American period most likely varied over time and never was a significant feature of the space. Additional planting would restore the wooded, closed-in character of the site during the mid-twentieth century. Planting changes just south and outside of the loop could make the earth impoundment structure more visible and available for interpretation.

Additional features include a small interpretive garden and information kiosk. The interpretive garden would include crops cultivated during the Spanish and Mexican periods, circa 1790 through circa 1850. Informal picnic facilities would be relocated outside of the loop on the slope to the northeast, and non-historic Building 860 would be rehabilitated or demolished to accommodate a new public restroom. Areas for ongoing archaeological investigations, such as the building foundation discovered just northwest of the loop, would be available for interpretive displays.

Conclusion: *Overall, the work at El Polín Loop would have no adverse effect on the contributing resources at the El Polín Loop area, the APE, or on the Presidio NHL as a whole. The proposed alterations to the El Polín Loop area would have a beneficial effect on the cultural landscape. Selective tree removal south of the loop is likely to enhance and reveal the historic impoundment structure. It is anticipated that the work at El Polín Loop will have a positive effect on the cultural landscape on the entire Tennessee Hollow Watershed.*

Pop Hicks Field Improvements

The proposed improvements at Pop Hicks Field under both Alternative 1 and Alternative 2 are similar in scope and would have the same impact on the cultural landscape. Both alternatives would restore a playing field at this site, and relocate existing parking to the northeastern edge of the field. This would allow for a surface water channel[4], which currently runs under the existing parking lot in a storm drain, to be established. During the first half of the twentieth century, this area of the Western Tributary was initially a quarry and then a firing range. By the end of the period of significance, it was well on its way to being a landfill. Little integrity of the cultural landscape remains in this area. The one constant through the twentieth century has been a grove of eucalyptus trees west of the residences along Quarry Road. Alternatives 1 and 2 propose to convert Barnard Avenue, a contributing feature of the NHL District, into to a multi-use trail. This conversion of road to trail would be accomplished in a manner that would avoid adverse effect to the cultural landscape.

[4] The proposed surface channel is subject to review under the Landfill E remedial design process and corresponding stakeholder input.

Conversion of Barnard Avenue to a trail would incorporate measures to maintain the profile, alignment, and appropriate width of this contributing feature as required in Mitigation Measure THCL-C.

Conclusion: *The proposed alterations to Pop Hicks Field would avoid adverse effect to the cultural landscape of the APE or the Presidio NHL as a whole. These alterations would, in fact, have a slightly beneficial effect on the cultural landscape. Specifically, the creation of an open stream channel would be considered beneficial because it rehabilitates a topographical feature lost with the creation of the landfill. Overall, the work at Pop Hicks Field is anticipated to have a positive effect on the cultural landscape of the Tennessee Hollow Watershed.*

Alternative 1

Within the Eastern Tributary, Alternative 1 would have a beneficial impact on the cultural landscape. Removal of vegetation that obscures the earthen impoundment structure would allow for better visual interpretation of this unique feature from the early years of the American Period. Interpretive signage and historic images would assist park visitors in seeing and experiencing this remnant landscape feature. As required by Mitigation Measure THCL-A, grading to daylight the drainage swale should be undertaken with care so as not to impact portions of the impoundment structure or alter the distinct terrace topography on the slope below Rodriguez Street. These terraces on the slope below Rodriguez Street most likely date from the West Cantonment developments of the early twentieth century. Careful consideration should be given to removing the mature vegetation on the slope below Rodriguez Street. Large pines as well as some other trees in this area date from the period of significance and should be considered for retention until they are senescent.

Under Alternative 1, Morton Street, a contributing feature of the NHL District, would be retained, with the drainage swale passing beneath it in a shorter culvert than the one that currently exists. The character-defining elements of this landscape feature would be respected such that modifications would avoid adverse effect. The non-historic Building 777 would be demolished, opening up the area that was not developed during the period of significance, and the site would be revegetated with native plantings.

Removing much of the fill associated with the Morton Street Field and daylighting the creek would rehabilitate the historic topography of this area. The most recent use of this area before the creation of Morton Street Field was a small pitch and putt golf course that was in existence as late as 1955. The topography of the small golf course was closer to the open sloping terrain that existed late in the period of significance, than the broad uniform level field that exists today.

Alternative 1 would also include a new Little League field and parking area west of Paul Goode Field at Fill Site 1, which was the site of numerous buildings associated with the West Cantonment during the first half of the twentieth century. By the end of the period of significance, this area was free of buildings and was the site of emerging vegetation patterns. A Little League field and a parking area would have little impact on the cultural landscape. There is an opportunity with the grading of the Little League field and the remediation of Fill Site 1 to allow for the earth impoundment structure above El Polín Springs to be more visible, which would be a benefit.

Conclusion: *Alternative 1 would have no adverse effect on either the cultural landscape of the APE or of the Presidio NHL as a whole. The alternative would have a slightly beneficial effect on the cultural landscape within the APE. Planting changes at*

the Morton Street Field would enhance and reveal the historic impoundment structure. Overall, Alternative 1 is anticipated to have a positive effect on the cultural landscape of the Tennessee Hollow Watershed.

Alternative 2 (Trust Preferred)

As under Alternative 1, the non-historic Morton Street Field would be removed, the creek daylighted, and a new trail and bench site provided. Alternative 2 would convert Morton Street, a contributing feature of the NHL District, into a multi-use trail. This conversion of road to trail would have a slightly negative impact on the cultural landscape, and would require careful consideration of the road's character during the period of significance. Efforts to maintain the profile, alignment, and appropriate width of Morton Street would be incorporated into the final design of the multi-use trail, as required in Mitigation Measure THCL-B, to avoid adverse effects. A bridge would be constructed where the trail crosses the drainage swale.

Under Alternative 2, two non-historic buildings, 770 and 777, would be demolished and their sites would be revegetated using native plantings, opening up these areas which were undeveloped during the period of significance. Alternative 2 proposes a small practice field and parking area west of Paul Goode Field, which would require less area than the proposed Little League field in Alternative 1, and therefore allows for a greater amount of rehabilitation of the historic topography and greater beneficial effects on the cultural landscape.

Under Alternative 2, the playing field at Julius Kahn would be expanded to accommodate one large soccer field (or two Little League fields). The Julius Kahn site, which dates from the 1920s, is a contributing feature to the Presidio NHL as is the historic forest that surrounds the site. From the earliest days of the Julius Kahn Playground, the open playing field on the eastern edge has been bordered by forest. Over the years, the playing field has expanded eastward, resulting in the continual reduction of forest tree plantings. Alternative 2 would position the playing field farther east, resulting in an additional loss of trees. Consistent with the previous playing field's eastward expansion and subsequent adjustment of the historic forest boundary, the expansion proposed in this alternative would not have an adverse effect on the cultural landscape. Alternative 2 proposes the development of a parking area just outside the western boundary of the Julius Kahn Playground complex. This proposed parking area would be within the limits of the historic forest, would have the potential for a negative impact on the cultural landscape, and would be subject to Mitigation Measure THCL-D. This work, if implemented, would be done in a manner that would maintain the forest's historic character.

Conclusion: *Overall, Alternative 2 would not have an adverse effect on the APE or on the Presidio NHL as a whole. The alternative is anticipated to have a slightly beneficial effect on the cultural landscape of the Tennessee Hollow Watershed.*

4.2.4 Mitigation Measures

The following PTMP EIS mitigation measure and four new measures were developed specifically for this project. Refer to Table A-1, Appendix A for a detailed description.

CR-7 – *Compliance with Standards for Building and Cultural Landscape Rehabilitation*
THCL-A – *Grading at Morton Street Field Site*
THCL-B – *Treatment of Morton Street* (Alternative 2)
THCL-C –*Treatment of Barnard Avenue*
THCL-D – *Guidelines for Julius Kahn Improvements* (Alternative 2)

4.2.5 Cumulative Impacts

The incremental effects associated with the two alternatives would result in a neutral to beneficial effect on the cultural landscape; therefore their implementation would not contribute to a negative impact on this portion of the Tennessee Hollow Watershed. Overall, work within the Tennessee Hollow Watershed, including the recent rehabilitation of Fill Site 6A, the ongoing rehabilitation of the landscapes associated with the residential neighborhoods of the East Housing District, and future work at Quartermasters Reach and the remediation sites have and will be done within the principles of the Tennessee Hollow Cultural Landscape Report, which include the repair of deteriorated character-defining elements, associations, and settings and feelings. Once completed, these projects would result in an overall long-term positive effect on the cultural landscape of the Presidio.

4.3 WATER RESOURCES

This section focuses on the potential short- and long-term hydrologic changes predicted to occur under the alternatives. An overview of the Presidio's water resources and general effects associated with restoring Tennessee Hollow are presented on pages 113 to 121 and 240 to 247 of the PTMP EIS.

The Trust retained Kamman Hydrology & Engineering, Inc. (KHE) to assist in project planning and to establish a science-based approach for the development, refinement, and subsequent analysis of various creek restoration alternatives. As a first step, KHE evaluated the geologic and hydrologic conditions in the watershed to better understand the opportunities and constraints for riparian corridor restoration. The analysis involved review of previously collected data, as well as new monitoring and data collection. The result was the preparation of a conceptual model that provides a detailed description of each significant environment and process in the watershed, and attempts to explain how these variables interact and control the movement of water within and through the entire watershed.

The next step was preparation of a numerical model that predicts surface water flows and groundwater conditions that would occur in response to various land management decisions (i.e., changes in land use, irrigation practices, fill removal, creek daylighting, etc.), and thus what type of habitat could be restored and sustained over time. A limiting factor in the restoration of wetlands is the availability of surface water and groundwater. The model was used as a tool to test and refine a variety of creek restoration alternatives with the objective of maximizing wetlands, a stated goal of the project. Both of the project alternatives evaluated in this EA seek to maximize wetland opportunities to the greatest degree feasible.

The analysis presented in this EA is supported by the following technical reports, which are incorporated by reference and are available for review at the Presidio Trust Library:

> *Conceptual Watershed Model and Proposed Surface- and Ground-Water Monitoring Program for the Tennessee Hollow Riparian Corridor Restoration Project (*KHE, 2002)
>
> *Hydrologic Monitoring Report for the Tennessee Hollow Riparian Corridor Restoration Project* (KHE, 2003)
>
> *Hydraulic & Geomorphic Feasibility Analysis Report: Tennessee Hollow Watershed Project* (KHE and Colby Groundwater Consulting, 2006)

4.3.1 Affected Environment

Surface Water Bodies

The 270-acre Tennessee Hollow Watershed contains three steep tributaries or "reaches" – called the Eastern, Central, and Western Tributaries – that converge in the central part of the watershed. Sections of each tributary have been significantly modified over the last 200 years by filling and urban development. The headwaters feeding these tributaries reach 350 feet in elevation in the south, and transition to the flatter

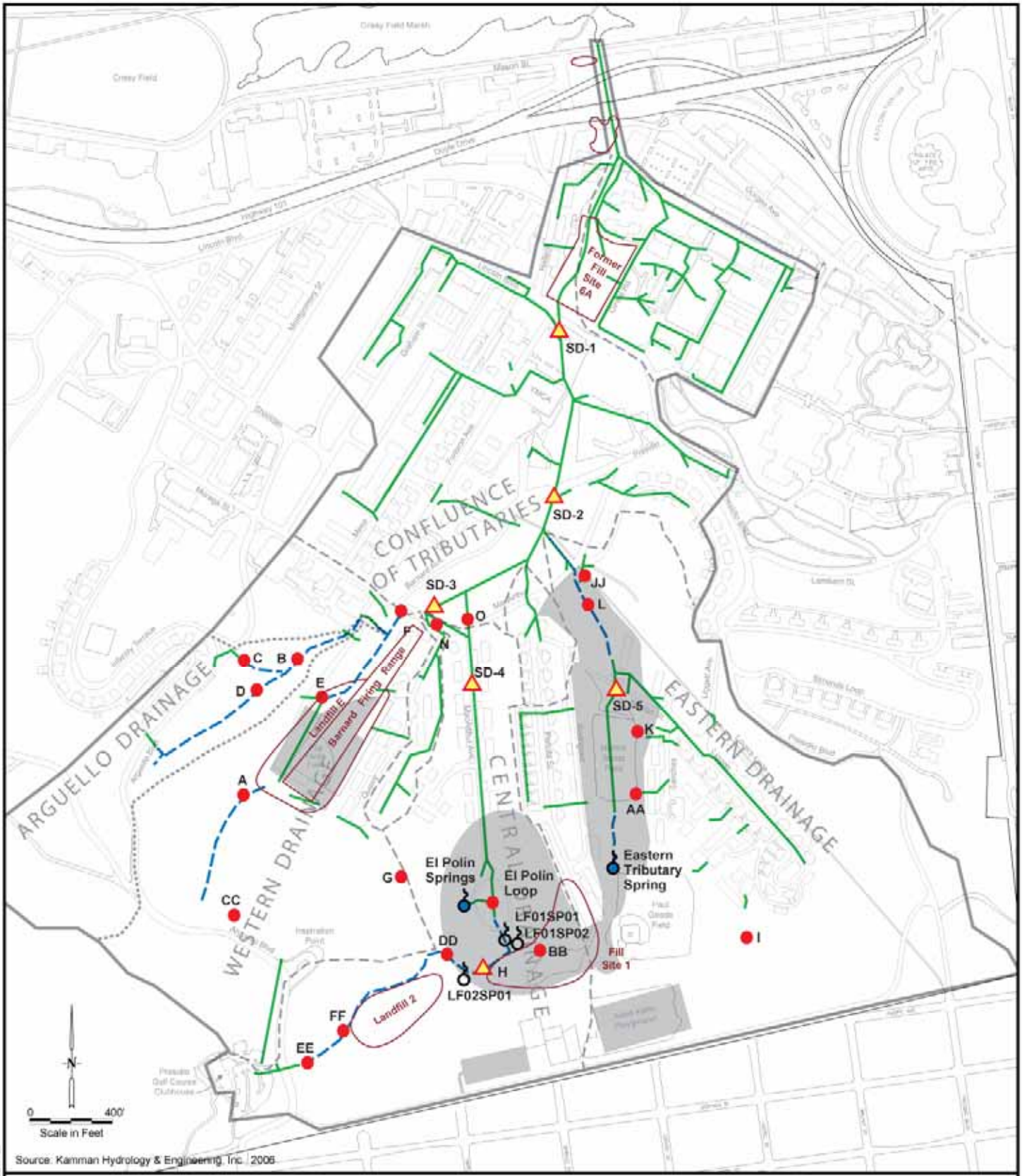
coastal alluvial plain in the north. The existing watershed drainage divides[5], channel alignments, and surface and groundwater monitoring locations are outlined in Figure 4.3-1. The Eastern and Central Tributaries are spring-fed, perennial drainages; the Western Tributary flows seasonally, primarily when it is raining. Average monthly flow records are presented in Figure 4.3-2.

The headwaters of the Eastern Tributary are discharged from the Eastern Tributary spring which originates in an erosional notch through the historic dam located between Morton Street and Paul Goode Fields. The dam is a barrier to groundwater flow, maintaining shallow/perched groundwater conditions upgradient (south) of the dam. It is likely that the dam and associated perched groundwater conditions maintain the spring. No runoff from Paul Goode Field or environs farther south (upstream) reach the spring location. Downstream of the spring, there is little if any water loss from the underground storm drain that carries the spring flow beneath Morton Street Field to the storm drain outfall at the remnant riparian reach. Year-round surface flow or saturated channel bed conditions are maintained throughout the remnant riparian reach. During the peak of the rainy season, base flows as high as 20 gallons per minute (gpm) are sustained through the remnant reach, punctuated by short-lived, higher-magnitude flood flows during rain events. By late summer, active flow through the remnant riparian area either slows to a trickle or water is only observed as puddles in creek-bottom depressions. The effects of variable evapotranspiration losses are noticeable at this time of year as Eastern Tributary flow from the Lovers' Lane Bridge outfall ceases during sunny, warm days, and low flows (less than 1 gpm) resume during cool, overcast weather (KHE, 2003).

In the Central Tributary, El Polín Springs contributes a constant, albeit relatively low, year-round flow of 0.6 to 2.0 gpm (KHE, 2003). Monitoring results indicate a close association of base flow from El Polín Springs and the adjacent bedrock aquifer. In addition to El Polín Spring, two main sources of sustained seasonal (intermittent) flows contribute to the flows within the Central Tributary. The first is a pair of intermittent springs emanating from a notch in the former dam located immediately south of the El Polín Loop. The second is seasonal spring and seep flows concentrated in the narrow creek channel located farther upland (south) of the Loop. During rain events, runoff in the headwaters of the central drainage originates at the golf course parking lot and as well as upland roads and trails. Downstream of El Polín Loop, flow is contained in a subsurface storm drain beneath MacArthur Avenue that empties into the concrete/stone-lined channel that passes through the Confluence of Tributaries area (Figure 4.3-1). Contributions to flow below El Polín Loop are dominated by storm runoff from impervious surfaces during the winter and runoff from landscape irrigation in the summer.

The Western Tributary, including the smaller Arguello ravine, is the least developed drainage in the watershed. Surface flow in this tributary is ephemeral, occurring primarily during sustained rain events. No year-round or even sustained seasonal flows were observed. Some early season flows were detected between monitoring points B and C (Figure 4.3-1); however, these were attributed to irrigation runoff.

[5] The term watershed divide used throughout this section is synonymous with surface water drainage basin, and is defined as the surface area that is occupied by a drainage system with a common outlet for its surface runoff. The outlet used to define the watershed is the outfall of the creek to Crissy Field Marsh. The drainage system within Tennessee Hollow also includes storm drains that direct water to the watershed outlet.



2002 Watershed Divide*

Tributary Drainage Basin Divide

Sub-basin Divide

Earthen Tributary Channel

Concrete Lined Channel or Storm Drain

Remediation Areas

E: Discrete Storm Water Monitoring Location (with location I.D.)

SD-3: Surface Water Monitoring Location (with gauge I.D.)

LF01SP01: Spring Monitoring Location (with spring I.D.)

Project Area

* This boundary differs slightly from other figures because it includes storm drains that direct waters into the watershed.

Figure 4.3-1
Existing Watershed Conditions and Monitoring Locations

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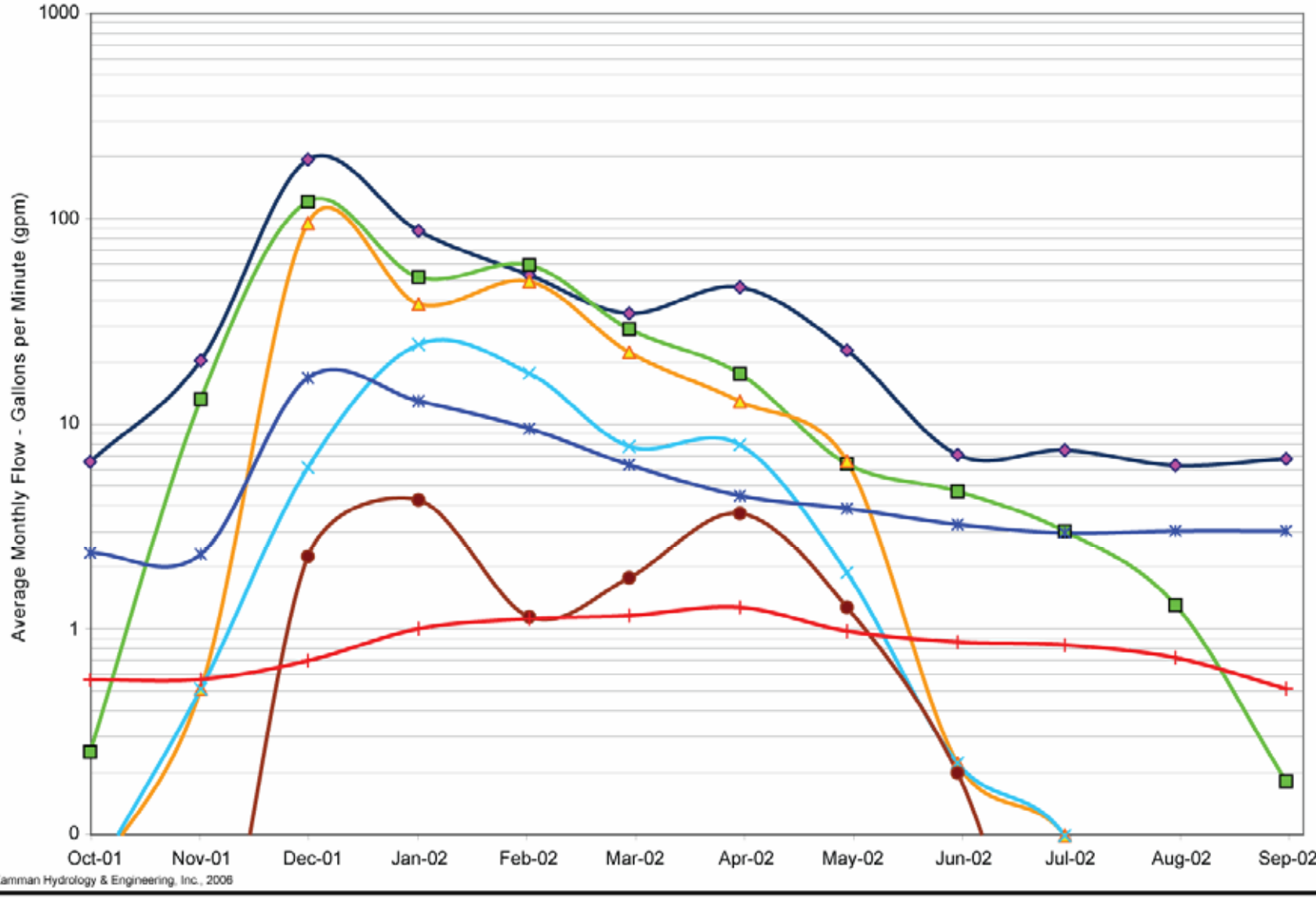


Figure 4.3-2
Average Monthly Flow at Stream Flow Gauges
(Water Year 2003)

August 2007
Tennessee Hollow Upper
Watershed Revitalization Project EA

Groundwater Resources

The hydrogeologic boundaries in watershed are defined largely by the topography of the bedrock surface, which exerts significant control over groundwater flow in the basin (KHE, 2002). Based on the available data, the bedrock surface appears to form a relatively impermeable boundary along the eastern and western edges of the watershed. Groundwater is found in dune sands and Colma formation sediments in the southern and central areas of the watershed, as well as the interbedded sands and bay mud in the north. In addition, perched groundwater conditions exist, at least seasonally, in some areas (e.g., within the fill material behind the historic Eastern Tributary dam) (KHE, 2002 and 2003). Groundwater is also encountered in Franciscan bedrock along the margins and underlying the watershed; however, bedrock is not generally considered to be a significant source of groundwater in comparison to overlying unconsolidated sediments (Montgomery Watson, 1996; KHE, 2002).

Groundwater flow is generally to the north towards Crissy Field Marsh and San Francisco Bay. Depth to groundwater in the watershed ranges from the ground surface at El Polín and Eastern Tributary Springs to approximately 65 feet below ground surface beneath Fill Site 1. The data reflect variations in bedrock and surface topography, thickness of unconsolidated sediments in the watershed, and the configuration of the water table surface. Groundwater elevations rise and fall seasonally with changes in precipitation.

The Confluence of Tributaries area, including the northern 200 feet of Eastern Tributary remnant riparian reach, is a unique area. In this location, shallow subsurface bedrock conditions effectively cause groundwater to rise close to the ground surface. In the winter, groundwater discharges directly to the ground surface, replenishing surface water outflow along the creek. In the summer, groundwater levels range within 3 to 5 feet of the ground surface. Unlike the remainder of the watershed, which is an area of groundwater recharge in the winter, this is an area of seasonal groundwater discharge. As a result, the opportunities for wetland enhancement are high in this area.

Water Quality

A variety of surface and groundwater quality investigations have been completed in the watershed; most of the long-term monitoring is being done in association with the Presidio Environmental Remediation Program. Several landfill/fill sites in the watershed have been remediated, or are slated for remediation. Monitoring of the potential contamination of groundwater and seep water is integral to remediation planning, implementation and post-cleanup monitoring. The entire creek corridor (and most of the watershed) has been designated by the Regional Water Quality Control Board (RWQCB) as a "Freshwater Ecological Protection Zone" (Water Board Order No. R2-2003-0080). As a result, this area is subject to more stringent cleanup levels than other areas of the Presidio. Cleanup levels are designed to be protective of human health and ecological receptors, and anticipate the future restoration of the creek. All remediation activities in the watershed have been/will be designed to ensure the protection of human and ecological health, as well as the future creek habitat.

In addition to monitoring associated with the remediation program, sampling was conducted to inform planning for creek restoration activities. Parameters measured include pH, specific conductance (conductivity), salinity, total dissolved solids, temperature, *Escherichia coli* (E. coli) coliform bacteria, and dissolved oxygen. Data were reviewed to determine whether current water quality would pose any limitations

or concerns for future restoration. In general, all parameters were detected at concentrations that complied with relevant San Francisco Bay Water Quality Control Plan (Basin Plan) objectives for surface waters in the San Francisco Bay basin; and no impediment to creek restoration was identified.

4.3.2 Regulatory Background

The Clean Water Act (CWA) is the cornerstone of surface water quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to achieve the broad goals of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

Section 404, Clean Water Act – Section 404 establishes a program to regulate disposal of dredge or fill material in the waters of the United States. Waters of the United States are broadly defined to include navigable waterways, their tributaries, and adjacent wetlands (33 CFR 328.3). Actions such as displacing soil into a wetland may require a 404 permit from the U.S. Army Corps of Engineers (USACE) and compensatory mitigation for any adverse impacts.

Potential jurisdictional wetlands and other waters of the United States subject to Section 404 of the CWA in the project area include El Polín Springs, the remnant riparian habitat in the Eastern Tributary, and the area around the spring that feeds the Eastern Tributary. Additional discussion related to wetlands and associated habitat values is provided in Section 4.4 (Biological Resources).

As a policy matter, the Presidio Trust seeks to protect and enhance wetland habitat (Trust, 2002a). Additionally, Executive Order 11990, *Protection of Wetlands*, requires federal agencies to avoid "new construction[6] located in wetlands unless the head of the agency finds (1) there is no practicable alternative to such construction, and (2) the proposed action includes all practicable measures to minimize harm to wetlands."

Section 401, Clean Water Act – Every applicant for a federal permit or license for any activity that may result in a discharge to navigable waters of the United States must first obtain a State Water Quality Certification that the proposed activity will comply with state water quality standards. This Section 401 program protects all surface waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters because these water bodies have high resource value. As the appropriate state reviewing agency, the RWQCB may recommend mitigation for filling of wetlands and other impacts in accordance with the state wetland policy.

4.3.3 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no creek daylighting or aquatic/riparian habitat restoration activities would occur. Approximately half of the Eastern Tributary would remain in a storm drain beneath Morton Street

[6] Under Executive Order 11990, the term "new construction" includes "draining, dredging, channelizing, filling, diking, impounding, and related activities and any structures or facilities." Executive Order 11990, *Protection of Wetlands*, 42 Fed. Reg. 26961 (1977) at § 7(b).

Field, and a section of the Western Tributary would remain in a storm drain beneath the Pop Hicks Field parking lot. No enhancements would occur at El Polín Springs/Loop.

Conclusion: *Under the No Action Alternative, the potential temporary water quality effects associated with project construction and implementation would be avoided, as would the substantial long-term beneficial effects of creek restoration.*

Consequences Shared by Both Project Alternatives

Both project alternatives would result in similar changes in a suite of basin-wide hydrologic characteristics. Hydrologic feasibility and impact analyses indicate that, although the degree or magnitude of change may vary slightly between alternatives, the resulting effect on hydrologic conditions (e.g., depth to groundwater, peak storm flow magnitudes) does not vary substantially. Project effects on hydrologic conditions shared by Alternatives 1 and 2 are summarized below, followed by a discussion of the incremental differences between the alternatives and a summary comparison.

- Neither project alternative would result in a material change in the total volume of freshwater discharge to Crissy Field Marsh.

- Removal of impervious surfaces would have long-term beneficial effects including a reduction in the magnitude of peak storm runoff events, reduction of non-point source pollutants, enhanced groundwater recharge, and corresponding water quality benefits.

- Reintroducing surface channels, floodplains, and wetlands would increase infiltration, slow water flow velocities, and provide areas for temporary storm water detention. The net effect would be to attenuate peak flows, provide opportunities for sediment deposition, and improve water quality. If designed properly, creek and wetland creation efforts in Tennessee Hollow Watershed would reduce sediment and pollutant discharges to Crissy Field Marsh and San Francisco Bay.

- Converting non-native trees and plants to native species would alter local evapotranspiration rates, canopy cover/interception of rainfall, and other hydrologic characteristics within the project area. Changes in irrigation practices could also affect local hydrology. These changes would in turn affect the local availability of water (see below).

- Construction activities could have potential temporary impacts on water quality, including increased sedimentation and erosion. Both project alternatives would be subject to the best management practices identified in Section 4.3.4. No significant impact would occur.

- Over the long term, restoration activities would introduce new erodable surfaces and increase the potential for channel bank erosion and bed scour. Bank erosion and sediment deposition are natural processes in creek channels. However, human activities and natural instabilities can accelerate bank erosion and create excessive impacts to downstream water quality. The potential for these activities would be highest at transition areas that cause flow constriction, expansion, or increased velocity. Such transitions are most notably associated with culverts, bridges, and transitions between earth-lined channel and fixed (e.g., concrete-lined) channels. The excavation of fill materials may yield steep slopes that could increase the potential for erosion, which in turn could also adversely impact downstream channel morphology, function, and water quality. The design of both project alternatives would therefore incorporate the protective measures identified in Section 4.3.4 to ensure these potential impacts are avoided or minimized.

- Both project alternatives propose identical changes for the area surrounding El Polín Springs/Loop and would thus have identical impacts on water resources as described below.

- Both project alternatives propose similar enhancements at Pop Hicks Field, and would have similar effects on the local area hydrology as described below.

