

Appendix A. Former ITT Property



Four Preliminary Concepts

Concept 1: Habitat Restoration

In *Concept 1: Habitat Restoration*, the Marsh Station building, parking lot, and entry road would be removed, and the entire developed area would be restored to tidal marsh as part of the Emily Renzel Wetlands. The footprint of the freshwater pond and marsh would remain as is. Pedestrians could access the maintenance road along the eastern side of the freshwater pond and marsh, and from trails on the periphery of the tidal marsh wetlands. Vehicular access to the freshwater pond and Marsh Trail would be restricted to maintenance vehicles only.

Concept 2: A Balanced System

In *Concept 2: A Balanced System*, the Marsh Station building would remain; however, no access would be allowed into the building. The developed area surrounding the building would be restored to salt marsh. The footprint of the freshwater pond and marsh would be expanded by approximately 50 percent into the salt marsh. Pedestrian access would be permitted up to the Marsh Station building, but would not be allowed to the eastern side of the site. Vehicular access to the freshwater pond and Marsh Trail would be restricted to maintenance vehicles only.

Concept 3: ITT Park

In *Concept 3: ITT Park*, the salt marsh would be restored and the Marsh Station building would be repurposed into a public museum. Visitors would have pedestrian and vehicular access to the Marsh Station building from the western end of the site, and a trail with a boardwalk would provide pedestrians with access to the eastern end of the site. The freshwater pond and marsh area would be expanded, with full pedestrian trail access. The Emily Renzel Wetlands, Remnant Marsh, and Matadero Creek would be connected hydrologically to allow maximum salt water flow throughout the site.

Concept 4: Return to Nature

Concept 4: Back to Nature is similar to Concept 1; however, access would be limited to the periphery of the salt marsh wetlands, with an elevated levee trail on the western side of the freshwater pond and marsh. The Emily Renzel Wetlands, Remnant Marsh, and Matadero Creek would be connected hydrologically to one another, and thus to the Bay. The Marsh Station building, entry road, and antennae would be removed.



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PALO ALTO BAYLANDS ITT AREA

PRELIMINARY CONCEPT
OPTION 1: HABITAT RESTORATION

LEGEND:

- PROPOSED PEDESTRIAN TRAIL (NO DOGS/HORSES)
- PROPOSED PEDESTRIAN TRAIL ALONG EXISTING MAINTENANCE ROAD
- EXISTING ROAD STOPS AT THE FRESHWATER POND AND MARSH
- EXISTING TRAIL
- BAYLANDS BOUNDARY
- FRESHWATER POND AND MARSH WITH CURRENT FOOTPRINT
- RESTORED HYDROLOGY, SALTWATER WETLAND WITH DENDRITIC CHANNELS
- HABITAT RESTORATION REPLACES ITT BUILDING FOOTPRINT AND IMPACTED SURROUNDING AREA
- HORSE/DOG/BIKE BARRIER GATE ACCESSIBLE FOR PEDESTRIANS AND MAINTENANCE ONLY
- FORMER ITT BUILDING INTERPRETIVE SIGN
- OVERLOOK AND GATHERING AREA WITH INTERPRETATIVE SIGNAGE
- TWO ANTENNAE, CHOSEN BY STAKEHOLDER GROUP, REMAIN ON SITE



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PALO ALTO BAYLANDS ITT AREA

PRELIMINARY CONCEPT
OPTION 2: A BALANCED SYSTEM

- LEGEND:**
- PROPOSED PEDESTRIAN TRAIL (NO DOGS/HORSES)
 - PROPOSED PEDESTRIAN TRAIL ALONG EX-ISTING MAINTENANCE ROAD
 - EXISTING ROAD TO ITT BUILDING (PEDES-TRIAN ONLY)
 - EXISTING TRAIL
 - BAYLANDS BOUNDARY
 - FRESHWATER POND AND MARSH WITH EX-PANDED FOOTPRINT
 - RESTORED HYDROLOGY, SALTWATER WETLAND WITH DENDRITIC CHANNELS AND PUBLIC USE FOOTPRINT
 - ITT BUILDING BECOMES A HISTORICAL STRUCTURE. INTERPRETATIVE SIGNAGE WILL BE PLACED OUTSIDE. NO ENTRY INTO THE BUILDING
 - PUBLIC USE FOOTPRINT AT ITT BUILDING
 - HABITAT RESTORATION REPLACES ITT BUILDING FOOTPRINT AND IMPACTED SUR-ROUNDING AREA
 - ITT BUILDING INTERPRETIVE SIGN
 - OVERLOOK AND GATHERING AREA WITH INTERPRETATIVE SIGNAGE
 - TWO ANTENNAE, CHOSEN BY STAKEHOLDER GROUP, REMAIN ON SITE.
 - HORSE/DOG/BIKE BARRIER GATE ACCE-SIBLE FOR PEDESTRIANS & MAINTENANCE ONLY



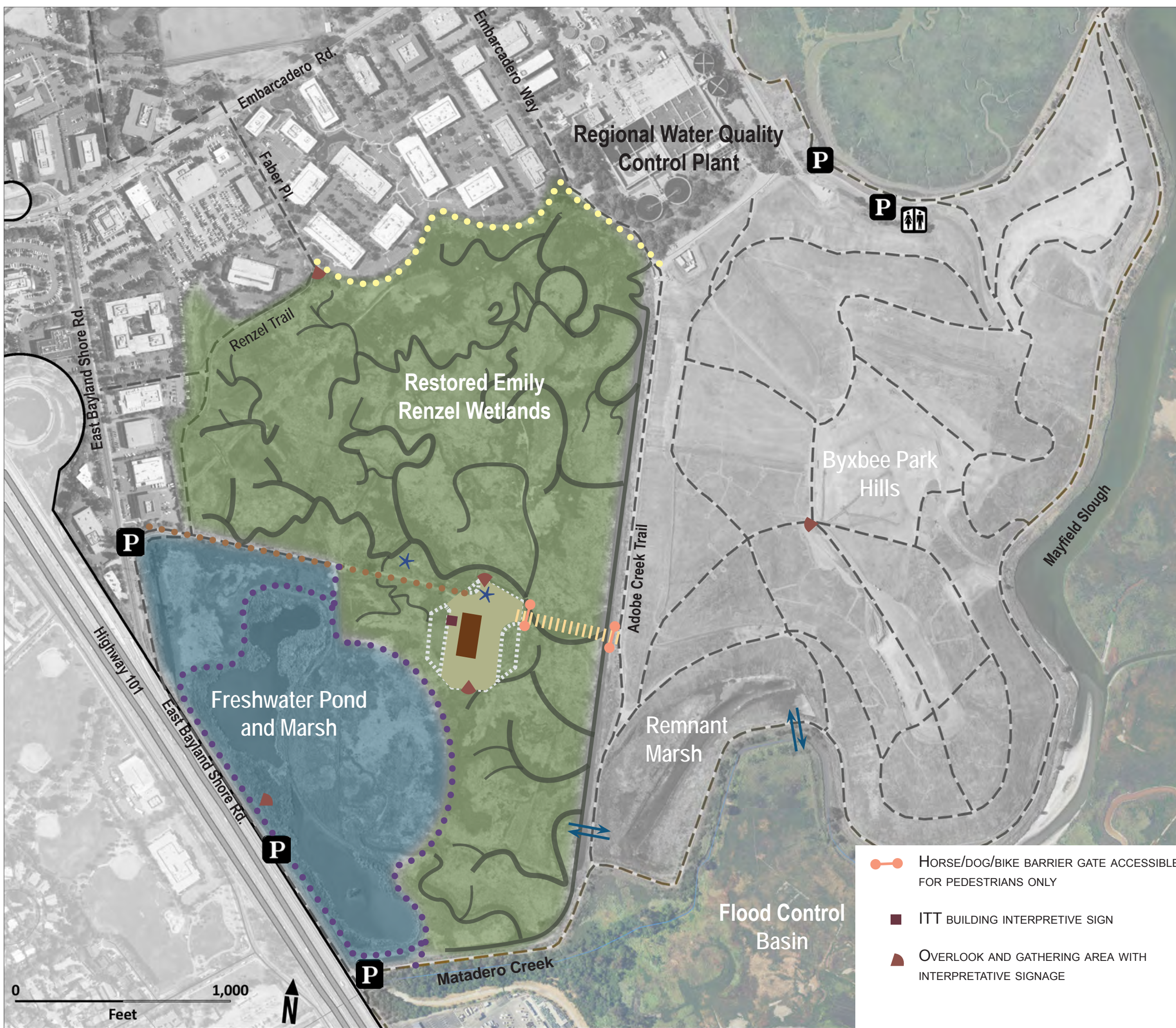
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PALO ALTO BAYLANDS ITT AREA

PRELIMINARY CONCEPT
OPTION 3: ITTPARK

- LEGEND:**
- PROPOSED PEDESTRIAN TRAIL (NO DOGS/HORSES)
 - PROPOSED PEDESTRIAN TRAIL ALONG EXISTING MAINTENANCE ROAD
 - EXISTING ROAD TO ITT BUILDING (VEHICULAR ACCESS)
 - TRAIL CONNECTION TO BYXBEE PARK WITH LEAST POSSIBLE ECOLOGICAL IMPACT.
 - EXISTING TRAIL
 - BAYLANDS BOUNDARY
 - FRESHWATER POND AND MARSH WITH EXPANDED FOOTPRINT
 - RESTORED HYDROLOGY, SALTWATER WETLAND WITH DENDRITIC CHANNELS AND PUBLIC USE FOOTPRINT
 - ITT BUILDING BECOMES A HISTORICAL STRUCTURE WITH ACCESS TO THE INTERIOR. INTERPRETATIVE SIGNAGE WILL BE PLACED OUTSIDE
 - PUBLIC USE FOOTPRINT AT ITT BUILDING INCLUDES PARKING AND PICNIC AREA
 - HABITAT RESTORATION REPLACES PORTION OF SURROUNDING AREA OF THE ITT BUILDING
 - TWO ANTENNAE, CHOSEN BY STAKEHOLDER GROUP, REMAIN ON SITE
 - TIDAL HYDROLOGICAL CONNECTION TO REMNANT MARSH AND FLOOD BASIN



