

MPRPD Smith's Blue Butterfly Habitat Conservation Concept Plan Proposal at Marina Dunes Preserve in Marina California

Prepared by: Lizzy Eichorn & Thor Anderson, Burleson Consulting Inc., A
Terracon Company
Reviewed by: Jackie Nelson, Monterey Peninsula Regional Park District
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BACKGROUND

In fall 2020, Monterey Peninsula Regional Park District (MPRPD) hired Burleson Consulting Inc., A Terracon Company (Burleson) to develop a three-year restoration action plan (RAP) for Marina Dunes Preserve, a 62-acre parcel of coastal dune habitat owned and operated by MPRPD in Marina, CA. The goal of the plan was to build off previous restoration planning and implementation efforts to develop a list of high-priority near-term actions that will help MPRPD improve native habitat value and enhance visitor experience. The RAP is based on an “ecosystem approach” where restoration prescriptions were developed to benefit the greatest number of native plant and animal species as possible. For ease of planning, the preserve was divided into 13 restoration areas base on topography, vegetative communities, and required restoration prescriptions. The highest priority actions across the preserve, in order of priority, are invasive species abatement, sand dune stabilization, and revegetation.

Marina Dunes Preserve is home to several listed species including western snowy plover (*Charadrius nivosus nivosus*), Smith's blue butterfly (*Euphilotes enoptes smithi*; SBB), Monterey spineflower (*Chorizanthe pungens* var. *pungens*; CHPUP), sand gilia (*Gilia tenuiflora* ssp. *arenaria*), and Yadon's wallflower (*Erysimum menziesii* ssp. *yadonii*) (Table 1). It is MPRPD's understanding that PG&E is interested in funding implementation of certain RAP components to benefit Smith's blue butterfly, Monterey spineflower, and sand gilia. This document provides a conceptual plan and rough cost per acre for restoration and monitoring of 31 acres of Smith's blue butterfly habitat, 9.3 acres of Monterey spineflower habitat, and one acre of sand gilia habitat. The implementation timeframe for this project is eight to ten years to allow for adequate sand dune stabilization and establishment of native plantings. Success monitoring will be conducted pre and post implementation, therefore monitoring may extend past ten years.

It should be noted that PG&E funds will serve as the initial capital investment needed to restore habitat and habitat function at the site. Monterey Peninsula Regional Park District plans to monitor and maintain the restoration sites and property beyond PG&E's funding to benefit listed species and the dune ecosystem as a whole.

ATTACHMENT 2

Table 1. Listing status of threatened and endangered species found at Marina Dunes Preserve.

Species	State Status	Federal Status
Western snowy plover	N/A	Threatened
Smith's blue butterfly	N/A	Endangered
Monterey Spineflower	N/A	Threatened
Sand gilia	Threatened	Endangered
Yadon's wallflower	Endangered	Endangered

CONCEPTUAL PLAN

Task 1: Smith's Blue Butterfly Habitat Restoration (21.7 ac)

See Figure 1 for an overview of Marina Dunes Preserve Restoration Areas (RA). Restoration Areas 1, 2, 9, and 10 cover approximately 21.7 acres and currently contain Smith's blue butterfly coast buckwheat (ERLA; *Eriogonum latifolium*) habitat. In summer 2021, Burleson biologists documented the presence of SBB in each of these restoration areas. However, the existing habitat is severely threatened by iceplant encroachment. Restoration in these areas will include iceplant eradication, ERLA plantings (Deepot size plants), and minor erosion control/sand stabilization. See Attachment A for more detailed restoration prescriptions per RA and Figure 2 for restoration locations.

Task 2: Smith's Blue Butterfly and Monterey Spineflower Habitat Restoration (9.3 ac)

Restoration Areas 5, 6, 7, and a portion of RA-3 cover approximately 9.3 acres. They are characterized by highly unstable sand and sparse vegetation. Previous plantings have been undermined by exposure to high winds. In order to transform these areas into SBB habitat, sand must first be stabilized. Sand stabilization will also provide ideal habitat for Monterey spineflower as the plant thrives in areas with sparse vegetation. Restoration will include installing a variety of biodegradable erosion control materials, waiting for sand to accumulate, broadcasting Monterey spineflower seed, and planting ERLA. Some invasive species abatement may be necessary. See Attachment A for more detailed restoration prescriptions per RA and Figure 2 for restoration locations.

