

Appendix A. Project Area Description of Dune Formations

Beach strand

Located within the tidal inundation zone, this area consists of loosely-compacted sand where abiotic factors rather than vegetation influence the landscape (Duebendorfer 1992). Beaches respond to seasonal change in wave conditions. During the summer months when tides are less extreme and waves are typically smaller, vegetation establishes as sand moves onshore forming a gently sloping profile. During winter storms with high waves and larger tides, sand erodes and moves offshore forming a steeper beach profile. Drift accumulates here and if the beach is accreting, shorebirds nest and new dunes form. Pioneer plant species such as sea rocket (*Cakile maritima*) and native dunegrass (*Leymus mollis*) are often found in this area.

Nearshore Dunes

Collectively the primary foredune, dune ridges, dune swales, and deflation plains collectively make up the nearshore dunes. Positioned above the mean high tide line, the foredune is a ridge of sand parallel with the beach resulting from sand accumulation around sand tolerant plants (Pickart and Sawyer 1998). Vegetation communities locally found on the foredune and dune ridges include the sand-verbena – beach bursage, native dunegrass, iceplant, and European beachgrass series. Occasionally, a break or gap (known as blowouts) in the foredune will occur as a result of sufficient disturbance to vegetation cover. Blowouts occurring in a continuous foredune can cause sand to move inland creating hummocks, which in time can become stabilized with vegetation, forming a narrow dune ridge. When these dune ridges alternate with depressions deflation plains and eventually dune swales can form.

Deflation Plain

A deflation plain is an eroded, expansive basin of unvegetated sand close to the water table. During storm events, deflation plains become seasonally inundated by a rising water table.

Dune Swales

Dune swales are formed when the moist conditions afforded by seasonal saturation in deflation plains result in the establishment of hydrophytic vegetation. Troughs between dune ridges in the nearshore dunes and in the stabilized backdunes can support herbaceous and woody dune swale vegetation (Pickart and Sawyer 1998). The vegetation communities typically found in dune swales at LRSB include the Sedge series and the Hooker willow series.

Moving Dunes

Parabolic dunes, transverse dunes, and sand sheets, together are known as moving dunes. Transverse dunes form when large areas of sand move inland. These dunes move too rapidly to support vegetation and this type of dune is not found in the project area. Sand moving inland from blowouts in the nearshore dunes form parabolic dunes. This moving sand is positioned parallel with prevailing winds and is largely devoid of vegetation (Pickart and Sawyer 1998). The slower-moving parabolic dunes may

become stabilized by vegetation resulting in the formation of dune ridges. These features are present in the project area. Sand sheets, which do not occur within the project area, are formed when parabolic dunes do not become vegetated and sand moves inland toward forest vegetation forming a steep slip face against the forest barrier (Pickart and Sawyer 1998).

Backdunes

Backdunes are formed from older vegetated dune ridges and stabilized parabolic dunes. The backdunes typically support dune scrub or dune forests which are often comprised of the Northern coastal scrub (Holland 1986) and Bishop pine vegetation communities respectively (Pickart and Sawyer 1998). At LRSB, the backdunes are comprised primarily of the Northern coyote brush scrub and the Sitka spruce series.

Northern Riparian Wetland

It is believed (Vaughan and Fiori 2004) that due to the proximity of Little River intersecting the dunes within the project area and the historic southern flow the river once had, a freshwater wetland has formed within the old river channel that is hydrologically linked to the current river channel. This wetland is dominated with species found within the Red alder vegetation series.

LITERATURE CITED

- Duebendorfer, T.E. 1992. Vegetation classification, rare plant analysis, impacts, restoration and habitat management strategies for the Humboldt County Beach and Dunes Management Plan. Humboldt County Department of Public Works. Unpublished document. Humboldt County Planning Department, Eureka, CA.
- Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game, Sacramento, CA.
- Pickart, A.J., and J.O. Sawyer. 1998. Ecology and restoration of northern California coastal dunes. California Native Plant Society. Sacramento, CA.
- Vaughan, Patrick R. and Fiori, Rocco. 2004. Geological Assessment of Exotic Vegetation Removal at Little River State Beach. California Department of Parks and Recreation, North Coast Redwoods District, Eureka, CA. 24 pgs.

Appendix B. Vegetation Series

Coastal dunes along the north spit of Humboldt Bay and within Humboldt County support multiple vegetative communities that are separated into units called series, based upon dominant vegetation. The classification system described here primarily follows Sawyer and Keeler-Wolf (1995) and Pickart and Sawyer (1998). These vegetation series are either currently found within the project area and or were historically found within the project area.

NATIVE DUNEGRASS SERIES¹

Generally restricted to the foredune, the Native dunegrass series has become widely reduced and displaced by European beachgrass (*Ammophila arenaria*). Once widespread north of Monterey, California, currently it is well represented only at the Humboldt Bay dunes and at Point Reyes, California (Pickart and Sawyer 1998). Native dunegrass (*Leymus mollis* ssp. *mollis*) is the sole or dominant plant in the series. Other species associated with this series include beach bursage (*Ambrosia chamissonis*), beach morning glory (*Calystegia soldanella*), pink sand verbena (*Abronia umbellatum* ssp. *breviflora*), sea rocket (*Cakile edentula*, *C. maritima*), seashore bluegrass (*Poa douglasii*), and yellow sand verbena (*Abronia latifolia*). Exotics such as European beach grass and hottentot fig (*Carpobrotus edulis*) may be present but not dominant. Total vegetation cover is sparse, ranging from 25 to 75% (Pickart and Sawyer 1998).