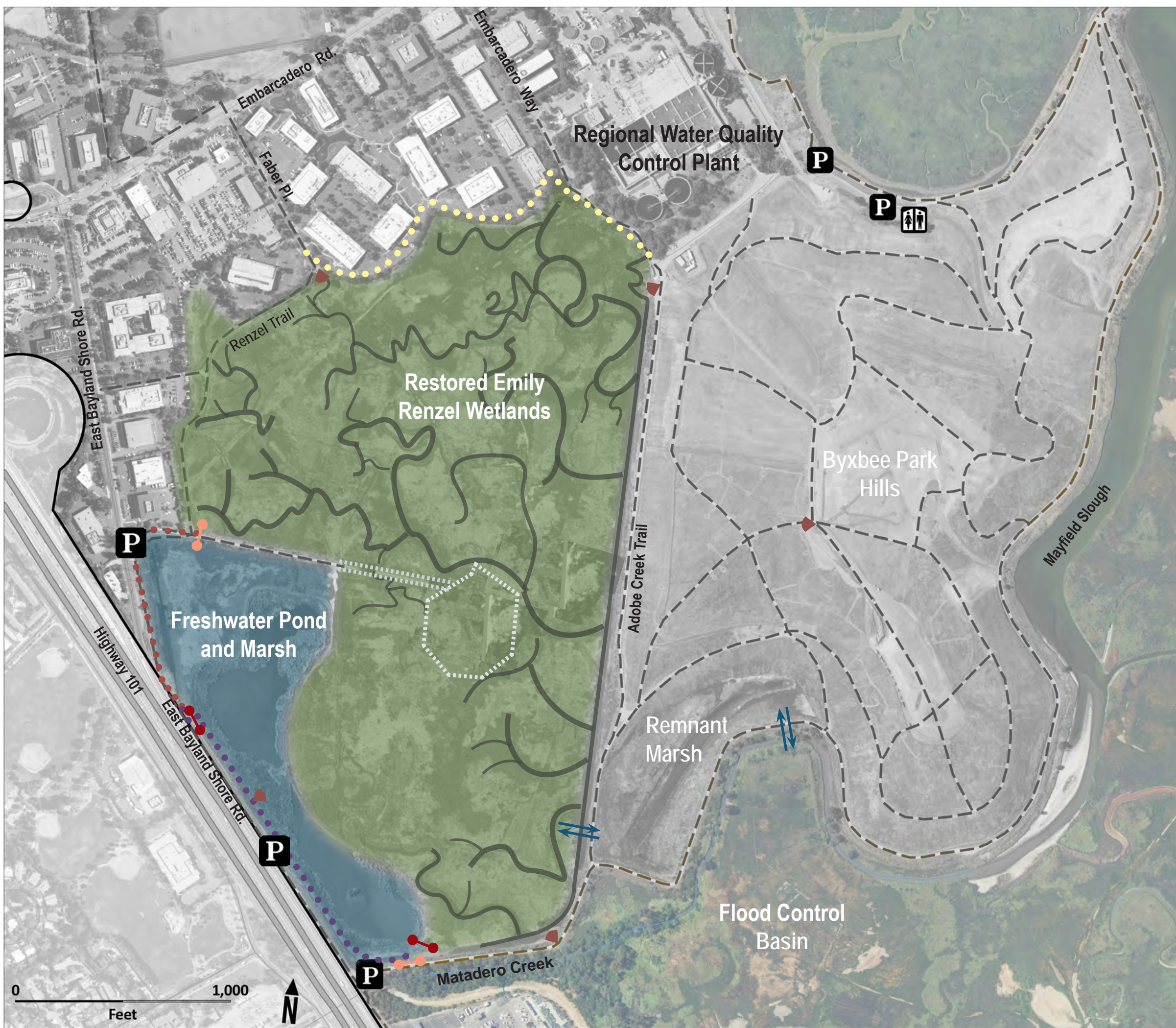
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PALO ALTO BAYLANDS ITT AREA

PRELIMINARY CONCEPT
OPTION 4: RETURN TO NATURE

- LEGEND:**
- PROPOSED PEDESTRIAN TRAIL (NO DOGS/HORSES)
 - EXISTING ROAD STOPS BEFORE THE FRESHWATER POND AND MARSH
 - ELEVATED PEDESTRIAN TRAIL ALONG LEVEE ROAD WITH ELEVATED PLATFORM AND INFORMATION STATION ABOVE FRESHWATER MARSH AND POND
 - EXISTING TRAIL
 - BAYLANDS BOUNDARY
 - FRESHWATER MARSH AND POND
 - RESTORED TIDAL HYDROLOGY, SALTWATER WETLAND WITH DENDRITIC CHANNELS. ALL ANTENNAE REMOVED
 - RESTORED HABITAT REPLACES ITT BUILDING FOOTPRINT AND SURROUNDING AREA.
 - POTENTIAL INFORMATION STATION LOCATIONS SURROUNDING EMILY RENZEL WETLANDS. POTENTIAL SPOTTING SCOPE AND OBSERVATIONAL PLATFORM AT ONE LOCATION.
 - HORSE/DOG/BIKE BARRIER GATE ACCESSIBLE FOR PEDESTRIANS AND MAINTENANCE ONLY
 - MAINTENANCE GATE ONLY. NO OTHER ACCESS



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Cost Comparison

Table 1. Cost Comparison – Renzel Wetlands Restoration and Improvements Cost Estimate

#	Description	Amt.	Unit	Unit Price			Item Total Price		
				Low	Medium	High	Low	Medium	High
Site Amenities									
1	North Trail	1,630	LF	\$20.00	\$35.00	\$100.00	\$32,600.00	\$57,050.00	\$163,000.00
2	North Trail Retaining wall	300	LF	\$20.00	\$25.00	\$30.00	\$6,000.00	\$7,500.00	\$9,000.00
3	North Trail Boardwalk	4,908	SF	\$50.00	\$70.00	\$150.00	\$245,400.00	\$343,560.00	\$736,200.00
4	North Trail Overlook	600	SF	\$4.00	\$7.50	\$12.00	\$2,400.00	\$4,500.00	\$7,200.00
5	North Trail Overlook Shade Structure	1	LS	\$10,000.00	\$20,000.00	\$40,000.00	\$10,000.00	\$20,000.00	\$40,000.00
6	Southwest Pedestrian Bridge	1	LS	\$13,000.00	\$39,000.00	\$64,000.00	\$13,000.00	\$39,000.00	\$64,000.00
7	Benches	3	EA	\$800.00	\$1,500.00	\$1,900.00	\$2,400.00	\$4,500.00	\$5,700.00
8	Recycling/Trash Can	2	EA	\$600.00	\$1,200.00	\$1,800.00	\$1,200.00	\$2,400.00	\$3,600.00
9	Interpretive Signage	3	EA	\$1,000.00	\$2,500.00	\$4,000.00	\$3,000.00	\$7,500.00	\$12,000.00
10	Directional/Informational Signage	4	EA	\$500.00	\$2,000.00	\$5,000.00	\$2,000.00	\$8,000.00	\$20,000.00
11	Mutt Mitt Station	1	EA	\$300.00	\$400.00	\$500.00	\$300.00	\$400.00	\$500.00
12	Horse/Bicycle Barrier Gates	2	EA	\$700.00	\$1,000.00	\$1,200.00	\$1,400.00	\$2,000.00	\$2,400.00
13	No Dog Signs	2	EA	\$300.00	\$500.00	\$700.00	\$600.00	\$1,000.00	\$1,400.00
14	Misc. concrete (e.g., footings)	50	CF	\$10.00	\$15.00	\$20.00	\$500.00	\$750.00	\$1,000.00
Subtotal:							\$320,800.00	\$498,160.00	\$1,066,000.00
Subtotal with 50% Contingency:							\$481,200.00	\$747,240.00	\$1,599,000.00
Annual Maintenance									
15	Maintenance of Site Amenities	1	AC	\$500.00	\$1,000.00	\$1,500.00	\$500.00	\$1,000.00	\$1,500.00
16	Weekly Trash/Recyclables Removal	2	EA	\$600.00	\$600.00	\$600.00	\$1,200.00	\$1,200.00	\$1,200.00
17	Renzel Wetlands Invasives Removal	68	AC	\$1,500.00	\$2,500.00	\$4,000.00	\$102000	\$170,000.00	\$272,000.00
18	Signage Replacement/Repair	1	EA	\$500.00	\$2,000.00	\$4,000.00	\$500.00	\$2,000.00	\$4,000.00
19	Tree and Shrub Trimming	0.30	MI	\$500.00	\$1,000.00	\$1,500.00	\$150.00	\$300.00	\$450.00
20	Gate Maintenance	2	EA	\$200.00	\$400.00	\$800.00	\$400.00	\$800.00	\$1,600.00
21	Walking Trail Maintenance	1.25	MI	\$1,000.00	\$2,000.00	\$3,000.00	\$1,250.00	\$2,500.00	\$3,750.00
22	Graffiti Removal (4 times per year)	1	LS	\$1,200.00	\$1,400.00	\$1,600.00	\$1,200.00	\$1,400.00	\$1,600.00
Subtotal:							\$107,200.00	\$179,200.00	\$286,100.00
Subtotal with 50% Contingency:							\$160,800.00	\$268,800.00	\$429,150.00
Restoration									
23	Salt Marsh Restoration	27	AC	\$80,000.00	\$130,000.00	\$180,000.00	\$2,160,000.00	\$3,510,000.00	\$4,860,000.00
24	Primary Dendritic Channel Restor'n	3,013	LF	\$35.00	\$35.00	\$35.00	\$105,455.00	\$105,455.00	\$105,455.00
25	Secondary Channel Restoration	4,177	LF	\$12.00	\$12.00	\$12.00	\$50,124.00	\$50,124.00	\$50,124.00
26	Salt Marsh Hydrology Restoration	1	LS	\$300,000.00	\$1,000,000.00	\$6,000,000.00	\$300,000.00	\$1,000,000.00	\$6,000,000.00
Subtotal:							\$2,615,579.00	\$4,665,579.00	\$11,015,579.00
Subtotal with 50% Contingency:							\$3,923,368.50	\$6,998,368.50	\$16,523,368.50
Acronyms: AC=Acre; CF=Cubic Foot; EA=Each; LF=Lineal Foot; LS=Lump Sum; MI=Mile; SF=Square Foot									
Source: Compiled by AECOM 2018									



Cost Narrative

Site Amenities

North Trail

This proposed trail would extend from the southern end of Faber Place, where it would tie into the existing Renzel Trail, and to Embarcadero Way along the property line and salt marsh boundary. Costs for the North Trail have been developed for three options:

- **Low-end option:** A 5-foot-wide walking trail would be created by mixing a 3-inch layer of native soil with stabilizer and placing it over compacted subgrade and a layer of landscape fabric. This cost option assumes that only pedestrians would be permitted to use the walking trail.
- **Medium cost option:** A 7-foot-wide walking trail consisting of a 4-inch layer of decomposed granite would be installed over compacted native soil, landscape fabric, and metal mesh.
- **High-end option:** A 10-foot-wide trail, similar to Renzel Trail to the west, consisting of a 4-inch-thick layer of asphalt concrete would be installed over a layer of compacted aggregate and geotextile fabric.

Construction for any of the three options would include a light to medium level of grading and vegetation clearing. Existing trees and shrubs primarily are ornamental, and most only would need to be trimmed. A cost range also has been developed to account unknown soil conditions and the presence of obstructions. The low end of this range would include working in soil that is easily compacted and only lightly vegetated, while the high end would include working in soil with rocks and/or dense vegetation.

All three cost options could achieve the degree of stability and firmness required for compliance with the Americans with Disabilities Act. Both the medium cost option and the high-end option assume that the trail would be used by bicycles and maintenance vehicles.