Task 3: Sand Gilia Restoration (1 ac)

One population of sand gilia is known to occur on the preserve (in RA-9). In 1993, 350 individuals were counted while only 30 were observed in 2021. In recent years, between one and 10 individuals have been seen, suggesting that the population may be in decline. Sand gilia restoration will entail monitoring and assessment of the population on site, seed collection from that population, propagation of mother plants, seed harvesting from nursery plants, and broadcast seeding across approximately one acre. See Figure 3 for restoration location.

SUCCESS MONITORING

Success monitoring of vegetative cover and species richness will be conducted pre and post restoration implementation. Smith's blue butterfly surveys will also be conducted to capture changes in population over time within restoration areas. See Table 2 for success criteria.

Table 2. Success criteria for restoration areas.

Task	Location	Restoration Type	Acres	Timeline	Success Criteria
1	RA-1, 2, 9, 10	SBB habitat restoration	21.7	Approximately three to ten years post planting and weed eradication	<ul style="list-style-type: none"> • Average ERLA absolute percent cover is 1% or greater • Average iceplant absolute percent cover is 10% or less • SBB are present in the same areas or more than in baseline
2	RA-3 (partial), 5, 6, 7	SBB and Monterey spineflower restoration	9.3	Approximately five to ten years post sand stabilization	<ul style="list-style-type: none"> • Average ERLA absolute percent cover is greater than in baseline • Average iceplant absolute percent cover is 10% or less • SBB are present in the same areas or more than in baseline • Monterey spineflower is present in seeded areas
3	RA-9	Sand gilia restoration	1	One to three years post broadcast seeding	<ul style="list-style-type: none"> • The number of distinct populations of sand gilia has increased compared to baseline

Contingency: Adaptive management measures may be necessary if monitoring shows success criteria are not being met in the initial years post restoration. It should be noted that successful dune restoration may take longer than the project timeframe.

Monitoring Methods

Vegetative Cover

The Marina Dunes Preserve RAP recommends point intercept transect monitoring to rapidly assess changes in vegetative communities over time post restoration. For the purposes of evaluating success criteria in Table 2, however, line intercept transect monitoring will be used to quantify changes in absolute cover of coast buckwheat post restoration. Belt transect monitoring (five feet on either side of the transect) will also be used to capture species richness along transects. Approximately one, repeatable, 50-meter transect will be placed per acre. One year of baseline monitoring and three years of follow-up monitoring across all transects are included in this proposal. Data will be collected between late May and the end of June to coincide with the time in which most dunes species are in flower. Follow-up monitoring will be conducted at approximately years 3, 6, and 9.

Smith's Blue Butterfly

Smith's blue butterfly will be monitored along vegetation monitoring transects during the flight season. Transect surveys will be walked methodically once a week (up to 10 weeks) during the flight season while taking GPS points for any SBB that are positively identified. Survey data will be utilized to develop the phenology of the SBB flight season and relative abundance between monitoring years. Surveys will coincide with the years in which vegetation is monitored.

Sand Gilia and Monterey Spineflower

Meandering transects will be conducted in areas seeded with Monterey spineflower and sand gilia. Monterey spineflower surveys will be conducted at the same time of vegetation transect monitoring. Sand gilia surveys will be conducted between mid-March and mid-April.