SAND-VERBENA-BEACH BURSAGE SERIES¹

“Dune mat” is an informal term used to describe this series that is typically found throughout the nearshore dunes (Pickart and Sawyer 1998). Dune mat is dominated by low-growing, matted herbaceous and woody plants such as coast buckwheat (*Eriogonum latifolium*), coast goldenrod (*Solidago spathulata* ssp. *spathulata*), seashore bluegrass, beach pea (*Lathyrus littoralis*), coastal sagewort (*Artemisia pycnocephala*), beach evening primrose (*Camissonia cheiranthifolia* ssp. *cheiranthifolia*), and yellow sand verbena which corresponds to the sand-verbena – beach bursage series described by Sawyer and Keeler-Wolf (1995). Overall plant species diversity in this community is typically relatively high. Two phases have been further detailed by Duebendorfer (1989) as the seashore bluegrass-beach pea phase, and the beach sagewort phase. A third phase dominated by red fescue (*Festuca rubra*) has been described by Pickart (1987), but has not been quantitatively justified (Pickart and Sawyer 1998).

EUROPEAN BEACHGRASS SERIES²

The European beachgrass series is dominated by European beachgrass (Sawyer and Keeler-Wolf 1995), an introduced and invasive species that substantially alters the physical and biological conditions of the natural dune environment, leading to a loss of native vegetation (Pickart and Sawyer 1998). European beachgrass is one of the most widespread herbaceous communities in the local dunes and dominates much of the nearshore dunes and backdunes within the project area. Few species are found in

¹ Native vegetation series historically found along the north spit of Humboldt Bay and most likely historically found at Little River State Beach.

² Non-native vegetation series currently found at Little River State Beach.

association with this vegetation type, but native vegetation has been observed growing in openings within, and on the periphery of European beachgrass. Shrubs such as coyote brush (*Baccharis pilularis*) and yellow bush lupine (*Lupinus arboreus*) may accompany European beachgrass in this series.

YELLOW BUSH LUPINE SERIES²

The Yellow bush lupine series, also described as Lupine scrub, is characterized by the dominance of the non-native shrub, yellow bush lupine. Like the European beachgrass series, it generally excludes local native plant species. Lupine occurs throughout the dune system primarily behind the foredune (Pickart and Sawyer, 1998). Associated species may include figwort (*Scrophularia californica*), European beachgrass, annual fescue (*Vulpia bromoides*), yarrow (*Achillea millefolium*), and ripgut grass (*Bromus diandrus*). Coyote brush and wax myrtle (*Myrica californica*) may also be present with less cover. Yellow bush lupine has the ability to fix atmospheric nitrogen in the soil. Increased nitrogen in nutrient poor habitats such as dunes has been shown to greatly increase the susceptibility of natural communities to invasion by weedy exotics and natives not normally adapted to the coastal dunes, thus facilitating dune stabilization.

COYOTE BRUSH SERIES³

Although yellow bush lupine and European beachgrass may be abundant, coyote brush is the dominant shrub in this series. Other species present may include; California blackberry (*Rubus ursinus*), California buckwheat (*Eriogonum fasciculatum*), poison oak (*Toxicodendron diversiloum*) and salal (*Gaultheria shallon*). Although the Coyote Brush series is dominated by native species it generally occurs within the foredune complex and on dunes previously stabilized by yellow bush lupine or European beachgrass (Pickart and Sawyer 1998). In some areas, it appears to be replacing the yellow bush lupine series (Pickart and Sawyer 1998).

SEDGE SERIES³

This series consists of bulrushes, rushes, sedges and/or spikerushes with sedge as the sole, dominant or important herb in ground canopy. The slough sedge (*Carex obnupta*) - salt rush (*Juncus breweri*) association of this series is found within the management area in seasonally inundated deflation plains. Duebendorfer (1989) classified this association as "herbaceous dune hollows," characterized by low growing rushes, sedges, and other herbaceous plants up to four feet in height. In addition to the dominant slough sedge and salt rush, associated species include Pacific silverweed (*Potentilla anserina*), springbank clover (*Trifolium wormskjoldii*), and California blackberry (Duebendorfer 1992).

HOOKER WILLOW SERIES³

Frequently interspersed with the Sedge and Beach pine series, The Hooker willow series is dominated by hooker willow (*Salix hookeriana*) shrub (Pickart and Sawyer 1998). This series occasionally contains wax myrtle and Sitka spruce but to a lesser extent. Along with the Beach pine, this series has been described by Duebendorfer (1992) as woody dune hollows. Woody dune hollow wetlands occur in seasonally inundated deflation plains and are characterized by shrubs or trees up to 6 meters high

³ Native vegetation series currently found at Little River State Beach.

(Pickart 1990). Salt rush and slough sedge are also dominant in the ground layer of this series.

BEACH PINE SERIES

This series occurs on seasonally saturated dune swale wetlands, but also occurs on forested, stabilized dunes. Shore pine is a coastal race of *Pinus contorta*, and is the sole or dominant species of this series occurring along the coast to Alaska (Pickart and Sawyer 1998). Salt rush and slough sedge occur in the ground layer, along with dune goldenrod and bearberry (*Arctostaphylos uva-ursi*) in drier microsites (Pickart and Sawyer 1998).

SITKA SPRUCE SERIES³

Typically, this series is dominated by Sitka spruce and occurs from sea level to 20 m (66 ft) (Sawyer and Keeler-Wolf 1995). Common on steep seaward slopes near the ocean and raised maritime terraces with perched water tables (Sawyer and Keeler-Wolf 1995). Grand fir (*Abies grandis*), red alder (*Alnus rubus*), redwood (*Sequoia sempervirens*), and western hemlock (*Tsuga heterophylla*) can be found intermixed in the canopy (Sawyer and Keeler-Wolf 1995). The ground cover is abundant, especially with ferns and shrubs sometimes present (Sawyer and Keeler-Wolf 1995). This series is the dominant vegetation type found in the dune forest at LRSB.

NORTHERN COASTAL SCRUB

Holland (1986) describes this series as a community of low, dense shrubs (0.5 to 2 m) with some grassy openings. Northern coastal scrub has been further divided into three types; the Northern coyote brush scrub, Northern salal scrub, and Northern silk tassel scrub (Holland 1986). A variety of scrub vegetation types have been described by Sawyer and Keeler-Wolf (1995). The vegetation series that correspond to Holland (1986) scrub community are the Coyote brush series, the Yellow bush lupine series, and or the Salal-black huckleberry series. The backdunes at LRSB are primarily comprised of the Coyote brush series, the Yellow bush lupine series (Sawyer and Keeler-Wolf 1995) or the Northern coyote brush scrub (Holland 1986).