Boardwalk

A portion of the North Trail may have to be completely elevated to minimize wetland impacts and avoid encroachment on neighboring properties. Costs for the North Trail Boardwalk have been developed for three options:

- **Low-end option:** An 8-foot wide elevated boardwalk would be created, with cast-in-place shallow concrete footings, fiberglass stringers, fiberglass guardrails, and plastic wood decking.
- **Medium cost-option:** An 8-foot-wide elevated boardwalk would be created, with drilled concrete caissons, fiberglass stringers, fiberglass guardrails, and textured, high-density polyethylene decking.
- **High-end option:** An 8-foot-wide elevated boardwalk would be created, with drilled fiberglass pilings, fiberglass stringers, fiberglass guardrails, and fiberglass decking.

All of these cost options include labor and material costs. All options assume that the boardwalk would be necessary only for some portions of the trail.



North Trail Retaining Wall

If access to neighboring properties is granted, a small segment of the North Trail may have to be elevated to minimize wetland impacts. Costs for the North Trail retaining wall have been developed for three options:

- **Low-end option:** A small retaining wall, less than 30 inches high, consisting of several layers of salvaged concrete from the Marsh Station building would be set in the slope. Redwood logs would be anchored along the edge, to create a natural curb and provide fall protection along the edge. This option assumes demolition of the Marsh Station building and the availability of free segments of concrete slab, suitable for construction of a retaining wall.
- **Medium cost option:** A small retaining wall, less than 30 inches high, consisting of natural rock set on the slope with 4 by 6-foot redwood timbers anchored along the edge would create a protective curb. Guardrails would not be required because the retaining wall would not exceed 30 inches in height.
- **High-end option:** A reinforced concrete retaining wall and integral curb would be created.

North Trail Overlook

Costs for the North Trail Overlook have been developed for three options:

- **Low-end option:** An overlook would be created on leveled existing grade, composed of a 3-inch layer of existing soil mixed with a soil stabilizer, installed over landscape fabric. The steep edge of the viewing platform would be bordered with a redwood log curb, anchored in place, and would serve both as a seating area and a protective barrier.
- **Medium cost option:** An overlook would be created on leveled existing grade, constructed from a 4-inch layer of decomposed granite, installed over compacted soil, landscape fabric, and wire mesh. This cost would include a 4 by 6-foot redwood timber curb, attached to the ground along the sloping edge of the viewing platform.
- **High-end option:** An overlook would be created, composed of pervious concrete, set over a base layer of crushed aggregate and geotextile, and with an integral concrete curb.

These cost options assume that the overlook would measure 30 by 20 feet, and that the overlook would be constructed on grade, above and outside any wetlands. All options would achieve the degree of stability and firmness required for compliance with the Americans with Disabilities Act.

North Trail Overlook Shade Structure

Costs for the North Trail Overlook shade structure have been developed for three options:

- **Low-end option:** A polyethylene shade sail would be fastened to three 15-foot-high by 12-inch-diameter wood posts, with a three-corner aluminum pulley system.
- **Medium cost option:** A wood timber or metal slatted pergola would provide partial shade.
- **High-end option:** A wood timber or metal A-frame shade structure with a shingle or metal roof would provide full shade.

The low-end cost option assumes that the shade sail would provide shade for 75 percent (450 square feet) of the overlook platform. Both the medium cost option and the high-end



cost option assume that the shade structure would provide shade for the entire viewing platform (600 square feet).

Southeastern Pedestrian Footbridge

Costs for the southeastern pedestrian footbridge have been developed for three options:

- **Low-end option:** A 25-foot-long, 10-foot-wide timber glulam bridge would be installed, with glulam decking, 42-inch timber guardrails, and concrete abutments.
- **Medium cost option:** A 25-foot-long, 10-foot-wide prefabricated lightweight fiberglass-reinforced plastic (FRP) footbridge would be installed, with high-density polyethylene (HDPE) decking, 42-inch FRP guardrails, and concrete abutments.
- **High-end option:** A 25-foot-long, 10-foot-wide prefabricated lightweight FRP truss footbridge would be installed. The cost would include FRP decking with antiskid coating, 42-inch FRP guardrails, and concrete abutments.

These cost options include all necessary labor and hardware for construction, such as galvanized steel deck screws, anchor clips, and other materials. Final costs assume that the site would be accessible by ground vehicles and other construction equipment, and that the assembly of the prefabricated footbridge could be completed within 2 weeks following footbridge delivery.

Benches

Three benches would be stationed at various locations around the site. Costs have been developed for three bench options:

- **Low-end option:** a wooden bench
- **Medium cost option:** a wood and concrete bench
- **High-end option:** a fiber-reinforced concrete bench

The concrete footings to which the benches would be attached are discussed under “Miscellaneous Concrete” below.

Recycling/Trash Can

Costs have been developed for three trash and recycling receptacle options:

- **Low-end option:** A wood or recycled plastic receptacle would be set with two 32-gallon plastic bin inserts for trash and recycling.
- **Medium cost option:** A wood and concrete trash and recycling receptacle would be set with two 32-gallon plastic bin inserts for trash and recycling.
- **High-end option:** A fiber-reinforced concrete trash can and recycling bin would be set with two 32-gallon plastic bin inserts for trash and recycling.

The cost of a concrete base is discussed under “Miscellaneous Concrete” below.



Interpretive Signage

Three interpretive signs would be installed throughout the area: one at the overlook, one at the end of the road leading to the former ITT property, and one near the freshwater pond. Costs for this signage have been developed for three options:

- **Low-end option:** A small 2 by 3-foot sign would be posted, with a single wood or metal post and a high-density polyethylene plastic sign panel with a plastic frame.
- **Medium cost option:** A large 3 by 5-foot sign would be posted, with a double post made of coated steel and a high-density polyethylene plastic sign panel.
- **High-end option:** A large 4 by 6-foot enameled steel sign would be posted, with a coated steel frame and a double coated steel post.

The costs of this signage include the post, sign panel, hardware, and installation. However, they do not include the sign post footing, which is discussed under “Miscellaneous Concrete” below.

Directional/Informational Signage

Three directional signs would be placed: at the end of Embarcadero Way, at the overlook area, and at the intersection of Renzel Trail and Marsh Station Road. In addition, one informational sign would be placed at the end of Faber Place in the overlook area. Costs for directional/informational signage have been developed for three options:

- **Low-end option:** Trail and safety signs, based on a U.S. Forest Service Level III sign (approximately 40–50 inches tall), would be posted, and would consist of plywood or fiberglass on a wood or metal post.
- **Medium cost option:** U.S. Forest Service Level II signs (approximately 48–60 inches tall) would be posted and would consist of a reflectorized wood, aluminum, or fiberglass sign on metal or wood posts.
- **High-end option:** U.S. Forest Service Level I signs would be posted. Level I signs are large and allow more information at special attraction sites. They typically have a more substantial, durable base, made from rock or brick.

Mutt Mitt Station

Costs for the Mutt Mitt Station have been developed for three options:

- **Low-end option:** An aluminum pet waste disposal station would be installed and would include a pet waste bag dispenser, an informational sign with instructions for waste disposal, and an aluminum mounting station. The cost for this option assumes that the pet waste station would be placed next to the trash receptacles on site.
- **Medium cost option:** A plastic, rectangular, pet waste disposal station would be installed, with a waste receptacle capable of a 10-gallon plastic insert, a pet waste disposable bag dispenser, and painted informational signage with instructions for waste disposal.
- **High-end option:** A coated steel pet waste disposal station would be installed and would include a receptacle for pet waste capable of holding a 10-gallon plastic insert, a pet waste disposable bag dispenser, and a small informational sign with instructions for waste disposal.



The concrete footing to which the pet waste station would be mounted is discussed under “Miscellaneous Concrete” below.

“No Dogs” Signs

As requested by the stakeholders, these signs would be placed at both ends of the freshwater pond and Marsh Trail to prevent off-leash or barking dogs from disturbing salt marsh wildlife.

Miscellaneous Concrete

This cost includes construction of concrete footings for the site amenities described above.

Annual Maintenance Costs

Maintenance of Site Amenities

This cost is for cleaning site amenities and tightening hardware, only in the limited area of public access (not in salt marsh habitat). Calculations are based on the actual area that would have site amenities, estimated to total 1 acre. Major repairs are not included.

Removal of Trash and Recyclables

This cost is to empty trash/recycling bins that would be located around the site, and to properly dispose trash on a weekly basis. This estimate does not include cleanup of illegal dumping and homeless camps. This cost assumes that two 32-gallon trash bins and two 32-gallon recycling bins would be emptied each week (throughout the year). The price for trash removal is based on the City of Palo Alto’s commercial refuse collection rates.

Removal of Invasive Vegetation in the Emily Renzel Wetlands

Costs for removing invasive vegetation in the Emily Renzel Wetlands have been developed for three options:

- **Low-end option:** Minimal extent removal of easy-to-eradicate invasive species, using limited equipment
- **Medium cost option:** Higher density removal of invasive species, requiring specialized equipment (weed wrenches)
- **High-end option:** High-density removal of invasive species, requiring specialized equipment (tilling with bobcat)

This cost is per acre and assumes that about 50 percent of the 135-acre Emily Renzel Wetlands and remnant marsh (68 acres) contain invasive vegetation. This cost could vary greatly and would be contingent on the amount and type of invasive species being removed and the removal method.

Signage Replacement/Repair

This cost is for maintenance and repair of existing signs. The cost range is a function of sign type, size, quality, and location.

Tree and Shrub Trimming

This maintenance cost is for limited pruning of trees, shrubs, and volunteer vegetation near the trails as needed. This cost may vary widely depending on the amount of vegetation.



Gate Maintenance

This estimated maintenance cost can vary greatly based on gate type. The maintenance would consist of painting, lubricating, and resetting or straightening gates, and repairing broken or damaged gate components.

Walking Trail Maintenance

This cost includes weed control (on trail shoulders), debris removal, minor erosion control (filling potholes and erosional rills), and minor repairs to other trail-related elements.

Graffiti Removal

The minimum service charge for graffiti removal is \$200 (operator and truck fee); also a charge of \$2 per square foot would be incurred. Graffiti removal costs have been developed for three options:

- **Low-end option:** Removal of 50 square feet of graffiti during each visit, for a total of \$300 per visit or \$1,200 annually
- **Medium cost option:** Removal of 65 square feet of graffiti during each visit, for a total of \$350 per visit or \$1,400 annually
- **High-end option:** Removal of 80 square feet of graffiti during each visit, for a total of \$400 per visit or \$1,600 annually

Salt Marsh Restoration Costs

Salt Marsh Restoration

Costs for salt marsh restoration have been developed for three options:

- **Low-end option:** Ripping compacted soil or tilling heavily weed-infested soil after pre-germination, removing invasive vegetation, and replanting and reseeding 27 acres of the site (as shown on the final conceptual plan), assuming that the density of invasive vegetation would be minimal
- **Medium cost option:** Ripping soil, removing invasive vegetation, and reseeding 27 acres of the site, assuming that a high quantity of invasive species would be present, and that restoration could be achieved with minimal wetland disturbance
- **High-end option:** Ripping soil, removing invasive vegetation and species, and replanting and reseeding 27 acres of the site, assuming that numerous invasive species would be present, and that restoration would require specialized equipment

Overall, these three options present a range of potential restoration costs and assume that typical approaches could be used to rip soil, remove invasive vegetation, and reseed at the site. The three options also assume that approximately 27 acres would have to be restored, and that such restoration would not affect the existing areas of salt marsh. The restoration costs do not account culverts or restoration of historic dendritic channels and hydrology.