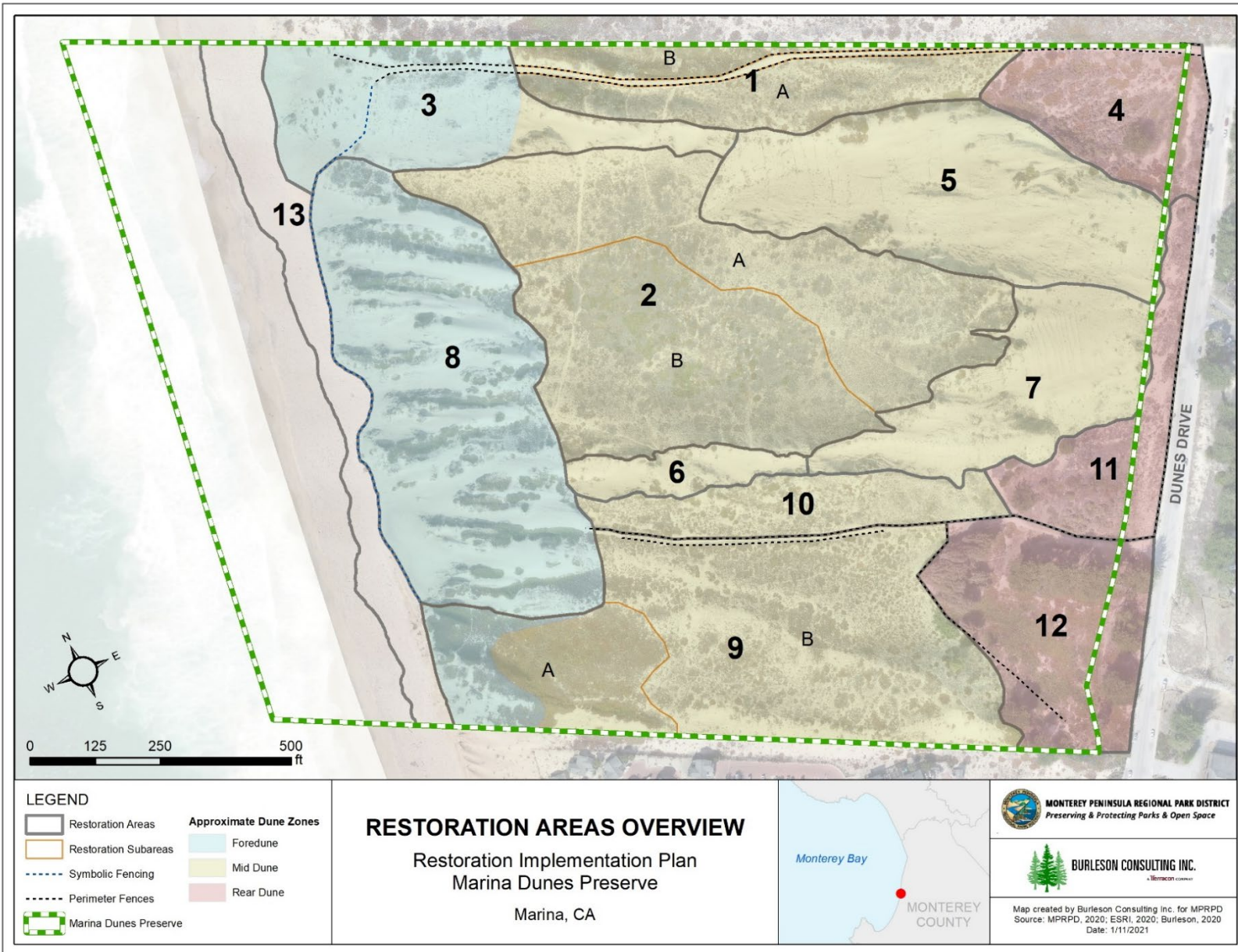
A one-page summary comparing all monitoring results to success criteria will be made available post monitoring (timeframe: August/September of monitoring years).