El Polín Spring/Loop Area

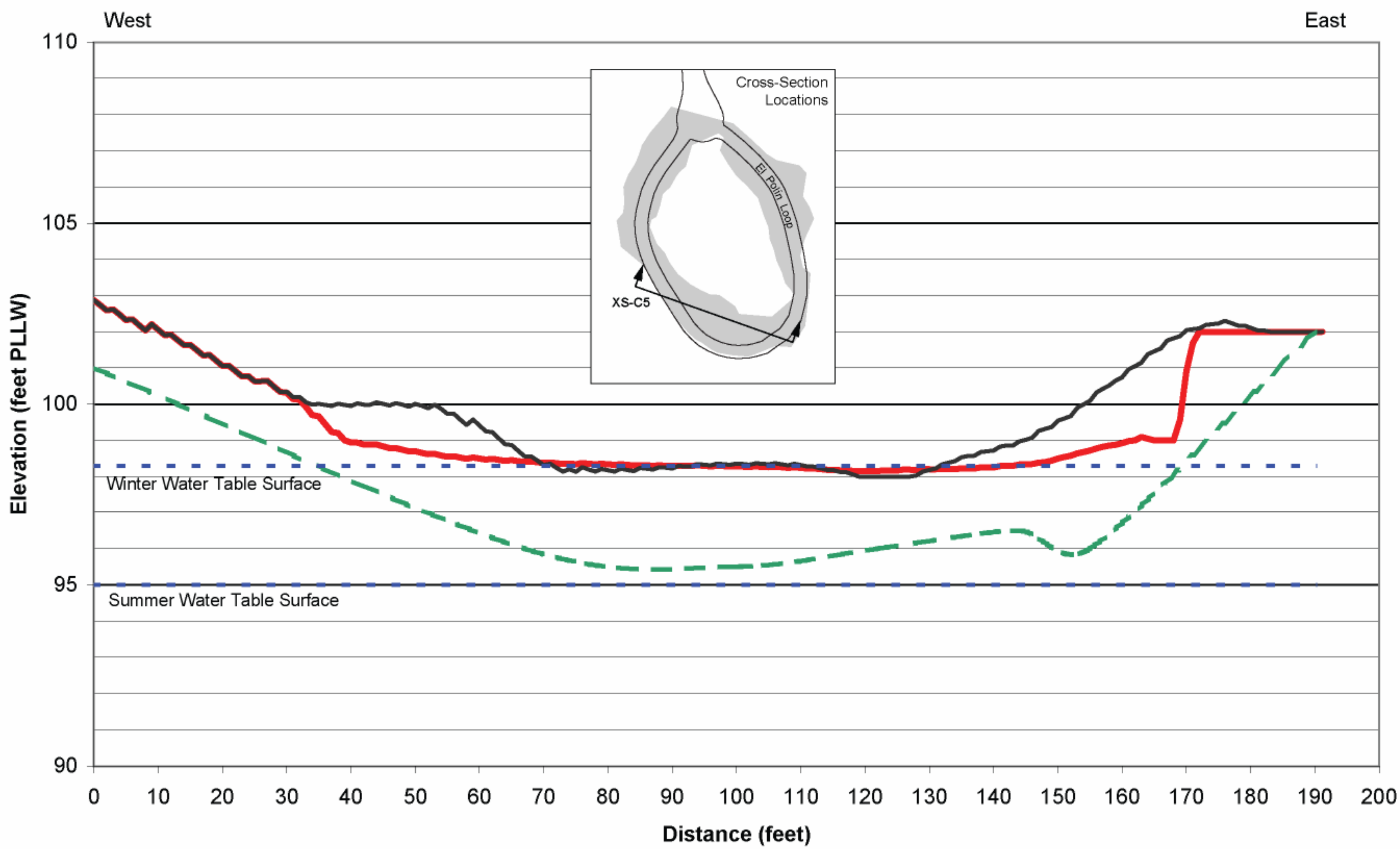
Proposed activities include the reduction in impervious surface area and excavation/regrading and revegetation efforts that optimize the existing hydrologic conditions in a fashion that improves overall ecological processes and function. Project activities in the El Polín Loop would not alter groundwater conditions. Cross-sectional profiles of existing, historical, and proposed grades near the springs are depicted on Figures 4.3-3 and 4.3-4. Existing and predicted summer and winter groundwater surface profiles are also presented on these figures. One beneficial ecological change that would result from both project alternatives is an expanded area of shallow groundwater conditions, enhancing the potential extent and sustainability of riparian and/or wet-meadow plant species. Because existing groundwater levels are already very shallow in this project area, removal of surrounding eucalyptus and other non-native vegetation, and subsequent reduction in local evapotranspiration rates, is not anticipated to result in a notable water table rise. However, an increase in the El Polín Springs yield may occur if there is a significant hydraulic connection between the shallow soil and underlying bedrock, which serves as a source for the spring. In general, however, no substantial or long-term changes in local hydrologic conditions are anticipated.

Both project alternatives would rehabilitate the historic stone channels within the Loop. These channels receive perennial and seasonal water from El Polín Springs, the unnamed springs at the southern edge of the loop, and the upstream reach of the Central Tributary. Rehabilitation of the channel would likely reduce groundwater recharge that currently occurs through cracks in the existing structure. This change, however, is not anticipated to result in any notable impacts because of the pre-existing shallow groundwater conditions. These losses would also be offset by increased infiltration along the portion of the creek (approximately 200 feet) that would be daylighted north of the Loop. Proposed activities would be subject to the best management practices identified in Section 4.3.4.

Pop Hicks Field

Proposed activities include rehabilitating the existing playing field and relocating the associated parking lot to daylight the underground storm drain (the Western Tributary) into a surface water channel[7] bordering the western margin of the field. The new surface channel would be constructed to the west of the capped landfill in a manner that protects the integrity of the landfill cap, while enhancing habitat and surface water quality. The channel would be designed to accommodate anticipated peak flows using engineered features and vegetation. Flow through the channel will be relatively short-lived – only occurring in response to rainfall events. Peak flow volumes are also not expected to be very large due to the relatively small contributing drainage area.

[7] The proposed surface channel is subject to review under the Landfill E remedial design process and corresponding stakeholder input.



Source: Kamman Hydrology & Engineering, Inc., 2006

- Proposed Ground Surface (Alternatives 1 & 2)
- Existing Ground Surface
- 1871 Ground Surface
- Water Table Surface

PLLW Presidio Low Low Water

Figure 4.3-3
XS-C5 Cross-Sectional Profile
El Polín Loop (Alternatives 1 & 2)

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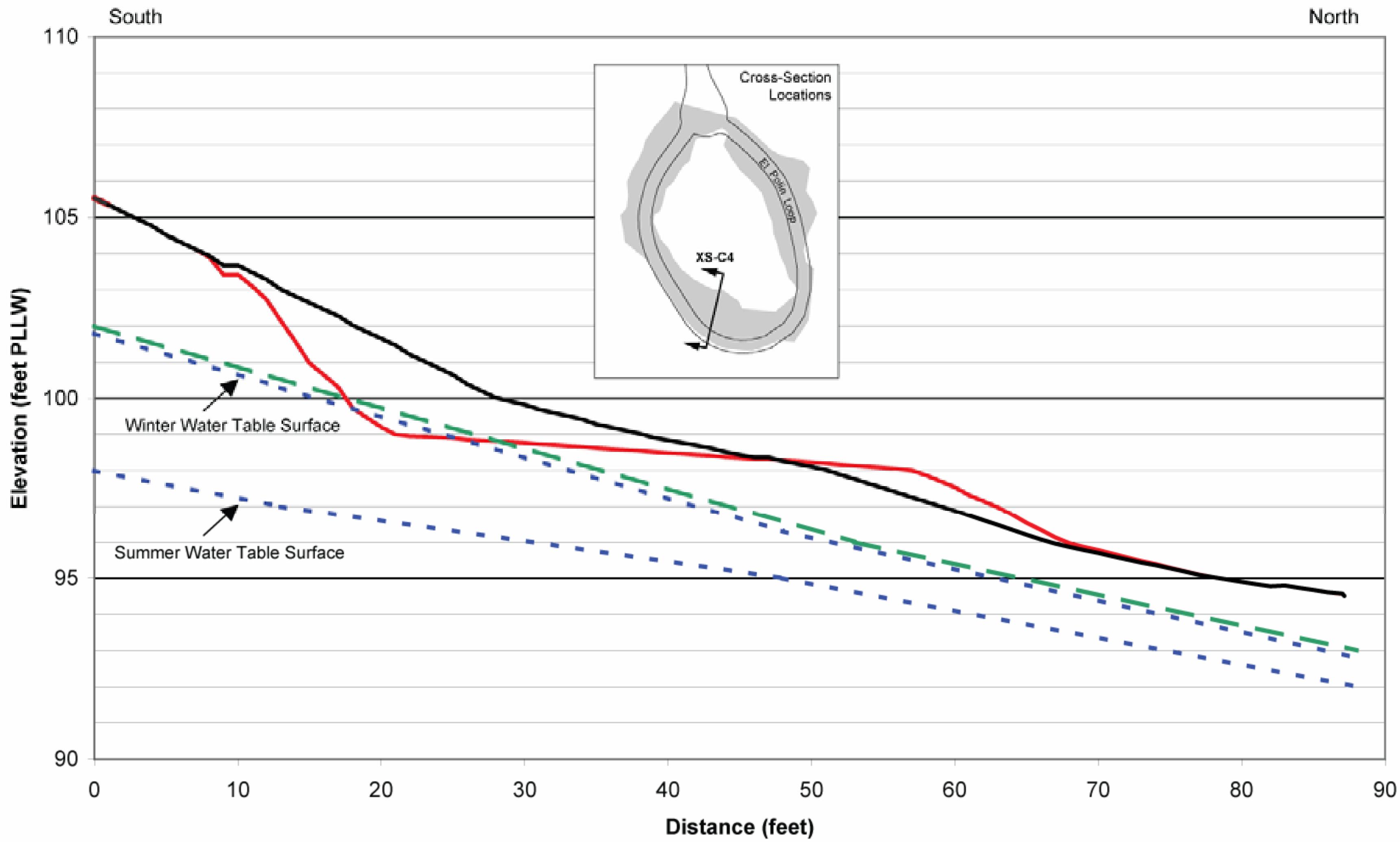

Source: Kamman Hydrology & Engineering, Inc., 2006

- Proposed Ground Surface (Alternatives 1 & 2)
- Existing Ground Surface
- 1871 Ground Surface
- Water Table Surface
- **PLLW** Presidio Low Low Water

Figure 4.3-4

XS-C4 Cross-Sectional Profile

El Polín Loop (Alternatives 1 & 2)

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Tennessee Hollow Upper
Watershed Revitalization Project EA

Surface water drainage infiltration and direct rainfall are not anticipated to recharge the underlying groundwater table because the landfill will be capped with an impermeable liner, likely requiring an extensive shallow subsurface drain system. Currently, rainfall on Pop Hicks Field infiltrates into the underlying fill. During heavy rainfall events, the ground becomes saturated and runoff flows across the landfill surface into low-lying areas to the north. In 2006, the Trust installed interim drainage improvements along the northern edge of the landfill after heavy rains in December 2005 caused a portion of the fill to slump. The construction of the liner and associated sub-drain system would effectively eliminate this process, distributing rainfall drainage around and downstream of the fill. Using appropriate BMPs, sub-drainage would be diffused into receiving areas and contribute to recharge of the local underlying aquifer. Hydrologic analyses indicate that surface water flow and shallow groundwater conditions within the Pop Hicks Field area under Alternatives 1 and 2 would not differ noticeably from existing conditions.

Alternative 1

In addition to the effects described above, the most notable change in hydrologic conditions under Alternative 1 would result from daylighting the Eastern Tributary – excavating fill materials and redirecting the creek from an impervious storm drain into an earth-lined channel. Currently, all flow from the Eastern Tributary spring enters a buried storm drain at the base of the historic dam and is directed approximately 700 feet downstream to an outfall into the remnant riparian reach, north of Morton Street. Daylighting the creek through an earth-lined channel would increase the opportunity for infiltration and groundwater recharge.

The overall effect of project-induced changes in vegetation (i.e., evapotranspiration) and creek infiltration were evaluated using the integrated surface water–groundwater hydrologic model (KHE, 2006). Under both project alternatives, turf and mature eucalyptus forest would be removed and replaced primarily by riparian scrub and willow riparian communities. As part of the modeling effort, a water budget that captures changes in vegetation-specific evapotranspiration rates was used to evaluate the long-term changes in surface water flows in response to these (and other) vegetation conversions. Based on this analysis, it is estimated that annual composite evapotranspiration rates in eucalyptus-dominated areas would decrease by 20 percent (from 2.34 acre-feet to 1.85 acre-feet). The net reduction in eucalyptus canopy would also reduce water loss (canopy interception of rainfall) by 40 percent (from 0.12 acre-feet per year to 0.07 acre-feet per year). As a result of these changes, long-term annual recharge and predicted water yields from the Eastern Tributary spring/seep may be expected to increase by 15 percent when compared to the No Action Alternative. This translates to an average annual increase in spring flow yield from 5.8 gpm to 6.7 gpm (based on average of Water Year 2002 and 2003 annual flow measurements).

Under Alternative 1, Morton Street Field would be relocated and the associated summer irrigation would cease. Currently the field introduces a net recharge volume of approximately 35 inches per year (KHE, 2006). For comparison, annual precipitation totals at the playing fields for 2002, a near-normal year, was 25 inches. Under Alternative 1, all turf grass within the existing field footprint would be replaced primarily by upland habitat vegetation, lesser amounts of riparian scrub species, and a small amount of willow riparian-type species within the creek channel. The proposed new Little League field upland of the site is assumed to be synthetic turf and no new irrigation would be introduced into the basin. It is also possible that other existing playing fields in the watershed may be converted from irrigated grass to synthetic turf. In order to evaluate the effect of this potential change, the impact analysis assumes that Alternative 1 considers the more likely

"short-term" changes, including cessation of irrigation at Morton Street Field, construction of a synthetic turf playing field at Fill Site 1, and retaining irrigated turf-grass at Paul Goode and Julius Kahn playing fields. The impact analysis of Alternative 2 considers complete conversion of all watershed playing fields to synthetic turf.

Figures 4.3-5 and 4.3-6 include cross sections and plots of the simulated water table surface during later summer conditions for both project alternatives. As shown, the most noticeable changes in water table elevation are centered along the former playing field site and lessen downstream beneath the remnant riparian reach. No change in water table elevation is perceptible farther downstream at the MacArthur Avenue crossing – mostly a result of the sharp rise in the underlying bedrock forcing groundwater towards the ground surface.

Even with the loss of summer irrigation at Morton Street Field, the analyses indicate a change in the overall infiltration and annual average groundwater recharge rate within the Eastern Tributary from 1.25 to 1.32 feet per year. Model simulations predict a 1 to 2 tenths of a foot rise in underlying summer groundwater level under Alternative 1 when compared to No Action Alternative conditions. The slight rise in water table elevation is likely due to the increased infiltration and recharge of creek water through the new earthen channel bed. Model simulation results also indicate no change in groundwater level and supply conditions beneath the remnant riparian reach or farther downstream at the MacArthur Avenue crossing.

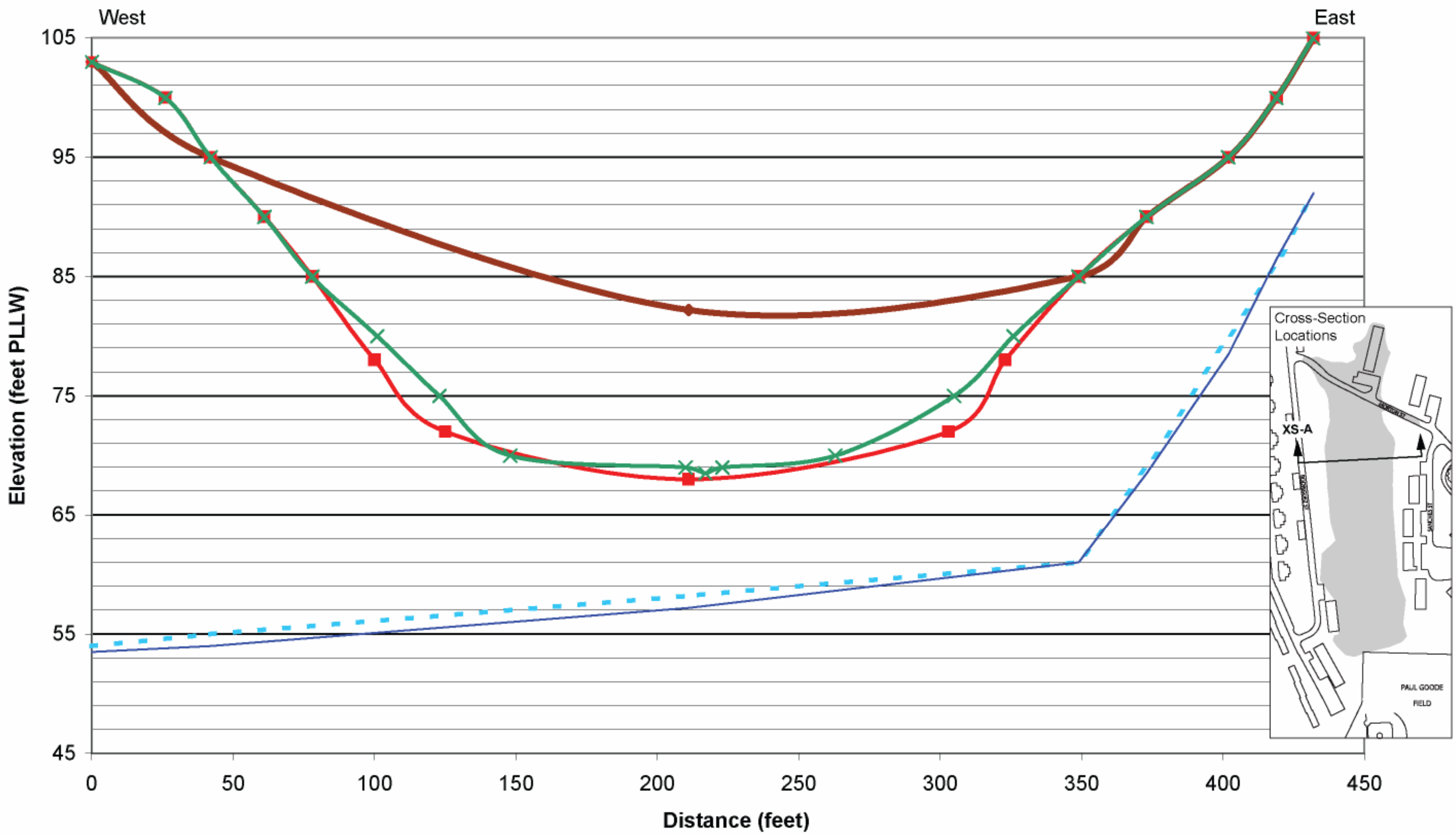
The analyses indicate that there would be a reduction in flow rates along the Eastern Tributary under Alternative 1. Although flow would be maintained along the entire Eastern Tributary during winter, increased infiltration along the newly daylighted reach would seasonally reduce downstream flows. Under Alternative 1, it is predicted that active flow would dry back to a point approximately midway between Morton Street and the dam by late summer (Figure 4.3-7). The channel would remain wet year-round from the headwaters/spring to approximately 400 feet downstream of the dam. The implications of this hydrologic change would be seasonal drying of the downstream remnant riparian reach. Figure 4.3-8 plots measured and simulated flow rates (for both alternatives) at the gauge just upstream of the remnant riparian reach. While surface flows may be seasonally reduced or eliminated along the remnant reach, the total creek channel length would be doubled and simulation results indicate that late summer groundwater levels underlying the remnant reach would be sufficiently high (3 to 10 feet bgs) to continue support existing willow riparian species.

Other changes that would occur under Alternative 1 include the removal of impervious surfaces consisting of and surrounding Building 777 and removal of the gravel parking area at the base of the playing field, adjacent to the remnant reach. Each of these actions would reduce impervious surface area and increase surface water infiltration and groundwater recharge. A summary comparison of water resource effects of both project alternatives is provided at the end of Section 4.3.3.4.

Alternative 2 (Trust Preferred)

Within the vicinity of Morton Street Field, Alternative 2 would have a similar impact on hydrologic conditions as described under Alternative 1 with the following exceptions:

- Removal of an additional building near the Eastern Tributary spring (Building 770) would further reduce the amount of impervious surface.



Source: Kamman Hydrology & Engineering, Inc., 2007

- Existing Grade
- 1871 Grade
- Alternative 1 & 2 Grades
- Alternative 1 Groundwater Level
- Alternative 2 Groundwater Level
- **PLLW** Presidio Low Low Water

Figure 4.3-5

XS-A Cross-Sectional Profile

Eastern Tributary (Alternatives 1 & 2)

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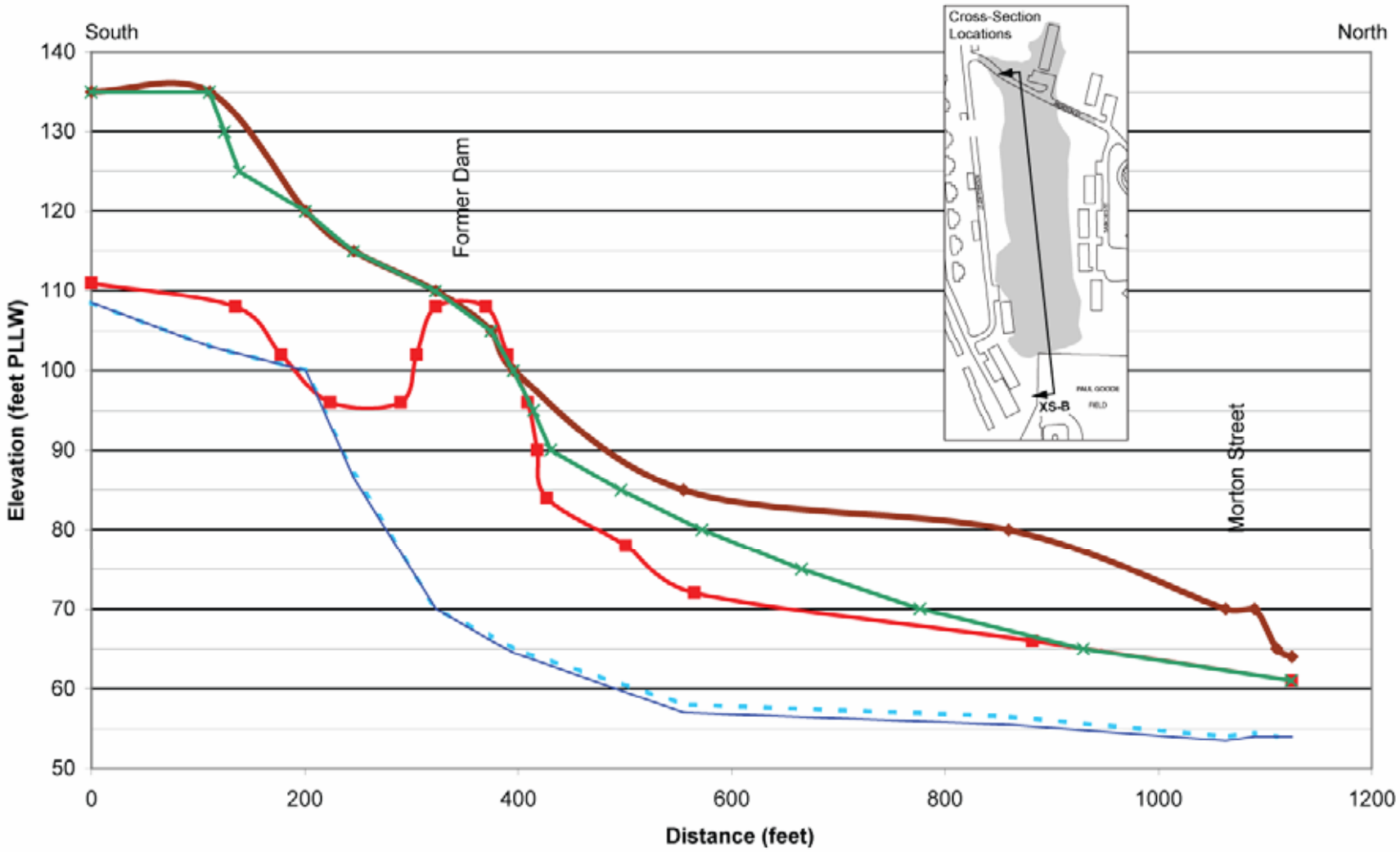


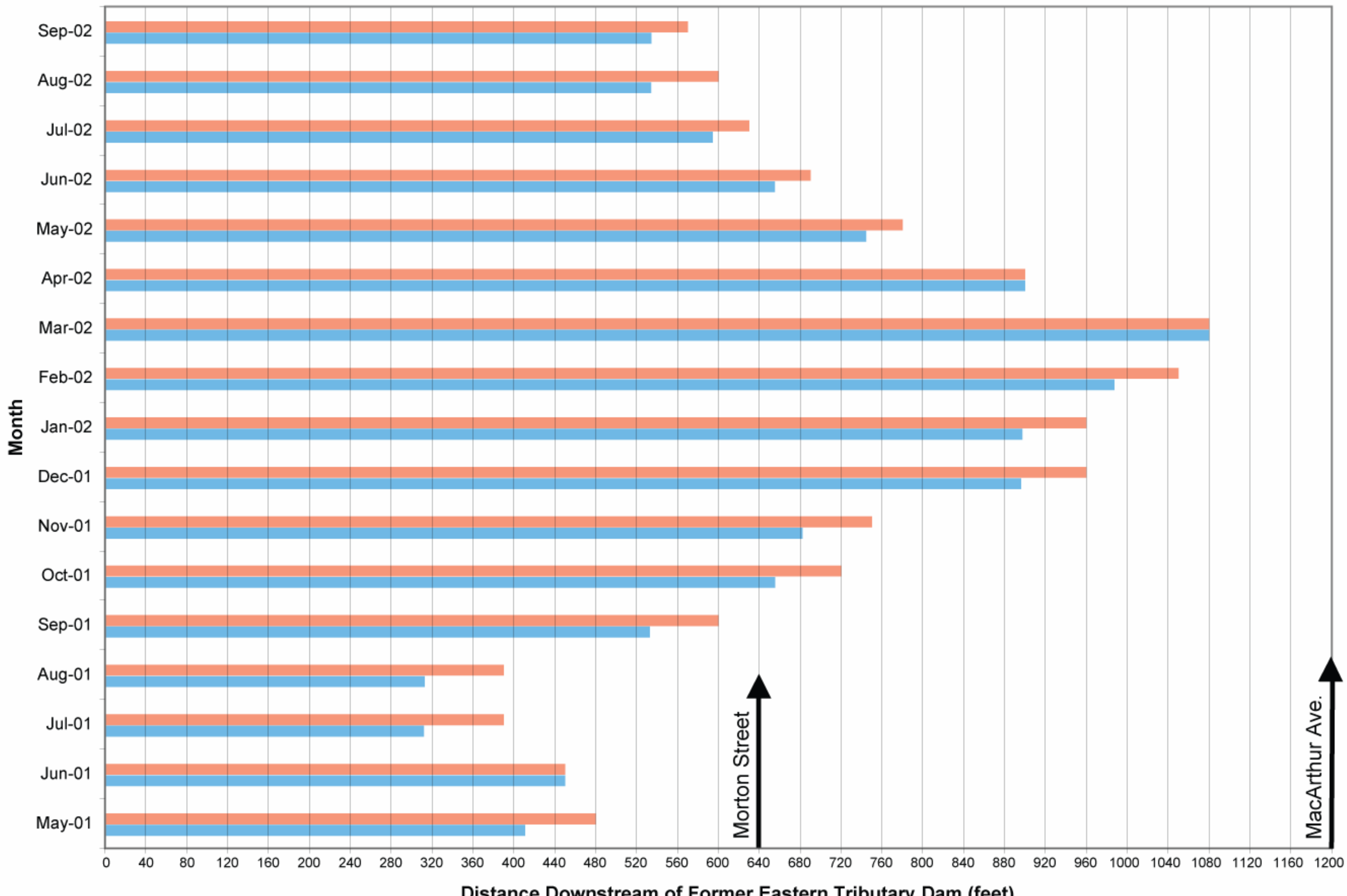
Source: Kamman Hydrology & Engineering, Inc., 2007

- Existing and Alternative 1 Grades
- 1871 Grade
- Alternative 1 & 2 Grade
- Alternative 1 Groundwater Level
- Alternative 2 Groundwater Level

PLLW Presidio Low Low Water

Figure 4.3-6
XS-B Cross-Sectional Profile
Eastern Tributary (Alternatives 1 & 2)

August 2007
Tennessee Hollow Upper
Watershed Revitalization Project EA



Source: Kamman Hydrology & Engineering, Inc., 2007

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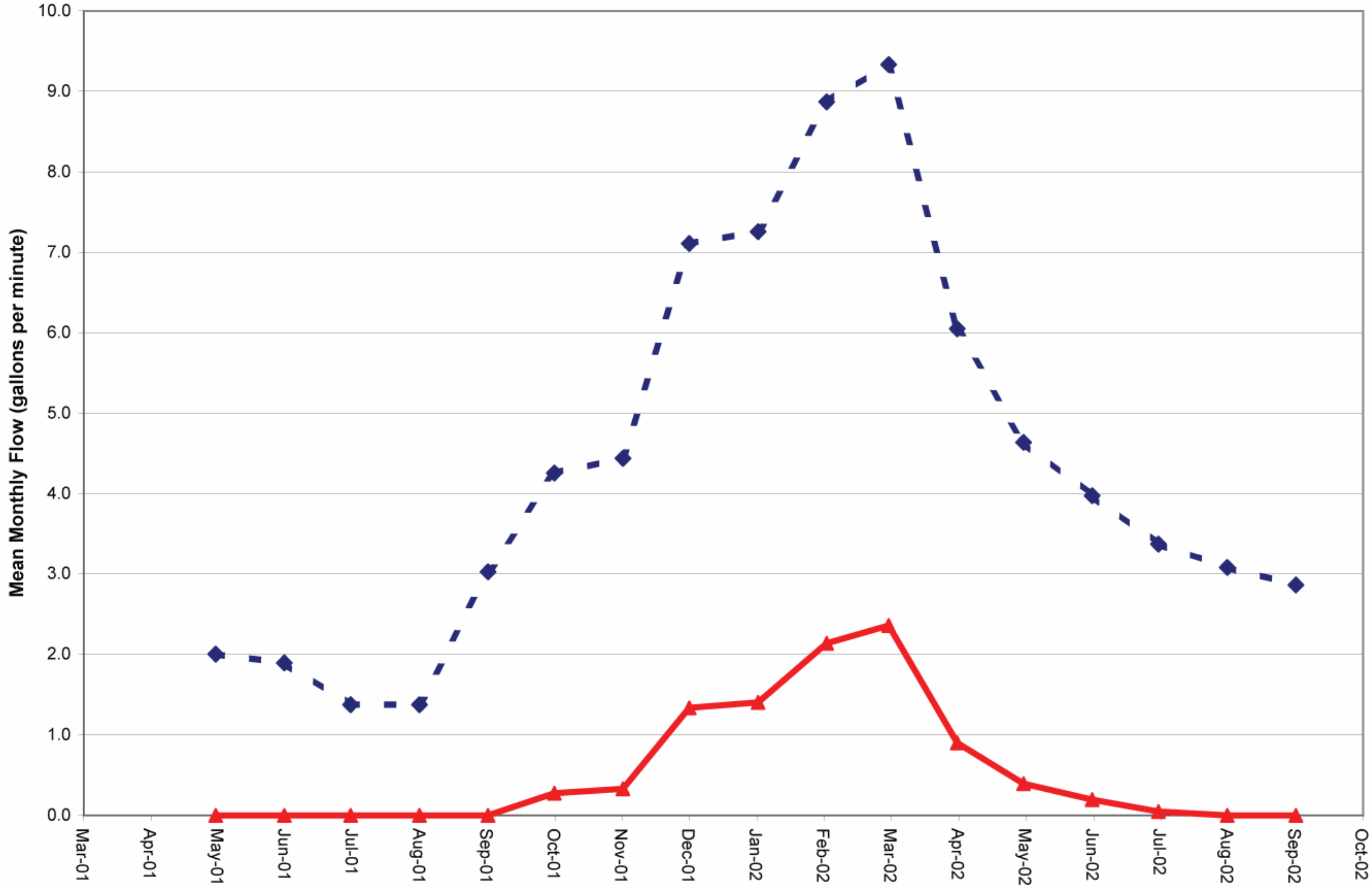
Figure 4.3-7
Predicted Seasonal Position of Wetting-Front in Eastern Tributary

August 2007
Tennessee Hollow Upper Watershed Revitalization Project EA



Source: Kamman Hydrology & Engineering, Inc., 2007

Existing Conditions - No Action Alternative
Alternatives 1 & 2 Simulated Flow Conditions

Figure 4.3-8
Flow Hydrographs of Eastern Tributary at Morton Street

August 2007
Tennessee Hollow Upper
Watershed Revitalization Project EA

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- Conversion of Morton Street to a multi-use trail with bridge creek crossing in lieu of maintaining the street would have virtually identical effects over local hydrologic conditions.