Restoration of the Primary Dendritic Channel

This cost is for trenching/clearing an 8-foot-wide by 4-foot-deep salt water channel. This cost does not include restoration of compacted areas after channel construction, which is discussed under “Salt Marsh Restoration” above.



Restoration of the Secondary Dendritic Channel

This cost is for trenching a smaller, 4-foot-wide by 2-foot-deep salt water channel. This cost does not include restoration of compacted areas after channel construction, which is discussed under “Salt Marsh Restoration” above.

Restoration of Salt Marsh Hydrology

Costs for restoration of salt marsh hydrology have been developed for three options:

- **Low-end option:** Three 6-foot-wide concrete culverts would connect the main Emily Renzel Wetlands channel to Matadero Creek/Mayfield Slough, with three 6-foot-diameter underground culverts installed beneath the levee road. This cost is conceptual and assumes (without detailed hydrological modeling) that the culverts would be a sufficient means of conveying water to provide natural hydrology to the Emily Renzel Wetlands. It also is based on the assumption that the invert elevations would be feasible to provide tidal inflow and outflow at the point of connection.
- **Medium cost option:** This option would replace the approximately 900-foot-long pipe currently connecting the site’s northeastern corner to the San Francisco Bay with a new pipe measuring 10 feet in diameter. Setting the new pipe at a lower elevation would improve tidal hydrology in the entire salt marsh at the former ITT property. This option also would include adding two 4-foot-diameter culverts that would connect isolated segments of the salt marsh in the northwestern portion of the site, separated from the main marsh by Renzel Trail. The conceptual estimate assumes that a 10-foot-wide pipe connection would be sufficient to restore natural hydrology in the marsh, and that the elevation at the point of connection would enable natural tidal inflow and outflow.
- **High-end option:** Daylighting would occur for approximately 900 feet of pipe that currently connects the former ITT property and the salt marsh in the northeastern corner of the Emily Renzel Wetlands. The cost includes removing the current culvert, excavating a wider trapezoidal channel, providing erosion protection for the bank and bottom of the channel, installing two prefabricated concrete bridges, and completing ecological restoration of the daylighted channel. This cost option also includes adding two 4-foot-diameter culverts that would connect isolated segments of the salt marsh in the northwestern portion of the site, separated from the main marsh by Renzel Trail.



City of Palo Alto Historic Survey Update for the former Federal Telegraph Company Marsh Station Property



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This form builds upon previous recordation and evaluation of this property in 2001 that was conducted for the City of Palo Alto Historic Survey Update by Corbett and Bradley of the consulting firm Dames & Moore (see attached).

P1. Other Identifier: International Telephone and Telegraph Corporation (ITT) Building; Federal Telegraph Company Marsh Station, Federal Telegraph Company Palo Alto Station; Federal Telegraph Company San Francisco Station

***P2. Location:** ☐ Not for Publication ☒ Unrestricted ***a. County:** Santa Clara
and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Palo Alto, CA **Date** 1991 **T** ; **R** ; ¹/₄ **of** ¹/₄ **of** **Sec** ; **Mount Diablo B.M.**

***c. Address** 2601 East Bayshore Road **City** Palo Alto **Zip** 94301

***e. Other Locational Data:** Assessor Parcel Number (APN): 008-04-001. The buildings and structures are accessed via a driveway leading eastward from East Bayshore Road northeast of US Highway 101. A series of locked gates restricts public access to the site.

***P3a. Description:** This Update form records and re-evaluates the former Federal Telegraph Company Marsh Station property located within the City of Palo Alto's Baylands Nature Preserve. In July 2018, the property consisted of a one-story station building constructed in phases between 1921 and 1932, a single-story engineering office/warehouse built between 1948 and 1956, and the original 1921 concrete and granite base for the no longer extant 626-foot-tall steel transmission tower (**Photograph 1**). These three buildings and structures are enclosed within chain link fence on approximately 3.5 acres within the larger 53-acre parcel (see **Site Map** on page 20).

The one-story station building has a rectangular plan and sits on a tall concrete foundation that is indicative of a high water table around the base of the building. The building is approximately 42.5' by 170' and is orientated north-south. The building is constructed of hollow clay tile and the exterior is clad with cement plaster. The building has a low-sloped wood gable roof truss system with geometric parapets on the north and south gable ends, which give the appearance of a restrained Art Deco design. The east and west sides have three wide shed roof overhanging eaves with exposed decorative rafter tails between two wall parapets and the gable end parapets. Fenestration on the east and west sides of the building is characterized by inset windows with transoms that have been boarded over and wire metal security panels installed. As viewed from the interior, the windows are paired four-over-four double-hung wood windows with transoms within wide wood window surrounds. The primary entrance of the station building is centrally located on the north side and is accessed via a set of concrete stairs with metal pipe railings. The entrance is comprised of a set of wood double doors with a large transom window, flanked by two shorter four-over-four wood double-hung windows and two larger paired four-over-four double-hung wood windows with transoms (**Photograph 2**). The south end has a similar composition but lacks the concrete stairs (see **Photograph 1**). Both the north and south parapets also have louvered vents near the top of the parapet wall (See Continuation Sheet).

***P3b. Resource Attributes:** HP11. Engineering structure; HP9. Public utility building

P5a. Photographs:



Photograph 1: Marsh Station at left, engineering office/warehouse at right, modern antenna on 1921 base at center, camera facing northwest, July 17, 2018 (AECOM).

***P6. Date Constructed/Age and Source:** ☒ Historic ☐ Prehistoric ☐ Both 1921-1935 / Corbett 2001; Hohen 2003

***P8. Recorded by:** Chandra Miller, AECOM, 2020 L Street, Suite 400, Sacramento, CA 95811

***P9. Date Recorded:** July 17, 2018

***P10. Survey Type:** Intensive

***P11. Report Citation:** None.

P3a. Description and P5a. Photographs (continued):



Photograph 2: Northwest corner of Marsh Station with primary entrance on north side of 1921 building segment, camera facing southeast, July 17, 2018 (AECOM).

The north entrance leads into a small foyer with entrances to two offices on the east and west sides and the central control room to the south (**Photograph 3**). The west office has acoustic tiles affixed to the walls and ceiling (**Photograph 4**), and the east office includes a staircase that leads to attic storage and double doors that lead to a machine shop room (**Photographs 5 and 6**).



Photograph 3: View from Marsh Station's north foyer into central control room with small offices areas flanking foyer, camera facing south, July 17, 2018.

P3a. Description and P5a. Photographs (continued):



Photograph 4: West office as viewed from foyer in 1921 building section, camera facing west, July 17, 2018 (AECOM)



Photograph 5: Interior view of east office with staircase to attic storage, double doors at center lead to machine shop room, camera facing south, July 17, 2018.

P3a. Description and P5a. Photographs (continued):



Photograph 6: Interior view of attic storage room, camera facing east, July 17, 2018 (AECOM).

The machine shop room includes a wooden work bench along the east wall (**Photograph 7**). The west wall features four-over-four double-hung wood windows with four-light transoms, and the east wall facing the control room has groups of tall, stacked, nine-over nine wood windows with six-light transoms and divided by wide mullions. A door in the east wall leads to the central control room (**Photograph 8**).



Photograph 7: Interior view of 1921 section of the station with machine shop located east off the central control room, double doors lead to a small office room with a staircase leading to storage area, camera facing northeast, July 17, 2018 (AECOM).

P3a. Description and P5a. Photographs (continued):

The central control room is largely characterized by stacked nine- and 12-light windows with four-, six-, and eight-light transoms and divided by wide mullions. Wide wood bracing ties the walls and supporting posts along the east and west sides. Some window groups have been removed to install equipment (**Photograph 8**). Two doors on the south wall lead to the center of the building. Non-historic metal framing for modern communication equipment has been installed outside of the south wall of the control room (**Photograph 9**).



Photograph 8: Interior view of control room in 1921 section of station, machine shop at left, camera facing southeast, removed windows for equipment at center July 17, 2018 (AECOM).



Photograph 9: Non-historic metal framing for removed communications equipment located south outside of central control room, camera facing north, July 17, 2018 (AECOM).

P3a. Description and P5a. Photographs (continued):

Flanking the control room are corridors along the east and west sides that housed equipment (**Photograph 10**). The south two-thirds of the station's interior, which is characterized by an open span floor plan with metal post supports, was constructed in 1928 and 1932 to accommodate additional equipment. A metal track system below the ceiling used to move equipment is still extant (**Photographs 11 and 12**).



Photograph 10: Interior view of west side corridor outside central control room from 1921 building section looking south towards 1928 and 1932 additions. Original transoms of 1921 window group at far right with remnant original wiring, camera facing south, July 17, 2018 (AECOM).



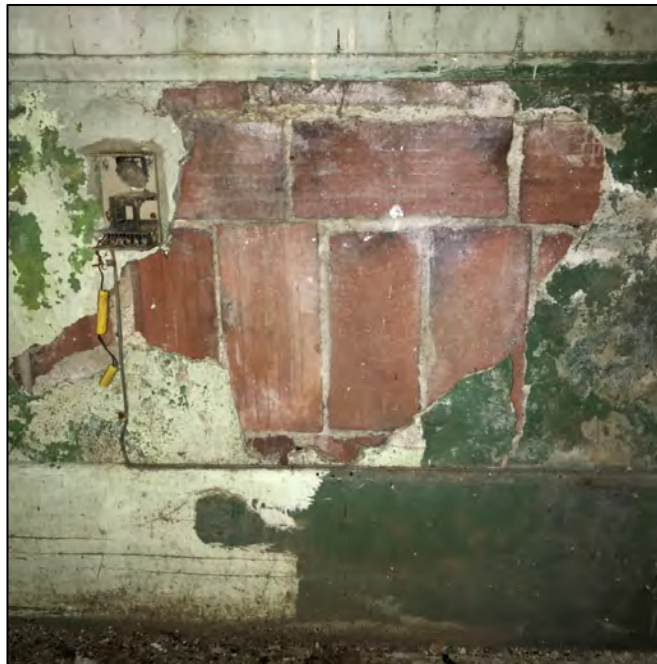
Photograph 11: Interior view of 1928 and 1932 additions looking south, replaced and upgraded communication equipment housed within. Metal track system mounted along interior ceiling still extant, camera facing south, July 17, 2018 (AECOM).