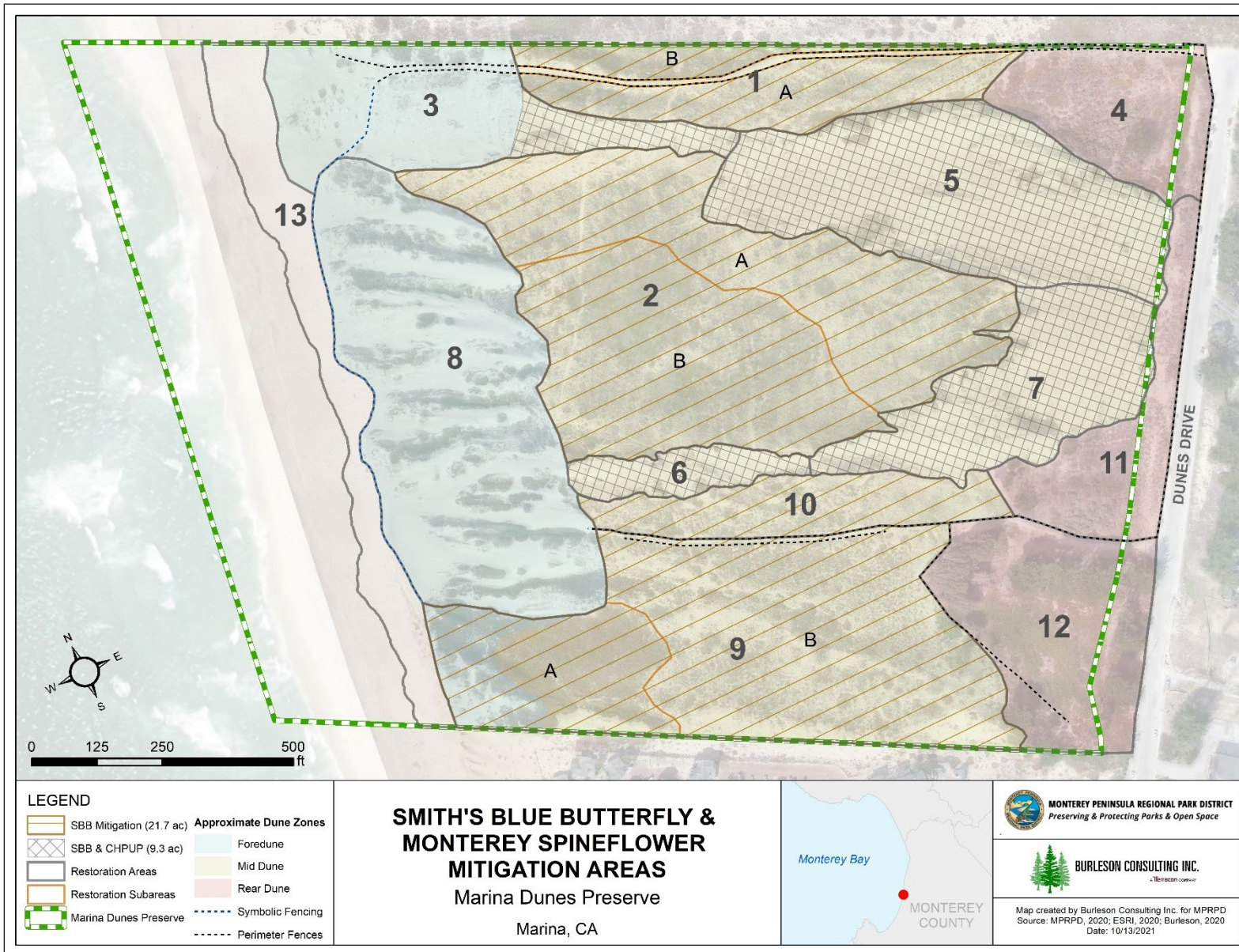
BUDGET ESTIMATES

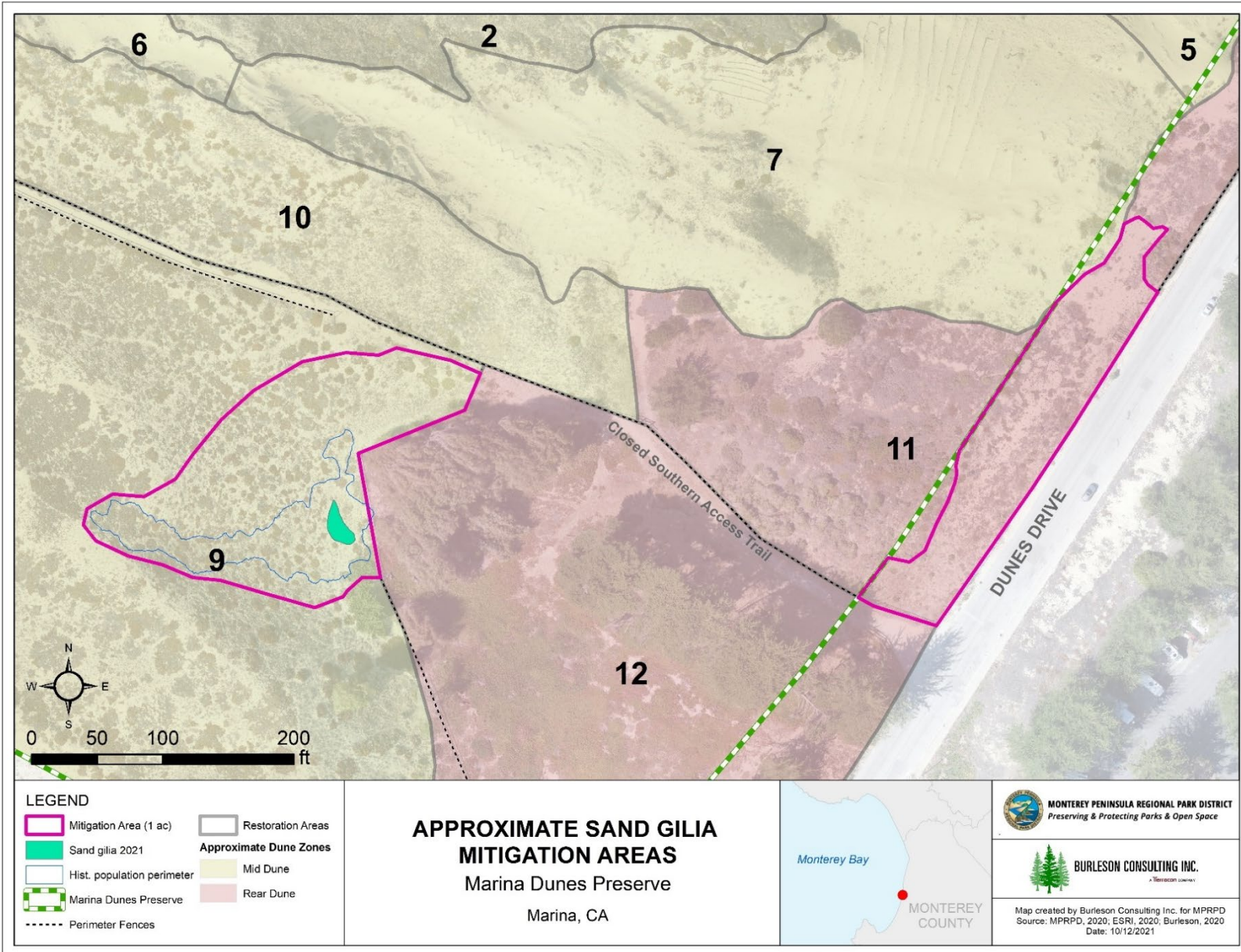
The approximate total cost per acre for restoring 41.3 acres for listed species is \$15,117. See Table 3 for a cost breakdown per task.

Table 3. Budget estimates by task.