RED ALDER SERIES³

Found in seasonally flooded soils to permanently saturated soils, this series is found in both wetlands and upland habitat from sea level to 750 m (2,475 ft) (Sawyer and Keeler-Wolf 1995). This series can be found along streams, river banks, floodplains, mouths, and terraces (Sawyer and Keeler-Wolf 1995). Alluvial sites can sustain self-perpetuating stands of red alder (Sawyer and Keeler-Wolf 1995). The ground cover is continuous will candyflower (*Claytonia sibirica*), ferns, and salal (*Gaultheria shallon*) (Sawyer and Keeler-Wolf 1995). This series is found primarily in the wetland in the old river channel at LRSB.

LITERATURE CITED

Duebendorfer, T.E. 1992. Vegetation classification, rare plant analysis, impacts, restoration and habitat management strategies for the Humboldt County Beach and Dunes Management Plan. Humboldt County Department of Public Works. Unpublished document. Humboldt County Planning Department, Eureka, CA.

- Duebendorfer, T.E. 1989. An integrated approach to enhancing rare plant populations through habitat restoration: II. Habitat characterization through classification of dune vegetation. Pages 478-487 in H.G. Hughes and T.M. Bonnicksen, editors. Restoration '89: The new management challenge. First Annual Meeting of the Society for Ecological Restoration, Society for Ecological Restoration, Oakland CA.
- Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game, Sacramento, CA.
- Pickart, A. J. 1987. A classification of Northern foredune and its relationship to Menzies' wallflower on the North Spit of Humboldt Bay, California. Unpublished document. The Nature Conservancy, Arcata, CA.
- Pickart, A. J. 1990. Dune Revegetation at Buhne Point, King Salmon, California. Pages 38-49 in J.J. Berger, ed. Environmental Restoration. Island Press, Covelo, California.
- Pickart, A.J., and J.O. Sawyer. 1998. Ecology and restoration of northern California coastal dunes. California Native Plant Society. Sacramento, CA.
- Sawyer, J. O. & Keeler-Wolf, T. 1995. A Manual of California Vegetation. Sacramento, CA: California Native Plant Society.

Appendix C. Historical Accounts of Plant Species

Scientific Name	Common Name
<i>Abies grandis</i>	grand fir
<i>Abronia latifolia</i>	yellow sand verbena
<i>Abronia umbellatum</i> ssp. <i>breviflora</i>	pink sand verbena
<i>Achillea millefolium</i>	yarrow
<i>Alnus oregana</i>	red alder
<i>Ambrosia chamissonis</i> *	beach bursage or silver beachweed
<i>Anaphalis margaritacea</i>	pearly everlasting
<i>Arctostaphylos uva-ursi</i>	bearberry
<i>Armeria maritima</i>	thrift
<i>Artemisia pycnocephala</i>	coastal sagewort
<i>Baccharis pilularis</i>	coyote brush
<i>Briza maxima</i> *	rattlesnake grass/quaking grass
<i>Cakile edentula</i> *	sea rocket
<i>Cakile maritima</i> *	sea rocket
<i>Calystegia soldanella</i>	beach morning glory
<i>Cardionema ramosissimum</i>	sand mat
<i>Carex obnupta</i>	sedge
<i>Chamissonia cheranthifolia</i>	beach evening primrose
<i>Cortaderia jubata</i> *	pampas grass
<i>Cupressus macrocarpa</i> *	Monterey cypress
<i>Cytisus scoparius</i> *	Scotchbroom
<i>Erechtites hieracifolia</i> *	fireweed
<i>Erigeron glaucus</i>	sea side daisy
<i>Eriogonum latifolium</i>	coast buckwheat
<i>Fragaria chiloensis</i> *	beach strawberry
<i>Garrya elliptica</i>	coast silk tassel
<i>Gaultheria shallon</i>	salal
<i>Glehnia littoralis</i> ssp. <i>leiocarpa</i>	American glehnia
<i>Gnaphalium palustre</i>	cudweed
<i>Hypochaeris radicata</i> *	hairy cat's-ear
<i>Juncus breweri</i>	dune rush
<i>Juncus lesueurii</i>	rush
<i>Layia carnosa</i>	beach layia
<i>Laythurs littoralis</i> *	beach pea
<i>Leymus mollis</i> *	American dune grass

* Non-native plants found within the project area.

<i>Lonicera involucrata</i>	twinberry
<i>Lupinus chamissionis</i> *	sea shore lupine
<i>Mentha pulegium</i> *	pennyroyal
<i>Myrica californica</i>	wax myrtle
<i>Picea sitchensis</i>	Sitka spruce
<i>Pinus contorta</i>	bishop pine
<i>Poa douglasii</i> *	sand dune bluegrass
<i>Polygonum paronychia</i>	beach knotweed
<i>Polystichum munitum</i>	sword fern
<i>Potentilla anserina</i> ssp. <i>Pacifica</i>	Pacific silverweed
<i>Pseudotsugo menziesii</i>	Douglas-fir
<i>Pteridium aquilinum</i>	western braken fern
<i>Ribes sanguineum</i> var. <i>glutinosum</i>	red flowering currant
<i>Rubus parviflorus</i>	thimbleberry
<i>Rubus spectabilis</i>	salmonberry
<i>Rubus ursinus</i>	blackberry
<i>Rumex</i> spp.	dock
<i>Salix hookeriana</i>	willow
<i>Solidago spathulata</i>	golden rod
<i>Tan acetum camphorate</i>	dune tansy
<i>Actinium ovatum</i>	black huckleberry

COMPILED FROM THE FOLLOWING LITERATURE

- Forys, Michelle and Amber Transou. 2004. Rare plant survey and vegetation monitoring conducted for the Little River State Beach Habitat Restoration Project. California Department of Parks and Recreation. Eureka, CA
- Gizinski, Valerie. 1994. Surveys for Sensitive Resources at Little River State Beach. Unpublished State of California Memorandum including a plant species list for Little River State Beach. California Department of Parks and Recreation, Eureka, CA.
- Labanca, Tony. 1993. Vegetation Changes at Coastal dunes between Mad River and Little River, Humboldt County, California. M.A. Thesis, Humboldt State University, Arcata, California.
- Parker, J.1974. Coastal dune systems between Mad River and Little River, Humboldt County, California. M. A. Thesis. Humboldt State University, Arcata, California, USA.