- To bracket the effects of possible "long-term" changes in applied irrigation, Alternative 2 assumes all playing fields in the watershed are converted to synthetic turf, eliminating the need for irrigation. This change may be considered by the Trust under either alternative and was evaluated as part of Alternative 2 for comparison purposes only.

As indicated above, the largest differences in hydrologic condition associated with Alternative 2 over Alternative 1 is the complete removal of summer playing field irrigation in the watershed. Hydrologic modeling results for Alternative 2 indicate slight reductions in water table elevations when compared to Alternative 1 (Figures 4.3-5 and 4.3-6). As a result of the decreased irrigation-water recharge, the wetting front conditions in the creek channel and simulated flow rates entering the remnant riparian reach under Alternative 2 would be slightly less than Alternative 1 conditions (see Figure 4.3-7). Groundwater levels would also decline under Alternative 2, resulting in a late-summer water table surface up to 1.5 feet lower in the center of the former Morton Street Field.

Conclusion: *Both project alternatives would have similar construction-related impacts. Implementation of the best management practices identified in Section 4.3.4 would avoid or minimize these effect. No significant impact would occur.*

There are only slight differences in the attributes between Alternative 1 and 2, and these differences, in themselves, would not impart a quantifiable difference in hydrologic conditions. The primary difference corresponds to their assumptions regarding the use of synthetic turf. As analyzed, the simulation results for Alternative 1 represent retaining turf-grass at existing fields, while simulation results for Alternative 2 represent conversion of all watershed fields to non-irrigated synthetic turf. The Trust may consider either approach – independent of the alternative selected – and thus the simulated conditions are applicable to both alternatives.

Based on turf assumptions, Alternative 1 would yield groundwater levels that are 1.5 feet higher than Alternative 2 as measured at the center of the former Morton Street Field. In addition, the predicted wetting front for summer creek baseflows would be about 10 percent greater under Alternative 1 than Alternative 2. Late-summer baseflows would be reduced or eliminated along the remnant riparian reach under both alternatives. Hydrologic modeling and monitoring indicate, however, that there is (and would continue to be) sufficient shallow groundwater supply to sustain all the existing emergent riparian vegetation. Any perceived adverse effects associated with the seasonal dry-back of the remnant reach would be more than compensated for by the improved ecologic and hydrologic function within the tributary. Other notable similarities and differences include:

- *Both alternatives would provide the same amount of functional floodplain benefits in terms of floodwater storage, peak flow attenuation, sediment capture, and associated water purification.*

- *Both alternatives would relocate parking lots away from the creek and incorporate best management practices (BMPs) to improve drainage and water quality. The reduction in impervious surface, introduction of earthen surface channels, floodplains, and wetlands would reduce the magnitude of storm runoff events, eliminate source pollutants, and enhance opportunities for sediment deposition and filtration.*

- *There would be a net increase in water quality within the watershed as well as outflows to the Crissy Field Marsh and Bay under both project alternatives.*

Overall, both project alternatives would have a beneficial effect on water resources, and improve ecological processes and function.

4.3.4 Mitigation Measures

The following mitigation measures, derived from the PTMP EIS and supplemented by project-specific measures, would apply to both alternatives. Refer to Table A-1, Appendix A for a detailed description.

NR-15 – Best Management Practices
NR-17 – Demolition and Construction Activities
NR-19 – Future Design
UT-7 – Stormwater Reduction
NR-13 – Wetlands/Compliance
THWR-A – Creek Channel Bank Erosion Control
THWR-B – Trail Creation and Maintenance

4.3.5 Cumulative Effects

The PTMP EIS analysis of cumulative effects on water resources took into consideration a wide range of past, present, and reasonably foreseeable activities, including the proposed project. The analysis concluded that while some adverse effects may be associated with Doyle Drive and other construction activities, overall there would be a long-term cumulatively beneficial effect on the Presidio's water resources. Nothing has changed since preparation of the PTMP to alter this conclusion. Revitalization of the El Polín Springs area and Eastern Tributary would partially implement PTMP's long-term vision for the watershed.

As part of the hydrologic modeling effort, relevant "cumulative projects" were evaluated to quantify cumulative effects on basin hydrology and determine whether these changes could implicate future planned restoration. The assumptions regarding cumulative activities in the watershed that may alter or impact hydrologic and water quality conditions in the watershed included:

- Restoration of all three Tennessee Hollow creek tributaries, consistent with the PTMP and the VMP
- Implementation of the Presidio Vegetation Management Plan within the entire watershed area (50-year plan)
- Conversion of 6 acres of impervious surface at the Main Post/Parade Ground to irrigated turf grass or design landscaping
- Completion/operation of the Letterman Digital Arts Center, including irrigated landscape areas
- Remediation and revegetation (pursuant to VMP) of Fill Sites 1 and 6A and Landfills 2 and E
- Implementation of the approved Presidio Water Recycling Project
- Existing stormwater management in adjacent areas of the City of San Francisco and Presidio Golf Course would continue

These cumulative projects were evaluated and compared to existing conditions as well as to the various project alternatives. Among the factors considered in this analysis were predicted changes in land uses (and corresponding recharge rates), irrigation practices, changes in basin evapotranspiration rates as a result of VMP implementation (50-year plan), and the effect of basin-wide fill removal. Overall, simulation results

indicated that no significant cumulative changes in groundwater levels and surface water flows would occur within the watershed. There would also be no material change in the watershed's freshwater contributions to Crissy Field Marsh under cumulative conditions. While there may be site-specific increases in groundwater levels and localized changes in surface flows, the effects would be localized and would not impact downstream hydrologic conditions or implicate future restoration activities.

Construction of each "project" would be conditioned by the best management practices established in the PTMP EIS as summarized in this EA. These measures would help individually mitigate potential construction-related impacts on water quality. Over time, the restoration of the creek system and upland areas would have a cumulative beneficial effects on basin water quality. Natural creek channels increase infiltration and help attenuate storm flows. The associated vegetation acts as a natural filter, improving the quality of the water as it flows downstream. Reducing impervious surfaces also reduces runoff and pollutant loads. Overall, daylighting and restoring the creek system in the Presidio's largest watershed would improve the quality of the water entering Crissy Field Marsh and San Francisco Bay. The proposed project would contribute cumulatively to this beneficial effect.

4.4 BIOLOGICAL RESOURCES

A summary of the Presidio's biological resources and predicted long-term effects associated with implementation of PTMP, including restoration of Tennessee Hollow, is provided on pages 83 to 118 and 225 to 240 of the PTMP EIS. This section summarizes relevant information and supplements it with more recent reports, field surveys, and input from other agency staff and local experts. The impact analysis focuses on the potential effects of construction as well as long-term ecological changes resulting from the proposed project. Refer to Appendix B for additional background.

4.4.1 Affected Environment

Vegetation

A summary of the plant communities[8] found within or adjacent to the project area is provided below (see Figure 4.4-1).

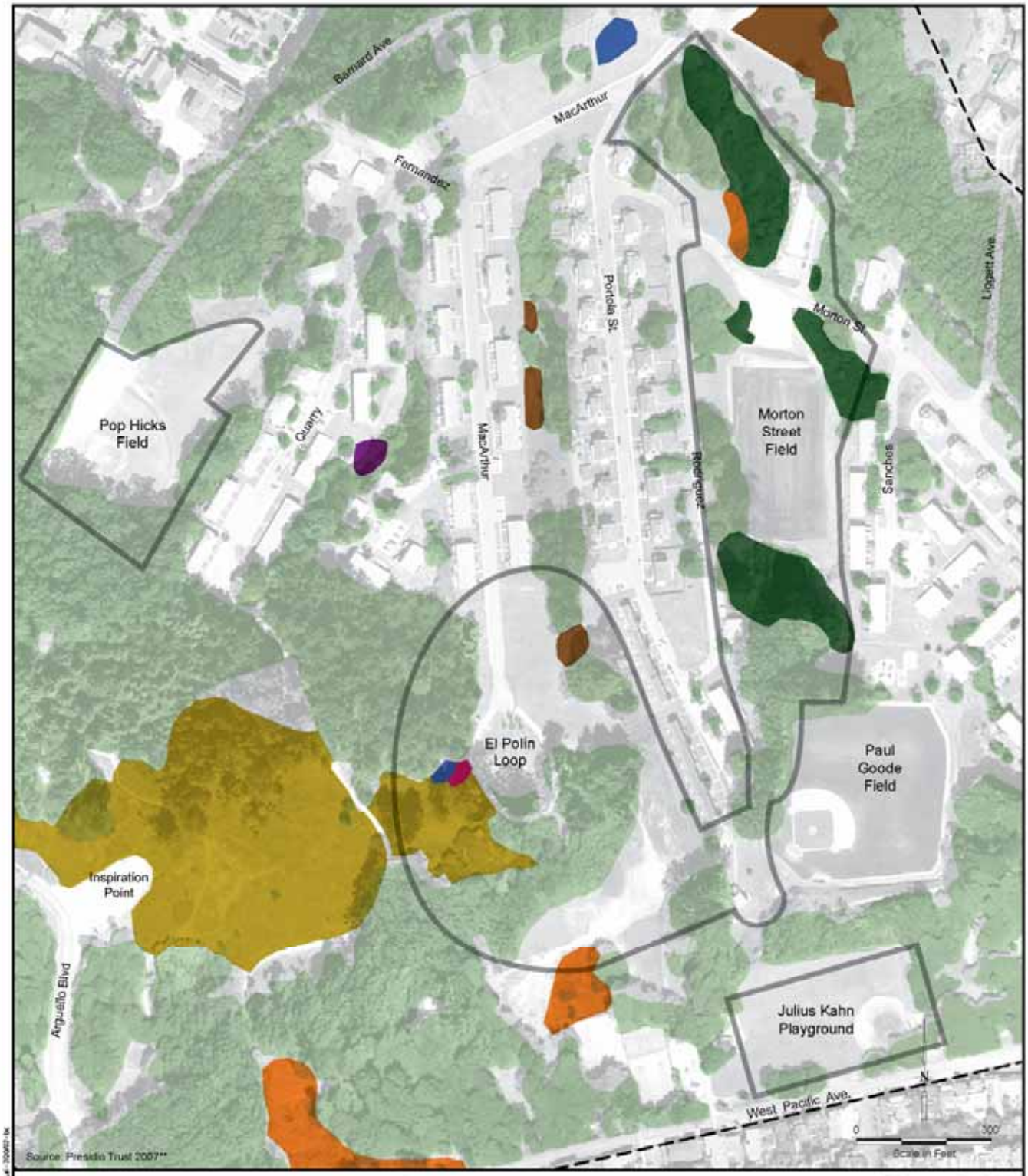
Riparian Communities are found within drainages of the project area. These are considered among the most valuable wildlife habitats, as they create many important microhabitats that provide shelter, nesting sites, forage, and water for a wide variety of wildlife species, including migratory birds (San Francisco Bay Area Wetlands Ecosystem Goals Project, 1999). Fragments of riparian habitat are located within the project area (Castellini and Coffman, 2003), represented by two native plant communities: willow riparian and riparian scrub (Figure 4.4-1).

Wetland Communities are found in perennially or seasonally saturated soils. Although they occupy very little area within the watershed, these small wetlands provide a rich species diversity and important foraging habitat for wildlife (Vasey, 1996). Within the project area, non-riparian wetlands are represented by a small area of wet meadow near El Polín Springs.

Upland Vegetation Communities are found along the ridges and upland areas of the project area and are represented by a variety of distinct vegetation communities, including the rare serpentine prairie, coastal prairie, coastal scrub, dune scrub, and coast live oak woodland**.**

Non-Native Plant Communities the primary vegetation community within the project area and include invasive non-native annual grasses, Cape ivy, mattress wire weed, Himalayan blackberry, gorse, French broom, poison hemlock, cotoneaster, English ivy, Algerian ivy, fennel, orchard grass, purple velvet grass, and non-historic stands of Monterey pine, Monterey cypress, and blue gum eucalyptus tree. These species dominate the area surrounding the headwaters of the Eastern Tributary and the El Polín Springs/Loop area. Many of these non-native plants limit species richness and diversity and impact the creek system itself. For example, eucalyptus trees produce terpenes and phenolic acids which create an inhospitable environment for most other plants and reduce species diversity in the understory areas. They also consume more water than native trees and contribute substantial litter which can build up, reducing opportunities for groundwater

[8] Table B-1 in Appendix B presents a comparison of these communities (defined used Holland's Index) with the corresponding California Natural Diversity Database (California Department of Fish and Game) plant communities classification system.



Native Plants

- Willow Riparian
- Coastal Prairie*
- Dune Scrub*
- Wet Meadow
- Coast Live Oak Woodland*
- Riparian Scrub
- Serpentine Prairie*

Forest Stands

- Mixed Forest (non-native)
- Watershed Boundary
- Project Area

* These habitat types are all included within the broader "Upland" plant community designation.

NOTE: Land outside of the project area boundary includes Native Plant Communities, Historic Forest, and Landscape Vegetation Zones. These areas will be managed in accordance with the Presidio Vegetation Management Plan (NPS and Trust, 2001).

** Aerial photo taken in 2001 may not be representative of current vegetation coverage. Vegetation communities are deduced from multiple sources.

Figure 4.4-1
Existing Vegetation Communities

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infiltration and clogging stream channels. Cape ivy and mattress wire weed form dense thickets that can reduce foraging and nesting habitat for wildlife, as well as preclude the establishment of a complex understory supporting a rich diversity of species.

Developed and Landscaped Areas include buildings, landscaping around buildings, ornamental plantings, playing fields, parking lots, and paved roads.

Wildlife

The Presidio provides one of the few remaining large open spaces in the city to sustain wildlife populations of amphibians, reptiles, invertebrates, birds, and mammals. Habitats located near water sources and having large areas of multistoried vegetation (of varied heights) support the highest diversity and abundance of wildlife (Jones and Stokes, 1997). Within the Presidio, the Tennessee Hollow Watershed provides an important wildlife movement corridor, connecting many of the Presidio's diverse upland grassland, scrub, and forested habitats to the tidal marsh at Crissy Field and San Francisco Bay.

Birds – The Presidio is located along the Pacific Migratory Flyway, a route heavily used by spring and fall migrant bird species. As part of the Flyway, the Presidio provides valuable resting places, as well as food and water sources for migrating and overwintering bird species. For many species, the availability of these resting, feeding, and breeding areas are critical to the species' long-term survival. A number of formal and informal bird surveys have been conducted on the Presidio. In total, more than 300 bird species have been observed throughout the park. This diversity and richness of bird species is remarkably high for such a small area, and is due in part to seasonal changes in the species using the Presidio and diversity of habitat types.

Bird use from season to season and year to year can vary considerably. Summer surveys indicate high species richness within the project area, with El Polín Springs supporting the highest species richness (11 species) the highest diversity of birds[9] at the Presidio. Presidio-wide, 61 species were detected during these summer surveys; the most abundant species were house finch, Nuttall's white-crowned sparrow, American robin, pygmy nuthatch, and Allen's hummingbird.

Winter surveys, using the same locations and techniques as the summer surveys, documented a total of 43 species Presidio-wide, including killdeer, northern flicker, Say's phoebe, Bewick's wren, several species of thrushes and warblers, fox sparrow, and western meadowlark. In contrast to summer months, the highest species diversity in winter was seen at points outside the project area, as well as one point near the Morton Street Field. The high species diversity near Morton Street may be due to a mix of good habitat adjacent to the playing field and the presence of a large flock of mixed bird species that was observed during the survey in a tree adjacent to the site. The survey point with the highest diversity lies west of Landfill E. In general, points with high species richness and diversity had more diverse vegetation than areas with lower numbers.

Mammals – Riparian and upland habitats provide cover and breeding sites for a variety of mammals including opossums, skunks, and raccoons, which may forage in nearby dunes or grassland. California voles and western harvest mice were found within Tennessee Hollow riparian, grassland, forested, and upland habitats (Harris, 1994). Few grey fox are now found on the Presidio, although several have been observed in

[9] Species richness is the total number of species detected. Diversity measures the number of species detected weighted by number of individual of each species. High diversity indicates more equal representation of species.

the watershed as have the more common red fox, raccoons, and striped skunk (Raffa, pers. comm., 2004 and Boydston, 2005). A coyote has also been regularly observed within the watershed since 2002 (Raffa, pers. comm., 2004 and Boydston, 2005). Other species that occur in the park and may be found in the watershed include roof rat, vagrant shrew, ornate shrew, valley pocket gopher, fox squirrel, house mouse, broad-footed moles, and deer mice. Six bat species were detected through ultrasound monitoring conducted on the Presidio from January to December 1994: the western red bat, hoary bat, California myotis, Yuma myotis, Mexican free-tailed bat, and the big brown bat (Pierson and Rainey, 1995). While Mountain Lake had the highest level of bat activity and the most abundant bat species on the Presidio, the edges between multi-aged forest stands and open areas had the greatest diversity of bat species. The Mexican free-tailed bat and the hoary bat were observed foraging in this type of habitat interface. The Mexican free-tailed bat most likely roosts in buildings in the Presidio or adjacent areas. While recent bat studies have not been conducted in the watershed, the project area does support habitat used by these two species.

Amphibians and Reptiles – Since the 1800s, eight species of amphibians and 15 reptiles have been reported to occur in the Presidio (Jones & Stokes, 1997). In 2005-2006, the California Academy of Sciences conducted a Presidio-wide herpetology study (Koo et al., 2007) which identified seven species currently present – the most common is California slender salamander, followed by northern alligator lizard. Other species that are likely to be found in Tennessee Hollow include western terrestrial garter snake and Ensatina salamander.

Invertebrates – A Presidio-wide bee study was conducted in 2004 (Wood et al., 2005). Sixty species of bees were found, 58 of which are native (Hafernik, pers. comm., 2006). The study surveyed nine sites, representing the diverse habitat types found on the Presidio. The second highest diversity of species was found in the watershed along the recently restored creek at former Fill Site 6A (29 species). The site closest to the project area was the serpentine grasslands below Inspiration Point, where 22 species were observed. No riparian area was surveyed.

In 2005-2006, the Presidio was surveyed for butterflies and odonates (dragonflies and damselflies), using the same survey areas as the bee study, as well as additional riparian, wetland, and forest areas (Moore & Hafernik, 2007). Results indicate that 19 butterfly species and 10 species of odonates occur in the Presidio. The greatest diversity of butterfly species was documented at Lobos Creek dunes (13 species); this area also had the greatest number of butterfly sightings (194). The serpentine grasslands below Inspiration Point had five species of butterflies and two species of odonates, and also supported the second highest number of butterfly sightings (136).

Within the project area, one butterfly species (one sighting) and two species of odonates were observed at El Polín Springs. Near the remnant reach/Lovers' Lane, six species of butterflies and three species of odonates were recorded, with 21 overall sightings. Survey areas in pine/cypress and eucalyptus forest both had low diversity and overall butterfly numbers (Moore & Hafernik, 2007).

In 2001, a survey of benthic macroinvertebrates was conducted within the watershed as well as at Dragonfly Creek in the Fort Scott Planning District (Castellini, 2001). The survey found the diversity of benthic macroinvertebrates within remnant riparian and "natural" sections of Tennessee Hollow to be higher than in the channelized and culverted areas; however, the diversity was lower than in Dragonfly Creek. Taxa common in slow-moving water and filtering collectors and collector gatherers (e.g., Amphipoda, Brachycentridae, Chironomidae, Dytiscidae, Oligochaeta) were the most common groups within Tennessee

Hollow (Castellini, 2001). The recently restored section of creek (former Fill Site 6A) was surveyed in 2006 and was dominated by Gastropoda and Nematoda but also included Chironomidae, Corixidae, Tipulidae, Amphipoda, Oligochaeta, and Ostracoda.

Flows in the upper watershed (project area) do not appear high enough to support fisheries resources; however, three-spined stickleback have recently been observed in the lower watershed along the newly restored reach of the creek. These species appear to have traveled from Crissy Field Marsh to the site through an existing storm drain.

Introduced Wildlife – Introduced mammal species that occur within the watershed include feral cats, Norway rat, red fox, and dogs. Introduced bird species include the rock dove (common pigeon), and European starling. These are aggressive species, which often out-compete native species for nesting sites and food. Non-native wildlife species may also prey on indigenous wildlife and reduce their populations.

Special-Status Species

Special-status species are those which are legally protected under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA), species proposed or candidates for listing under FESA, and/or "sensitive" species that are considered sufficiently rare by the scientific community to qualify for such listing.

Special-Status Plants

Of the fifteen federally or state-listed plants found on the Presidio, only one is known to occur within the project area – the Presidio clarkia (*Clarkia franciscana*). Presidio clarkia is an annual with lavender-pink petals shading to white near the middle and a bright reddish-purple base. It is endemic to serpentine coastal prairie and serpentine rock outcrops. Only three populations are known to exist, one in the Oakland Hills in the East Bay, and two on the Presidio. Of the two Presidio populations, only the Inspiration Point population is a natural historic population; the second population, at the World War II Memorial, was established by direct seeding in the 1970s. Habitat for the Presidio clarkia is affected by the establishment of non-native vegetation (Bode, 2000). Ongoing restoration has improved and expanded clarkia habitat in and around Inspiration Point. A portion of this Presidio clarkia population (approximately 900 plants) is located within the project area in the upland area west of El Polín Springs, on the east side of Quarry Road (Chasse, pers. comm., 2006).

Special-Status Wildlife

Of the ten special-status animal species observed in the Presidio, only the olive-sided flycatcher has been observed near the project area. The olive-sided flycatcher (*Contopus cooperi*) is listed as a Species of Concern (Federal) and Species of Special Concern (State). It breeds in the Presidio in nests high in the tree canopy, typically in large conifers and snags often at the edge of meadows, clearcuts and other open areas where it feeds (Altman and Salabanks, 2000). It is fairly common in the Presidio, and has been observed in the watershed (Ehrlich and Pollak, pers. comm., 2006). For a complete description of all 10 special-status species, including their likelihood to occur in the project area, refer to Table B-2 in Appendix B.

In addition to special-status species, a number of birds that occur in the Presidio have been identified by various environmental organizations as species of concern (i.e., Partners in Flight watch list species). For additional information on these species please refer to Table B-3 in Appendix B. The Trust seeks not only to protect, but through implementation of the project, to benefit these and other wildlife species.

Wetlands, Streams, and Drainages

Eight known wetland features are within or adjacent to the project area. The sites and their jurisdictional status are summarized in Table 4.4-1. Wetlands support some of the most ecologically diverse habitat at the Presidio, and are afforded protections by Trust management policies and various laws and regulations (see Sections 4.4.2 and 4.3.2 for relevant regulatory background). While the intent of the proposed project is to expand and enhance the overall health of the watershed's wetlands, construction activities and potential long-term changes in local hydrology may affect existing wetlands, and these resources are therefore addressed in the impact analysis.

El Polín Springs, a perennial spring located near the headwaters of the Central Tributary, supports approximately 0.11 acre of potential wetland habitat. The Eastern Tributary is fed by a perennial spring that emerges below Paul Goode Field and just above a historic dam located south of Morton Street Field. The Morton Street Field Wetland occurs where the fill located behind the dam face is perennially saturated. The Eastern Tributary wetland is located downstream, north of Morton Street and the field. This wetland surrounds the only remaining section of natural stream channel in the watershed (Castellini and Coffman, 2003). As shown on Figure 4.4-2, several potential jurisdictional wetlands are also adjacent to the project area.

Table 4.4-1: Potential Jurisdictional Wetlands (USACE) and USFWS Wetlands Within or Adjacent to the Project Area (acres)

Wetland/Wetland Habitat Site	USACE Potential Jurisdictional Wetland	USFWS Wetland Habitat*
El Polín Springs	0.007	0.11
Landfill 2 Seep	0.11	.41
Tennessee Hollow Eastern Tributary	0.52	0.68
Morton Street Field Wetland	0.23	0.60
Morton Street Willows	--	0.45
Lovers' Lane Meadow	0.24	0.35
Upper Landfill E (i.e., Pop Hicks)	0.02	--
Lower Landfill E (i.e., Pop Hicks)	--	0.57
Total Acreage	1.127	3.17

Source: Presidio Wetland Resources (Castellini and Coffman, 2003)

* Includes potential USACE wetland acreage.

4.4.2 Regulatory Background

Federal Endangered Species Act of 1973: The Federal Endangered Species Act (FESA) contains a comprehensive program designed to protect threatened and endangered species and their ecosystems. Section 9 of the Act

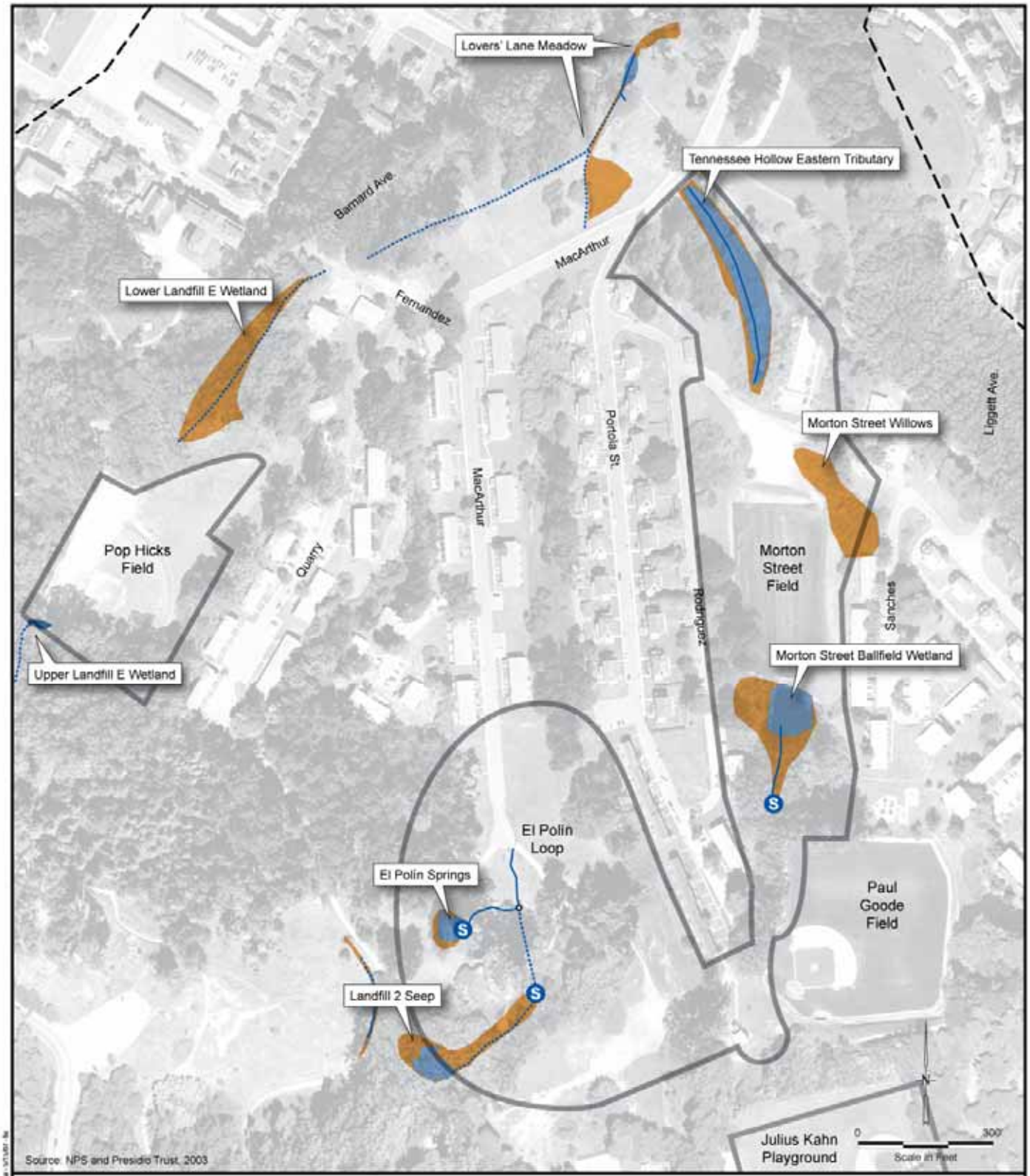

Figure 4.4-2
Existing Wetlands

Note: The wetland locations presented on this map are based on a Presidio-wide wetland inventory conducted in 2003.