Task	Description	Estimated Cost
1	SBB Habitat Restoration (21.7 ac)	\$210,895
2	SBB and CHPUP Habitat Restoration (9.3 ac)	\$253,401
3	Sand Gilia Restoration (1 ac)	\$19,004
4	Monitoring and Reporting	\$89,722
5	Project Management	\$51,324
	Total:	\$624,346







Attachment A: Restoration Prescriptions

Task 1: Smith's Blue Butterfly Habitat Restoration (21.7 ac)

Restoration Area 1 (2.6 ac)

RA-1 Subarea A (1.9 ac)

- Description: Good existing ERLA habitat in eastern portion of subarea. Needs spot treatment/hand pulling of iceplant and more ERLA. Accessible by vehicle.
- Prescription:
 - Weed eradication: Treat with herbicide and/or hand pull iceplant. Perform follow-up treatments in subsequent years. Perform follow-up foliar spray treatment of golden wattle.
 - Planting: Plant ERLA in dead iceplant mulch in clusters of 10.
 - Target: 500 plants

RA-1 Subarea B (0.7 ac)

- Description: Poor habitat, largely dense mats of iceplant, some ERLA. Accessible by vehicle.
- Prescription:
 - Weed eradication: Treat with herbicide and/or hand pull iceplant. Perform follow-up treatments in subsequent years.
 - Planting: Plant ERLA in dead iceplant mulch in clusters of 10.
 - Target: 1,000 plants

Restoration Area 2 (9.4 ac)

RA-2 Subarea A (4.8 ac)

- Description: Good existing ERLA habitat though sparse in some areas, interspersed with iceplant. Not accessible by vehicle.
- Prescription:
 - Weed eradication: Treat with herbicide and/or hand pull iceplant. Perform follow-up treatments in subsequent years.
 - Sand stabilization:
 - Place burlap sacks of sand and/or wood shims in eroded areas (i.e. along unauthorized access trails)
 - Planting: Plant ERLA in dead iceplant mulch in clusters of 10.
 - Target: 2,500 plants

RA-2 Subarea B (4.6 ac)

- Description: Predominantly dense mats of iceplant, some ERLA habitat in the south. Not accessible by vehicle.
- Prescription:
 - Weed eradication: Treat with herbicide and/or hand pull iceplant. Perform follow-up treatments in subsequent years.
 - Sand stabilization:

- Place burlap sacks of sand and/or wood shims in eroded areas (i.e. along unauthorized access trails)
- Planting: Plant ERLA in dead iceplant mulch in clusters of 10.
 - Target: 3,500 plants

Restoration Area 9 (8 ac)

RA-9 Subarea A (2.2 ac)

- Description: Dense mat of iceplant (largest on the Preserve). Potentially accessible by utility terrain vehicle.
- Prescription:
 - Weed eradication: Treat with herbicide (dense iceplant mat close to ocean). Perform follow-up treatments in subsequent years.
 - Planting: Plant ERLA in dead iceplant mulch in clusters of 10.
 - Target: 2,200 plants

RA-9 Subarea B (5.8 ac)

- Description: Stunted ERLA intermixed with iceplant. Exposed/windy habitat, could benefit from improved landscape heterogeneity (i.e. placement of sand bags etc.). Potentially accessible by utility terrain vehicle.
- Prescription:
 - Weed eradication: Treat with herbicide and/or hand pull iceplant. Perform follow-up treatments in subsequent years.
 - Sand stabilization:
 - Place burlap sacks of sand and/or wood shims in eroded areas.
 - Consider disguising and rehabilitating closed southern access trail.
 - Planting: Plant ERLA in dead iceplant mulch in clusters of 10.
 - Target: 4,000 plants

Restoration Area 10 (1.7 ac)

- Description: Good existing ERLA habitat in eastern portion of subarea. Needs spot treatment/hand pulling of iceplant and more ERLA. Potentially accessible by utility terrain vehicle.
- Prescription:
 - Weed eradication: Treat with herbicide and/or hand pull iceplant. Perform follow-up treatments in subsequent years.
 - Planting: Plant ERLA in dead iceplant mulch in clusters of 10.
 - Target: 1,000 plants

TOTAL ERLA PLANTING TARGET: 14,700 plants

Task 2: Smith's Blue Butterfly and Monterey Spineflower Habitat Restoration (9.3 ac)

Restoration Area 3 (0.7 ac)