Appendix D. Little River State Beach Plant List

Scientific Name	Common Name	Family
<i>Abronia latifolia</i>	yellow sand verbena	Nyctaginaceae
<i>Abronia umbellata</i> ssp. <i>breviflora</i> ¹	pink sand-verbena	Nyctaginaceae
<i>Achillea millefoliata</i>	yarrow	Asteraceae
<i>Agrostis capillaris</i>	colonial bentgrass	Poaceae
<i>Agrostis microphylla</i>	little-leaf bentgrass	Poaceae
<i>Agrostis stolonifera</i>	creeping bentgrass	Poaceae
<i>Aira praecox</i>	European hairgrass	Poaceae
<i>Aira caryophyllea</i>	silver European hairgrass	Poaceae
<i>Alnus rubra</i>	red alder	Betulaceae
<i>Alopecurus aequalis</i>	short-awn foxtail	Poaceae
<i>Ambrosia chamissonis</i>	beach bursage	Asteraceae
<i>Amelanchier alnifolia</i>	service-berry	Rosaceae
<i>Ammophila arenaria</i>	European beachgrass	Poaceae
<i>Anagallis arvensis</i>	scarlet pimpernel	Primulaceae
<i>Anaphalis margaritacea</i>	pearly everlasting	Asteraceae
<i>Anthoxanthum odoratum</i>	sweet vernal grass	Poaceae
<i>Armeria maritima</i>	sea thrift	Plumbaginaceae
<i>Artemisia ludoviciana</i>	mugwort	Asteraceae
<i>Aster chilensis</i>	California aster	Asteraceae
<i>Atriplex triangularis</i>	sparscale	Chenopodiaceae
<i>Avena barbata</i>	wild oat	Poaceae
<i>Baccharis pilularis</i>	coyote brush	Asteraceae
<i>Brassica nigra</i>	black mustard	Brassicaceae
<i>Briza maxima</i>	quaking grass	Poaceae
<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome	Poaceae
<i>Bromus carinatus</i> var. <i>maritimus</i>	California brome	Poaceae
<i>Bromus diandrus</i>	rip-gut	Poaceae
<i>Bromus hordeacous</i>	soft chess	Poaceae
<i>Cakile edentula</i>	sea rocket	Brassicaceae
<i>Cakile maritima</i>	sea rocket	Brassicaceae
<i>Calandrinia ciliata</i>	red maids	Portulacaceae
<i>Calocedrus decurrens</i>	incense cedar	Cupressaceae
<i>Calystegia soldanella</i>	beach morning glory	Convolvulaceae
<i>Carpobrotus chilensis</i>	sea fig, iceplant	Aizoaceae
<i>Camissonia cheiranthifolia</i>	beach evening primrose	Onagraceae
<i>Cardionema ramosissimum</i>	sand mat	Caryophyllaceae
<i>Carex lyngbyei</i> (possible hybrid) ¹	Lyngbye's sedge	Cyperaceae
<i>Carex obnupta</i>	slough sedge	Cyperaceae
<i>Carex pansa</i>	sand dune sedge	Cyperaceae
<i>Centaurium erythraea</i>	centaury	Gentianaceae
<i>Centunculus minimus</i>	chaffweed	Primulaceae
<i>Cerastium glomeratum</i>	mouse-ear chickweed	Caryophyllaceae
<i>Camomilla suaveolens</i>	pineapple weed	Asteraceae
<i>Chenopodium</i> sp.	pigweed, goosefoot	Chenopodiaceae

¹ California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (online edition, v6-04b).