P3a. Description and P5a. Photographs (continued):

Water intrusion throughout has damaged the interior ceiling and wall surfaces original finishes and materials (**Photograph 12**). The south interior wall of the station building, which was constructed in 1932, has areas where the cement plaster has deteriorated and exposed the hollow clay tile wall construction (**Photograph 13**).



Photograph 12: Detail view of metal roof supports, metal track system, and damaged ceiling. Lights are not original, camera facing north, July 17, 2018 (AECOM).



Photograph 13: Hollow clay tile wall construction exposed under cement plaster, located on interior south wall of 1932 addition, camera facing south, July 17, 2018 (AECOM).

P3a. Description and P5a. Photographs (continued):

The engineering office/warehouse is perpendicular to the station and sited northeast of the northeast corner of the station (see **Site Map** on page 20). The single-story, rectangular plan building measures 30' by 84' and is set at grade (**Photograph 14**). The exterior is clad with stucco and the gable roof has fascia boards on the east and west gable ends and open eaves along the north and south sides. The west side has three evenly spaced boarded over square window openings. The south side has two boarded over doorways and three square window openings. The east end of the south side has two modern overhead roll up metal doors. One of these entrances has a sloped concrete ramp. The east side has one centrally located square window opening (**Photograph 15**). The northeast corners have metal louvers at the lower third of the wall. The north side has three square window openings. Windows at the east end of the north wall have been infilled. The exterior stucco appears to be a later alteration to the building based on the depth of the window and door openings and lack of frames.



Photograph 14: Southwest corner of engineering office/warehouse with 1921 antenna base at left, camera facing northeast, July 17, 2018 (AECOM).



Photograph 15: Engineering office/warehouse northeast corner, windows at east end of north wall have been infilled, camera facing southwest, July 17, 2018 (AECOM)

P3a. Description and P5a. Photographs (continued):

The original 1921 concrete and granite base for the no longer extant 626-foot steel transmission tower is located at the west end of the Engineering Office/warehouse (**Photograph 16**). The concrete base measures 6' deep by 16' square. The four granite blocks, which served as the footings for the original 626-foot tall antenna are on top of the concrete base and measure 1.5' tall by 3' wide by 3' long. A much shorter, metal lattice tower supported by guyed wires and capped with a rounded top was installed in the center of the concrete base sometime after the original antenna was removed in 1960. The southwest granite block has "1921" carved on its south face (**Photograph 17**). Within the chain link fenced area of the building cluster, several of the original concrete anchorages used for the 1921 antenna are still present (**Photograph 18** and **Plate 1**). All other towers and poles formerly within the chain link fenced area have been cleared from the site. Outside of the fenced perimeter are various age wood and metal poles of various heights scattered throughout (**Photograph 19**).



Photograph 16: Original 1921 concrete and granite antenna base with replacment shorter, modern tower, camera facing northeast, July 17, 2018 (AECOM).



Photograph 17: Granite block on concrete base of antenna carved with 1921 built date, camera facing north, July 17, 2018 (AECOM).

P3a. Description and P5a. Photographs (continued):



Photograph 18: Concrete anchorage for 1921 antenna located southeast from station building, camera facing south, July 17, 2018 (AECOM).

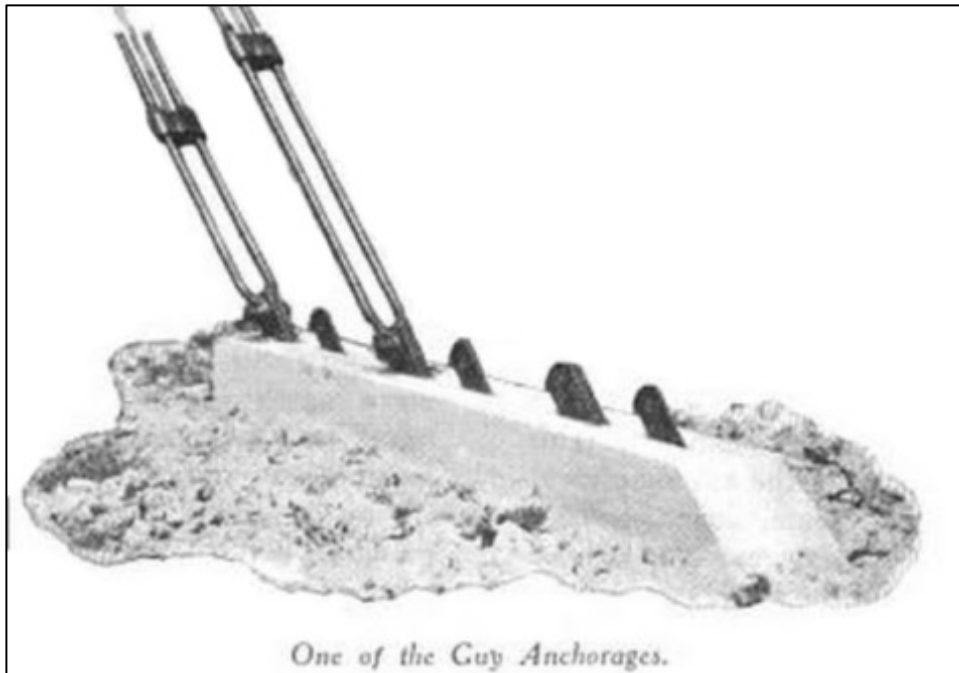


Plate 1: 1921 Marsh Station antenna anchorage (*Pacific Radio News* 1921a).

P3a. Description and P5a. Photographs (continued):



Photograph 19: Remnant wood and metal poles of various ages and heights located outside chain link fence, camera facing south, July 17, 2018 (AECOM).

***B6. Construction History:** (Construction date, alterations, and date of alterations):

The first phase of construction was in 1921 when the north portion of the Marsh Station was built along with a water tank, outdoor condensers, and the 626-foot-tall steel transmission tower. The second phase in 1928 doubled sized the station with an addition on the south side. The third addition on southern end of station was constructed in 1932. The water tank and condensers were removed sometime between 1948 and 1956. A single-story rectangular plan building constructed perpendicular to the northeast corner of station was constructed between 1931 and 1939 and is no longer extant. The 626-foot-tall steel transmission tower was removed in 1960 (concrete and granite base still extant).

The engineering office/warehouse was built between 1948 and 1956. Two overhead modern roll up metal garage doors at the east end were added at an unknown date. The exterior stucco cladding appears to be a later alteration based on the depth of the window and door openings and lack of frames. The windows on the north side of the building have been infilled.

***B10. Significance:**

This update form was prepared to record the existing conditions of the former Federal Telegraph Company Marsh Station property, re-evaluate the property's historical significance, and assess its historic integrity. When the property was initially recorded in 2001, it consisted of five buildings centered within the fenced area and several antennae arrays. As of July 2018, only two buildings remain extant. The following historic context builds upon and supplements the historical context provided in the previous DPR 523 form (Corbett 2001, see attached). Additional sources of information were reviewed for this update including several collections on file at the History San Jose Research Library that were not available in 2001.

Historic Context

Beginning in 1910, the Federal Telegraph Company constructed and operated stations along the west coast to provide an inter-city communication system between the principal cities of Seattle, Portland, San Francisco, Los Angeles, and San Diego for commercial telegraph purposes and to provide wireless service for ships at sea. The transmitter equipment used at the stations was developed and manufactured by the company, which was based in Palo Alto. In 1912, the Federal Telegraph Company built a larger station in San Francisco and also completed a station in Honolulu as the company sought to develop long range overseas transmission technology (Perham Collection on Federal Telegraph Company 2003). Using its newly constructed Honolulu Station, Federal Telegraph demonstrated the capabilities of their Poulsen arc system to relay messages over 4,500 nautical miles for the United States Navy, and subsequently secured a Navy contract in 1913 to develop a string of high powered Naval radio stations on the east coast to the Canal Zone. Federal

Telegraph also held contracts to provide arcs for dozens of Army posts throughout the United States and hundreds of Shipping Board Liberty Ships (*Electrical Review* 1921; Adams 2017:9-11, 17-18).

When the United States officially entered World War I in April 1917, the west coast Federal Telegraph Company stations were requisitioned for use by the Navy as part of the nationwide control of all railroads, telephone, and radio as wartime necessities (Adams 2017:13). In May 1918, the Navy purchased most of Federal Telegraph's real property holdings including the San Francisco, Los Angeles, and San Diego stations¹, the American rights to nearly 40 technology patents and patents pending held by Federal Telegraph, and other intellectual property of the company for \$1.6 million. This purchase was an attempt to block Federal Telegraph's rival, American Marconi, which had the British Navy as a client, from obtaining key intellectual property and strategic radio stations. The United States sought a monopoly and worldwide dominance of radio communication technology to rival Britain's dominance in cable communication technology. Between 1918 and 1921, the Navy attempted to have one of Federal Telegraph's arcs reverse engineered to potentially expand manufacturing of the arc on the east coast; however, they were unsuccessful (Adams 2017: 5, 22-23, 26-27).

In order to continue commercial services for newspapers and other clients during the war, the Federal Telegraph Company leased land wire telegraph circuits from the Pacific Telephone & Telegraph Company (*Moody's Manual of Railroads and Corporation Securities* 1900:1507; Harold F. Elliott Papers 2003). After the war, the Navy returned the stations to Federal Telegraph; however, equipment within the stations purchased by the government during the war was either removed and sent to military installations or altered for military purposes, and Federal Telegraph was not able to resume the use of their west coast inter-city telegraph system immediately after the war. Federal Telegraph quickly enacted plans to build four new West Coast radio stations to return to commercial radio transmission. The first two stations were built in the first half of 1921 in Hillsboro, Oregon (Portland) and Palo Alto (Marsh Station), California (San Francisco) (*Morning Oregonian* 1920). When originally constructed in 1921, Marsh Station was the most powerful of the West Coast stations as it could receive and send out more messages at once with additional equipment installed at the site. It was the first station in the world with the capability to communicate with four different stations at one time (*Pacific Radio News* 1921c).

The boost in capital from the Navy purchase in 1918 and the reacquisition of its patents in March 1921 provided a second wind for the company; however, the arc technology that Federal Telegraph specialized in since 1913 was on the way out and the vacuum tube was on the rise for lower power and smaller unit applications (Adams 2017: 27). Within the intellectual property that the Navy returned were patents that included a navigation device that improved maritime safety. Federal Telegraph hired Frederick A. Kolster, who developed and patented that technology in 1921 and began developing the first commercial radio direction finder, also called a radio compass. At the time, this development was seen as a major advancement in nautical technology and one of most important inventions since the magnetic compass (*Electrical Communication* 1946:396). With Kolster on board with the company, the 1920s saw the Federal Telegraph Company change gears from manufacturing high-power arc transmission systems to focus on long range radio transmission systems for commercial use. In 1927, Federal Telegraph became the exclusive manufacturer and supplier of equipment for the Mackay Radio and Telegraph Company's operating system, which was used by the Postal Telegraphic Commercial Cables Group. Mackay's contract with the Postal Telegraphic Commercial Cables Group required providing a competitive land and ocean communication service. In 1928 it appears Kolster, who was now lead engineer at Federal Telegraph, utilized the Marsh Station in Palo Alto as part of a series of experiments with directional antennas using short waves to transmit from Palo Alto to Seattle (710 miles) and Palo Alto to Honolulu (over 2,000 miles). The Marsh Station likely was expanded in 1928 during this experimentation phase to house additional equipment for transmissions to Honolulu and the Philippines (Adams 2017:28-29; Corbett 2001).