- Description: Restoration Area 3 contains mid dune and foredune habitat. The portion of the RA containing mid dune habitat covers approximately 0.7 ac and is included here as mitigation acres for SBB and CHPUP. Native habitat quality is poor, and sand is highly unstable. Accessible by vehicle.
- Prescription:
 - Sand Stabilization:
 - Gradually remove non-biodegradable sand stabilizing materials throughout the site and replace with biodegradable materials like wood lath, wood shims, burlap sacks of sand, coir fabric matting, straw bales, and/or straw wattles. Visit site periodically to raise lath and shims as sand accumulates.
 - Planting:
 - Plant ERLA once sand has stabilized.
 - Target: 2,000
 - Broadcast CHPUP seed post erosion control installation.
 - Target: 0.11 lbs
 - Weed eradication:
 - Spot treat and/or hand pull iceplant as necessary once dunes stabilize.

Restoration Area 5 (5 ac)

- Description: Restoration Area 5 is the largest sand sheet on the Preserve. It covers five-acres and has been planted multiple times. Most plantings have failed, but the plants that persist are generally stunted and wind has scoured around their roots. Erosion control efforts have had varying success, with efforts being more successful towards the rear dune. Native habitat quality is poor, and sand is highly unstable. Inaccessible by vehicle.
- Prescription:
 - Sand Stabilization:
 - Gradually remove non-biodegradable sand stabilizing materials throughout the site and replace with biodegradable materials like wood lath, wood shims, burlap sacks of sand, coir fabric matting, straw bales, and/or straw wattles. Visit site periodically to raise lath and shims as sand accumulates.
 - Planting:
 - Plant ERLA once sand has stabilized.
 - Target: 10,000
 - Broadcast CHPUP seed post erosion control installation.
 - Target: 0.75 lbs
 - Weed eradication:
 - Spot treat and/or hand pull iceplant as necessary once dunes stabilize.

Restoration Area 6 (0.7 ac)

- Description: Restoration Area 6 is a 0.7-acre, narrow blowout to the north of the ridge above the closed southern access trail. Some plastic drift fencing is present at the site and previous restoration plantings are predominately dead or considerably scoured. Native habitat quality is poor, and sand is highly unstable. Inaccessible by vehicle.

- Prescription:
 - Sand Stabilization:
 - Gradually remove non-biodegradable sand stabilizing materials throughout the site and replace with biodegradable materials like wood lath, wood shims, burlap sacks of sand, coir fabric matting, straw bales, and/or straw wattles. Visit site periodically to raise lath and shims as sand accumulates.
 - Planting:
 - Plant ERLA once sand has stabilized.
 - Target: 2,000
 - Broadcast CHPUP seed post erosion control installation.
 - Target: 0.11 lbs
 - Weed eradication:
 - Spot treat and/or hand pull iceplant as necessary once dunes stabilize.

Restoration Area 7 (2.9 ac)

- Description: Restoration Area 7 (2.9 ac) is similar to RA-5 and RA-6 as it includes sand sheets and blowouts. The site has been planted multiple times and erosion control measures on site include wood and metal sand fencing, plastic-netted straw waddles, and plastic drift fencing. Native habitat quality is poor to moderate, and sand is unstable in most areas. Inaccessible by vehicle.
- Prescription:
 - Sand Stabilization:
 - Gradually remove non-biodegradable sand stabilizing materials throughout the site and replace with biodegradable materials like wood lath, wood shims, burlap sacks of sand, coir fabric matting, straw bales, and/or straw wattles. Visit site periodically to raise lath and shims as sand accumulates.
 - Planting:
 - Plant ERLA once sand has stabilized.
 - Target: 5,800
 - Broadcast CHPUP seed post erosion control installation.
 - Target: 0.44 lbs
 - Weed eradication:
 - Spot treat and/or hand pull iceplant as necessary once dunes stabilize.

TOTAL ERLA PLANTING TARGET: 19,800 plants

TOTAL CHPUP SEEDING TARGET: 1.41 lbs