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prohibits "taking" of any endangered species of fish or wildlife. Section 7 applies specifically to federal agencies, directing them to "conserve" listed species and limiting federal agency actions that adversely affect species and their habitat.

One federally endangered plant species is located within the project area. No known federally listed wildlife species occur within the project area.

Migratory Bird Treaty Act (16 U.S.C. 703-711): The Migratory Bird Treaty Act (MBTA) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and many other species.

Federal Executive Orders

Executive Orders (EOs) are internal management tools by which the President of the United States develops and communicates policy applicable to the executive branch.

EO 11990 (Protection of Wetlands): EO 11990 was issued in 1977 "…to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative…" This order provides that federal agencies are to take a leadership role in the preservation and enhancement of wetlands. Agencies are directed to include wetlands considerations in their assessments under NEPA and provide an opportunity for early public review of any plans or proposals for new construction in wetlands.

EO 13112 (Invasive Species): The National Invasive Species Council oversees implementation of Executive Order 13112, which directs federal agencies to prevent the introduction of potentially invasive non-native species and control invasive species on lands for which they are responsible. The Trust implements this requirement through protective measures provided in the *Presidio Vegetation Management Plan* adopted by the Trust and NPS in 2001.

EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds): Recognizing that "migratory birds are of great ecological and economic value," federal agencies are required to avoid or minimize the negative impacts of their actions on migratory birds and take active steps to protect these birds and restore or enhance their habitat. This includes preventing or abating pollution or detrimental alteration of the environment, as practicable, and incorporating migratory bird conservation into agency planning processes whenever possible.

4.4.3 Environmental Consequences and Mitigation

No Action Alternative

Under the No Action Alternative, no effort to daylight the creek or enhance native plant communities or wildlife habitat would be implemented. Existing areas of native and non-native plant communities would generally remain as shown on Figure 4.4-1, except for replanting activities that would occur following required environmental remediation, consistent with the VMP.

Existing pockets of native plant communities would continue to be isolated. The current invasive non-native plant infestations would likely expand into these sites, further reducing the native plant species abundance and richness within those areas. Cape ivy patches, for example, could expand and degrade the remnant willow patches in the lower and upper Eastern Tributary at a rate of up to 6 feet annually (Alvarez, 1997). The Presidio Park Stewards Program helps to implement and maintain habitat restoration sites throughout the Presidio. While resources may be available to manually control the spread of invasive plants in these areas, these sites would experience continued colonization pressures requiring on-going labor. This long-term need would have to be considered along with Presidio-wide demands on the program, and the availability of volunteers in any given year.

Potential short-term wildlife effects associated with tree removal and construction would be avoided under the No Action Alternative, as would the long-term benefits of habitat restoration. There would be no effort to increase the connectivity and extent of native habitat. As a result, there would be no improvements to wildlife habitat and movement corridors. The continued spread of invasive non-native plants within remnant riparian areas could result in further decreased richness and abundance of over-wintering and neotropical songbirds (Gardali, pers. comm., 2004); limited foraging and nesting habitat, and decreased richness of some invertebrates. The richness and abundance of benthic macroinvertebrate populations would remain low because a large portion of the project area creek system would remain culverted. This would continue to limit the population sizes of stoneflies, dragonflies and damselflies and feeding guilds such as "shredders." The adults of the species in this group provide a valuable food source for birds (Castellini, pers. comm., 2004).

Existing wetland features would similarly continue to be impacted by invasive non-native plant species such as poison hemlock (*Conium maculatum*), acacia (*Acacia* spp.), Himalayan blackberry (*Rubus ursinus*), English and Algerian ivy (*Hedera* spp.), and Cape ivy (*Delairea odorata*).

Conclusion: *The No Action Alternative would essentially maintain the status quo within the project area. Remnant habitat in the watershed would continue to be isolated and subject to colonization pressures from invasive non-native species which dominate the surrounding areas. No effort to connect native habitat areas to provide a continuous wildlife habitat corridor would be made. The construction-related effects of the project including removal of mature non-native trees would be avoided, however, so would the long-term beneficial effects for biological resources.*

Impacts Common to Both Project Alternatives

Alternatives 1 and 2 would have similar construction-related impacts, as well as some long-term benefits, as summarized below. The alternatives differ primarily in their approach to restoration in the Eastern Tributary and treatment of playing fields, the effects of which are highlighted in Section 4.4.3.3.

Native Plant Communities

Excavation and non-native plant removal could result in direct or indirect impacts to existing areas of riparian habitat and other small assemblages of native plants that currently exist within the project area. As shown in Figure 4.4-1, the small pockets of existing native plant communities constitute less than 3 acres of the project area. Mitigation measure NR-1 would be implemented to minimize these disturbances, and control future infestation of non-native species.

One special-status plant, Presidio clarkia (*Clarkia franciscana*), occurs within the project area. A small population was recently enhanced along the upper edges of the project area above El Polín Springs (below Quarry Road). All proposed habitat enhancement associated with the project would be designed to avoid disturbing these plants, as described in mitigation measure NR-3/NR-4.

Under both alternatives, the 10-acre area surrounding El Polín Springs/Loop would be enhanced by converting non-native trees and other vegetation surrounding the loop into a mosaic of willow riparian woodland, riparian scrub, serpentine grassland, wet meadow, oak woodland and other upland habitat. Revegetation in the upland areas west of El Polín Springs would enhance and expand existing Presidio clarkia habitat, and potentially restore habitat that could expand re-introduction efforts for Marin dwarf flax (*Hesperolinon congestum*, a Federally Threatened species). Figures 4.4-3 and 4.4-4 present the predicted native plant communities that could be sustained at the site under Alternatives 1 and 2, respectively. The spatial distribution and restoration design for these communities would be determined through a balanced treatment of ecological, cultural, and recreational values.

Under both project alternatives, the Eastern Tributary would be daylighted and associated riparian and upland habitat restored, including the 2 acres surrounding the spring that feeds the creek. Existing fragmented areas of riparian habitat would be restored, expanded, and connected to form a continuous corridor along the length of this tributary. This area would be replanted primarily with willow riparian habitat; a small area overlaying the historic dam structure would be planted with selected low-growing coastal scrub species to ensure that the feature remains visible and available for interpretation (Figures 4.4-3 and 4.4-4).

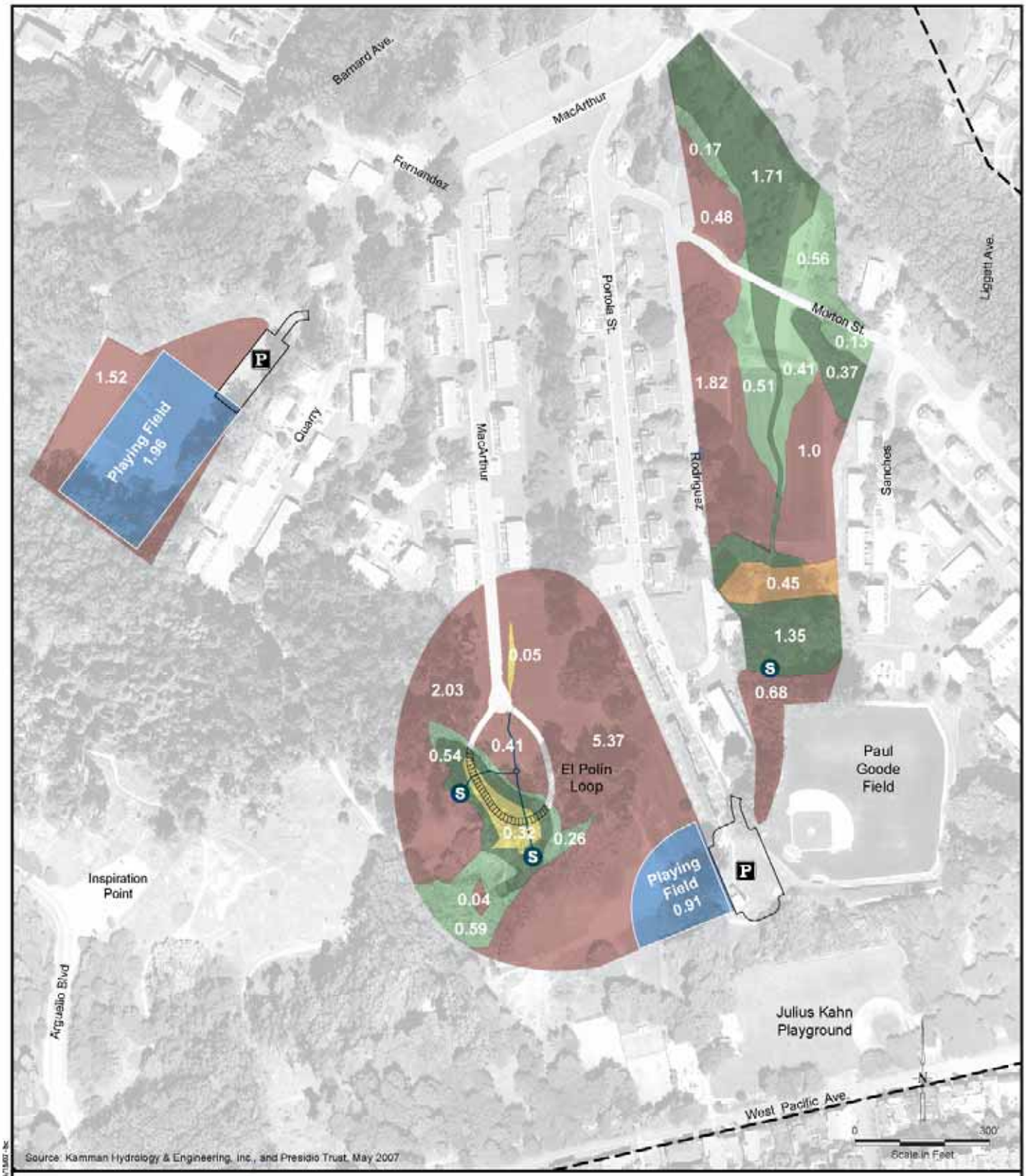
In the Western Tributary, at Pop Hicks Field, both alternatives propose to reorganize circulation and parking to accommodate creek[10] and habitat enhancements. Given the ephemeral nature of this drainage, the predicted habitat would include a rich diversity of upland native plant communities. These enhancements would improve the habitat connectivity with the Western Tributary and adjacent upland areas that are slated for restoration under the VMP. The restoration activities proposed under Alternatives 1 and 2 would encroach into the Landscape Vegetation Zone established in the VMP and are therefore being evaluated as part of this EA.

Wildlife

Short-term direct impacts to wildlife could include temporary displacement associated with equipment noise, tree and other vegetation and fill removal, and demolition and grading activities. While some direct losses of small or less mobile species, such as small mammals, reptiles, amphibians, and invertebrates would probably be unavoidable during construction, there would be long-term benefits to these species within the project area. The reduction of cover and vegetation complexity would likely have negative short-term impacts; however, these conditions would be ameliorated as the restored habitat matures.

Over time, nearly 10 acres of mature non-native trees would be removed from the project area, including approximately 100 eucalyptus, Monterey pine and Monterey cypress trees. Tree removal could directly and indirectly impact tree-dependent species such as the pygmy nuthatch, red crossbill, olive-sided flycatcher, and

[10] The proposed surface channel would be located to the west of proposed landfill cap, and is subject to review under the Landfill E remedial design process and corresponding stakeholder input.



Landscape Vegetation
Riparian Scrub
Upland
Willow Riparian
Coastal Scrub
Wet Meadow

S Spring
P Parking
Watershed Boundary
Boardwalk

NOTE: Numbers shown represent approximate acreage.

Figure 4.4-3
Alternative 1 – Predicted Vegetation and Habitat Zones

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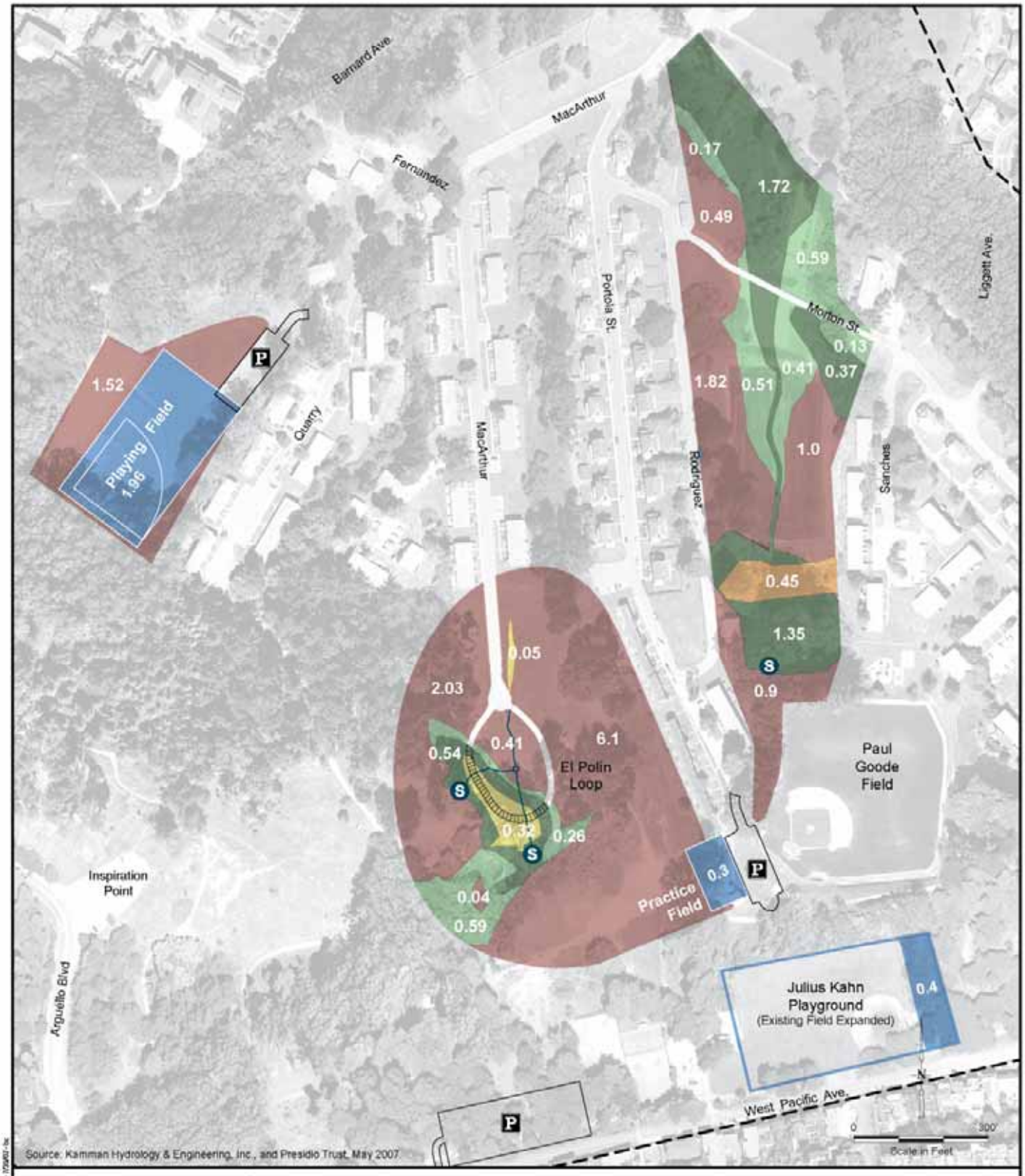

Figure 4.4-4
Alternative 2 – Predicted Vegetation and Habitat Zones

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brown creeper, as well as various raptors such as the red-shouldered hawk, red-tailed hawk, American kestrel, and great horned owl, and locally rare cavity nesting birds. To avoid or minimize the impact on nesting birds, tree removal would be phased over several years and would be scheduled to occur outside of the nesting season (see Mitigation Measures NR-3 through NR-5). Where appropriate and safe, snags (standing dead trees) will be left in place within restoration areas to provide food and shelter for wildlife. Snags will not be left in locations where they might fall on trails.

Native trees planted at these sites would not reach sizes that serve as replacement habitat for many years; however, there is suitable alternate nesting habitat within close proximity to the project area. More than 500 acres of mature forest canopy are located elsewhere within the Presidio; the effects of replanting the project area would be reduced due to the large number of surrounding trees that could be used by these species (Fish and Gardali, pers. comm., 2004). In addition, proposed removal of large stature trees would be phased in accordance with mitigation measures (see Section 4.4.4). The expansion of wet meadow habitat adjacent to structurally complex riparian and woodland vegetation in the El Polín Springs area could benefit bird species such as the San Francisco common yellowthroat and song sparrow (Gardali, pers. comm., 2004).

These long-term changes could also directly benefit a number of locally rare species, such as the Swainson's thrush and the Pacific-sloped flycatcher, which rely on riparian habitat. Restoration of protected open grassland habitat and riparian forest would increase foraging habitat for raptors and other wildlife species. Restoration of coastal and central dune scrub habitats could support potential habitat for other species such as the California quail.

Under both alternatives, there would be an increase in the complexity and diversity of wildlife habitat, as well habitat connectivity within the project area. Increased vegetation cover and density would improve foraging and nesting habitat, as well as movement corridors for small mammals, neotropical migrants, and overwintering species. Because of their linear shape, riparian corridors can provide protected travel corridors for wildlife between habitat areas such as the serpentine grasslands surrounding Inspiration Point and the Crissy Field Marsh.

The richness and abundance of benthic macroinvertebrate populations would likely increase as the result of creek daylighting activities. Connecting and expanding habitat is very valuable for birds and mammals but it can be even more valuable for animals that travel on the ground, on vegetation, or that do not travel long distances. Terrestrial invertebrates and small vertebrates can have small ranges and can be blocked or discouraged by dramatic changes in vegetation composition and impervious surfaces. Reptiles and amphibians would also likely increase in number in response to increased access to water and moist soil throughout the project area.

The expansion of open creek channels and wetlands also has the potential to increase breeding habitat for mosquitoes in areas where shallow water is standing water for a sufficient periods of time. During the warm (breeding) season, however, much of the "wetland" habitat created or enhanced by the project would be sustained by groundwater near the ground surface, or damp soil, rather than by standing surface water. While mosquitoes serve as food source for birds, bats, and other insects they can also pose a nuisance and health concerns for humans. The Trust currently monitors and manages mosquito populations in a manner that is protective of both human and environmental health, consistent with the Trust's mosquito management

strategy. Monitoring of the watershed is ongoing and would be expanded to include new areas as deemed necessary by the Trust.

The Trust may consider the use of synthetic turf for new or existing playing fields within the watershed. Synthetic turf provides many benefits, including eliminating the need for irrigation and pesticide use, and substantially reducing the fuel demands associated with regular maintenance activities. Synthetic turf also reduces the diversity and abundance of the plants and soil organisms that would otherwise be present and as a consequence, reduces the numbers and diversity of animals that use those plants and soil organisms for food, shelter, and breeding sites. Given the small size of the fields within the watershed, and the other beneficial effects associated with conversion to synthetic turf, this would not be considered a significant effect. Both alternatives also propose changes at Pop Hicks Field that would enhance the habitat connectivity within the Western Tributary and the adjacent upland areas.

Wetlands

Removal of Morton Street Field from its current location would create a substantial opportunity for wetland restoration along the Eastern Tributary. Water that currently flows in a storm drain would be directed into a surface channel and floodplain planted with freshwater emergent and riparian habitat. This new segment of creek would be approximately 800 feet long, with a wide floodplain (approximately 200 feet). In combination with the remnant channels (up- and downstream of the field), the Eastern Tributary would provide approximately 1,500 feet of relatively continuous creek and associated wetlands. In the Western Tributary, approximately 400 feet of a surface drainage would be created and enhanced. Construction activities may temporarily affect existing wetlands; however, implementation of Mitigation Measure NR-5 would reduce potential impacts to a less-than-significant level.

Over the long term, proposed creek daylighting and habitat restoration would indirectly affect existing wetlands by altering local hydrology. As described in Section 4.3 (Water Resources), the proposed conversion of eucalyptus forest to native trees near the headwaters is anticipated to have a slight increase in spring yield along the Eastern Tributary. Conversely, moving the creek from a storm water drain into an earthen channel at the Morton Street Field site is anticipated to reduce downstream flow as a result of increased infiltration along new permeable channel. Although flow would be maintained along the entire Eastern Tributary during winter, active flow would dry back to a point approximately 200 feet south of Morton Street by late summer during average water years. This seasonal dry-back of the channel could affect the richness and density of emergent and herbaceous wetland vegetation growing directly along the edges of the existing creek. Groundwater would be sufficiently high along the remnant reach, however, to support deeper-rooted wetland vegetation such as willows. More than doubling the creek length in this reach and corresponding habitat enhancements and connectivity would have a long-term beneficial effect on existing wetlands.

Comparison of Alternatives 1 and 2

Alternatives 1 and 2 would have similar construction-related impacts, and both would have substantial, long-term benefits on the park's biological resources, as described above. The primary difference between the two project alternatives relates to the extent and quality of habitat provided by each alternative. Table 4.4-2 compares the habitat that would be created under the two project alternatives against current conditions (No Action Alternative).

Table 4.4-2: Predicted Native Vegetation Habitat Types, by Alternative (acres)

Vegetation Type	No Action Alternative	Alternative 1	Alternative 2 (Trust Preferred)
Eastern Tributary			
Willow Riparian	2.58	3.43	3.44
Riparian Scrub	0	1.78	1.81
Upland[1]	0.12	4.43	4.66
Subtotal	*2.7*	*9.64*	*9.91*
Pop Hicks Field Area			
Willow Riparian	0	0	0
Riparian Scrub	0	0	0
Upland[1]	0	1.52	1.52
Subtotal	*0*	*1.52*	*1.52*
El Polín Springs/Loop (including Fill Site 1)			
Wet Meadow	0.04	0.37	0.37
Willow Riparian	0	0.54	0.54
Riparian Scrub	0.04	0.85	0.85
Upland[1]	0.09	7.85	8.58
Subtotal	*0.17*	*9.61*	*10.34*
TOTAL[2]	**2.87**	**20.77**	**21.77**

[1] Upland habitat includes serpentine prairie, coastal prairie, dune scrub, oak and bay woodlands and oak riparian woodland. It excludes playing fields. It also includes the coastal scrub called out on Figures 4.4-3 and 4.4-4.

[2] Totals do not include the Julius Kahn Playground area which is located within the VMP Landscape Vegetation and Historic Forest zones; any replanting in this area would be done with non-native tree species and is therefore not addressed in this table.

Note: A watershed-based hydrologic model was used as a tool to develop the spatial distribution and approximate acreages of native vegetation communities under a "restored condition" within the project area (KHE, 2006). For additional information, refer to technical reports cited at the beginning of Section 4.3.

Compared to Alternative 2, Alternative 1 would be less beneficial to biological resources. Alternative 1 would introduce a new Little League field into the area slated for future native plant restoration at Fill Site 1. While native plant communities would be restored along the margins of the field, this alternative would provide less buffer area between El Polín Springs and upland recreational facilities. This transition zone between the springs and upland areas is important to a diversity of wildlife not only for the array of food and shelter they provide, but also for the direct access to water. Introduction of a regulation-size playing field at this site would be more intensive and potentially disruptive to wildlife than the use proposed under Alternative 2. Alternative 2 restricts active recreation and parking facilities to the Landscape Vegetation Zone identified in the VMP, and proposes to restore dune scrub and open areas suitable for native dune annuals. These habitat types are very uncommon this far inland and are therefore particularly valuable.

Other biological benefits would be realized under Alternative 2 by the removal of an additional non-historic structure (Building 770) adjacent to the spring that feeds the Eastern Tributary. Removal of this structure would provide additional area for habitat enhancement, increase the buffer area between the spring and adjacent historic neighborhoods, and better protect the integrity of the enhanced willow grove. Alternative 2 also proposes to convert Morton Street – the only roadway that bisects the Eastern Tributary – into a multi-

use trail. This change would reduce the potential for car-based contaminants reaching the creek, reduce the number of animals killed by cars, and make it easier for animals to move within the Eastern Tributary corridor. A bridge would be constructed at the point where the creek crosses under the trail. Placing a bridge over the creek would improve passage for plants and animals as compared to the long culvert in the No Action Alternative or the short culvert in Alternative 1. The enhanced passage would provide benthic habitat under the bridge, link aquatic populations on either side of the bridge, and perhaps increase the passage of terrestrial animals.

Alternative 2 would relocate Morton Street Field to the upland areas at Julius Kahn Playground, outside of the VMP Native Plant Communities zone. The proposed improvements include expansion of an existing playing field and construction of a new parking area. Although these activities may decrease the habitat value of the forest in this location, the overall impact would be more than offset by the expansion of new and more valuable habitat above El Polín Loop, at Fill Site 1.

Conclusion: *Alternatives 1 and 2 would have similar construction-related effects. Implementation of the mitigation measures identified in Section 4.4.4 would minimize temporary effects. No significant impact would occur.*

Both project alternatives would have long-term biological benefits: approximately 1,200 linear feet of creek would be enhanced or daylighted, and more than 20 acres of native plant communities and wildlife habitat would be restored and enhanced. Alternative 2 would restore an additional 1acre of habitat, and provide greater habitat connectivity in key locations. In particular, the conversion of Morton Street to a multi-use trail and revegetation efforts at Fill Site 1and the Eastern Tributary springs would provide noticeable benefits in comparison to Alternative 1.

4.4.4 Mitigation Measures

The following mitigation measures are derived from the PTMP EIS, VMP EA, and Trails Plan EA and apply to both project alternatives.

NR-1	*Native Plant Communities*
NR-3/NR-4	*Threatened, Endangered, Rare, Sensitive Species, and Special-Status*
NR-5	*Wildlife and Native Plant Communities*
NR-6	*Best Management Practices*
NR-9	*Wildlife and Wildlife Habitat*
NR-12	*Cumulative Activities*

4.4.5 Cumulative Effects

While most of the Presidio's remaining natural communities are small and typically isolated, these resources are still significant contributors to the region's biodiversity. As described in the PTMP EIS, many of the activities planned for the Presidio are intended to enhance, expand, and connect these remnant habitat areas. Over the long term, implementation of PTMP (including the planned restoration of Tennessee Hollow) would quadruple the acreage of native plant communities within Area B of the Presidio (from 52 to 217 acres), including restoration of habitat that supports rare and endangered species. As described in the PTMP EIS, restoration activities as well as other planned construction activities, including required environmental remediation, may adversely impact biological resources. Implementation of the mitigation established in the PTMP EIS would help minimize the effect of construction activities on a project-by-project basis, and ensure

that activities are phased to reduced adverse cumulative impacts. Over time, there would be a long-term beneficial effect on the Presidio and region's biological resources. The proposed project would contribute cumulatively both to construction-related (short-term impacts) as well as expected long-term beneficial effects on the Presidio's biological resources.

4.5 VISUAL RESOURCES

A summary of the Presidio's visual resources, as well as general effects associated with implementation of restoring Tennessee Hollow, is provided on pages 122 to 123 and 247 to 252 of the PTMP EIS. The focus of this section is on site-specific changes that would occur under various alternatives. Many of the visual resources within the project area also have historic or cultural importance, and this section should be reviewed in conjunction with Section 4.2, Cultural Landscape.

4.5.1 Affected Environment

The Presidio is prominent from throughout the northern portions of the Bay. Its forested ridges and north-facing slopes are defining landscape features of the Golden Gate: the scenic viewshed comprising the entrance into San Francisco Bay and possibly the single most scenic and significant viewshed in the region. It appears as a forested, highly distinctive frame to views toward the Golden Gate, contrasting with the urban forms of the surrounding city. Beyond its scenic qualities, the Presidio's landscape also embodies various periods of historic and cultural significance. To determine the best balance between these scenic and historic/cultural aspects, this analysis relies on guidance provided by the PTMP and VMP, which define significant cultural landscapes of the Presidio and Tennessee Hollow based on the NHL District 1993 Update.

Key Scenic Features and Views of Tennessee Hollow

Tennessee Hollow comprises the easternmost drainage of the Presidio, including three north-south oriented tributary valleys whose prominent wooded slopes play a major role in defining the Golden Gate viewshed. As identified in the PTMP, the spatial organization of the Tennessee Hollow Watershed is based on a visible physiographic and historic contrast between developed upland north-south ridges, occupied by a linear arrangement of historic housing complexes, and the once natural riparian valleys between them. More recently these valleys were filled and occupied by playing fields, housing, and other infrastructure. In broad terms, the principal components of the existing watershed landscape consist of the historic forest and the instances of buildings in the East Housing Planning District possessing historic and architectural significance.