As a result of the 1928 experiments, Federal Telegraph was able to refine a point-to-point short wave radio network using vacuum tubes and transmitters of the company's own design and manufactured them exclusively for Mackay. That same year, Federal Telegraph sold their West Coast properties, including the series of ship-to-shore stations built in 1921 and 1922 of which Marsh Station was a part, to Mackay. Federal Telegraphy subsequently became purely a manufacturing and engineering company engaged in the design and supply of the electrical equipment exclusively for Mackay to fulfill its land and ocean radio service contract with the Postal Telegraphic Commercial Cables Group (*Electrical Communication* 1946:400-401). Mackay was purchased by International Telephone and Telegraph Corporation (ITT) in 1930 and ITT became a parent company of both Mackay and Federal Telegraph. In 1931, the manufacturing and research operations of Federal Telegraph were relocated from Palo Alto to Newark, New Jersey, thus ending the physical presence of the Federal Telegraph Company in Palo Alto (Adams 2017: 28-29).

Physical Development of the Marsh Station

The Marsh Station and the Hillsboro, Oregon stations were both built in 1921 and were identical in design and transmitting capacity with a range of 5,000 to 7,000 miles depending upon conditions. The tower designs were exactly the same with 626-foot-tall towers with horizontal cross sections of 6' by 6' on four vertical steel columns of riveted angle braces and braced with steel struts. Each of the four columns rested upon a granite block measuring 1.5' tall by 3' wide by 3' long that were set on a concrete base measuring 6' deep x 16' square (see **Plate 2**) (*Electrical Review* 1921). The station building at Hillsboro measured 40' by 60', was of clay tile construction, and

¹ The San Diego station was built during World War I for the Navy and was designed by the Bureau of Yards and Docks (National Park Service 1994).

***B10. Significance:**

finished with cement plaster on the interior and exterior. The interior was divided into six compartments including an operating room, arc and machinery room, two helix rooms, machine shop, and office and lavatory. Based on early photographs of the Marsh Station site and trade publications from the time, the design, materials, and layout are assumed to have been the same at the Marsh Station (*Electrical Review* 1921; Fred M. Hoehn Papers 2003-42; *Pacific Radio News* 1921b). Plans for the Clearwater Station (Los Angeles station) were a slightly modified design from the Hillsboro and Marsh stations (**Plate 3**), but it appears Federal Telegraph developed a standard design for its West Coast stations (*Pacific Radio News* 1921a:132; Harold F. Elliott Papers 2003).



Plate 2: Granite base and block foundation for Hillsboro 626-foot radio tower (*Electrical Review* 1921).

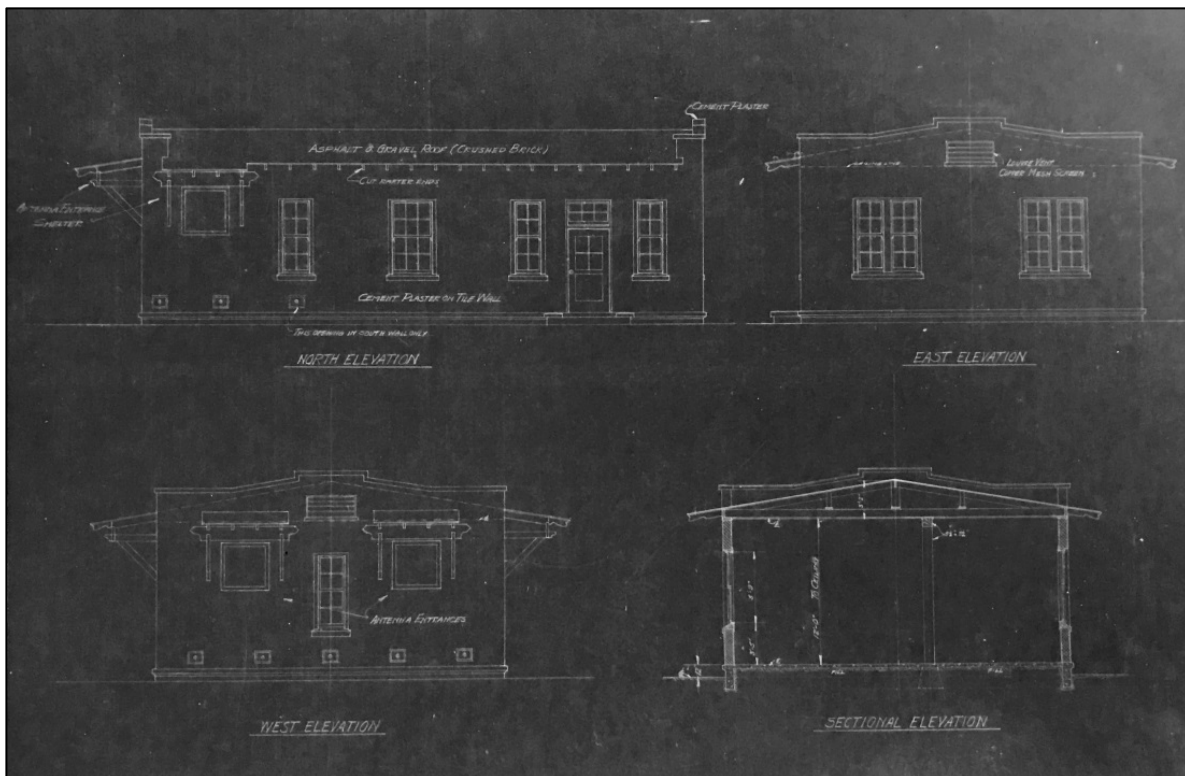
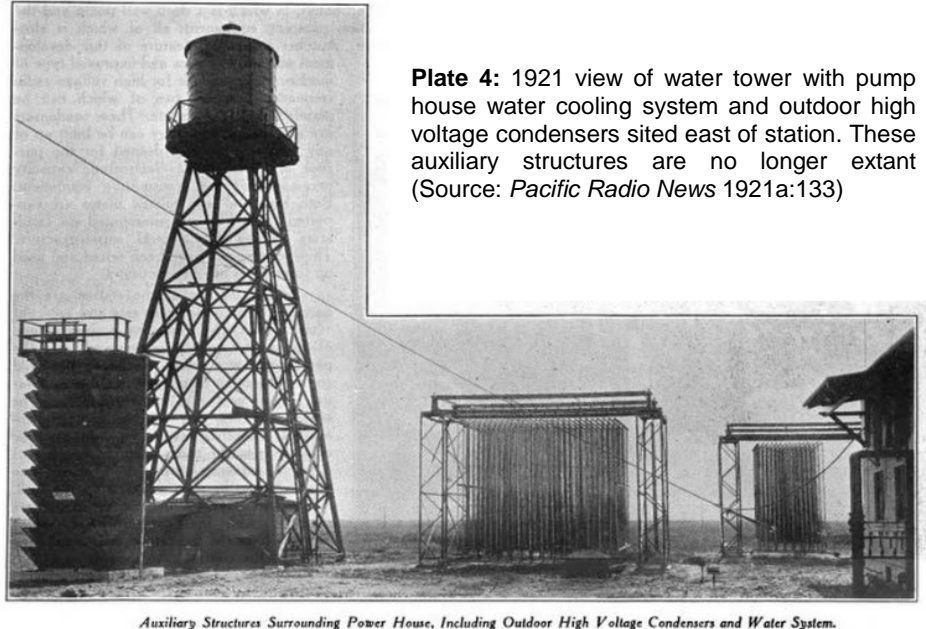


Plate 3: Clearwater Station exterior elevations, May 1921. The design was a slight deviation from Palo Alto Marsh Station and Hillsboro, Oregon designs (Harold F. Elliott Papers 2003, Box 20, Folder 3).

***B10. Significance:**

The same water circulating system for cooling the arcs was developed for the Hillsboro, Marsh, and Clearwater stations (*Pacific Radio News* 1921a:134) (see **Plate 4**). None of this original cooling system is extant on the Marsh Station property and neither the Hillsboro or Clearwater station are extant (UCSB various years).



The Marsh Station was expanded in response to evolutions in telecommunications technology. The original station is the northern third of the building at the north end, the 1928 expansion is the middle, and the 1932 addition is the southern third (Fred M. Hoehn Papers 2003-42). The 1928 section was likely added to accommodate Kolster's experiments, which required additional equipment. In 1932, the Marsh Station was enlarged again to house four high-powered vacuum tube transmitters to communicate with a station in Shanghai, China. These vacuum tube transmitters replaced the earlier Poulsen arc converters manufactured by Federal Telegraph that less than twenty years earlier had been the most advanced wireless technology at the time (Adams 2017:28-29; Corbett 2001). As wireless communication technology evolved, the equipment housed in the station was removed and upgraded. Based on review of historic photographs and site inspection, it does not appear that any of the original equipment that was installed by Federal Telegraph in the interior of the station is still extant. See **Plates 5** and **6** for comparison views of the property with notes on various alterations to the site (*Pacific Radio News* 1921a; Hohen 2003-42).

ITT continued to operate the Marsh Station until 1990. During that time, in the early 1970s the station property was rezoned as agriculture-conservation as part of the City of Palo Alto's (City) long-term vision to restore the area back to salt marsh habitat through dike removal and tidal inundation. The City acquired 152 acres in 1977 from ITT with ITT retaining an exclusive easement to use and occupy 36.5 acres for the operation of a "Public Coast Station" (Marsh Station). The following year, the surrounding area outside of the ITT easement was rezoned to Public Facility-Design Control and was dedicated as parkland in 1982. KFS World Communications acquired the ITT station easement in 1990, and was later succeeded by Globe Wireless. In 2014, Globe Wireless purchased property in Rio Vista, California, to relocate its operation and approached the City to sell all rights and interests of the Marsh Station. The City Council approved the purchase in 2016. At the time of the sale, the station site consisted of the station building, the engineering office/warehouse, a machine shop measuring 24' by 72', a 24' by 24' garage building, two utility buildings measuring 12' by 16' and 8.75' x 11.75', and 22 antenna poles including wood poles with copper wire and a 60' metal tower. The machine shop, garage, utility buildings, and wood poles were cleared from the site in 2017 (City of Palo Alto 2017; Google Earth 2018). Today, the station, engineering office/warehouse, the 1921 antenna base, and some concrete anchorages are extant on the site within the smaller fenced area, and remnant wood and metal poles are scattered throughout the remainder of the legal parcel boundaries.