<i>Cirsium vulgare</i>	bull thistle	Asteraceae
<i>Cortaderia jubata</i>	pampas grass	Poaceae
<i>Cotula coronopifolia</i>	brass buttons	Asteraceae
<i>Cupressus macrocarpa</i>	Monterey cypress	Cupressaceae
<i>Cynosurus echinatus</i>	bristly dogstail grass	Poaceae
<i>Cyperus eragrostis</i>	nutsedge	Cyperaceae
<i>Cytisus scoparius</i>	Scotch broom	Fabaceae
<i>Dactylis glomerata</i>	orchard grass	Poaceae
<i>Danthonia californica</i>	California Oatgrass	Poaceae
<i>Daucus carota</i>	Queen Anne's lace	Apiaceae
<i>Daucus pusillus</i>	rattlesnake weed	Apiaceae
<i>Deschampsia cespitosa</i> var. <i>holciformis</i>	tufted hairgrass	Poaceae
<i>Digitalis purpurea</i>	foxglove	Scrophulariaceae
<i>Dipsacus fullonum</i>	teasel	Dipsacaceae
<i>Distichlis spicata</i>	saltgrass	Poaceae
<i>Eleocharis macrostachya</i>	spikerush	Cyperaceae
<i>Eleocharis pachycarpa</i>	black sand spikerush	Cyperaceae
<i>Epilobium ciliatum</i>	willow herb	Onagraceae
<i>Equisetum arvense</i>	common horsetail	Equisetaceae
<i>Equisetum telmateia</i> ssp. <i>braunii</i>	giant horsetail	Equisetaceae
<i>Erechtites glomerata</i>	cut-leaved coast fireweed	Asteraceae
<i>Erechtites minima</i>	fireweed	Asteraceae
<i>Eriogonum latifolium</i>	beach buckwheat	Polygonaceae
<i>Erodium cicutarium</i>	common stork's-bill	Geraniaceae
<i>Festuca arundinacea</i>	tall fescue	Poaceae
<i>Festuca rubra</i>	red fescue	Poaceae
<i>Fragaria chiloensis</i>	beach strawberry	Rosaceae
<i>Galium aparine</i>	goose grass	Rubiaceae
<i>Galium trifidum</i> var. <i>pacificum</i>	bedstraw	Rubiaceae
<i>Garrya elliptica</i>	coast silktassel	Garryaceae
<i>Gaultheria shallon</i>	salal	Ericaceae
<i>Geranium dissectum</i>	geranium	Geraniaceae
<i>Glehnia littoralis</i> ssp. <i>leiocarpa</i> ¹	American glehnia	Apiaceae
<i>Glyceria elata</i>	fowl mannagrass	Poaceae
<i>Glyceria occidentalis</i>	northwestern mannagrass	Poaceae
<i>Gnaphalium purpureum</i>	cudweed	Asteraceae
<i>Gnaphalium stramineum</i>	cudweed	Asteraceae
<i>Gnaphalium palustris</i>	lowland cudweed	Asteraceae
<i>Heracleum lanatum</i>	cow parsnip	Apiaceae
<i>Hieracium albiflorum</i>	white-flowered hawkweed	Asteraceae
<i>Holcus lanatus</i>	velvet grass	Poaceae
<i>Hordeum brachyantherum</i>	barley	Poaceae
<i>Hypericum perforatum</i>	Klamath weed	Hypericaceae
<i>Hypochaeris glabra</i>	smooth cat's ear	Asteraceae
<i>Hypochaeris radicata</i>	rough cat's ear	Asteraceae
<i>Juncus balticus</i>	Baltic rush	Juncaceae
<i>Juncus bolanderi</i>	rush	Juncaceae
<i>Juncus brewerii</i>	salt rush	Juncaceae
<i>Juncus bufonius</i> var. <i>occidentalis</i>	toad rush	Juncaceae
<i>Juncus effusus</i>	soft rush	Juncaceae

<i>Juncus lesueurii</i>	salt rush	Juncaceae
<i>Juncus xiphioides?</i>	rush	Juncaceae
<i>Lagurus ovatus</i>	haretail grass	Poaceae
<i>Lathyrus japonicus</i> ¹	beach pea	Fabaceae
<i>Lathyrus latifolius</i>	perennial sweet pea	Fabaceae
<i>Lathyrus littoralis</i>	beach pea	Fabaceae
<i>Leontodon taraxacoides</i>	hawkbit	Asteraceae
<i>Lessingia filaginifolia</i>	beach aster	Asteraceae
<i>Leucanthemum vulgare</i>	ox-eye daisy	Asteraceae
<i>Leymus mollis</i> ssp. <i>mollis</i>	dunegrass	Poaceae
<i>Leymus xancouverensis</i>	Vancouver wild rye	Poaceae
<i>Lilaeopsis occidentalis</i>	western lilaeopsis	Apiaceae
<i>Lolium multiflorum</i>	Mediterranean ryegrass	Poaceae
<i>Lolium perrene</i>	perennial ryegrass	Poaceae
<i>Lonicera hispidula</i>	honeysuckle	Caprifoliaceae
<i>Lonicera involucrata</i>	twinberry	Caprifoliaceae
<i>Lotus corniculatus</i>	bird's-foot trefoil	Fabaceae
<i>Lotus micranthus</i>	miniature lotus	Fabaceae
<i>Lotus uliginosus</i>	greater bird's-foot trefoil	Fabaceae
<i>Lupinus arboreus</i>	yellow bush lupine	Fabaceae
<i>Lupinus bicolor</i>	miniature lupine	Fabaceae
<i>Lupinus rivularis</i>	riverbank lupine	Fabaceae
<i>Lupinus rivularis x arboreus</i>	hybrid lupine	Fabaceae
<i>Luzula comosa</i>	wood rush	Juncaceae
<i>Lythrum hyssopifolium</i>	loosestrife	Lythraceae
<i>Marah oreganus</i>	coast manroot	Cucurbitaceae
<i>Mentha pulegium</i>	pennyroyal	Lamiaceae
<i>Mimulus aurantiacus</i>	sticky monkeyflower	Scrophulariaceae
<i>Myrica californica</i>	wax myrtle	Myricaceae
<i>Navarretia squarrosa</i>	skunkweed	Polemoniaceae
<i>Oenanthe sarmentosa</i>	water parsley	Apiaceae
<i>Parapholis incurva</i>	sickle grass	Poaceae
<i>Parentucellia viscosa</i>	parentucellia	Scrophulariaceae
<i>Pentagramma triangularis</i>	triangle fern	Pteridaceae
<i>Phalaris arundinacea</i>	reed canary grass	Poaceae
<i>Picea sitchensis</i>	Sitka spruce	Pinaceae
<i>Pinus contorta</i> ssp. <i>contorta</i>	beach pine	Pinaceae
<i>Plantago lanceolata</i>	English plantain	Plantaginaceae
<i>Plantago major</i>	common plantain	Plantaginaceae
<i>Poa annua</i>	annual bluegrass	Poaceae
<i>Poa kelloggii</i>	Kellogg's bluegrass	Poaceae
<i>Polygonum arenastrum</i>	common knotweed	Polygonaceae
<i>Polygonum paronychia</i>	dune knotweed	Polygonaceae
<i>Polypodium calirrhiza</i>	polypody	Polypodiaceae
<i>Polypogon monspeliensis</i>	rabbitsfoot grass	Poaceae
<i>Polystichum munitum</i>	sword fern	Dryopteridaceae
<i>Potentilla anserina</i> ssp. <i>pacifica</i>	Pacific silverweed	Rosaceae
<i>Prunus</i> sp.	plum	Rosaceae
<i>Pseudotsuga menziesii</i>	Douglas-fir	Pinaceae
<i>Pteridium aquilinum</i>	bracken fern	Dennstaedtiaceae