Dramatic views from within Tennessee Hollow are surprisingly few. Inspiration Point, located above the headwaters of the creek system outside the project area, is among the most dramatic within the park. Other vantage points within the watershed, however, are generally restricted to views within the park due to blockage by tall trees. Within the watershed, the historic forest is primarily blue gum, Monterey cypress and Monterey pine, with many stands reaching over 120 feet in height. These plantings completely transformed the Presidio landscape and led to its current visual identity, which is defined to a substantial degree by this tall tree canopy. From outside the park, this canopy dominates the visual character, contrasting with the city's surrounding urban forms and providing a vivid natural backdrop to the historic structures of the Main Post district. These wooded areas also define the internal viewsheds of the watershed, enclosing, directing, and sometimes obstructing view corridors.

Within the open areas of the watershed defined by the forest edge, the former military housing associated with the NHL District period of significance contributes a unique, recognizable visual character. Both the

architecture and layout of the East Housing Planning District are highly distinctive, consisting of repeating masonry structures with classical proportions and detailing, organized in linear fashion following the watershed's parallel ridge tops. The neighborhoods on Portola Street and Ligget Avenue within the watershed are considered to be of historic significance.

Key Scenic Features and Views Within the Project Area

Eastern Tributary

The Eastern Tributary is the most visually open of the watersheds due to the large playing fields. Historically important landscape features in this reach include the East Housing neighborhoods and an historic earthen dam structure that defines the southern end of Morton Street Field. The area behind the dam is currently occupied by a large stand of mature (approximately 120-foot tall) blue gum trees, which dominate and enclose views south of Morton Street Field and north of Paul Goode Field. Both Eucalyptus and willow currently obscure the distinctive form of the dam face. Beyond the project area, substantial portions of the historic forest flank the ridges, enclosing and directing views within the Eastern Tributary. Other portions of the forest in the tributary are lower, more scattered, and less visually important.

Morton Street Field

Central Tributary/ El Polín Springs

The Central Tributary includes 1960s-era housing that is visually without interest. El Polín Springs is a historically significant locale; however, there is little existing visual evidence of the historic period of significance beyond a portion of historic stone channel, and the vicinity is currently neither visually unique nor highly scenic. As in the Eastern Tributary, the existing Central Tributary viewshed is defined by tall forest on the valley slopes.

View South/Down the Central Tributary (El Polín Loop in foreground, non-historic housing in background)

Western Tributary

The Western Tributary includes non-historic, visually non-descript post-World War II housing and Pop Hicks Field. Except for these facilities, the tributary is largely occupied by tall, predominantly Eucalyptus forest. Pop Hicks Field is a large, level abandoned playing field and parking area currently overgrown with grass and weeds, with derelict backstop, spectator stands and chain-link fencing. Views within Pop Hicks Field are enclosed by surrounding tall tree canopy.

View of Pop Hicks Field from the southwest edge of parking lot.

4.5.2 Environmental Consequences

Environmental consequences of the project alternatives were evaluated and compared according to a variety of criteria, including:

- whether alternatives obstructed, created, or preserved scenic views
- how the alternatives would affect attributes of the landscape's visual quality such as visual variety, coherence, vividness, and intactness
- whether alternatives would preserve and enhance visibility and legibility of historic landscape features
- whether alternatives would conform with objectives of the PTMP

Visual simulations of several components of the project alternatives were produced with the use of accurate three-dimensional computer models of terrain, grading, and vegetation, and photographs of existing restoration projects of similar habitat types.

No Action Alternative

Under the No Action Alternative, none of the proposed changes in vegetation, topographic modifications, interpretative, or other landscape features would occur. The goals of the PTMP and VMP, including restoration of the historic spatial pattern of developed uplands and natural riparian valleys, would not be achieved within the study area.

The historic Eastern Tributary dam and El Polín Springs archaeological resources would not be made visually accessible for interpretation to the public. North-south views down the tributaries and to the Bay would not be improved, nor would the quality of views within the tributaries. Following the required remediation of Landfill E in the Western Tributary, Pop Hicks Field would be returned to active use as a Little League field. The existing field was abandoned more than a decade ago due to safety concerns, and rehabilitation of the degraded field would be a notable improvement in the visual character of the site.

Conclusion: *Under the No Action Alternative, the various visual and cultural landscape improvements envisioned in the PTMP would not be implemented within the project area with the exception of the post-remediation restoration of Pop Hicks Field. The No Action Alternative would thus be the least beneficial of the alternatives under study.*

Consequences Common to Both Alternatives

Short-Term Construction Impacts

Both project alternatives, short-term adverse visual impacts would be anticipated due to removal of large-scale non-native trees and other vegetation, and grubbing and grading. These effects would be visible to viewers outside of the park to a limited degree, and though somewhat adverse, would be relatively minor and less than significant. Views from adjacent housing would be adversely affected during construction, and somewhat impaired until restored vegetation matures. However, within approximately one year, visual quality of the Morton Street Field viewshed would be comparable to the existing view of playing fields, and would continue to improve with time. These minor impacts would be temporary and are considered to be less than

significant. Over the long term, both project alternatives would generally conform with the guidelines of the PTMP and result in beneficial visual effects.

El Polín Springs Improvements

Under both project alternatives, improvements would be implemented at El Polín Springs and at the headwaters of the watershed's Central Tributary to enhance visual, historic, and habitat resources. From a purely visual perspective the setting would regain its scenic intactness as the restored habitat matures. The improvements would also introduce landscape features of visual interest interpreting the Spanish-Mexican Colonial and pre-contact periods.

Conclusion: *In the short term these actions would have adverse visual effects due to vegetation removal; however, in the long term they would represent a substantial visual improvement in the integrity of the site's historic setting and feeling. The proposed actions would conform with the guidelines and objectives of the PTMP and represent a beneficial visual impact.*

Alternative 1

Under Alternative 1, Morton Street Field would be relocated and the daylighted creek would be revegetated in a combination of riparian scrub, riparian willow, and upland oak habitats. A new pedestrian trail would be constructed along the eastern side of the creek, providing visual and recreational access. A non-historic building north of Morton Street (Building 777) would be removed per the PTMP and replaced with riparian vegetation. Morton Street would remain in its current paved condition. Figure 4.5-1 depicts views of the site from Morton Street, including predicted vegetation growth 5 and 10 years after restoration.

The existing historic earthen dam south of Morton Street Field would be replanted with lower stature native shrubs to maintain the feature's visibility and provide opportunities for interpretation. Existing non-native vegetation behind the dam, including the tall but non-historic eucalyptus, would be removed and replaced with lower-growing native trees and shrubs, opening north-south views within the tributary.

The overall effects of these actions would conform with the guidelines of the PTMP for open space, vegetation, and views of the East Housing District. In particular, the historic pattern of spatial organization of historic housing on the upland ridges and natural vegetation in the tributary valleys would be enhanced by replacement of the post-World War II–era Morton Street Field with oak and riparian woodland habitat. This change would, within a relatively short period of time (roughly 3 to 5 years), result in a substantial enhancement of visual coherence within the tributary. Views from locations along the new trail and creek would represent a new and valuable visual resource. Canopies of the restored riparian habitat would represent a substantial scenic enhancement as seen from surrounding upland viewpoints, including the East Housing and associated roadways providing a substantial beneficial visual effect.

Views from the south looking northwest across the project area would be greatly improved due to removal of the tall eucalyptus grove atop the historic dam. The Golden Gate Bridge towers, and visually distinctive areas within the Presidio such as the Portola Street housing, would become visible from those viewpoints, enhancing scenic views within the tributary (Figure 4.5-2). This would be a substantial beneficial visual effect for viewers above Morton Street Field.

Source: William Kanemoto & Associates, 2006

Figure 4.5-1

Alternative 1 – Eastern Tributary (looking SE from Morton Street)

Source: William Kanemoto & Associates, 2006

Figure 4.5-2

Alternatives 1 & 2 – View from Above Eastern Tributary (looking NW across Paul Goode Field)

Morton Street Field would be relocated to the site of Pop Hicks Field in the Western Tributary. The existing field is abandoned and in disrepair pending the remediation of the underlying landfill. Additional visual enhancements would be made along the western edge of this site. In addition, a new Little League field would be constructed in the upland area near Paul Goode Field, at Fill Site 1. Overall, the effect would be visually superior to the existing unimproved dirt lot which serves as an informal parking lot.

Conclusion: *Alternative 1 would enhance scenic quality of the project area and have a long-term beneficial effect.*

Alternative 2 (Trust Preferred)

Proposed changes and resulting visual effects at Morton Street Field under Alternative 2 would be similar to those of Alternative 1, including the predicted vegetation (and growth rates) as presented in Figure 4.5-1. Under Alternative 2, however, Morton Street would be converted to a multi-use trail with a pedestrian bridge at the creek crossing as depicted in Figure 4.5-3. Alternative 2 also proposes the removal of an additional non- historic and visually nondescript building (770) on Rodriguez Avenue, adjacent to the spring that feeds the Eastern Tributary.

Alternative 2 would add a new parking lot off of West Pacific Avenue near Julius Kahn Playground. The lot would be constructed simultaneously with planned reforestation of the area, which is being phased throughout the historic forest. Trees would be spaced to accommodate parking. The lot is spatially separated from tennis courts and other heavy use areas of the playground. Over time, as the canopy matures, the exposure of the lot would be minimized. In addition, under one circulation option, West Pacific Avenue would be converted to a multi-use trail, resulting in elimination of the extensive parking that now takes place and is visible from Pacific Avenue, an additional visual benefit over Alternative 1.

Conversion of the dirt parking lot adjacent to Paul Goode Field (Fill Site 1) into a practice field, improved parking, and adjacent plantings would improve the visual character of the area. Similar to Alternative 1, Alternative 2 proposes to rehabilitate the derelict field at Pop Hicks Field and enhance the surrounding areas.

Conclusion: *Visual effects of Alternative 2 would be substantially similar to those of Alternative 1, and similarly beneficial. Differences in visual effects of Alternative 2 and Alternative 1 are relatively minor but would represent slight visual advantages over Alternative 1.*

4.5.3 Mitigation Measures

No mitigation measures have been identified.

4.5.4 Cumulative Impacts

In conjunction with the PTMP and other VMP actions outside the project study area, the remaining areas of the watershed would be enhanced over time. The historic forest and historic residential landscapes would be rehabilitated, native plant communities restored and expanded, and veiwesheds enhanced. These activities would each have a cumulatively beneficial effect on the landscape of the Presidio, improving the accessibility of the park's historic features, improving the diversity and coherence of the park's internal landscapes and views, while preserving the characteristic visual image of historic architecture and tall forests so strongly identified with the Presidio as seen by viewers in and out of the park.

Source: William Kanemoto & Associates, 2006

Figure 4.5-3

Alternative 2 – Eastern Tributary (looking SE from Morton Street)

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4.6 AIR QUALITY AND MICROCLIMATE

The focus of this air quality analysis is on the construction-related effects of the proposed project. Once implemented, the project would not impact regional air quality as no stationary sources of air pollutants are part of the proposed project. In response to public scoping comments, additional analysis regarding potential microclimate changes that may result from project implementation is also presented. For additional information regarding air quality of the Presidio, refer to pages 124 to 126 and 252 to 260 of the PTMP EIS.

4.6.1 Affected Environment

Local Air Quality Conditions

The Presidio's location allows for excellent air circulation from prevailing west and northwest winds. No pollution sources are located west of the Presidio; therefore, air moving into the area is of very high quality. Because the Presidio is upwind of most sources of pollution, the air quality is generally better than most urban areas in the Bay Area. In addition, San Francisco generally experiences lower temperatures than the inland areas, which helps keep ozone formation down. As a result, even though the Bay Area as a whole is in nonattainment of federal and state ozone standards, neither ozone standard has been exceeded at the monitoring station closest to the Presidio. Only state standards for respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) have been exceeded locally. No other criteria air quality standards have been exceeded in San Francisco over the past 5 years (CARB, 2004 and 2006).

Microclimate

The Presidio's relatively mild climate is strongly influenced by its proximity to the ocean and bay, as well as local topography and vegetation. Average day temperatures range from 55 degrees Fahrenheit (°F) in January to 68°F in September and October (McBride, 2006). Prevailing winds at the Presidio are from the west, northwest, and southwest. Typically, onshore winds pick up in the afternoon and reach their peak near sundown. During summer afternoons, winds off the ocean on the west side of the Presidio can reach 15 to 20 miles per hour (mph), and as much as 70 mph at the Golden Gate, creating a cooling trend. As wind travels across the Presidio, its speed and associated cooling effect is reduced by the Presidio's vegetation and surface roughness. Studies have shown that forest stands reduce wind speed by as much as 50 percent, when measured downwind (leeward) of the trees at a distance equal to three to five times the tree height. Wind velocity is also reduced upwind (windward) of forest stands to nearly zero within two to three times the height of the trees. As the wind speed is reduced, the relative temperature increases. During a recent study in the Presidio, reductions in wind velocity from 2.25 to 7.75 mph were observed to have an effective increase in temperature from 3.6 to 11.2°F (McBride, 2006).

Lobos Creek is a main pathway for wind moving across the southern edge of the Presidio. The topographic defile created by the creek funnels the wind over the ridge where Arguello Boulevard enters the Presidio. From this topographic saddle the wind flows down a small canyon leading to El Polín Loop and into Tennessee Hollow. A portion of the wind moving inland from the ocean south of Sutro Heights crosses the Richmond District and flows down Tennessee Hollow from the topographic gap along West Pacific Avenue. The influence of topography on wind direction can be seen in the shift in wind direction recorded north of El

Polín Loop. Afternoon wind direction ranged from southwest to south-southwest at this location, while simultaneous wind direction at Baker Beach remained steady at west-southwest. Wind velocity measurements taken to demonstrate the local effects of forest stands in and adjacent to Tennessee Hollow indicate that reductions of 73 to 93 percent occurred along the leeward edge of stands. Greater wind velocity reduction occurred adjacent to stands of eucalyptus than adjacent to stands of Monterey cypress/Monterey pine (McBride, 2006).

4.6.2 Regulatory Background

The California Air Resources Board (CARB), which is part of the California Environmental Protection Agency, is responsible for establishing and reviewing the state ambient air quality standards. The Bay Area Air Quality Management District (BAAQMD) is the primary agency responsible for managing compliance with ambient air quality standards in the San Francisco Bay Area.

4.6.3 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no restoration and enhancement activities would be implemented. The only ground-disturbing activities and vegetation changes that would occur in the project area would be those associated with the required environmental cleanup activities that are subject to a separate environmental review process.

Consequences Shared by Both Project Alternatives

Implementation of both project alternatives would involve varying degrees of vegetation clearing and grubbing, excavation and grading, and demolition of up to three structures. Backhoes, dump trucks, excavators, front-end loaders, chain saws, scrapers, and bulldozers may be used during construction activities. It is anticipated that primary construction would require several months to complete at each project site.

During construction, short-term exhaust and fugitive dust would be generated. These emissions may impact nearby sensitive receptors, which primarily consist of existing residences and recreational fields in the project vicinity. Of particular concern is exposure to PM_{10} emissions from fugitive dust produced during ground-disturbing activities. BAAQMD has guidelines for reducing fugitive dust emissions associated with construction activities (BAAQMD, 1999).

Short-term exhaust emissions are taken into account by BAAQMD in the regional air quality plans; therefore, emissions from construction equipment would not be expected to impede attainment or maintenance of any of the ambient air quality standards. Additionally, emissions of criteria pollutant emissions during implementation of any of the action alternatives are expected to be much less than 100 tons per year; thus, a conformity determination is not required. Under both alternatives, building demolition would occur. Appropriate mitigation measures would be required for all alternatives to prevent the airborne release of lead-based paint and asbestos.

Removal of non-native mature trees and proposed grading activities in the Eastern Tributary and the area surrounding El Polín Springs would result in increased wind velocities. It will be several years before planted

vegetation would are sufficient size to serve as an effective wind barrier. Based on the location and extent of proposed changes, a conservative estimate is that average wind velocities would increase by 10 percent during summer afternoons as a result of the proposed project. This would translate into an increase from an average of 5 mph to 5.5 mph. An increase of this magnitude would hardly be perceptible to persons in the outdoor environment. Under higher wind conditions, when strong winds typically down the watershed at 25 mph, a 10 percent increase would result in winds of 27.5 mph. Again this increase would likely not be perceptible to people outdoors. Wind velocities of 5 mph and above can typically interfere with ball games such as soccer and tennis; however, average afternoon wind velocities are already at that level and the incremental increase which may result from the project would not noticeably add to wind conditions. Restoration areas would not be affected by the anticipated 10 percent increase in wind velocity. Some individual planted plants may need to be shielded from the wind during their establishment period, but this wind protection, if needed, would be required for planting under the existing conditions (McBride, 2006).

Conclusions: *Consistent with the BAAQMD guidelines for construction activities, the Trust would implement measures to reduce fugitive dust emissions. With regard to potential airborne lead-based paint and asbestos during demolition, the Trust requires abatement of both prior to demolition. Implementation of the mitigation measures identified in Section 4.6.3.3 will minimize potential impacts. No significant air quality impacts would occur. Overall, there may a slight increase in wind velocity within the immediate project area. Given existing wind conditions, this increase would not likely be perceptible by people in the outdoors and would not impact the proposed restoration activities and would therefore be less than significant.*

4.6.4 Mitigation Measures

The following PTMP EIS mitigation measures would apply to both project alternatives. Refer to Table A-1, Appendix A for additional detail.

NR-20 – Basic Control Measures
NR-22 – Deconstruction/Demolition Techniques

4.6.5 Cumulative Impacts

Short-term fugitive dust emissions from restoration activities could cause cumulative air quality impacts if other nearby projects are under construction at the same time. However, these projects would be conditioned with similar protective measures. Since the proposed project would not result in additional new stationary sources of emissions after construction, the project would not contribute to cumulative impacts during operations. Projects such as the rehabilitation of the historic forest and environmental cleanup activities (and associated tree removal/grading), along with the proposed project, would contribute cumulatively to changes in microclimate and wind patterns within the watershed. All of these projects would be implemented in phases over a period of many years, as required by the mitigation set forth in the PTMP EIS. In total, implementation of the cumulative projects within Tennessee Hollow would take several decades to complete. In addition, the majority of the sites that are currently forested would similarly be replanted with tree species. Sequencing work over multiple years would allow replanted vegetation time to mature and become effective wind barriers. Overall, no significant cumulative impacts are anticipated.

4.7 NOISE

The focus of this analysis is on the construction-related effects of the proposed project. Once operational, the project would have no impact on existing noise. For additional information refer to pages 127 to 130 and 260 to 267 of the PTMP EIS.

4.7.1 Affected Environment

Given its urban setting, noise levels within the Presidio can fluctuate greatly. Away from roadways, the Presidio is generally quieter than the surrounding urban environment. The existing noise environment is influenced primarily by surface-vehicle traffic, principally on Presidio Boulevard and Lincoln Boulevard, and natural noises. Noise monitoring activities in the Presidio have concluded that levels away from major roadways are commonly below 60 dBA,[11] which is common for most residential neighborhoods. Noise levels above 67 dBA occasionally occur adjacent to some of the Presidio's roadways and near the entry gates (Trust, 2002b).

Certain types of land uses are considered to be more sensitive to ambient noise levels than others. Schools, libraries, churches, hospitals, nursing homes, auditoriums, parks, and outdoor recreation areas are generally considered more sensitive to noise than are commercial and industrial land uses. Residences may also be considered noise-sensitive uses. The level of impact depends upon the amount of noise exposure (in terms of both exposure time and intensity) and the types of activities typically occurring with these land uses.

Noise problems typically arise when new sources are introduced to an area where not previously located, even for a short period of time. Sensitive receptors within the vicinity of the proposed project are residential dwellings and recreational areas. The closest residential areas are approximately 25 to 50 feet from the proposed project activities, while the closest recreational area is 25 feet away.

4.7.2 Regulatory Background

Local noise control for the urban neighborhoods surrounding the Presidio is governed by the San Francisco Noise Ordinance (Article 29 of the *San Francisco Police Code*, 1994). The noise ordinance regulates construction noise, fixed-source noise, and unnecessary, excessive, or offensive noise disturbances within the city. The construction noise regulations in Sections 2907 and 2908 of the San Francisco Police Code stipulate that construction noise be limited to 80 dBA at 100 feet from equipment during daytime hours (7 a.m. to 8 p.m.). Impact tools are exempt, provided that they are equipped with intake and/or exhaust mufflers.

The Trust seeks to comply with provisions equivalent to the standards in the San Francisco Noise Ordinance.

[11] Sound levels are the audible intensities of air pressure vibrations and are most often measured with the logarithmic decibel scale (dB). Generally, a 3 dB difference in community noise is noticeable to most people, a 5 dB difference may cause a change in community reaction, and a difference of 10 dB is perceived as a doubling of loudness. The A-weighted decibel scale (dBA) characterizes the pitch and loudness, as perceived by humans.

4.7.3 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no construction activities would occur within the project area, with the exception of the required environmental remediation activities. Noise associated with remediation construction would be evaluated and mitigation developed as appropriate, during a separate environmental review process. No other new noise-generating activities would occur within the project area under the No Action Alternative.

Consequences Common to Both Project Alternatives

Implementation of both project alternatives would involve clearing and grubbing of existing vegetation, excavation and grading, and demolition. The type of equipment that may be used during these activities includes backhoes, dump trucks, excavators, front-end loaders, scrapers, chain saws, and bulldozers. According to U.S. Environmental Protection Agency (U.S. EPA) studies of equipment types and activities, predicted construction noise would range from approximately 70 dBA to 95 dBA at 50 feet from its source.

Construction activities would increase the ambient noise levels in the project vicinity for a period of several months. These increases may impact nearby sensitive receptors, which consist of residential and recreational uses. The nearest receptors are located about 25 to 50 feet from the proposed construction activities. Noise levels at the sensitive receptors would depend on the type of construction activity occurring, noise levels generated by various pieces of equipment, distance between the noise source and receptor, and the presence of intervening structures such as vegetation, walls, or buildings.

Conclusions: *Temporary increases in noise would occur during demolition, tree removal, excavation, and grading proposed under both project alternatives. Implementation of mitigation measure NR-23 would limit noise impacts. No significant impact would occur.*

4.7.4 Mitigation Measures

The following PTMP EIS mitigation measure applies to both project alternatives (see Table A-1, Appendix A):

NR-23 – General Construction/Demolition Noise

4.7.5 Cumulative Impacts

At most locations within the Presidio, visitors and employees enjoy a quiet environment. The only significant sources of persistent noise are Doyle Drive/Richardson Avenue and 19th Street, as they traverse the Presidio. Tennessee Hollow is remote from these sources, and includes open space, recreation facilities, and housing – which tend to not be generators of sustained noise. Cumulative projects likely to generate noise in the project area include environmental remediation activities. Remediation construction would require use of heavy equipment. These would be temporary noise impacts, and would be conditioned to minimize nuisances to nearby receptors. Overall, the noise environment of the Presidio is not anticipated to change appreciably as a result of implementation of any of these projects. The proposed project would contribute cumulatively to construction noise in the area; however, these effects would be temporary and would be less than significant.

4.8 TRANSPORTATION AND CIRCULATION

A comprehensive discussion of the Presidio's long-term transportation and circulation system is provided on pages 168 to 183 and 302 to 327 of the PTMP Final EIS. The focus of this analysis is on site-specific construction-related effects and permanent changes in local circulation and parking contemplated under the various project alternatives. Transit would not be affected by the project, and is therefore not analyzed.

4.8.1 Affected Environment

Existing Roadway Network and Traffic Characteristics

Two arterial roadways provide access to the Tennessee Hollow Watershed: Presidio Boulevard and Lincoln Boulevard. Within the watershed, vehicular access to the residential neighborhoods, trailheads, and playing fields is provided by a series of local streets including Barnard Avenue, Quarry Road, Fernandez Street, Wallen Court, MacArthur Avenue, Portola Street, Rodriguez Street, and Morton Street. The roadways directly affected by the proposed project include MacArthur Avenue, Morton Street, West Pacific Avenue, Barnard Avenue and Quarry Road. All intersections in the watershed are unsignalized, with either two-way or all-way stop control.

On weekdays substantial commuter traffic on Presidio Boulevard and Lincoln Boulevard is associated with workplaces in the park, park residents traveling to workplaces as well as pass-through traffic. Seasonally varied weekend traffic is primarily recreation-based, which is partially generated by activities on the Tennessee Hollow trailheads and playing fields. However, all intersections in the watershed area currently operate at acceptable levels during both the a.m. and p.m. peak hours and are predicted to continue to do so over the long term (Trust, 2002b).

Bicycle and Pedestrian Circulation

Several trails and bikeways, including the historic Lovers' Lane, bisect the watershed. In November 2003, the Trust and NPS adopted the *Presidio Trails and Bikeways Master Plan* (Trails Plan) which now serves as the guiding plan for park-wide management of the trail system. The Trails Plan identifies trail improvements that will be implemented over time, including the establishment of several new major trail corridors. One of these corridors is the "Tennessee Hollow Trail," which is envisioned to provide visitors with a continuous trail connection from Julius Kahn Playground in the south, along the restored creek, down to Crissy Field and the San Francisco Bay, in the north. A portion of this trail passes through the El Polín Loop area, and would be partially implemented by the proposed project. The Trails Plan also designates a new pedestrian trail to coincide with creek restoration planned along the Eastern Tributary (NPS and Trust, 2003).

Parking

The project area is located in the East Housing Planning District, which contains 1,095 parking spaces, most of which are associated with housing or playing fields including approximately 20 spaces at Morton Street Field, about 38 spaces at Paul Goode Field, and approximately 60 informal parking spaces along the south side of West Pacific Avenue. In general, there is a substantial surplus of parking during midday weekdays.

However, in the evenings when parking demand is greatest for residential uses, occupancy of these parking spaces is typically near capacity.

4.8.2 Environmental Consequences

This section analyzes each alternative individually, and concludes with a summary comparison of the alternatives and determination of their relative significance following mitigation.

No Action Alternative

Under the No Action Alternative, no site enhancements would be implemented, and therefore current traffic and parking conditions would persist. There would be no construction-related traffic effects or long-term changes in circulation or parking conditions. The trails outlined in the Trails Plan for the Tennessee Hollow area would not be implemented, the Morton Street Field parking area would remain informal, and capacity of the lot would remain at approximately 20 vehicles. During games when parking demand is highest, motorists currently park in this informal lot as well as along the edge of Morton Street. This condition would continue under the No Action Alternative. The current parking configuration along West Pacific Avenue impedes safe pedestrian connection between the parking area and the playground, and safety in the area is further compromised by the volume of pass-through traffic on West Pacific Avenue.

Consequences Shared by Both Project Alternatives (El Polín Springs/Loop Area)

Alternatives 1 and 2 propose the same enhancements for the El Polín Springs area and thus the temporary construction effects and permanent roadway changes would be identical for both alternatives.

Temporary (Construction) Effects

Both project alternatives propose the same site enhancements around El Polín Loop. These activities would generate truck trips to and from the area over a period of several months. Vegetation removal and replanting would be adaptively managed and implemented in phases over a period of several years at this site. For the purposes of this analysis, it is assumed that habitat restoration would be completed in two major phases. Each phase would take several months to complete. The greatest amount of truck traffic would be generated during initial tree removal activities, which are anticipated to generate an average of 60 to 80 daily one-way truck trips over a period of 3 to 4 weeks. These activities would translate into an average of approximately four one-way truck trips per day. The small increase in traffic on Presidio streets would have a minimal effect on the flow of traffic on these roadways. Access to and from the site during each phase of construction would be determined at the time of construction through the preparation of the required Construction Traffic Management Plan (CTMP) and consultation with Presidio Trust Transportation staff, as described in Section 4.8.3.

Long-Term Effects

Permanent changes in the El Polín Springs area include closing the Loop roadway (southern terminus of MacArthur Avenue) to vehicular traffic. The roadway would be converted to a multi-use trail beyond the new restrooms and visitor parking area (Figure 3.2). Fire truck access would be provided by a granular roadway circumventing the new restroom building. Permanent closure of El Polín Loop would require some physical

changes to MacArthur Avenue to allow vehicles to turn around at the end of MacArthur Avenue; however these circulation changes would not significantly affect traffic volumes on MacArthur Avenue such that levels of service at key intersections would change from what was cited in PTMP EIS.

The elimination of traffic from El Polín Loop and the area beyond the restrooms would require the removal of 26 parking spaces around El Polín Loop. The removal/reuse of Building 860 on MacArthur Avenue as a public restroom would reduce parking demand in this area by an estimated 8 spaces. The project would replace the remaining 18 parking spaces along MacArthur Avenue (between Buildings 857 and 859) and in a new lot near the proposed restroom. The existing parking lot near Paul Goode Field, accessible by trail from the Loop, will continue to serve as overflow parking. Organized groups that visit the area would be asked to park in this lot. Trail enhancements would be constructed as identified in the adopted Trails Plan.

Alternative 1

Temporary (Construction) Effects

Alternative 1 would require temporary closure and diversions along Morton Street to allow for the construction of a new culvert where the creek crosses the roadway. During construction activities, access to the Sanches Street and Liggett Avenue neighborhoods would be limited to Liggett Avenue via Presidio Boulevard. Access to the MacArthur Avenue and Quarry Road neighborhoods would be limited to MacArthur Avenue via Presidio Boulevard. This temporary closure would last for several months.