Other sites located in the city that are associated with Federal Telegraph are no longer extant. The original 1909 headquarters, laboratory, and manufacturing plant at 913 Emerson Street have been demolished and the site was listed as a California Historical Landmark No. 836 Pioneer Electronics Research Library in 1969. The second facility used between 1916 and 1931 between Alma Street and El Camino Real near the original headquarters is also no longer extant (OHP 2018; History San Jose 2018).

***B10. Significance:**

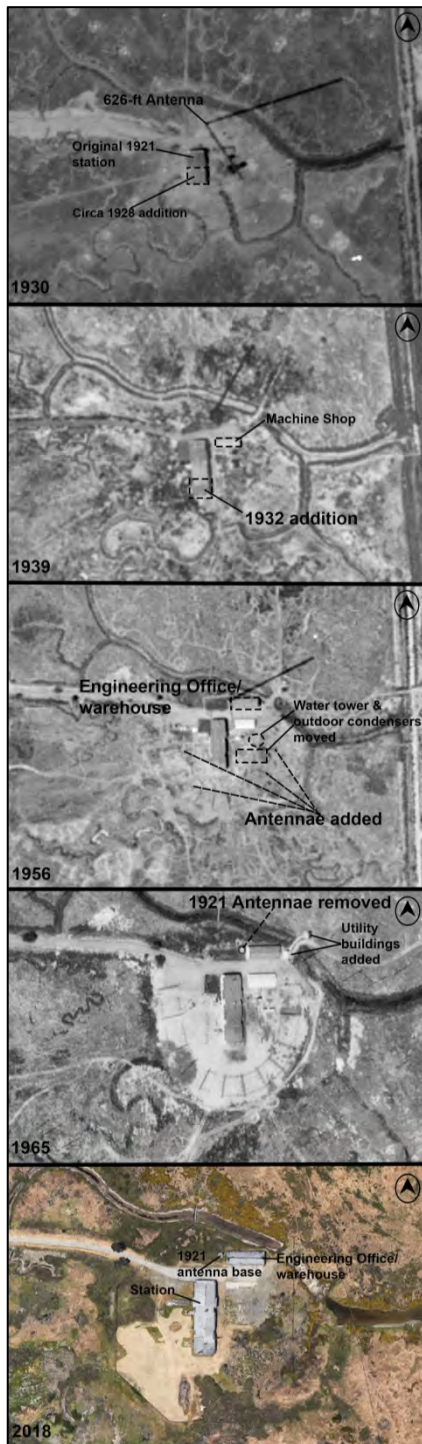


Plate 5: Aerial view of evolution of Marsh Station site from 1930 to 2018 (Source: UCSB various years, Google Earth 2018).

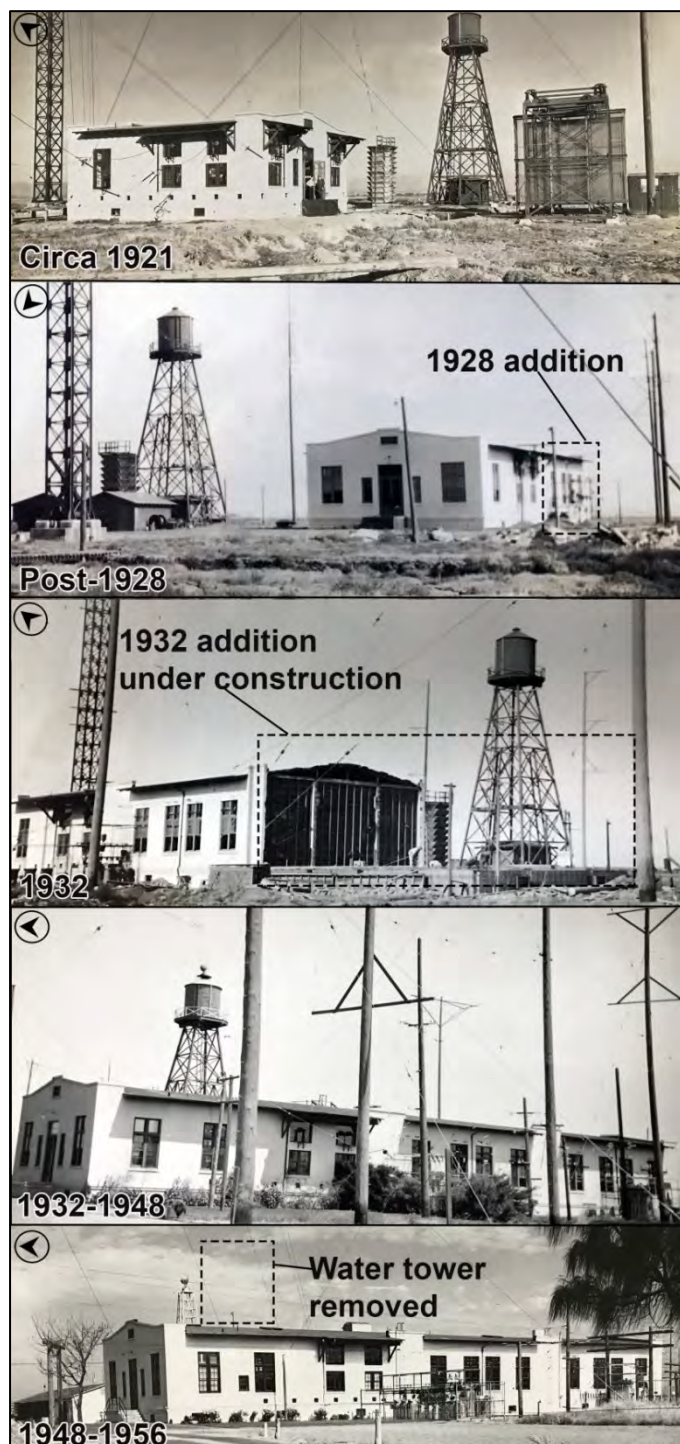


Plate 6: Comparison view of Marsh Station over time. Notes added by AECOM (Source: Fred M. Hoehn Papers 2003-42).

***B10. Significance:**

2001 Evaluation

In August 2001, Michael Corbett of Dames & Moore recorded the property at 2601 Easy Bayshore Road as part of the Palo Alto Historic Survey Update; however, the site was not accessible at the time of recordation and the site and building descriptions were developed from a distance. Corbett noted in the evaluation of the property that additional work should be conducted including a close inspection of the buildings and the equipment inside them, as well as additional research. Nevertheless, Corbett found that the property appeared eligible for the National Register of Historic Place (NRHP) under criterion A at the national level of significance as the best surviving remnant of the once extensive presence of the Federal Telegraph Company in Palo Alto, which served as its early headquarters. The period of significance proposed by Corbett was 1921 to at least 1951; which is an arbitrary end date that corresponded with fifty years prior to the recordation date.

This re-evaluation assessed other potential periods of significance for the property in which to evaluate historic integrity. Corbett noted that the removal of the 626-foot-tall tower in 1960 resulted in a serious loss of historic integrity for the facility, but that it retained integrity of location, design, setting, materials, workmanship, feeling, and association at that time. Since recordation in 2001, the station property has undergone additional changes including the removal of the machine shop, garage, two utility buildings, and various poles and antennae. (Corbett 2001: 5). This re-evaluation also assesses whether the changes to the property have resulted in additional loss of historic integrity.

2018 Re-Evaluation

NRHP A/CRHR 1

Under NRHP Criterion A and CRHR Criterion 1, the Marsh Station is significant as a surviving representative example of the Federal Telegraph Company research and manufacturing presence in Palo Alto, which is significant on the national level for achievements in long range wireless technology. The Marsh Station appears to be the only building remaining in Palo Alto directly associated with Federal Telegraph when the company was located there from 1909 to 1931. The Marsh Station was built in 1921 over a decade after the company headquarters was established in Palo Alto in 1909 and after the company's success refining long range transmissions; however, the Marsh Station is representative of the continued wireless technological advancements made after the First World War by Federal Telegraph. When originally constructed in 1921, Marsh Station was the most powerful within Federal Telegraph's West Coast station system and was the first station in the world with the capability to communicate with four different stations at one time (*Pacific Radio News* 1921c). Before the sale of the station to Mackay Radio and Telegraph Company, the station was expanded in 1928 to house additional equipment for transmissions to Honolulu and the Philippines and for experimentation of new short-wave technology that was the predecessor to microwave technology (Adams 2017:28-29; Corbett 2005). The proposed period of significance is 1921 to 1931, when the station was built by the Federal Telegraph Company to 1931 when the station was sold to Mackay Radio and Telegraph Company, subsumed by ITT, and the Federal Telegraph research and manufacturing was moved to New Jersey.

NRHP B/CRHR 2

Under NRHP Criterion B and CRHR Criterion 2, the Marsh Station is significant for its direct association with the lives of persons important to history. It is unclear from the historic record if Federal Telegraph's head engineer Frederick A. Kolster did in fact test his short-wave system at the Marsh Station site or at the research and manufacturing site in the city. However, the location of the Marsh Station and its powerful transmission equipment may have been the site of Kolster's experiments that lead to the development of modern microwave technology. As such, the Marsh Station appears to be directly associated with Kolster's work on this revolutionary wireless technology, that was important to the advancement of the technology worldwide.

NRHP C/CRHR 3

The Marsh Station, constructed between 1921 and 1932, appears significant under NRHP Criterion C as the last surviving station within Federal Telegraph's West Coast system developed in 1920 and 1921 and the last surviving remnant of Federal Telegraph Company within Palo Alto. The Hillsboro and Clearwater stations, which used the same design, are no longer extant and the San Diego station within the four station system as designed and built by the Bureau of Yards and Docks. The Federal Telegraphy company used a standard design for these West Coast stations that included stations with geometric stepped parapets in a restrained Art Deco style, tall window groups, smooth cement plaster exteriors, 626-foot-tall steel towers on a concrete and granite base, and water cooling system, creating a uniform style for their stations after World War I.

NRHP D/CRHR 4

Under NRHP Criterion D or CRHR Criterion 4, the Marsh Station property does not appear to be significant as a source (or likely source) of important information regarding history. It does not appear to have any likelihood of yielding important information about historic construction materials or technologies.

***B10. Significance:**

Integrity

In addition to meeting one or more of the NRHP/CRHR criteria, a property must also retain a significant amount of its historic integrity to be considered eligible for listing. Historic integrity is made up of seven aspects: location, design, setting, materials, workmanship, feeling, and association. These aspects are addressed below with respect to the proposed period of significance of 1921 to 1931.

Location is the place where the historic property was constructed or the place where the historic event took place. The location of the Marsh Station has remained the same and has not been moved since construction. The integrity of location remains intact.