<i>Raphanus raphinistrum</i>	jointed charlock	Brassicaceae
<i>Rhamnus purshiana</i>	cascara	Rhamnaceae
<i>Ribes divaricatum</i> var. <i>pubiflorum</i>	wild gooseberry	Grossulariaceae
<i>Ribes sanguineum</i> var. <i>glutinosum</i>	red-flowering currant	Grossulariaceae
<i>Rorippa nasturtium-aquaticum</i>	water cress	Brassicaceae
<i>Rosa gymnocarpa</i>	wood rose	Rosaceae
<i>Rubus discolor</i>	Himalayan blackberry	Rosaceae
<i>Rubus parviflorus</i>	thimbleberry	Rosaceae
<i>Rubus ursinus</i>	California blackberry	Rosaceae
<i>Rumex acetosella</i>	sheep sorrel	Polygonaceae
<i>Rumex conglomeratus</i>	dock	Polygonaceae
<i>Rumex crispus</i>	curly dock	Polygonaceae
<i>Salix hookeriana</i>	Hooker willow	Salicaceae
<i>Salix lucida</i> ssp. <i>lasiandra</i>	shining willow	Salicaceae
<i>Sanicula crassicaulis</i>	sanicle	Apiaceae
<i>Scirpus americanus</i>	three-square bulrush	Cyperaceae
<i>Scirpus cernuus</i>	low club rush	Cyperaceae
<i>Scirpus microcarpus</i>	small-fruited bulrush	Cyperaceae
<i>Scirpus pungens</i>	common three-square	Cyperaceae
<i>Scrophularia californica</i>	California figwort	Scrophulariaceae
<i>Sequoia sempervirens</i>	coast redwood	Taxodiaceae
<i>Silene gallica</i>	common catchfly	Caryophyllaceae
<i>Solidago spathulata</i> ssp. <i>spathulata</i>	dune goldenrod	Asteraceae
<i>Sonchus asper</i> ssp. <i>asper</i>	prickly sow thistle	Asteraceae
<i>Sonchus oleraceus</i>	common sow thistle	Asteraceae
<i>Spergularia macrotheca</i> var. <i>pubiflorum</i>	sand-spurrey	Caryophyllaceae
<i>Spergularia rubra</i>	sand-spurrey	Caryophyllaceae
<i>Spartina densiflora</i>	Chilean cordgrass	Poaceae
<i>Stellaria calycantha</i>	chickweed	Caryophyllaceae
<i>Stellaria media</i>	common chickweed	Caryophyllaceae
<i>Tanacetum camphoratum</i>	dune tansy	Asteraceae
<i>Trifolium dubium</i>	little hop-clover	Fabaceae
<i>Trifolium pratense</i>	red clover	Fabaceae
<i>Trifolium repens</i>	white lawn clover	Fabaceae
<i>Trifolium wormskioldii</i>	spring bank clover	Fabaceae
<i>Triglochin concinna</i>	arrow-grass	Juncaginaceae
<i>Umbellularia californica</i>	California bay laurel	Lauraceae
<i>Vaccinium ovatum</i>	California huckleberry	Ericaceae
<i>Veronica americana</i>	American brooklime	Scrophulariaceae
<i>Vicia gigantea</i>	giant vetch	Fabaceae
<i>Vicia hirsuta</i>	hairy-fruited vetch	Fabaceae
<i>Vicia sativa</i> ssp. <i>nigra</i>	narrow-leaved vetch	Fabaceae
<i>Vicia tetrasperma</i>	smooth tare	Fabaceae
<i>Vulpia bromoides</i>	brome fescue	Poaceae
<i>Vulpia myuros</i>	rattail fescue	Poaceae

*Prepared by Stephanie Morrisette and Laurel Goldsmith; July 2008; Mad River Biologists, 417 2nd Street, Suite 201, Eureka, California, 95501. Summer 2008.

Appendix E. Western Snowy Plover Breeding Information

Number of Breeding Western Snowy Plovers in the North Coast Redwoods District																	
Unit	1977	1989	1991	1992	1993	1994	1995	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Sinkyone State Wilderness Area	NS	0	0	NS													
Little River State Beach	2	2	7	0	1	7	4	13	6	7	8	8	7	2	10	12	0
Big Lagoon (HLSP)	13	12	5	NS	NS	NS	0	0	0	0	0	0	0	1	0	0	2
Dry Lagoon (HLSP)	NS	0	0	0	0	0	0	0	3	0							
Stone Lagoon (HLSP)	NS	0	0	0	0	0	0	0	0	0	0						
Prairie Creek State Park	NS	0	0	0	0	0	0	4	0	0	2						
Tolowa Dunes State Park	5	8	3	NS	NS	NS	0	NS	NS	0	0	0	0	0	0	0	0

* Survey area includes portions of Clam Beach County Park and Private Property. NS = Area Not Surveyed.

Little River State Beach Western Snowy Plover Breeding Season Summary								
Year	Number of Female Plovers	Number of Male Plovers	Number of Nests	Number of Nests Exclosed	Number of Chicks Hatched	Hatching Success	Number of Chicks Fledged	Fledging Success
2002	5	3	10	6	6	20%	1	17%
2003	3	4	4	2	5	50%	1	20%
2004	2	2	2	1	4	100%	3	75%
2005	6	5	6	3	14	100%	3	21%
2006	2	2	2	2	3	50%	0	0%
2007	1	1	0	0	0	0%	0	0%

*Sources of Data: Colwell et al. 2001, 2002, 2004; 2005; Forys and Harris 2002 and 2003; Forys and Transou 2004; LeValley 1999; Page and Stenzel 1981; Page et al. 1991 and 1985; Transou 2006 and 2007; Transou and Forys 2005;

Appendix F. Measure to Avoid Take of Sensitive Natural or Cultural Resources

This refers to all listed and or sensitive species and culturally significant features.