The majority of construction truck traffic would be generated during the removal of fill materials under Morton Street Field and nearby tree/vegetation removal. Approximately 40,000 cubic yards of fill material would be removed from the Morton Street Field site; about half of the fill is expected to be reused on site, the other half would be hauled off-site for disposal. The additional truck traffic beyond the immediate project area would occur over a period of four to six weeks and travel through several key intersections to access U.S. 101 or Highway 1. Based on this four- to six-week duration of off-haul activity, there would be approximately 80 to 120 daily one-way truck trips (40 to 60 round trips) to and from the area during this period. These 80 to 120 one-way truck trips would travel through a few key intersections, including the Presidio/Letterman/Lincoln intersection. The vehicles would be distributed throughout the day, with an average of 8 to 12 one-way vehicles per hour. This volume of additional truck traffic would not significantly affect the average vehicle delay at this intersection during the peak commute hours when the intersection is most congested. The remaining 20,000 CY of fill would be transported for reuse at Fill Site 1, which is located roughly 3,000 feet southwest of Morton Street Field. Hauling would likely be done with excavation equipment primarily off-road, and therefore would not substantially affect the operation of any key intersection.

Proposed tree and vegetation removal would require heavy equipment and trucks. Some felled trees and vegetation would be transported from the site to the Presidio's Compost Yard on the western side of the park, but the majority of the material would be disposed of outside the Presidio. Removal activities would likely take 3 to 4 weeks and involve 60 to 80 one-way truck trips for an average of approximately four one-way truck trips per day.

Construction would occur during daylight hours, and comply with the San Francisco Noise Ordinance. It is assumed that approximately 15 workers would be required on site (excluding truck drivers hauling or off-hauling soil from outside the park). It is assumed that an average of 28 employee daily one-way vehicle trips would be needed for excavation, restoration, demolition, and construction activities. It is assumed that construction workers would either park on site, at Fill Site 1 or in the parking area north of Presidio Boulevard and west of Lincoln Boulevard (the "dustbowl"). These areas provide a total of approximately 75 to 100 spaces, which would be more than adequate to meet the project needs. Replanting and initial maintenance activities would occur over several years and would be done primarily by volunteers in groups of 10 to 40. Volunteers would likely meet at a centralized location and travel to the site via van and/or carpools. Therefore, traffic and parking associated with replanting and maintenance activities would be minimal.

A CTMP, as required by Mitigation Measure TR-26, would be prepared and implemented under Alternative 1. The required CTMP would specify haul routes to minimize impacts on residential neighborhoods and ensure that clear detour and advance notification signage is provided. No significant impacts would occur.

Long-Term Effects

Beyond the El Polín Loop modifications, Alternative 1 includes one other permanent change to the roadway network. Near Pop Hicks Field, Barnard Avenue would be converted to a multi-use trail, and the access to the relocated parking area would be made from Quarry Road. The relocation of the parking lot would result in slightly more traffic on Quarry Road and MacArthur Avenue, but would have a negligible effect on traffic conditions beyond the immediate area.

The removal of one building would result in a slight reduction in the traffic in the immediate area on a permanent basis. The removal of Morton Street Field and the provision of a Little League field at Fill Site 1 would slightly reduce traffic near the Liggett Avenue and Sanches Street neighborhoods, and would slightly increase traffic in the Portola neighborhood; however the effect on key intersections would be negligible.

The new 72-space parking area near Paul Goode Field and the new Little League field would serve Paul Goode Field, the new Little League field, overflow parking for El Polín Loop, and a small amount of trailhead parking. The combined demand for these facilities is approximately 65 spaces. A small amount of surplus parking (5 percent to 10 percent) is typically provided to avoid motorists circulating to find parking spaces during momentary periods of peak demand. Neither Paul Goode Field nor the adjacent Little League field will use night lighting and thus playtime will continue to be restricted to daylight hours. The Trust will require (as is currently the case) that all field users participate in the Trust's Transportation Demand Management (TDM) program.

As a part of Alternative 1, a new pedestrian trail would be constructed along the Eastern Tributary as identified in the adopted Trails Plan.

Alternative 2 (Trust Preferred)

Temporary (Construction) Effects

Construction effects would be similar to those described under Alternative 1, with the following exception. Under Alternative 2, one additional building would be removed and all of the fill materials at the Morton Street Field site (approximately 40,000 cubic yards) would be hauled off site for disposal. Because of this, Alternative 2 would generate approximately twice the number of total truck trips outside the immediate project area compared to Alternative 1. The number of daily truck trips would be similar to Alternative 1, but the duration of off-haul activities would be approximately twice as long. The truck traffic would occur over a period of two to three months and travel through several key intersections to access U.S. 101. Based on this two- to three-month duration of off-haul activity, there would be approximately 70 to 110 daily one-way truck trips (35 to 55 round trips) to and from the area during this period. As described under Alternative 1, this incremental increase would be spread over the course of a day and would not significantly affect nearby intersections. A CTMP would be required to minimize potential parking and traffic impacts associated with construction. No significant impacts would occur.

Long-Term Effects

Alternatives 1 and 2 would have similar long-term effects, with the following exceptions. With the relocation of Morton Street Field to Julius Kahn under Alternative 2, the parking demand near Julius Kahn Playground would increase slightly, while vehicle traffic in the Portola Street, Sanches Street and Liggett Avenue neighborhoods would decrease slightly. Many of the current field users come to the Presidio from the surrounding neighborhoods, and the location at Julius Kahn Playground would make pedestrian and bicycle access to the field somewhat easier for this group.

Given existing parking conditions at Julius Kahn Playground, Alternative 2 proposes a new off-street parking area to accommodate the combined demand generated by the existing playground and the proposed upgrades at the playing field (approximately 110 spaces). The lot would be located within the forest immediately west of the tennis courts (Figure 4.8-1), and would replace the informal parking that currently occurs on the south side of West Pacific Avenue. The parking lot would substantially enhance pedestrian safety and convenience in this area.

In conjunction with the parking lot, a circulation variant of Alternative 2 is also analyzed in this EA. The variant proposes the closure of West Pacific Avenue to vehicular traffic between the entrance to the lot and the overlook near Presidio Boulevard. This segment of West Pacific Avenue would be converted to a multi-use trail (see Figure 4.8-1).

Observations in the summer of 2004 indicate that the hourly pass-through traffic on West Pacific Avenue is approximately 100 to 140 vehicles per hour in the mid-afternoon to late afternoon hours, with about 40 percent traveling eastbound and about 60 percent traveling westbound. If a section of West Pacific Avenue was closed to vehicles, the pass-through traffic would likely shift to a variety of other routes, including other Presidio roadways (e.g., through the Main Post), and other city arterial streets such as California and Sacramento Streets. Because the pass-through traffic would likely be distributed across several other routes, the additional traffic would not significantly affect the operation of any key intersection.

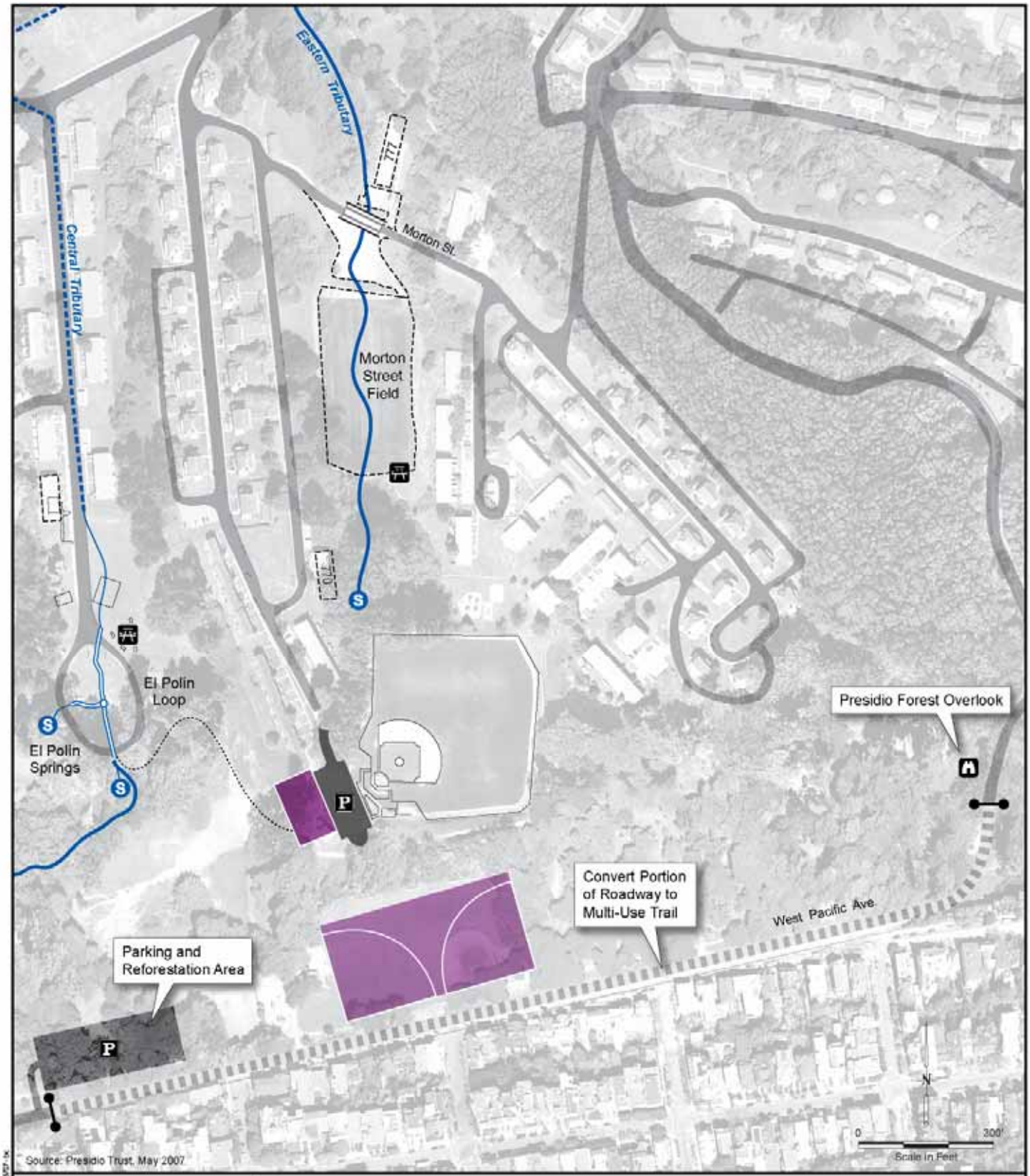

Figure 4.8-1
Alternative 2 - Circulation Variant

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Under this circulation variant, all Julius Kahn Playground visitors arriving by car would use Arguello Boulevard to access the new parking lot. This would reduce traffic on Presidio Boulevard, and slightly increase traffic on Arguello Boulevard. This increase would likely be most noticeable at the Arguello/Jackson intersection. Signalization of this intersection was identified as a future mitigation measure in the PTMP EIS to address cumulative Presidio growth as well as predicted Bay Area regional growth. The closure of West Pacific to pass-through traffic alone would not trigger the need to signalize this intersection. As required by the PTMP EIS, the Trust will continue to periodically conduct traffic counts at PTMP study intersections and assess intersection levels of service. If and when the level of service at this intersection degrades to an unacceptable level, the Trust will coordinate with the City and County of San Francisco to implement the signal or an alternative mitigation measure.

One additional permanent roadway network change is proposed under Alternative 2. Morton Street would be converted to a multi-use trail. As a result, vehicular access to the Sanches Street and Liggett Avenue neighborhoods would be permanently limited to Liggett Avenue via Presidio Boulevard. (Note: In May 2007, intersection improvements at Liggett Avenue and Presidio Boulevard improved the safety and access to these neighborhoods.) Access to the MacArthur Avenue and Quarry Road neighborhoods would be permanently limited to MacArthur Avenue via Presidio Boulevard. These closures would result in some traffic circulation changes; however, the changes would be minor and would not significantly change levels of service at key intersections from what was cited in PTMP. Consistent with the Trails Plan, a new pedestrian trail would be constructed along the restored creek.

Other long-term changes that would occur under Alternative 2 include the removal of an additional building which would have a slight permanent reduction in the traffic in the immediate residential area. Under Alternative 2, a practice field would be constructed adjacent to Paul Goode Field at Fill Site 1. The field would generate fewer trips and have lower parking demands than the Little League field proposed under Alternative 1. During peak use (i.e., in the event of a formal game at Paul Goode Field and use of the practice field), the maximum estimated parking demand would be approximately 45 vehicles. Parking demand for both fields, as well as trailhead parking and any overflow from El Polín would be adequately met by a proposed new 50-space parking lot in this location. If future demand is greater than anticipated, the Trust may reduce peak period demand by requiring more intensive Transportation Demand Management (TDM) measures.

Conclusion: *Construction of both project alternatives would generate truck and employee vehicle trips and require temporary road closures and detours. The extent and duration of these effects vary between Alternatives 1 and 2, but the overall impact would be less than significant under either alternative.*

Over the long term, potential impacts on the transportation and circulation system would be less than significant. The development of new pedestrian trails would increase and improve access and is considered a beneficial impact.

4.8.3 Mitigation Measures

The following mitigation measures specified in the PTMP would apply to both alternatives. See Table A-1, Appendix A for additional detail. No additional mitigation is necessary or recommended.

TR-22 – TDM Program Monitoring
TR-26 – Construction Traffic Management Plan

4.8.4 Cumulative Impacts

Other planned projects, such as rehabilitation of the Main Parade Ground, remediation of fill and landfill sites, renovation of buildings, the planned seismic retrofit of Doyle Drive, and various vegetation management activities, would generate construction traffic. Depending on the site, construction may require temporary detours of traffic and temporary parking restrictions. These projects would occur at different times and at different locations over the next 20 years. All such construction activities were considered in the PTMP EIS analysis and would be subject to PTMP's requirement to prepare and implement a Construction Traffic Management Plan. All CTMPs will be reviewed and approved by the Trust to ensure coordinated and comprehensive management of the Presidio-based activities.

The cumulative "projects" within closest proximity to the project area are three remediation sites – Fill Site 1, Landfill 2 and Landfill E. Fill Site 1 is located at the southern end of Portola Street and underlies a portion of the project site. Landfill 2 is approximately 500 feet to the west of Fill Site 1, above El Polín Loop. Landfill E is located between Barnard and Quarry Roads, along the Western Tributary of the creek system. All sites are slated for cleanup in 2011 or 2012. The proposed remedy for the Fill Site 1 and Landfill 2 sites would involve the excavation and off-site disposal of fill materials. The proposed remedy for Landfill E would involve the import of material for a cap. Detailed information regarding haul routes for the remediation construction activities is not currently known. Assumptions regarding the potential construction duration, phasing, and probable number of truck trips were incorporated into this analysis. These assumptions are based on the best available information and may change during the environmental review process associated with each remediation project.

Fill Site 1, Landfill 2 and Landfill E remediation activities are all expected to take approximately 3 months to complete. In total, remediation activities at these three sites in the watershed are expected to require 9 months to complete and would be implemented during 2011 or 2012. The most intensive truck trips would occur during hauling activities. Hauling for each of these projects is expected to last 7 to 12 weeks at each site.

Hauling activities for Fill Site 1 and Landfill 2 would likely occur consecutively and would last approximately 18 to 22 weeks. With either Fill Site 1 or Landfill 2, the localized truck traffic is expected to be an average of 100 one-way truck trips per day (50 round trips). Although other portions of the proposed project may coincide with the Fill Site 1 project, it is unlikely that the haul activities for the proposed project would coincide with haul activities for Fill Site 1. The intersection of Presidio/Letterman/Lincoln would be most affected by the truck trips, and has the capacity to accommodate this number of truck trips with only a minimal increase in delay. The daily schedule of the hauling activities is such that truck trips would likely affect the a.m. peak commute hour, but not the p.m. peak commute hour. Hauling would not typically occur on weekends. In the a.m. peak commute hour, the intersection was determined to operate with an average delay of 11.1 seconds per vehicle in October 2005.

The addition of 10 one-way truck trips per hour and the anticipated growth in background traffic volumes over the next few years would increase the average delay by less than two seconds per vehicle. Beyond this

intersection, truck trips would be distributed widely across the roadway network (Lincoln Boulevard, Halleck Street, Lombard Street), and the effect in areas beyond this intersection would diminish accordingly. This temporary increase in truck traffic would increase congestion on Presidio arterial roadways and intersections, but because of the short duration of cumulative haul activities, the increased congestion would be less than significant. The haul activities associated with the proposed project would be coordinated with the Trust Remediation and Public Affairs Departments to ensure scheduling (both dates and hours) of haul activities to minimize disturbance to residents, as well as appropriate notification.

Chapter 5. Consultation and Coordination

Consistent with the spirit and intent of the National Environmental Policy Act (NEPA), the Trust encouraged public participation early in the planning and environmental review process. Public input has played a significant role in shaping the alternatives and scope of this EA, and will continue to be important to the decision-making process for Tennessee Hollow. A summary of the public input received to date, as well as consultation and relevant permitting requirements of the project are provided in this section.

5.1 PUBLIC SCOPING

The Trust began seeking public input regarding this project in November 2002. This was initially achieved using a two-step process. The first step was to solicit early public input into the formation of draft project alternatives, project goal statements, and the scope of the environmental analysis. This input was used to draft the "Tennessee Hollow Watershed Project Scoping Materials" – a document that presented a range of alternatives and the proposed scope for the environmental analysis. The Scoping Materials package was then circulated for a second round of public review and comment. In total, nearly 450 comment letters were received by the Trust during this process. Copies of these letters are maintained in the Trust Library (34 Graham Street, Presidio).

One of the major issues that surfaced during both scoping comment periods was concern about the treatment and disposition of the Presidio's playing fields. Views ranged from opposition to any field removal to recommendations that all fields in the watershed be removed. As the public discourse continued, the division in the community grew and the public expressed concern about the long-term disposition of all Presidio fields. The Trust subsequently placed this project on hold so that this issue could be addressed (see Section 5.1.3).

5.1.1 Initial Scoping Comments

The Trust initiated scoping through an announcement of a November 20, 2002 public workshop in the Presidio Post newsletter (which has a circulation of approximately 12,000) and by a direct public mailing. The direct mailing was sent to approximately 300 agencies, groups, and individuals who had previously expressed interest in Presidio planning projects and/or specifically in Tennessee Hollow. Approximately 75 people attended the workshop. At the workshop, the project team presented an overview of the watershed, draft project goals, key planning issues, and next steps for the planning and environmental review process. The group then broke into small group work sessions to further discuss and ask questions about the different areas of the watershed.

This workshop kicked off a 3-month initial comment period during which the Trust solicited written public input on the formation of project phasing priorities, refinement of project goals, and scope of the alternatives and environmental analysis. By the close of the comment period in early March 2003, the Trust had received

more than 170 comment letters. A summary of these initial scoping comments and how the Trust responded is provided below.

Comment Summary

Two government agencies provided initial scoping comments – the Golden Gate National Recreation Area (GGNRA) and the San Francisco County Transportation Authority (SFCTA). The GGNRA expressed support for the project, along with suggested changes to project goal statements, approach to phasing, and recommendations that restoration be maximized. These recommendations were incorporated into the July 2003 scoping materials package. The SFCTA requested that the EA evaluate cumulative effects of the Doyle Drive and Tennessee Hollow projects, and that close coordination with the Doyle Drive project team be provided. Since that time, the Trust has worked in coordination with the Doyle Drive project team, and designs for area of creek underlying the highway are currently underway. These designs will be incorporated into ongoing highway design to ensure that provisions are made to accommodate a connection between Tennessee Hollow and Crissy Field Marsh.

Eighteen organizations submitted comments, including the San Francisco Little League (SFLL), local neighborhood organizations, a group of Presidio restoration volunteers, the Fort Point and Presidio Historical Association, the California Heritage Council, and two local environmental groups (Urban Watershed Project and Wild in the City). In addition, a joint letter was submitted by several environmental groups – the Alliance for a Clean Waterfront, Clean Water Action, Golden Gate Audubon Society, Natural Resources Defense Council, San Francisco League of Conservation Voters, San Francisco Tomorrow, and the Sierra Club.

Comments from SFLL advocated playing field retention/replacement and expressed strong support for reuse of Pop Hicks Field for active play. Consistent with the PTMP, Pop Hicks Field is designated to be returned to active use, contingent upon remediation of the underlying landfill. Predominant themes raised in comments from the neighborhood organizations included preferences both for and against tree removal, requests to extend the original January 24 public comment deadline, financial and other general concerns, and detailed questions about the project. In response to comments, the Trust extended the January 24 comment deadline and accepted comments until March 2003. Most of the other issues raised related to the environmental analysis and scope of project and are addressed in this EA. The restoration volunteers and environmental stakeholders expressed general support for the project, and provided specific comments and suggestions for alternatives emphasizing ecological restoration wherever possible. The Trust attempted to incorporate these concepts, as well as those suggested by other commentors, into the development of the alternatives presented in this EA.

Comments from the historic preservation community stated overall concern regarding cultural resource effects on the National Historic Landmark (NHL) District status, prioritizing Trust funds to the project before historic buildings in need of immediate maintenance are stabilized, and questions about the use of the term “restoration” as defined in the Secretary of the Interior’s Standards. The project’s potential effect on the NHL District is considered in this EA, and will be thoroughly analyzed through the National Historic Preservation Act (NHPA) compliance process required for the project. With respect to funding and implementation, the full restoration of Tennessee Hollow as envisioned in the PTMP and VMP will be implemented in phases over many years. Implementation will be contingent upon availability of

philanthropic or other outside funding. The term "restoration" has different definitions for different disciplines. When used in the context of ecology, it refers to ecological health rather than restoration to a specific time or period in history as defined in the Secretary's Standards. The EA attempts to clarify this wherever possible. The historic preservation commentors also requested additional information regarding the historic resources and the cultural landscape, including the preparation of a Cultural Landscape Report (CLR). Sections 4.1 and 4.2 respond to these requests, as do various technical reports prepared in support of this EA including the *Tennessee Hollow Cultural Landscape Report 1895-1945* (see Chapter 6).

The letter from the consortium of environmental groups was generally supportive of the project, acknowledging that it will require a long-term implementation strategy. A conceptual phasing strategy, showing the relative priority of types of actions to others, was proposed. The consortium also provided comments on the draft project goals and made a few recommendations for alternatives that were considered and incorporated in the *Tennessee Hollow Watershed Project – Scoping Materials* (July 2003) document.

Nearly 160 individuals provided comments (emails, letters, and comment cards). More than 100 of these were emails submitted in conjunction with the San Francisco Little League letter expressing support for continued use of playing fields and/or strong support for replacement if fields are to be removed as part of this project. These comments were further vetted through the playing fields planning process (see Section 5.1.3).

The majority of the remaining letters from individuals expressed general support for this project, advocating full restoration of the creek corridor, removal of infrastructure including roads or replacement with bridges where possible, and other specific recommendations for project components. Several individuals raised concerns regarding the financial feasibility of the project, and one individual requested that a detailed financial analysis be included. The alternatives presented in the EA incorporate many of the suggestions made by commentors. With respect to detailed cost estimates, this information will not be available until more is known about the design of the project. At this time, it is estimated that the improvements identified in this EA may cost upwards of $12 million. As previously stated, implementation of the proposed project in the near term is contingent upon the availability of outside funding.

5.1.2 Subsequent Scoping Comments (July 2003–November 2003)

Public input obtained between November 2002 and March 2003 helped inform the preparation of the *Tennessee Hollow Watershed Project – Scoping Materials* document. This document presented the refined project goal statements, a range of draft project alternatives, and a proposed scope for the environmental analysis. The Scoping Materials document was released in July 2003 for additional public review and comment. The Trust also hosted a "Tennessee Hollow Watershed Day" event on July 25, 2003, which was announced in the *San Francisco Chronicle*. Approximately 150 people attended the event, which included guided hikes and tours of the archaeological investigation site, discussion of the project alternatives and environmental issues and gave the public opportunities to explore the site and ask questions.

The scoping package's availability as well as another public meeting was announced through a notice in the Presidio Post newsletter and through direct project mailing. During this same time, the Trust solicited written comments on the Scoping Materials document from the other agencies and the public. The comment period was initially scheduled to close in early September, but based on public requests, was extended until

the end of October 2003. By November 2003, the Trust had received an additional 270 comment letters. These letters were reviewed by the Trust, and were used to refine the project alternatives and scope of the environmental analysis as summarized below.

Project Goals – A few letters focused on the project goals – some suggesting that recreation should outweigh natural resources, others recommending that natural and cultural resources should outweigh recreational values. Some refinement of the goal statements were made in response to these comments and subsequent public input (Section 5.1.3). The suggestion that individual resource values be given precedence over the protection of others, however, was not followed, as it conflicts with the Trust's adopted plans and policies.

No Action Alternative – This issue received substantial attention from a diverse group of stakeholders, ranging from the environmental community to historic preservation groups to neighborhood organizations to the National Park Service. The overwhelming majority of those who commented on this topic recommended that the Trust revise the alternative to more clearly reflect "no project" conditions. The Council on Environmental Quality's NEPA guidelines provide agencies with two different approaches to defining "no action" – one which uses a true "no project" scenario (i.e., the status quo), while the other directs agencies to define no action as what would reasonably be expected to occur under existing (adopted) plans – that is what would occur if the current planning effort does not go forward. The Trust initially used the latter approach tiering from PTMP and referencing relevant plans to help define the "no action" alternative. Based on public scoping comments, however, a new no action alternative has been developed using the former approach. The revised No Action Alternative serves as the basis for comparison of the project alternatives evaluated in this EA. Please refer to Chapter 3 for a full description of the alternatives.

Scope of Project – Several commentors expressed confusion and/or concern about the scope of the project. The scope of the project and EA has been refined to address only those activities that Trust proposes to implement in the next five years and for which additional environmental review was determined by the Trust to be warranted. To further clarify the scope of the project, a "project area" has been delineated on all EA maps. As requested, a phasing diagram (Figure 1.3) has also been included to illustrate the anticipated sequencing for other activities in the watershed.

Specific Comments on Alternatives – The majority of commentors who expressed a preference for a particular alternative supported former "Alternative 2" which relocated Morton Street Field away from the creek corridor and maximized opportunities for habitat restoration. (Former Alternative 2 is most closely aligned with current Alternative 2.) The group commenting favorably on former Alternative 2 included park neighborhoods and members of the environmental community. General themes expressed included support for full replacement of Morton Street Field, preferences for use of bridges rather than culverts for creek/street crossings, and suggestions to further maximize ecological values in other areas of the watershed – beyond the scope of the project area evaluated in this EA.

The NPS Cultural Resource Management Group expressed concerns about the potential impact individual components of Alternative 2 could have on historic resources, many of which were focused on the treatment of roadways including those outside the current scope of the project. These comments were incorporated into and addressed in Section 4.2, Cultural Landscape, as well as into the revision of project alternatives.

Range of Alternatives – A few commentors expressed concern that the range of alternatives was "too narrow," primarily referencing criticisms that the "no action" alternative was too similar to the action alternatives. As previously described, the No Action Alternative was redefined to reflect true "no project" conditions; providing substantially greater contrast among alternatives. Some commentors suggested using a more aggressive approach towards achieving a specific project goal. For example, some suggested that an alternative should be developed which removes all non-historic housing (and associated roadways) and all playing fields in the watershed. Others suggest that a new "recreation only" alternative that maximizes active recreation throughout the watershed, regardless of proximity to the creek, be included in the EA. While some of the individual components suggested by commentors were incorporated into the project alternatives, on the whole these alternatives conflict with the policy guidance provided in the Trust's adopted governing plans. (See Section 3.4 for a discussion of alternatives previously considered.)

General Suggestions – There was overwhelming support for ensuring that interpretation is a fundamental part of any future alternative for Tennessee Hollow. Recommended themes included the "history of water" (a way to tell the story of Tennessee Hollow and the establishment of the Presidio and City of San Francisco), Native American use of the area, cultural landscapes, Spanish/Colonial era inhabitants as told through archaeological discoveries, and use of the watershed as an "outdoor classroom" for children to learn about watershed ecology. One group suggested that interpretation be used as a tool to communicate with the public throughout the implementation of the project – recommending that the Trust use preconstruction signage as a way to educate and notify the public about upcoming construction activities, and explain the purpose and need for the project. Education and interpretation has been a focal point in the vision for Tennessee Hollow since project inception. Public input has, and will continue to play an important role in shaping the emphasis of these programs. Refer to Chapters 2 and 3 for more specific information on this subject. As suggested by the public, the Trust will use preconstruction signage to enhance public understanding of the project, as well incorporate a diversity of opportunities for public engagement (i.e., guided hiking tours, stewardship activities, etc.).

YMCA – A few commentors, including NAPP, expressed concern regarding potential removal of the YMCA noting that replacement should be guaranteed, not subject to funding availability, and should not be removed until a replacement is constructed. The YMCA site is beyond the scope of the current project. These comments are noted and will be incorporated into future planning for this area.

Creek Access – Several commentors, primarily neighborhood groups, requested that direct public access to the creek be provided. The Coalition of Environmental Groups letter stated that while it supports "reasonable trail access and recreational opportunities," that such activities must be sited and managed to not impact overall restoration goals. Other commentors expressed opposition to direct access and urged the Trust to maximize buffer areas to keep people and pets away from the creek. Both of the project alternatives include trails, bridges, boardwalks, and other facilities to encourage public use and enjoyment, while protecting the character and resources of the area. These facilities would be designed and implemented in a manner consistent with the adopted *Presidio Trails and Bikeways Master Plan* and standard best management practices used at the Presidio.

Marsh Confluence – The NPS suggested that the Trust should consider removal of Marshall Street; others recommended that habitat opportunities be maximized in this area. The Coalition of Environmental Groups

expressed concerns regarding the Doyle Drive project and its impacts on successful linkage to the marsh and encouraged the Trust to actively engage to ensure this important connection is not precluded in the future. The Trust agrees and has, and will continue to, actively engage with the Doyle Drive project team to ensure that this issue is thoughtfully considered.

Tree Removal – Several neighborhood groups requested more detail on the proposed removal of trees. Some expressed interest in preserving certain species or stands of mature trees (i.e., the stand of redwoods, the eucalyptus stand above Pop Hicks Field, and "conifers" in the "northwest quadrant"); others, including the Coalition of Environmental Groups, encouraged the Trust to convert non-native tree stands to native species wherever possible, and recommended a phased approach to minimize interim habitat loss/disruption. Most of the site-specific tree removal concerns were addressed by delineating and clarifying the physical boundaries of the project. Suggested phasing was incorporated into the project mitigation (see Section 4.4).