Design is the combination of elements that create the form, plan, space, and style of a property. The design of the Marsh Station property from its potential period of significance of 1921 to 1931 has been negatively impacted through the removal of the 626-foot-tall tower, exterior water cooling system, and the original Poulsen arc technology that was installed within the station and resulted in the station's significance as the most powerful within Federal Telegraph's West Coast station system and the first station in the world with the capability to communicate with four different stations at one time. The removal of the transmission equipment and the ancillary machinery to operate the technology has resulted in severe loss of integrity of design to the 1921 to 1931 appearance. Other changes include the enlargement of the station in 1932, which increased the size of the building by one-third, and the construction of the Engineering Office/warehouse in the 1940s.

Setting is the physical environment of a historic property. The setting of the station has been negatively affected through the removal of the various antennae and other exterior equipment that was associated with the communication system utilized on the site. As illustrated in historic photographs, the 626-foot-tall tower on the flat marsh area was a strong visual presence in the area, more so than the station building itself. Without this strong vertical, visual landmark that represented the technological significance of the Marsh Station, the property has severely diminished setting to the 1921 to 1931 potential period of significance.

Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern of configuration to form a historic property. The removal of the original 626-foot-tall steel tower in 1960 and its replacement with a short modern tower is a severe loss of materials. In addition, the external water cooling system for the station, the original transmission equipment housed within the station, and wood poles that were scattered throughout the site are no longer extant, resulting in diminished integrity of materials.

Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. The Marsh Station remains recognizable as a restrained Art Deco style radio station from the 1920s. The southern addition built in 1932 was sympathetic to the existing design and materials of the 1921 and 1928 segments, thus retaining integrity of workmanship. The workmanship of the original steel tower, which was an engineering feat of its own at 626 feet tall with a concrete and granite base, and a series of concrete anchorages was severely impacted through the removal of the tower in 1960.

Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. When taken in total, the feeling of the Marsh Station from its proposed period of significance of 1921 to 1931 has been diminished through loss of integrity of design, setting, materials, workmanship

Association is the direct link between an important historic event or person and a historic property. Because the many original elements of the Marsh Station have been removed, the station as a whole is no longer representative of the Federal Telegraph Company in Palo Alto from 1909 to 1931, or as an example of the series of West Coast stations developed by Federal Telegraph between 1921 to 1922. The station has diminished integrity of association

In conclusion, although the former Federal Telegraph Company Marsh Station property at 2601 East Bayshore Road is significant under NRHP/CRHR criteria A/1, B/2, and C/3, it does not retain sufficient historic integrity of design, setting, materials, workmanship, feeling, or association, and no longer physically conveys its historic significance. Therefore the station property is recommended not eligible for listing in the NRHP/CRHR.

B12. References:

Adams, Stephen, 2017. "Arc of Empire: The Federal Telegraph Company, the U.S. Navy, and the Beginnings of Silicon Valley." *Business History Review* 91(2). June: 329-59.

City of Palo Alto, 2017. City Council Staff Report, ID# 8078, Adoption of a Park Ordinance, June 5. Available at <https://www.cityofpaloalto.org/civicax/filebank/documents/58003>. Accessed July 20, 2018.

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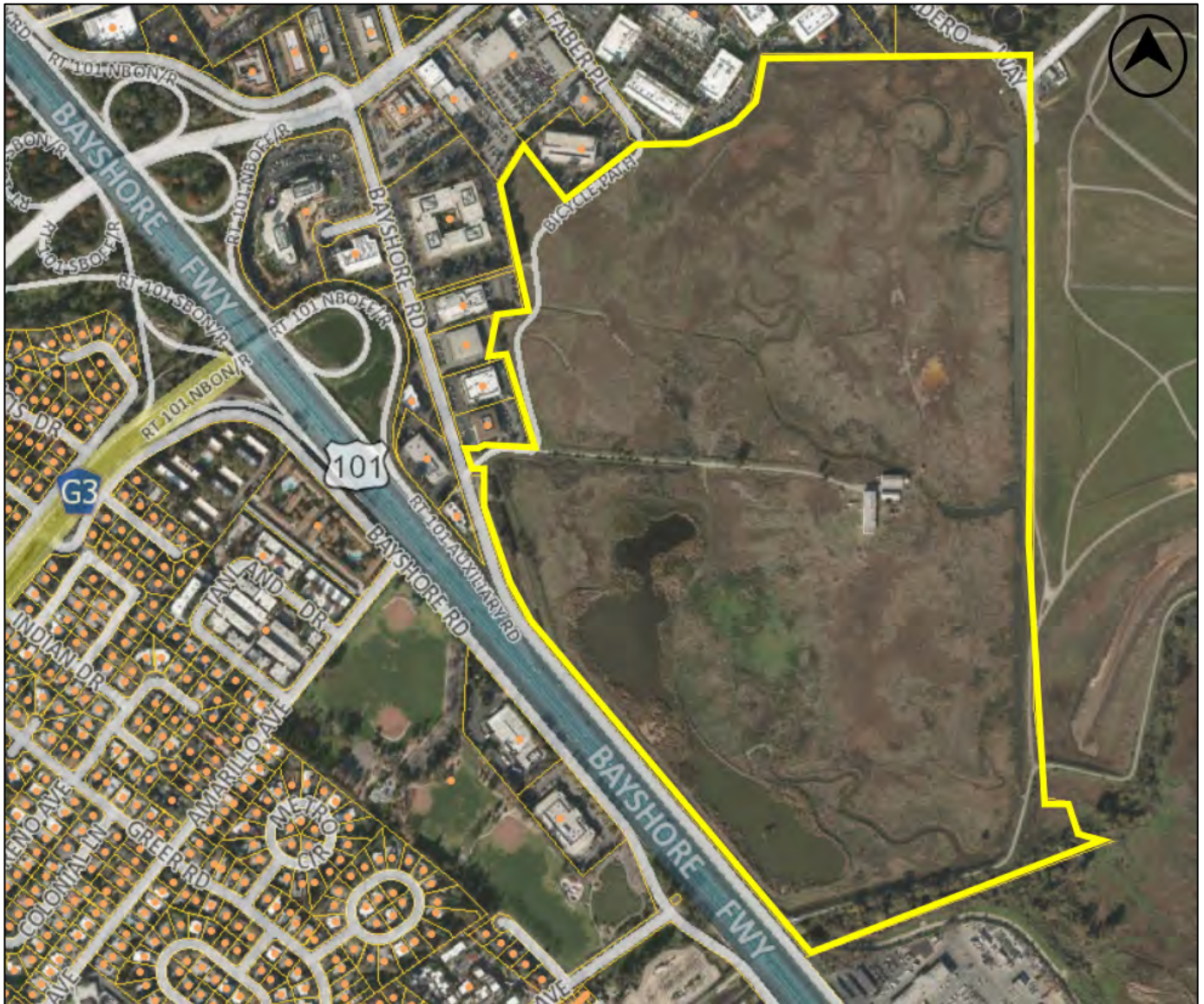
1968. Flight CAS-2310, frame 1-64.

1980. Flight GS-VEZR, frame 1-110.

*B14. Evaluator: Chandra Miller, AECOM

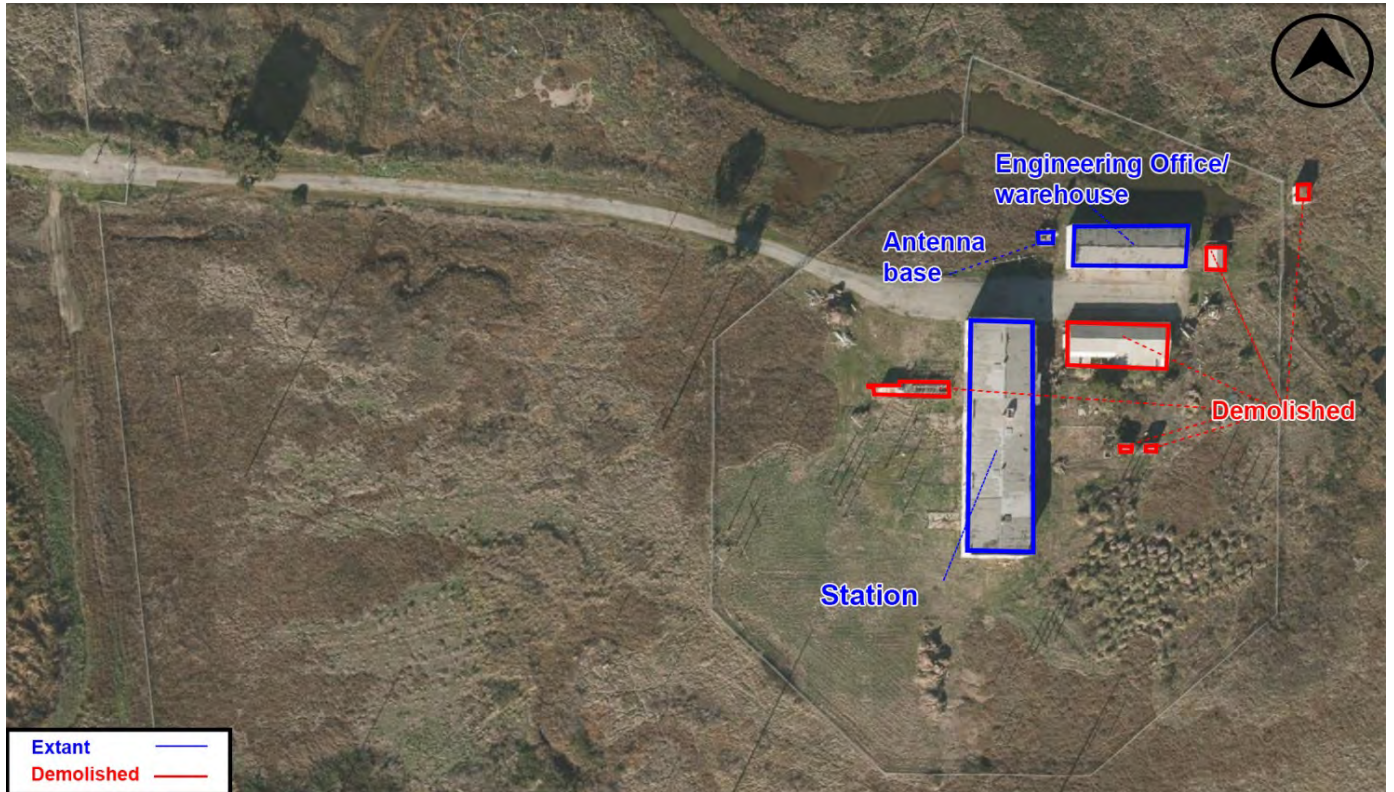
*Date of Evaluation: July 2018

Sketch Map:



Sketch Map of former Federal Telegraph Company Marsh Station in Assessor Parcel 008-04-001
(Source: Santa Clara County 2017)

Site Map:



Site Map of former Federal Telegraph Company Marsh Station building cluster. Marsh Station, Engineering Office/warehouse, and antenna base extant. Other buildings and exterior equipment removed 2017. Notes added by AECOM (Source: Santa Clara County 2017)