WESTERN SNOWY PLOVER

- Western snowy plover mitigation measures will be applied whenever operations are occurring in the nearshore dune habitat.
- Permitted snowy plover monitors will survey areas that work will be conducted in each day prior to operation. Snowy plover monitors will be onsite for the entire duration of operational hours to ensure that there are no snowy plovers present within the established spatial buffer zone and that they have not moved on site. If snowy plovers are observed within the spatial buffer zone of project activities, an alternative area where snowy plovers are not present will be picked.
- All staff and activities will remain in delineated project area in which presence/absence surveys will be conducted.
- Heavy equipment operations will be conducted outside of the WSP breeding season between September 15th and March 1st. All operations will occur during daylight hours.
- During the non-breeding season, a 50 meter (164 feet) spatial buffer zone will be maintained between WSP and restoration/enhancement operations. If the WSP monitor determines that operations are resulting in a behavioral disturbance to WSP then operations will be moved far enough away so as to eliminate the disturbance to the plovers.
- During the breeding season, a 100 meter (330 feet) spatial buffer zone will be maintained between WSP and restoration/enhancement operations. If the WSP monitor determines that operations are resulting in a behavioral disturbance to WSP then operations will be moved far enough away so as to eliminate the disturbance to the plovers.
- All operations will occur during daylight hours.
- Vehicles driven on the beach will be limited to 10 mph, or the minimal speed required to prevent getting stuck in sand. Vehicles will remain on the wet sand until reaching the treatment area. All vehicles will be escorted by a permitted snowy plover biologist. A snowy plover monitor will walk in front of vehicles to and from the waveslope. This will be repeated in the afternoon when work is completed for the day. There will be no night driving or driving during periods of diminished visibility.
- Trash will be contained in predator-proof containers and transported off site at the end of each workday.
- Lunch and breaks will be taken at the work site to prevent workers from disturbing plovers.
- No dogs or other pets will accompany workers to the work site.
- Heavy equipment will be fueled at the start of every day at a predetermined location (western ¼ of the nearshore dunes). Fuel will be delivered via a 4x4

truck at the start of each workday, and be administered by a fuel dispenser held in the bed of the truck. The truck carrying the fuel dispenser will enter the beach at the Clam Beach County Park vehicle entrance or through the newly created access path through LRSB. A snowy plover monitor will walk in front of the vehicle from the waveslope to/from the western $\frac{1}{4}$ of the treatment area, where heavy equipment will be fueled.

- All staff and activities will remain in delineated project area in which presence/absence surveys will be conducted.
- Outreach will be conducted to explain the project and its benefits to plovers, other listed and rare species, and the native coastal dune ecosystem.

BOTANICAL

- Floristically appropriate surveys will be conducted prior to the initiation of project activities and shall be in conformance with DFG guidelines (CDFG 2008). If sensitive plant species are found, 5 m (16.5 ft) buffer will be allotted and flagged. Any removal efforts targeted within the protected buffer zone will be removed by hand.
- Heavy equipment will enter the project area through an existing trail from the Clam Beach frontage road to the foredune, where it will be stored at the interface of European beachgrass and Coyote brush plant series. Heavy equipment will remain onsite until the completion of each year's implementation phases, at which time that equipment will exit from where it came. Objects to obstruct the entrance to the path will be placed at the trailhead once heavy equipment moves through.
- Symbolic fencing will be erected around treated areas to avoid human disturbance of newly created habitat and reseeding efforts.
- Interpretive signs will be used on the symbolic fencing to inform the public of the restoration project and sensitive species. The signs will focus on the restoration project.
- A Hazardous Material Spill Contingency Plan and Safety Plan will be reviewed daily and kept onsite.

CULTURAL

- If it is determined the find indicates a sacred or religious site, the site will be avoided to the maximum extent practicable. Formal consultation with the State Historic Preservation Officer (SHPO) and review by the NAHC/tribal representatives will also occur as necessary to define additional site mitigation or future restrictions.
- Prior to operating in area(s) identified in the confidential 5024 document as potentially culturally sensitive, the project manager will contact the North Coast District Archaeologist at least two weeks prior to operations. The Archaeologist (or his designee) shall determine the boundaries of the sensitive area(s) and flag with black and yellow candy-stripe flagging. The Archaeologist will determine if a tribal monitor needs to be present during operations within these area(s). No