Microclimate/Wind – At least one commentor expressed concern regarding potential impact of tree removal on local climate and wind conditions. In response, an analysis of these potential effects was included in Section 4.6.

Defining Habitat – The NPS directly, and some environmental groups indirectly, requested additional information on the type and extent of habitat that would be created under each of the alternatives. Section 4.4 includes the requested information.

Cumulative Effects – Several commentors requested that the EA evaluate the cumulative effects of the project, and in particular requested that the EA present the total volume of fill proposed for removal/disposal and corresponding truck trips. A discussion of cumulative effects is provided at the end of each impact analysis section in Chapter 4. Construction traffic is analyzed in Section 4.8.

Housing Removal – Various commentors raised questions or expressed concerns regarding the indirect effects of non-historic housing removal, specifically related to: (1) financial impacts of lost revenue, and (2) impacts of replacement (new construction) on historic resources. Others requested that the Trust defer housing removal until after 2013 and/or after the Trust meets its financial self-sufficiency mandate. In the "Scoping Materials Package" distributed in July 2003, the Trust indicated that removal of the 66 units of non-historic housing identified in the PTMP "…would be implemented in phases and would be done only when financially feasible." The proposed project contemplates the removal of up to three non-historic structures. Most of the potential housing removal, however, would be deferred until the final phases of watershed restoration which is beyond the scope of this EA (see Section 1.3).

Playing Fields – This issue received the greatest volume of comment letters during both scoping comment periods. During this second round of comments more than 200 of the 270 letters received addressed this topic. The vast majority were form letters initiated by youth recreation leagues. While strong support for preserving or increasing playing fields drew the most letters, there were, as is typical for Presidio projects, dissenting opinions. The primary themes raised overall are summarized below:

- While many opposed the removal of Morton Street Field, some suggested that replacement of the field prior to its removal would address their concerns.

- Some stressed the important role of organized sports in the development of children, noting the lack of other facilities in San Francisco and requested more specificity about the long-term disposition of Presidio fields – including their expansion and improvement.

- There was general support to return Pop Hicks Field to active play as soon as possible. The Urban Watershed Project suggested that Pop Hicks Field could be converted to a less formal recreational space; others suggested tennis courts as a preferred use.

- Dissenting views included requests that the Morton Field not be replaced within the Presidio, some encouraged the Trust to consider the removal of Paul Goode Field, and some requested that the Trust remove all playing fields in the Presidio, stating that they did not believe it was an appropriate use for a national park site.

5.1.3 Playing Fields Planning Process

Community concern regarding the future disposition of the Presidio's playing fields has been growing in recent years, exacerbated by increasing demand and a shortage of fields in the city. While PTMP makes a commitment to maintain and enhance active recreation, it also states that some fields may be considered for removal or replacement to satisfy other park objectives. The project's proposed removal/relocation of Morton Field brought this issue to a head during scoping and created substantial division among various stakeholders.

The Trust hopes that the Tennessee Hollow project will enjoy broad community support. Realizing that this will not be possible until the community's playing field concerns are addressed, the Trust placed the project on hold and launched a public planning effort dedicated to this issue. Between September 2006 and April 2007, the Trust engaged more than 400 people through a series of public workshops and a site tour. The overarching objective was to reach public consensus regarding the preferred location, type, and distribution of fields in the Presidio. Through this process, various playing field design concepts were developed and refined, and by April 2007 substantial progress had been made. Consensus was reached on many key issues, including broad public agreement that Morton Street Field should be removed to daylight the underlying creek as long as a replacement field of comparable size is made available before the field is demolished. This consensus point was incorporated into this EA; it is reflected in the project goal statements and was a key factor in shaping the project alternatives evaluated in this EA.

Although consensus was reached on many key issues, there remains one primary area of dissent – Pop Hicks Field. The long-term disposition of Pop Hicks Field has been the ongoing subject of public debate for more than a decade. This issue has been addressed in several prior public planning efforts, first by the National Park Service and later by the Presidio Trust [Presidio GMPA (NPS, 1994), Presidio VMP (NPS and Trust, 2001), and PTMP (Trust, 2002a)]. All of these planning efforts have ended with the same conclusion: Pop Hicks Field will be restored to active play after the remediation of Landfill E. The project alternatives included in this EA propose site improvements to accommodate active recreation as well as habitat enhancements (see Chapter 3).

Underlying, and perhaps at the very heart of the public debate regarding Pop Hicks Field, appears to be the proposed remediation treatment of Landfill E, rather than its long-term use as a playing field. The remediation strategy has been the subject of substantial review, scientific analysis, monitoring, regulatory

oversight, and public input. If you are interested in learning more about the Presidio Environmental Remediation Program or specifically the remediation plans for Landfill E, please visit the Trust Library. For a complete description of the playing field planning process, as well as a summary of public input received, please refer to http://www.presidio.gov/trust/projects/fields.htm.

5.2 PERMITTING & CONSULTATION

5.2.1 NHPA Consultation

The entire Presidio is designated as a National Historic Landmark District on the National Register of Historic Places. Compliance with the National Historic Preservation Act (NHPA) is of central importance to any project that could affect the District.

Consistent with the regulations implementing the NHPA (Title 36 of the Code of Federal Regulations, as amended), the Presidio Trust consulted with the Advisory Council on Historic Preservation (ACHP), the California State Historic Preservation Officer (SHPO), and the NPS, and has executed a Programmatic Agreement (PA). The PA establishes procedures by which the Trust satisfies its responsibilities under the NHPA for Area B[12] of the Presidio, including those associated with the proposed undertakings.

Consistent with the PA, the Trust initiated consultation early in the planning process (e.g., during public scoping). Comments received from PA parties on the scoping materials indicated a concern over possible "segmentation" of the watershed project. The public scoping period for the Fill Site 6A remediation and re-vegetation project was announced during the scoping period for the larger watershed project. As a result, a consultation meeting was held during which the PA parties agreed on the phased implementation and APE for the entire watershed project. Furthermore, the PA parties agreed that the consultation would continue for the Fill Site 6A project and that future implementation of other phases in the watershed would be reviewed through separate consultations. Effects from future implementation phases are to be measured against the watershed APE and the Presidio NHL District as a whole.

In conformance with the Stipulations of the PA, the PA parties will receive copies of this EA for their review and comment. A consultation meeting will be held with SHPO, ACHP, and NPS after the close of the comment period. The National Trust for Historic Preservation and the Fort Point and Presidio Historical Society will be invited to submit written comment to be considered in the consultation meeting. The Trust will take into consideration the comments from all PA parties and will either revise the EA and draft Finding of No Significant Impact (FONSI) to reflect these comments or will follow the process established in the PA for notifying parties about why their comments were not incorporated. When all PA processes have been completed, the Trust will sign the final FONSI, which will conclude the Section 106 consultation.

5.2.2 U.S. Army Corps of Engineers

On June 12, 2007, the Presidio Trust sent a letter to the U.S. Army Corps of Engineers (USACE) notifying them of the proposed project and potential impacts to jurisdictional wetlands. On July 16, 2007, Trust staff

discussed the project by phone with USACE staff; USACE staff indicated that a site-specific 404 permit would not be required for the project and that the Trust should submit a permit application for a Nationwide 27 permit (restoration projects). The Trust is currently preparing the application for submittal to USACE. The USACE will review the application and notify the Trust by letter following completion of its review. The application is expected to be approved.

5.2.3 Regional Water Quality Control Board

The Trust has consulted, and will continue to consult with the RWQCB as design for creek proceeds. As part of the 404 permit process, the RWQCB will also participate via the associated the 401 certification.

5.3 OTHER TRUST PROCEDURES

Both project alternatives propose to convert individual sections of Presidio roadways into multi-use trails in order to improve public safety and/or enhance resource values. Such activities would be subject to the procedures outlined in Presidio Trust regulations, 36 CFR § 1001.5, which require a written determination by the Presidio Trust Board of Directors and appropriate public notice.

5.4 OTHER AGENCY COORDINATION

The following agencies were notified of the project and invited to participate during project scoping comment. Refer to Section 5.1 for an overview of comments received. In addition, Trust staff consulted with representatives from various agencies during project planning, including the NPS and Doyle Drive team.

Federal Highways Administration
National Park Service, GGNRA
National Park Service, Regional Office
United States Army Corps of Engineers
United States Environmental Protection Agency
United States Fish and Wildlife Service
California Department of Fish and Game
California Department of Toxic Substances Control
California Department of Transportation
California Regional Water Quality Control Board
California State Clearinghouse
San Francisco Bay Conservation and Development Commission
San Francisco Bay Regional Water Quality Control Board
San Francisco County Transportation Authority

[12] The Presidio Trust is responsible for management of the non-coastal areas of the Presidio (roughly 80 percent of the park) which is referred to as "Area B." The NPS manages the coastal areas – "Area A." The proposed activities evaluated in this EA are entirely within Area B.

Chapter 6. References

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6.2 LIST OF PREPARERS & CONTRIBUTORS

Presidio Trust

Amy Marshall, Transportation Planner

Michael Lamb, Historic Landscape Architect

Liz Clevenger, Archaeologist

Mark Frey, Supervisory Ecologist

Becky Carpenter, Graphic Designer

Renee Schultz, Graphic Designer

Peter Ehrlich, Forester

Andrea Andersen, Assistant General Counsel

Craig Cooper, Presidio Remediation Program Manager

Ric Borjes, Federal Preservation Officer

Tia Lombardi, Director of Public Affairs

Michael Boland, Director of Park Projects

Terri Thomas, Director of Cultural and Natural Resources

Allison Stone, Presidio Trust Project Manager

Other

Sharon Farrell, Associate Director – Resource Conservation & Project Implementation, Golden Gate National Parks Conservancy

Consultants

Greg Kamman, P.E., Hydrologist, Kamman Hydrology & Engineering, Inc.

William Kanemoto, Principal, William Kanemoto & Associates

McBride, Joe R., Consulting Forest Ecologist

Brian Vahey, Word Processing

URS Corporation:
- Fritts Golden, Project Manager
- Keith Dewey, Planner
- Richard Shih, P.E., Air Quality Specialist
- Mark Hale, Archaeologist
- Jean Lewis, Technical Editor

Appendices

APPENDIX A

DRAFT FINDING OF NO SIGNIFICANT IMPACT

This draft Finding of No Significant Impact (FONSI) provides the basis for the Presidio Trust (Trust) to determine that the proposed Tennessee Hollow Upper Watershed Revitalization project, as analyzed in the attached environmental assessment (EA), will not have a significant impact on the quality of the human environment and does not require the preparation of an environmental impact statement (EIS). A description of the proposed action and its environmental consequences are contained in the EA, which is incorporated by reference into this FONSI.

PROPOSED ACTION

The proposed action will revitalize up to 28 acres within the upper reaches of the Tennessee Hollow Watershed in the Presidio of San Francisco, a National Historic Landmark District and national park site. Proposed enhancements include creek and habitat restoration, new trails, an interpretative garden, reorganization and rehabilitation of playing fields, picnic areas, and other visitor amenities such as a public restroom. A description of the proposed action is outlined in the Executive Summary.

BASIS FOR DECISION

Based upon the EA, the Trust determines that both project alternatives (Alternative 1 and Alternative 2) will not have direct, indirect, or cumulative significant impacts on the human environment. The analysis supporting this conclusion is presented in Chapter 4 of the EA. The following summarizes factors considered in this determination.

ARCHAEOLOGICAL RESOURCES:

Both project alternatives have the potential to disturb unknown archaeological resources and would be subject to the existing protocols and practices stipulated in the Programmatic Agreement to minimize or avoid potential adverse effects. Proposed interpretive enhancements would increase public awareness of the Presidio's archaeological resources and have a beneficial effect.

CULTURAL LANDSCAPE:

Neither alternative would have an adverse effect on the Area of Potential Effects or on the Presidio National Historic Landmark District as a whole. The proposed alterations to the El Polín Springs Loop area would have a beneficial effect on the cultural landscape. Selective tree removal south of the loop is likely to enhance and reveal the historic impoundment structure. At Pop Hicks Field, the creation of an open stream channel would be considered beneficial because it rehabilitates a topographical feature lost with the creation of the landfill. Alternative 2 proposes a small practice field and parking area west of Paul Goode Field, which requires less area than the proposed Little League field in Alternative 1, and therefore allows for a greater amount of rehabilitation of the historic topography and greater beneficial effects on the cultural landscape. Overall, both project

alternatives would have positive effects on the cultural landscape of the Tennessee Hollow Watershed

WATER RESOURCES:

Proposed activities at El Polín Springs include a reduction in impervious surface area, as well as excavation, re-grading, and revegetation efforts that optimize the existing hydrologic conditions and improve overall ecological processes. Both project alternatives relocate parking lots away from the creek and incorporate best management practices to improve drainage and water quality. The introduction of earthen surface channels, floodplains and wetlands would reduce the magnitude of storm runoff events, eliminate source pollutants, and enhance opportunities for sediment deposition and filtration. Following implementation of best management practices and mitigation measures, both alternatives would improve water quality and have lasting benefits on the Presidio's water resources.

BIOLOGICAL RESOURCES:

Both project alternatives would have long-term biological benefits; approximately 1,200 linear feet of creek would be enhanced or daylighted and more than 20 acres of native plant communities and wildlife habitat would be restored. Alternative 2 would restore an additional 1 acre of habitat, and provide greater habitat connectivity in key locations. In particular, the conversion of Morton Street to a multi-use trail and re-vegetation efforts at Fill Site 1 and the Eastern Tributary springs would provide noticeable additional benefits in comparison to Alternative 1.

VISUAL RESOURCES:

While short-term adverse visual impacts would be anticipated, both alternatives would open up vistas within the project area and revitalize areas that are currently in disrepair. Overall, the long-term visual benefits would be comparable under either alternative.

AIR QUALITY AND MICROCLIMATE:

There would be a temporary increase in fugitive dust and other emissions during construction of either project alternative. The impact would be less-than-significant. Tree removal may result in a slight increase in local wind velocities pending the maturation of replacement plantings. Given the existing wind conditions, however, the increase would be negligible. Once implemented, the project would not impact regional air quality as no stationary sources of air pollutants are part of the proposed action.

NOISE:

Predicted construction-related noise levels would be less-than-significant under both alternatives. Once operational, the proposed action would have no impact on existing noise levels.

TRANSPORTATION AND CIRCULATION:

During construction, both alternatives would increase traffic and require temporary detours. The impacts would be less-than-significant. Over the long-term, both alternatives would result in minor changes in local circulation patterns. The effect on traffic at surrounding intersections would be less-than-significant. Parking demand at new or upgraded playing fields would be accommodated on-site, and Alternative 2 would substantially enhance existing parking conditions and pedestrian safety at Julius Kahn Playground. New pedestrian trails would increase access and be considered a beneficial effect of both alternatives.

CUMULATIVE IMPACTS:

The incremental adverse effects associated with the construction of the project alternatives on archaeological resources, biological resources, air quality and microclimate, noise, and transportation and circulation are not expected to be significant. The incremental contribution of the proposed action to the cumulative effect on cultural landscape, water resources, and visual resources will be neutral or beneficial.

REASONS FOR REJECTION OF ALTERNATIVES

The Trust has considered the following factors in choosing not to select the no action alternative or Alternative 1.

NO ACTION: This alternative was not selected because it does not meet the stated purpose and need of the project. Maintaining the status quo within the project area would preclude the public use, habitat restoration, historic preservation and interpretation goals envisioned in PTMP. It would also preclude construction of the creek side Tennessee Hollow Trail – a major trail corridor identified in the adopted *Presidio Trails & Bikeways Master Plan.* Over time, invasive (non-native) plants would overtake the small pockets of remnant riparian habitat, lessening the ecological diversity of the Presidio. Opportunities for the public to interpret and explore the history of El Polín Springs and its environs would be limited, as would the quality of outdoor amenities such as picnic facilities and restrooms. Morton Street Field would remain in its current unimproved condition including the existing undersized dirt parking lot and portable restroom.

ALTERNATIVE 1: Alternative 1 was not selected for two primary reasons. First, the habitat benefits would be noticeably less under this alternative. Second, this alternative's reliance on Pop Hicks Field as a replacement site for Morton Field essentially precludes restoration of the Eastern Tributary until 2011-2012 at the earliest. Overall, while this alternative attempts to respond to the basic purpose and need of the project, it is less responsive than Alternative 2.

MEASURES TO AVOID OR MINIMIZE POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS

All practicable mitigation measures identified in the EA to avoid or minimize environmental impacts that could result from project implementation will be incorporated into the proposed action. These

mitigation measures, described in Table A-1 of this Appendix, will be monitored and enforced in accordance with the monitoring and enforcement program (MEP) for the PTMP from which this EA tiers. The Trust's Compliance Manager will be responsible for monitoring compliance with the MEP. As the primary purpose of the proposed action is creek restoration, there is no practicable alternative, however, that would not involve construction in a wetland.

FINDING

The Trust has considered the information and analyses in the environmental assessment and supporting environmental documentation, the comments of agencies and the public, and the project's administrative record. After a thorough analysis of the alternatives and their potential environmental consequences, consideration of all public and agency participation and concerns raised during the NEPA process, and consideration of the mandates of the Trust Act together with the plan set out in the PTMP, the Trust has determined to adopt Alternative 2 for implementation. Based on the Trust regulations on environmental quality (36 CFR 1010), monitoring and experience, including prior significance determinations documented in previous NEPA decisions, it is the determination of the Trust that the proposed action is not a major federal action having the potential to significantly affect the quality of the human environment. There are no significant direct, indirect, or cumulative effects on public health or safety, sites listed on the National Register of Historic Places, or other unique characteristics of the region. No activities implementing the proposed action will involve resource effects warranting mitigations beyond those routinely adopted as conditions of Trust approvals for comparable projects. Implementation of the proposed action will not involve unique or unknown risks, cause loss or destruction of significant park resources, or violate federal, state, or local law. Implementation of the proposed action is not precedent-setting nor will it automatically trigger other actions which may require environmental impact statements. Pursuant to Executive Order 11990, and taking the above information into account, there is no practicable alternative to such action in a wetlands and the proposed action includes all practicable measures to minimize harm to wetlands which may result. Therefore, in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9), an environmental impact statement will not be prepared.

APPROVED:

_____ _____

Craig Middleton Date
Executive Director, Presidio Trust

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

Mitigation Measure	Reporting Stage	Responsibility for Compliance	Method of Implementation	Enforcement
Archaeology				
CR-8 – *Archaeological Management Assessment and Monitoring Program.* The Trust will retain the services of a qualified archaeologist who will develop an AMA/MP for areas and undertakings within and adjacent to the APE defined for the project. This program will ensure that all planned site disturbances are reviewed by a qualified archaeologist prior to final design and/or approval. In addition to the AMA/MP, the project archaeologist will prepare and the Trust will review an archaeological research design for any archaeological investigations that are required, and/or test excavations or data recovery from prehistoric or historic sites that are known or discovered. The Trust's management of archaeological properties is reviewed annually in accordance with Stipulation XXI of the PA. The AMA/MP and any research design required pursuant to this measure would be incorporated into the Trust's annual report.	Continual	Presidio Trust FPO and Historical Archaeologist (for archaeological discoveries)	Presidio Trust Preservation and Maintenance Program	Document in Annual Report per PA
CR-9 – *Ground-Disturbing Activities.* Ground-disturbing maintenance activities and construction projects will be closely observed in the APE to discover, document, protect, and manage the archaeological record of the Presidio. The AMA/MP described in Mitigation Measure CR-8 will specify whether archival research, subsurface coring or trenching, and/or test excavations are required prior to ground disturbance, and if so, where. Archaeological monitoring is appropriate in areas of predicted archaeological sensitivity or for sampling purposes in areas that are not considered sensitive when the natural ground surface is obscured by paving or fill, or in other instances where a pedestrian survey or archaeological testing cannot reasonably be accomplished. Any required archaeological monitoring will be implemented in accordance with the AMA/MP and prepared by qualified personnel. If historic properties or prehistoric properties are discovered, a detailed report will be prepared. Should circumstances arise where the Trust cannot address archaeological concerns in a manner consistent with the AMA/MP, the Trust will notify the SHPO.	Prior to Final Design and During Construction	Presidio Trust Project Manager in Coordination with Presidio Trust Historical Archaeologist	Presidio Trust Preservation and Maintenance Program	Document in the Project's Administrative Record and Annual Report per PA

[13] These mitigation measures were derived from the PTMP EIS or during preparation of this EA and will be adopted and implemented by the Trust as part of the decision. Unless otherwise noted, mitigation measures apply to both project alternatives.

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

Mitigation Measure	Reporting Stage	Responsibility for Compliance	Method of Implementation	Enforcement
CR-11 – *Excavation Permits.* Per Stipulation XII Part D of the PA, the Trust will require all excavation permits to undergo archaeological review by qualified personnel, as defined in Stipulation III, prior to initiation of the requested activity.	Prior to Initiation of Requested Activity	Presidio Trust Project Manager in Coordination with Presidio Trust Historical Archaeologist	Presidio Trust NEPA/NHPA Compliance Process	Require as Excavation Permit Condition as Stipulated in PA
CR-13 – *Curation of Archaeological Collections.* All records associated with excavations and excavated materials not subject to the Native American Graves Protection and Repatriation Act (NAGPRA) that are deemed important for preservation will be accessioned, catalogued, and managed in accordance with 36 CFR Part 79, "Curation of Federally-Owned and Administered Collections."	Following Prehistoric or Historic Resource Survey, Excavation or other Study	Presidio Trust Historical Archaeologist in Coordination with Qualified Museum Professional	Presidio Trust Preservation and Maintenance Program	Terms and Conditions included in Contracts, Memoranda or Agreements for Curatorial Services / Periodic Inspections and Inventories
CR-14 – *Discoveries.* If it appears that an excavation in the APE would affect a previously unidentified property that could be eligible for inclusion in the National Register, or could contribute to the NHLD, or affect a known historic property in an unanticipated manner, the Trust will stop any potentially harmful activities in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the property until it concludes consultation with the SHPO.	Immediately following Discovery	Presidio Trust Project Manager in Coordination with Presidio Trust Historical Archaeologist	Presidio Trust NEPA/NHPA Compliance Process	Document in Project's Administrative Record
CR-15 – *Treatment of Discoveries.* If the newly discovered property has not previously been included in or determined eligible for the National Register and provisions for its treatment are not contained in an approved research design or AMA/MP, the Trust may assume that the property is eligible for purposes of the PA. The Trust will notify the NPS and SHPO at the earliest possible time and consult to develop actions that shall take the effects of the undertaking into account. The Trust will notify the SHPO of any time constraints, and the Trust and the SHPO will mutually agree upon time frames for this consultation, which will not exceed 30 days. If treatment of the discovery is not included in an approved research design or AMA/MP, the Trust will develop written recommendations reflecting its consultation with the NPS and SHPO and, as necessary, will present a plan and schedule to implement these recommendations.	At the Earliest Possible Time following Discovery	Presidio Trust Historical Archaeologist in Coordination with NPS and SHPO	Presidio Trust NEPA/NHPA Compliance Process	Document in Approved Research Design, AMA/MP, or Written Recommendations

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
Cultural Landscapes				
CR-7 – *Compliance with Standards for Building and Cultural Landscape Rehabilitation.* For historic landscape rehabilitation, projects shall conform to the Secretary of the Interior's Guidelines for the Treatment of Cultural Landscapes.	Prior to Historic Landscape Rehabilitation	Presidio Trust FPO	Presidio Trust Preservation and Maintenance Program and Grounds Maintenance Program	Require through Design and Construction Documents and Document in the Project's Administrative Record and Annual Report per PA
THCL-A – *Grading at Morton Field Site.* • The extent and gradient of the historic impoundment structure is to be carefully considered in the excavation and revegetation plans required to daylight the drainage swale from the buried culvert. Vegetation selection for the impoundment structures should focus on creating a low, uniform treatment that will allow for the structure to be visible in the landscape. • The grades and slope below (east of) Rodriguez Street are to be carefully considered in the excavation plans required to daylight the drainage swale from the buried culvert. Any mature trees on this site which date from the period of significance should be considered for retention until they are senescent.	Prior to Final Design	Presidio Trust Historic Landscape Architect and Project Manager	Presidio Trust NHPA Compliance Process	Require through Design and Construction Documents and Document in the Project's Administrative Record and Annual Report per PA
THCL-B – *Treatment of Morton Street.* For conversion of Morton Street to a multi-use trail proposed in Alternative 2: • The profile and alignment would be retained as the roadway is converted to a multi-use trail. • Appropriate trail width to be determined by the condition at the end of the period of significance. • Similarly, the width of the proposed bridge would be consistent with width of historic road	Prior to Final Design	Presidio Trust Historic Landscape Architect and Project Manager	Presidio Trust NHPA Compliance Process	Require through Design and Construction Documents and Document in the Project's Administrative Record and Annual Report per PA

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
THCL-C –*Treatment of Barnard Avenue.* For conversion of Barnard Avenue to a multi-use trail: • The profile and alignment would be retained as the roadway is converted to a multi-use trail. • Appropriate trail width to be determined by the condition at the end of the period of significance.	Prior to Final Design	Presidio Trust Historic Landscape Architect and Project Manager	Presidio Trust NHPA Compliance Process	Require through Design and Construction Documents and Document in the Project's Administrative Record and Annual Report per PA
THCL-D – *Guidelines for Julius Kahn Improvements.* For the proposed parking area on West Pacific Avenue and the expanded playing field in Alternative 2: • The character of the historic forest as identified in the VMP is to be retained in terms of species and density, where possible, of the original forest planting. Layout and surface treatment of parking shall be developed to minimize the impact, both visual and physical, on the rehabilitated forest stand at this location. Alternative paving system, including permeable systems, should be considered for possible use to maintain its character as historic forest. • The forest plantings between the playfield and West Pacific Avenue should be evaluated and considered for rehabilitation.	Prior to Final Design	Presidio Trust Historic Landscape Architect, Forester, and Project Manager	Presidio Trust NHPA Compliance Process & Forestry Program	Require through Design and Construction Documents and Document in the Project's Administrative Record and Annual Report per PA

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
Water Resources				
NR-15 – Best Management Practices. In order to maintain good water quality during and after project implementation, the Trust would develop and employ Best Management Practices including, but not limited to: • Maintaining appropriate erosion and siltation controls during construction, and permanently stabilizing all exposed soil or fill • Ensuring that all newly constructed impervious surfaces prevent, to the greatest extent feasible, increased water runoff volume and velocity reduced water quality and reduced water infiltration • Ensuring protection of normal movement, migration, reproduction, or health of aquatic fauna, including low flow conditions • Properly maintaining structures or fill so as to avoid adverse impacts to aquatic environments and public safety • Placing excavated fill on non-sensitive upland sites, and stabilizing all material with compatible erosion control techniques • Monitoring storm drain run-off into Crissy Field Marsh and implementing measures to reduce any high levels of organics, sedimentation and contaminants	Prior to Final Design and During Construction	Presidio Trust Project Manager in Coordination with Engineering/Utilities Manager and Natural Resources Program Manager	Presidio Trust NEPA/NHPA Compliance Process	Incorporate BMPs into Project Plans and Document in Project's Administrative Record
NR-17 – Demolition and Construction Activities. During future site-specific planning and environmental review, proposed demolition, new (replacement) construction and intensive human activities would be sited at least 100 feet (or greater distance if deemed necessary to avoid indirect effects) from the edge of existing wetlands, seeps, riparian vegetation or from the top of bank of unvegetated stream channels where feasible. If this is not feasible, the following measures shall be used: • Install fencing or other barriers adjacent to affected wetlands, streams and associated habitats to prevent inadvertent human, pet or equipment access in wetland systems. Other barriers could include the planting of dense native vegetations • Regularly inspect the affected areas to enforce compliance • Provide signage and/or other educational devices to encourage voluntary compliance	During Project Planning and Environmental Review	Presidio Trust Project Manager in Coordination with Natural Resources Program Manager	Presidio Trust NEPA/NHPA Compliance Process	Incorporate Measure into Project Plans

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

Mitigation Measure	Reporting Stage	Responsibility for Compliance	Method of Implementation	Enforcement
NR-19 – Future Design. During the planning process, projects would be designed to prevent alterations to drainage patterns or water movement, in a manner that would result in erosion or siltation on or off site; prevent substantial runoff water which could exceed the capacity of either existing or planned storm water drainage systems, or the infiltration rates of surrounding soils; and prevent additional sources of polluted runoff (also see Storm Drainage mitigation).	During Project Planning and Environmental Review	Presidio Trust Project Manager in Coordination with Natural Resources Program Manager	Presidio Trust NEPA/NHPA Compliance Process	Incorporate Measure into Project Plans
UT-7 – Stormwater Reduction. As part of planning for future projects under PTMP, the Trust would implement designs or measures to limit or eliminate impervious surfaces in order to reduce stormwater runoff volumes and improve water quality. The Trust would practice natural stormwater reduction by using on-site vegetation and landscaping as a filtration and retention system to the extent feasible. Grass, sand, and other porous surfaces, particularly when placed around non-porous surfaces such as asphalt, could significantly limit stormwater runoff. Projects would be reviewed to determine if stormwater flows could be limited through reduction of impervious surfaces and addition of porous surfaces.	During Project Planning and Environmental Review	Presidio Trust Engineering/Utilities Manager	Presidio Trust Planning and NEPA/NHPA Compliance Process	Incorporate Designs or Measures into Project Plans and Document in the Project's Administrative Record
NR-13 – Wetlands/Compliance. As further details about site-specific activities affecting wetlands and stream corridors are developed, the Trust would undertake applicable compliance steps, including obtaining any necessary permits, under the Clean Water Act Section 401, 402, and 404 programs.	During Project Planning and Environmental Review	Presidio Trust Natural Resources Program Manager	Clean Water Act Section 401, 402 and 404 Programs	Document in Project's Administrative Record
THWR-A – Creek Channel Bank Erosion Control. As part of final project creek design, hydraulic analyses should be completed by experienced professionals to aid in developing appropriately sized, aligned, and stable channels. Special analyses and design considerations should be conducted for fixed points along the creek alignment (e.g., culverts and bridges) where bank instabilities most commonly develop. At these locations, appropriate channel bank/bed armoring techniques may be necessary. Post-channel construction conditions should also be monitored to identify and adaptively manage channel bank conditions.	Prior to Final Design	Presidio Trust Project Manager in Coordination with Natural Resources Program Manager	Presidio Trust Planning and NEPA/NHPA Compliance Process	Incorporate Designs or Measures into Project Plans and Document in the Project's Administrative Record

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
THWR-B – Trail Creation and Maintenance. Placement and construction of new trails should minimize disruption to soil and slopes susceptible to erosion. The design of trail features that intersect natural surface water bodies, such as bridges or wooden boardwalks (e.g., El Polín Loop) should include measures to avoid or reduce interference with the features' natural flow dynamics. New trails, boardwalks, and rehabilitated trails would be constructed to avoid other hydrologic features, especially the sensitive areas surrounding groundwater seeps and springs. All new or renovated trails should be constructed and maintained in a manner consistent with the best management practices (BMPs) established in the *Presidio Trails and Bikeways Master Plan* (National Park Service and Presidio Trust, 2003).	Prior to Final Design	Presidio Trust Project Manager in Coordination with Planning Director and Natural Resources Program Manager	Presidio Trust Planning and NEPA/NHPA Compliance Process	Incorporate Designs or Measures into Project Plans and Document in the Project's Administrative Record
Biological Resources				
NR-1 – *Native Plant Communities.* To reduce the possibility of colonization by non-native plant species, the Trust will implement the following mitigation measures: • Immediately revegetate with native species areas of native vegetation disturbed by construction, infrastructure repair, and increased land use activities. • Prepare a site-specific revegetation plan for the project site. • Wherever possible, use planting materials (seeds and cuttings) from the local Presidio gene pool. Prioritize the use of propagules from the Tennessee Hollow watershed • Protect all revegetation efforts through buffers and/or barriers during establishment, and maintain and monitor for at least three years. • Native plant/landscape design edges would be monitored for the encroachment of landscape vegetation species into natural areas. If the spread of these species impacts the integrity of the natural vegetation, then control actions would be identified and implemented. • To the extent possible, non-native trees would be felled to prevent direct and indirect impacts to remnant and restored areas.	Prior to Construction Activities Affecting Areas of Native Vegetation	Presidio Trust Project Manager in Coordination with Natural Resources Program Manager	Presidio Trust NEPA/NHPA Compliance Process	Document in Revegetation Plans

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
NR-3/NR-4 – *Threatened, Endangered, Rare, Sensitive Species, and Special-Status.* To ensure long-term protection of special-status species and to mitigate any project-related indirect and direct impacts on these species, the Trust will continue its inventory and monitoring program. The following project-specific measures would be implemented at the one site where Presidio clarkia occurs within the project area: • Erect a temporary construction barrier around the plants and train construction workers in identification and ecological needs of the plants. • The Trust will implement the following measures to ensure that potential impacts to special-status wildlife are avoided or minimized: • Conduct surveys for special-status wildlife species including San Francisco forktail damselfly, special-status birds, raptors, and bats prior to construction activities • If a special-status species is found in the vicinity of the project area, adopt a species-specific mitigation plan to avoid or minimize impacts • If project activity commences during the raptor nesting season (January 1 to August 15), conduct surveys in areas of suitable nesting habitat within 500 feet of the project area. If no active nests are found, no further mitigation will be required. If construction is initiated outside the raptor nesting season, no mitigation is required. If an active raptor nest is found, a qualified biologist must determine that the activity has no potential to adversely affect the nest. Otherwise, appropriate buffers will be established and no project activity will commence within the buffer area until the biologist confirms the nest is no longer active.	Prior to Construction	Presidio Trust Natural Resources Program Manager	Presidio Park Stewardship Program	Require as Part of Recovery Strategy in Recovery Plans/ Incorporate into Annual Workplan and Work Programming Process

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
NR-5 – *Wildlife and Native Plant Communities.* To protect wildlife and native plant communities, the Trust will implement the following measures. *During Construction* • Schedule heavy equipment use, to the greatest extent feasible, to avoid areas where soils are wet and prone to compaction. • Do not side-cast or spread excavated materials into native plant communities or special-status species habitat. • Apply appropriate erosion and siltation controls during construction and stabilize exposed soil or ecologically compatible fill after construction. • If fill is necessary, use only fill that is certified as weed-free, is compatible with local hydrologic and ecological conditions, and is appropriate for the enhancement of special-status species restoration activities. • Immediately revegetate native plant areas affected by construction with native plant species appropriate to the area and grown from local seed stock, and temporarily cover the soil and/or revegetation areas. • Ensure that human food is never left exposed to wildlife on the construction site. *Post-Construction* • Prepare interpretive materials and install signage emphasizing resource conservation in areas adjacent to sensitive habitat and native plant communities, and provide other educational devices to encourage protection of these areas. • Consistent with PTMP Mitigation Measure NR-14, regularly inspect restoration areas and for any impacts or damage and implement remedial measures as needed (e.g., increased education and outreach).	During Project Planning and Construction Activities	Presidio Trust Project Manager in Coordination with Natural Resources Program Manager	Presidio Trust NEPA/NHPA Compliance Process	Incorporate Measures into Project Plans and Document in the Project's Administrative Record

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
NR-6 – *Best Management Practices.* Site-specific best management practices would be implemented during construction/demolition activities to minimize erosion and potential disturbance in adjacent natural areas. New facilities such as bridges, parking areas, and playing fields would be designed using the latest techniques to reduce runoff, improve storm water quality and otherwise minimize environmental effects. Playing fields would be maintained consistent with the Presidio Trust Roads and Grounds Integrated Pest Management Program which does not allow the use of fungicides or insecticides on playing field turf, and restricts the use of herbicides to those which have a low toxicity, are not on the CA EPA list of known groundwater contaminants, and present a low risk of environmental impact. Trails constructed within the project area would be designed consistent with the BMPs identified in the Presidio Trails and Bikeways Management Plan (Trust & NPS, 2003) including: Drainage Control (BMP #1), Trails in Wet Areas (BMP #2), Trails in Proximity to Sensitive Resources (BMP #10), and Natural Resources Conservation (BMP #12).	Prior to Construction	Presidio Trust Natural Resources Program Manager	Presidio Trust NEPA/NHPA Compliance Process	Incorporate BMPs into Project Plans and Document in the Project's Administrative Record

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
NR-9– *Wildlife and Wildlife Habitat.* To protect nesting birds and bat species, the Trust will implement the following mitigation measures: • Prior to any building demolition activities, retain a qualified bat biologist to check all window coverings for bats. The qualified biologist will then remove any bats that are present without harm. • To protect active nests of birds covered under the Migratory Bird Treaty Act, limit earth moving, landscaping, vegetation removal, and other heavy equipment activities to the non-breeding season (August through December) and follow park guidelines for the removal of vegetation. • Implement a control program for non-native species such as Norway rats, red foxes, and European starlings. • Phase the removal of mature trees to minimize impacts on tree-dependent bird species. At El Polín Loop, remove trees along the lower edge of the loop and replant with native trees as a first phase. To the extent possible, begin tree propagation several years before planting. Once the lower areas have been restored and vegetation is established, and remediation activities at nearby Landfill 2 and Fill Site 1 are underway, finish removal in the upland areas surrounding the loop. Some targeted tree removal in the upland area west of El Polín Springs may be expedited to ensure protection of Presidio clarkia habitat. • Plant fast growing species such as California blackberry and yellow bush lupine (Lupinus arboreus) to quickly re-establish cover for native animals disturbed by vegetation removal • Leave snags in existing stands if possible. • To enhance the habitat for California Quail and many other species, the Trust will provide and maintain brush piles along the western and eastern edges of the tributary corridors that can be used for cover from predators.	During Project Planning and Construction Activities	Presidio Trust Project Manager in Coordination with Natural Resources Program Manager	Presidio Trust NEPA/NHPA Compliance Process	Document in the Project's Administrative Record

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
NR-12 – *Cumulative Activities.* The Trust will develop measures to ensure that cumulative disturbance to natural habitat areas within the Presidio does not exceed 20 acres within any given year. No more than 5 acres of that disturbance should be concentrated within one wildlife corridor, sensitive habitat, or plant community without approval from a professional ecologist. This would not apply to disturbances created by natural storm or environmental events. If such events occur, disturbed areas would be restored or treated consistent with natural resources objectives.	Annually	Presidio Trust Natural Resources Program Manager	Presidio Trust Natural Resources Management Program	Incorporate into Annual Workplan and Work Programming Process
Air Quality				
NR-20 – Basic Control Measures. To reduce construction-generated particulate matter (PM_{10}) emissions, construction contractors shall implement as appropriate the BAAQMD's recommended control measures for emissions of dust during construction. Basic control measures are: • Water all active construction areas at least twice daily; • Cover all trucks hauling soil, sand, and other loose materials or require trucks to maintain at least 2 feet of freeboard; • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas; • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas; and • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.	During Project Planning and Construction Activities	Presidio Trust Project Manager in Coordination with NEPA Compliance Specialist	Presidio Trust NEPA/NHPA Compliance Process	Incorporate Measure into Project Plans
NR-22 – Deconstruction/Demolition Techniques. To the extent feasible, the Trust shall apply an environmentally effective approach, including a combination of deconstruction and demolition techniques, to remove outdated structures and to reduce PM_{10} emissions from demolition activities.	During Project Planning and Construction Activities	Presidio Trust Project Manager in Coordination with NEPA Compliance Specialist	Presidio Trust NEPA/NHPA Compliance Process	Require as Demolition Permit Condition

Table A-1
Tennessee Hollow Upper Watershed Revitalization Project
Mitigation Monitoring and Enforcement Program[13]

MITIGATION MEASURE	REPORTING STAGE	RESPONSIBILITY FOR COMPLIANCE	METHOD OF IMPLEMENTATION	ENFORCEMENT
Noise				
NR-23 – General Construction/Demolition Noise. Construction would be limited to daytime hours (7a.m. to 8 p.m.). During construction, contractors and other equipment operators shall be required to comply with the San Francisco Noise Ordinance (San Francisco Municipal Code, Section 2907b), which requires that each piece of powered equipment, other than impact tools, emit noise levels of not more than 80 A-weighted decibels (dBA) at 100 feet. To reduce noise impacts, barriers shall be erected around construction sites and stationary equipment such as compressors; this shall reduce noise by as much as 5 dBA. To further reduce noise impacts on visitors, some construction sites shall be temporarily closed, and appropriate barriers placed at a distance of 250 feet from the sites.	During Project Planning and Construction Activities	Presidio Trust Project Manager in Coordination with NEPA Compliance Specialist	Presidio Trust NEPA/NHPA Compliance Process	Require as Building Permit Condition
Transportation and Circulation				
TR-22 – TDM Program Monitoring. The Trust will continue to require that all playing field users participate in the Trust's TDM program. The Trust would monitor implementation and effectiveness of the TDM program on an ongoing basis, and implement more aggressive TDM strategies if needed.	Ongoing	Presidio Trust TDM Coordinator	Presidio Trust TDM Program	Require as Permit/Lease Condition
TR-26 – Construction Traffic Management Plan. The contractor(s) of individual projects shall work with the Trust to develop a Construction Traffic Management Plan. The plan shall include information on construction phases and duration, scheduling, proposed haul routes, permit parking, staging area management, visitor safety, detour routes, and pedestrian movements on adjacent routes.	Prior to Demolition and Construction Activities	Project Contractor in Coordination with Presidio Trust Project Manager	Construction Traffic Management Plan	Require as Conditions for Demolition and Construction Permits

APPENDIX B

BIOLOGICAL RESOURCES

This Appendix supplements the information provided in Section 4.4, Biological Resources. Additional information can be found in relevant technical reports and surveys which are available for review at the Presidio Trust Library, 34 Graham Street, San Francisco. See Chapter 6 for a complete list of these documents.

VEGETATION

A description of the seven native plant communities and non-native and developed landscaped areas within or adjacent to the project area is provided below. Table B-1 presents a comparison of these communities (defined used Holland's Index) with the corresponding California Natural Diversity Database (CA Department of Fish and Game) plant communities classification system.

Table B-1: Holland and CNDDB (CNPS) Plant Communities Conversion Table

Plant Community Described in EA	Holland Community Name	CNDDB Community Name and Number
Central Coast Arroyo Willow Riparian Forest	Central Coast Riparian Forest {61200}	Central Coast Arroyo Willow Riparian Forest and Woodland (*61.201.01)
Central Coast Riparian Scrub	Coastal Scrub {32000}	Central Coast Riparian Scrub (63.902.00)
Freshwater Seep	Freshwater Seep {45400}	Freshwater Seep (45.700.00)
Freshwater Wet Meadow	Meadow and Seep {45000}	Meadow and Seep Habitats (45.300.00) Meadows and Seeps not dominated by grasses (45.000.00)
Serpentine Grassland	Serpentine Grassland {42130}	Serpentine Bunchgrass (*41.280.00)
Coastal Terrace Prairie	Coastal Terrace Prairie {41100}	Coastal Terrace Prairie (*41.270.00)
Central Dune Scrub	Backdune Scrub {21320}	Central Dune Scrub (*21.100.09)
Northern Coastal Scrub	Coastal Bluff Scrub {31100}, Coastal Scrub {32110}	Northern Coastal Bluff Scrub (*31.100.00) Coyote Brush Scrub and Dwarf Scrub (32.060.00)
Coast Live Oak Woodland	Coast Live Oak Woodland {71160}	Coast Live Oak Woodland (71.060.19)
Non-Native Plant Communities	N/A	Non-Native Grassland (42.000.00)

* indicates a series or association considered rare and worthy of consideration by CNDDB, May 2002 edition.

Riparian Communities

Riparian communities are found within drainages of the project area. These are considered among the most valuable wildlife habitats, as they create many important microhabitats that provide shelter, nesting sites, forage, and water for a wide variety of wildlife species, including migratory birds (Goals Project, 1999). Five small fragments of riparian habitat are located within the project area (NPS, 2003). These are represented by two native plant communities: Central coast arroyo willow riparian forest (willow riparian woodland) and Central coast riparian scrub (riparian scrub).

Central coast arroyo willow riparian forest *(willow riparian woodland)* **–** This woodland develops in the wettest zones of perennial (i.e., year-round) and intermittent creeks. Several stands of this vegetation community are found in the Eastern Tributary, typically reaching heights of 8 to 12 feet. The largest thicket (1.1 acres) is located in the lower region of the Eastern Tributary, north of Morton Street. Dense stands of arroyo willow trees occur as a part of this community. Other plant species that comprise this community include blue elderberry, red elderberry, creek dogwood, wax myrtle, and potentially red alder.

Central coast riparian scrub *(riparian scrub)* **–** This community is typically found adjacent to small streams that lack any significant seasonal flooding. A small patch of riparian scrub within the project area is adjacent to El Polín Springs (Vasey, 1996). Riparian scrub typically reaches heights of 4 to 10 feet, supports more shrubby species, and develops in areas where the water table is typically high enough to exclude trees such as oaks. It is usually characterized by the following species: wax myrtle, coyote brush, common rush, California blackberry, and arroyo willow.

Wetland Communities

Wetland communities are found in perennially or seasonally saturated soils. Although they occupy very little area within the watershed, these small wetlands provide a rich species diversity and important foraging habitat for wildlife (Vasey, 1996). Within the project area they are represented by freshwater seep and freshwater wet meadow vegetation habitats. Two small fragments of freshwater seep and wet meadow habitat are adjacent to El Polín Springs and at the headwaters of the Eastern Tributary (NPS & URS Corporation, 2003).

Freshwater seep –Freshwater seep vegetation occurs in areas where groundwater seepage creates permanently or periodically saturated soils. Seeps within the project area emerge from serpentinite fractures and areas where two substrates of different permeability meet. Freshwater seep vegetation typically includes rushes, sedges, and other plants adapted to moist or wet growing conditions. Small freshwater seeps are located at El Polín Springs and the Eastern Tributary headwaters.

Freshwater wet meadow *(wet meadow)* – A wet meadow habitat differs from a freshwater seep in the depth and duration of inundation. It is an area adjacent to a perennial or a seasonal creek where the groundwater remains relatively close to the surface and the soil is seasonally saturated. Although this type of habitat is not officially classified as a vegetation community, it is a habitat type that is referred to in local floras and exists within the project area. Wet meadows support specific plant species and are extremely diverse. Within the project area these species may include meadow barley, cow clover,

buttercups, common rush, and horse tail. Small scattered fragments of wet meadow habitat can be found on the Presidio, including one above El Polín Springs and one outside the project area just south of Lovers Lane Bridge.

Upland Vegetation Communities

Upland vegetation communities are represented by serpentine grassland, coastal terrace prairie, coastal scrub, Central dune scrub (dune scrub), and Coast live oak woodland (oak woodland).

Serpentine grassland – The Presidio's largest area of this rare grass- and forb-dominated community is located adjacent to the project area along the slopes of Inspiration Point. A small part of this larger restored grassland occurs within the project area, on the eastern side of Quarry Road above El Polín Springs. This habitat supports ecologically significant native plant species, including the federally endangered Presidio clarkia. Restoration efforts northeast of the Inspiration Point Overlook have significantly enhanced this community, reducing infestations of invasive non-native plant species. This community is dominated by species such as California oatgrass, purple needlegrass, foothill needlegrass, goldfields, tidy tips, and blue dicks. The federally threatened Marin dwarf flax once populated the serpentine barrens just northwest of the project area, but is now considered to be extirpated from this area (being last seen in the early 1990s) (NPS, 1996). Efforts to re-introduce this species are currently underway (Chasse, pers. comm. 2004).

Coastal terrace prairie – Once the most common plant community on the Presidio, Coastal terrace prairie now occupies less than 3 acres in the western area of the Presidio (Vasey, 1996). Several relatively disturbed patches of coastal terrace prairie are located within the eastern slopes of the Central Tributary. Coastal prairie is dominated by California oatgrass and purple and foothill needlegrass. Coastal prairie is considered to be a sensitive community by the California Native Plant Society (CNPS) because its extent has been drastically reduced in California as a result of agriculture and urban development.

Central dune scrub – Central dune scrub occurs on stable dune deposits inland from the immediate coast. It is considered rare in California by the CNPS. One small patch (less than 0.1 acre) of Central dune scrub was planted by the Presidio Park Stewards in the late 1990s adjacent to the remnant willow riparian habitat in the lower Eastern Tributary (Albert, pers. comm., 2002). Restoration was limited, and included the planting of several dominant scrub species under the Monterey pine canopy. Central dune scrub supports a mosaic of shrubs interspersed with sub-shrubs and sparsely vegetated openings (NPS, 2003).

Coastal scrub – Once dominating the coastal areas of the San Francisco Peninsula remnant coastal scrub only survives in patches within protected areas such as the Presidio's coastal bluffs. This community contains many of the same species that make up the dune scrub palette but coastal scrub species tends to occur on non-sandy substrates, allowing a dense cover to form and significant soil development. Coastal scrub also supports California lilac, California sage, and a variety of smaller stature species that do not grow in the sandy soils found under dune scrub communities. A small patch of restored coastal scrub is found just below the Inspiration Point overlook.

Coast live oak woodland – oak woodlands were likely a dominant vegetation type within the protected Tennessee hollow watershed. The large plants that make up this community require more water to grow and be maintained than most other upland plant communities on the Presidio. This extra water can be supplied through a shallower groundwater table and/or through reduced evapotranspiration due to the reduced wind blowing through protected valleys such as those found in the Tennessee Hollow watershed. Dominant species include the coast live oak, California bay laurel, and California buckeye.

Non-Native Plant Communities

Invasive non-native plants within the project area include non-native annual grasses, Cape ivy, mattress wire weed, Himalayan blackberry, gorse, French broom, poison hemlock, cotoneaster, English ivy, Algerian ivy, fennel, orchard grass, purple velvet grass, and non-historic stands of Monterey pine, Monterey cypress and blue gum eucalyptus tree. These species dominate the area surrounding the headwaters of the Eastern Tributary and the El Polín Springs/Loop area. Many of these non-native plants limit species richness and diversity and impact the creek system itself. For example, eucalyptus trees produce terpenes and phenolic acids which create an inhospitable environment for most other plants thereby reducing species diversity in the understory areas. They also consume more water than native trees and contribute substantial litter which can build up reducing opportunities for groundwater infiltration and clogging stream channels. Cape ivy and mattress wire weed form dense thickets that can reduce foraging and nesting habitat for wildlife, as well as preclude the establishment of a complex understory supporting a rich diversity of species.

Developed and Landscaped Areas

Developed and landscaped areas include buildings, landscaping around buildings, ornamental plantings, playing fields, parking lots, and paved roads.

WILDLIFE

Special-Status Wildlife

Table B-2 presents the threatened or endangered animal species that are known to occur in the Presidio. Of the ten species presented, only the Olive-sided flycatcher has been documented using trees near the project area. Table B-2 summarizes the potential for these species to occur within the project area.

Table B-2: Special-Status Animals

Common Name	Scientific Name	Status	Potential for Occurrence in Project Area
		Federal/State	
Invertebrates			
San Francisco forktailed damselfly	*Ischnura gemina*	SC/--	At the Presidio, only documented near Fort Point (Presidio Trust, 2002b). Typical habitat consists of small sun-exposed areas of open water surrounded by emergent vegetation. Small freshwater seeps and shallow open water pools within watershed may provide suitable habitat – however, species has not been observed in the project area.
Birds			
Cooper's hawk	*Accipiter cooperii*	--/SSC	A Cooper's hawk was observed in 2002 in the watershed, in the historic forest south of Liggett housing (GGRO Raptor Monitoring and Inventory; unpublished data.)
Olive-sided flycatcher*	*Contopus cooperi*	SC/SSC	Breeds in the Presidio in nests high in the tree canopy, typically in large conifers and snags often at the edge of meadows, clearcuts and other open areas where they feed (Altman and Salabanks, 2000). Fairly common in Presidio, and has been observed in the watershed including the area surrounding El Polin Springs (Ehrlich and Pollak, pers comm. 2006).
Saltmarsh common yellowthroat	*Geothylpis trichas sinuosa*	--/SSC	Uncommon visitor to Mountain Lake, and has been recorded in all seasons (Jones and Stokes, 1997). Prefers emergent vegetation and open habitat associated with edge of riparian community.
Loggerhead shrike	*Lanius ludovicianus*	--/SSC	No nesting records exist for San Francisco (Presidio Trust, 2002b) Doubtful that it would use the project area; however, could over winter in Presidio using upland grasslands and scrub habitats. Reasons for decline are unknown; declining throughout its range (Gardali, pers. comm. 2004).
Long-eared owl	*Asio otus*	--/SSC	Species not documented in watershed, and although not likely to nest in the area, the conifers, oaks, and willow thickets throughout the watershed provide potential roost sites for this owl.

Table B-2: Special-Status Animals

Common Name	Scientific Name	Status	Potential for Occurrence in Project Area
		Federal/State	
Willow flycatcher	*Empidonax traillii*	SC/E	Uncommon summer and fall migrant, using dense willow habitat within the north and east arms of Mountain Lake for roosting areas (Presidio Trust 2002b). Not a breeder in the Presidio. No sightings in watershed; however, habitat exists and species may occur in the project area or vicinity (Gardali, pers. comm. 2004).
Yellow warbler	*Dendroica petechia brewsteri*	--/SSC	Uncommon summer and fall migrant; uses dense willow habitat within the north and east arms of Mountain Lake for roosting areas (Presidio Trust, 2002b). No sightings in watershed; however, may occur in the project area or vicinity (Gardali, pers. comm. 2004).
Yellow-breasted chat	*Icteria virens*	--/SSC	No records available, but species is easily overlooked. Unlikely to occur in the watershed except perhaps occasionally during migration when it could use willow riparian areas for foraging. Species will likely not breed in the area.
Mammals			
Yuma myotis	*Myotis yumanensis*	SC/--	Detected during 1994 surveys (Jones & Stokes 1997), both Lobos Creek and Mountain Lake offer suitable foraging habitat. Roosts in tree cavities and attic spaces.

* Known to occur within or adjacent to the project area

SC = Species of Concern (Federal).
E = Endangered (either Federal and State).
SSC = Species of Special Concern (State).

A number of bird species found in the project area are identified as Partners in Flight watch list species or Partners in Flight Focal Species. Watch list species are defined as those species facing population declines, threats such as habitat loss, and/or are found in limited geographic ranges. Focal species are defined as species with habitat requirements that represent a "healthy system, are good indicators for monitoring, and/or may be of conservation concern in California." Allen's hummingbird is identified as a watch species; brown creeper, Oregon junco, western scrub jay, Wilson's warbler, and song sparrow are identified as focal species. In addition, there are several other animal species that are recognized by various environmental organizations as species of concern. While these species are not afforded the regulatory protection of FESA, the Trust seeks to protect these species and they have therefore been identified below.

Table B-3: Animals of Local Concern (non-Special-Status)

Common Name	Scientific Name	Potential for Occurrence in Project Area
Birds		
Great horned owl	*Bubo virginianus*	Great horned owl have been observed along the Western Tributary, including a confirmed nest site in 2006 near Pop Hicks Field (GGRO Raptor Monitoring and Inventory; unpublished data.) In 2003, nest also near MacArthur meadow, off Barnard St.
Hutton's vireo	*Vireo huttoni*	Documented in the watershed and elsewhere at the Presidio (Presidio Trust, 2002b; Rosegay, 1996).
Pacific-slope flycatcher	*Empidonax difficilis*	Common fall migrant and summer breeder; typically associated with oak/bay forest; riparian nesters, locally common - observed on the Presidio (Gardali, pers. comm. 2004).
Red-tailed hawk *	*Buteo jamaicensis*	Red-tailed hawk have observed nesting in the historic forest in the Western Tributary (near Pop Hicks Field), and in the vicinity of the project area at Morton Street since 2002 (Pollak, pers. comm. 2006).
Swainson's thrush	*Catharus ustulatus*	Common fall migrant and summer breeder in protected forests with sufficient understory; mostly found in coastal riparian areas; observed on the Presidio (Gardali, pers. comm. 2004). There have been no confirmed sightings in the watershed in recent years.
Tree swallow	*Tachycineta bicolor*	Observed on the Presidio; cavity nester and uses riparian areas, especially snags. Potentially nest in holes of buildings if created by woodpecker or other disturbance (Gardali, pers. comm. 2004). Seen at El Polín within the last few years (P. Ehrlich, pers. comm. 2007).
Violet-green swallow*	*Tachycineta thalassina*	Observed within the Eastern Tributary; cavity nester and uses riparian areas, especially snags. Potentially nest in holes of buildings if created by woodpecker or other disturbance (Hopkins, pers. comm. 2004). Seen at El Polín within the last few years (P. Ehrlich, pers. comm. 2007).
Band-tailed pigeon	*Columba fasciata*	Typically uses open sites bordered by tall conifers. Observed in past years near Baker Beach. Watershed could provide potential habitat.
Bewick's wren		Present on the Presidio, utilizes riparian and scrub habitat (Gardali, pers. comm., 2004). While not observed in the watershed, suitable habitat present.
Western screech-owl	*Otus kennicottii*	Nearly extirpated from San Francisco and the Presidio (Jones & Stokes, 1997). Screech owls were heard near Inspiration Point in spring 2004 (Hopkins, 2004) in the upland areas adjacent to the project area. Species roost during the day in dense coniferous and other evergreen trees and hunt at night in woodland and open habitats (Cannings and Angell, 2001). There have been no confirmed sightings in the watershed since 2004 so the species may be extirpated.
Wrentit	*Chamaea fasciata*	Thought to have been extirpated from the Presidio and San Francisco in 2003, this species was heard on the coastal bluffs in May 2007.
Spotted towhee	*Pipilo maculates*	Observed at the Nike Swale and North Baker Beach; utilizes scrub habitat (Gardali, pers. comm. 2004) There have been no confirmed sightings in the watershed in recent years.
California quail*	*Callipepla californica*	Nearly extirpated from San Francisco and the Presidio. A covey of quail are located in north of the Public Health Services Hospital (LSA Associates, Inc., 2001; Harley et al., 2003). One brood of chicks was observed near Morton Street and Rodriguez Street (2000) and one male was observed in the Tennessee Hollow watershed near Morton and Rodriguez Streets in 2003 (Raffa, pers comm. 2006). Seen between Quarry Rd. and MacArthur Ave. within the last few

Table B-3: Animals of Local Concern (non-Special-Status)

Common Name	Scientific Name	Potential for Occurrence in Project Area
		years (P. Ehrlich, pers. comm. 2007). Banding and monitoring confirmed populations north of PHSH in 2005/6; a few individuals were observed in 2007.
Reptiles		
Western Fence Lizard	*Sceloporus occidentalis*	Once common this species appears to currently have a restricted range, mostly near the ocean. There have been no confirmed sightings in the watershed in recent years (Koo, et al 2007).
Amphibians		
Arboreal salamander	*Aneides lugubris*	Observed at Infantry Terrace in 2006 (Koo et al 2007). This species is likely found in forested areas but there have been no confirmed sightings in the watershed in recent years.
Pacific Treefrog	*Pseudacris [Hyla] regilla*	Found in the dune swale at Crissy Marsh in recent years.
Mammals		
Western red bat	*Lasiurus blossevillii*	Identified as the most abundant species at the Presidio during a 1994 study (Pierson and Rainey, 1995). Observed at Mountain Lake and in open areas adjacent to multi-structured forest stands. No recent confirmed sightings in the watershed but may use the watershed.
Grey fox*		Seen within the watershed within the last 5 years (M. Frey, per comm).
Invertebrates		
Field crescent*	*Phyciodes campestris*	Occurs in the watershed and its range appears to have shrunk from 1994 to 2007 (Moore and Hafernik 2005)

* Indicates species have been observed within or adjacent to the project area.

The Presidio Trust – 34 Graham Street, P.O. Box 29052, S.F., CA 94129 – (415) 561-5414, www.presidio.gov