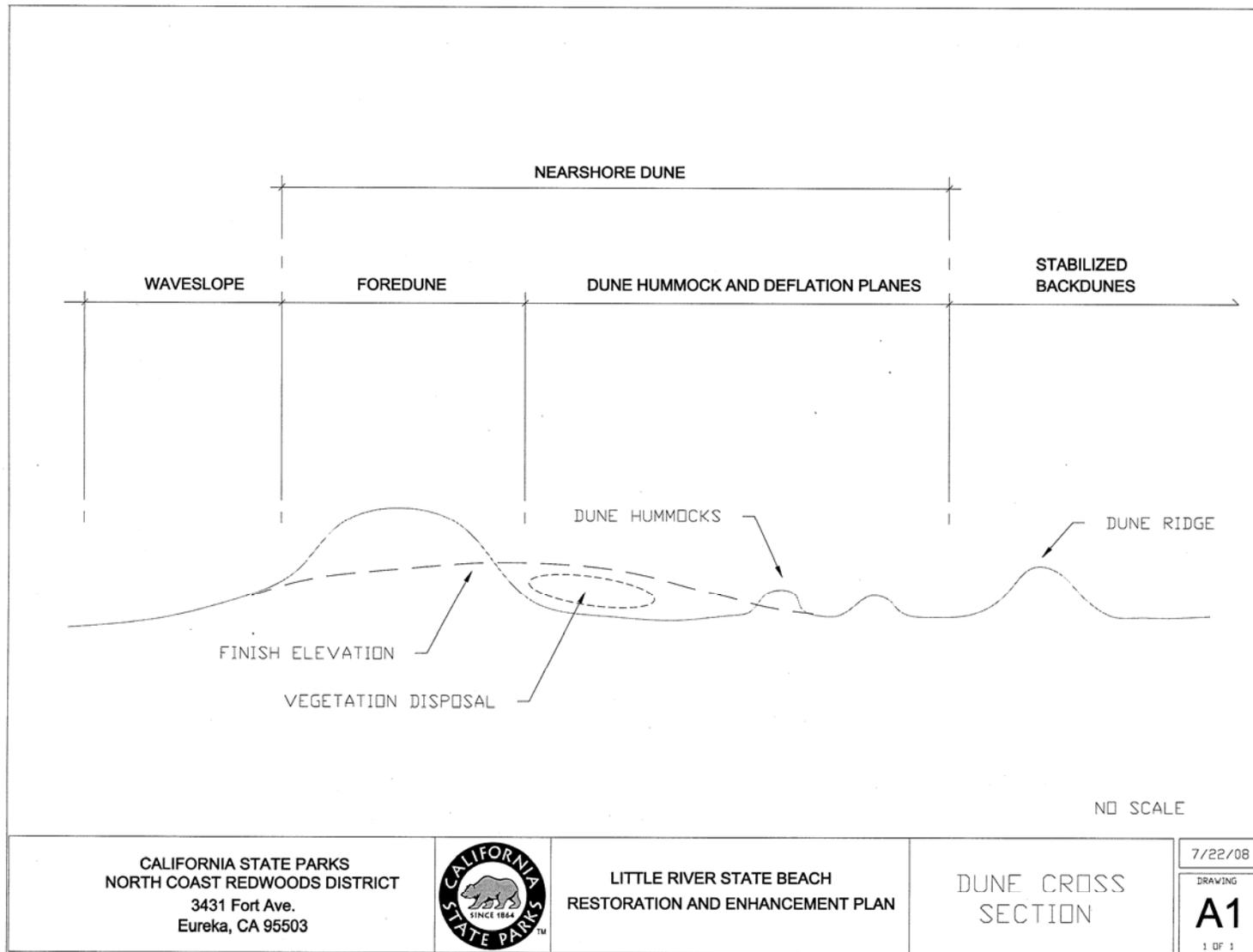
heavy equipment will be allowed within designated culturally sensitive area(s).

- In the event that human remains are discovered, work will cease immediately in the area of the find and the project manager/site supervisor will notify the appropriate DPR personnel. Any human remains and/or funerary objects will be left in place. The DPR Sector Superintendent (or authorized representative) will notify the Humboldt County Coroner, in accordance with §7050.5 of the California Health and Safety Code, and the Native American Heritage Commission (NAHC) will be notified within 24 hours of the discovery if the Coroner determines that the remains are Native American. The NAHC will designate the “Most Likely Descendent” (MLD) of the deceased Native American. The MLD will recommend an appropriate disposition of the remains. If a Native American monitor is on-site at the time of the discovery and that person has been designated the MLD by the NAHC, the monitor will make the recommendation of the appropriate disposition.
- If the coroner or a tribal representative determines that the remains represent Native American internment, the NAHC in Sacramento and/or tribe will be consulted to identify the Most Likely Descendent (MLD) and appropriate disposition of the remains. Work shall not resume in the area of the find until proper disposition is complete as part of PRC §5097.98. No human remains or funerary objects will be cleaned, photographed, analyzed, or removed from the site prior to determination.

LITERATURE CITED

California Department of Fish and Game. 2008. Natural Diversity Data Base. Sacramento California.

Appendix G. Exotic Vegetation Disposal Diagram



Appendix H. Fire Risk and Complexity Analysis

FIRE RISK ANALYSIS Little River State Beach 6-22-07 Prepared by Stephen Underwood Environmental Scientist

Introduction: This project involves using propane torches to control exotic plant vegetation in the nearshore dunes and backdunes at Little River State Beach. Green flaming and/or black flaming maybe used. Green flaming calls for applying enough heat to cause the plants to wilt and die. Black flaming involves applying enough heat to incinerate the vegetation or destroy the cambium layer. Exotic herbaceous and shrub vegetation maybe treated.

Methods: Prior to treatment woody exotic shrubs will be manually removed thereby reducing fuel load. A propane torch connected to a LP cylinder will then be used to apply heat to exotic shrubs and herbaceous vegetation. To prevent creating a fire which carries from plant to plant the following precautions will be used:

1. Flaming will only be used from November through March.
2. Either a wetting rain must have fallen within the previous three days or it must be foggy.
3. Each day of flaming will start in an area of very sparse vegetation to confirm that fire does not appear to want to spread from plant to plant.
4. No flaming will occur at wind speeds above 5 mph mid-flame.
5. Flaming will be conducted with a member of the North Coast Redwoods District Burn Team with at least 2 field days of experience present. Basic fire tools will be available.
6. California Highway Patrol, Humboldt County Sheriff, and Arcata Police Department dispatch offices will be notified if it appears that smoke produced from the burning may cause 911 calls.

Fire behavior: Fire behavior will be limited to flame coming from torch and burning of shrub and herbaceous vegetation in the flame. If bushes or herbaceous vegetation is consumed outside of contact with the propane torch flaming will be stopped as this is an indication fuels are too dry.

Topography: The dunes where the work is to occur is generally flat.

Fuels: Fuels are a combination of shrub, herbaceous and grass vegetation. Currently, some areas have fairly continuous shrub and herbaceous vegetation. Much of this shrub vegetation is exotic lupine which will be removed before flaming. That the existing fuel structure is continuous enough to carry fire was demonstrated in a wildfire, which occurred under windy conditions on Clam Beach County Park adjacent to the State Beach.

Spot Fire: Probability is low due to high fuel moistures and low winds speeds allowed in the methods.

Structures and improvements: A county owned restroom is located on the south end of the State Beach. It is made out of non-burnable material. Private residences are located on the east side of Highway 101 and should not be threatened. The risk of structure loss is very low due to time of year, high fuel moistures and the fact that the structures are so far away.

Fire weather: Fire weather at the burn location is generally fairly predictable. The burn area is exposed to direct sunlight and winds which blow off the Pacific Ocean. Flaming will only occur during times of high live and dead fuel moisture and low wind speeds.

Potential for re-ignition: Potential for re-ignition is low due to high live and dead fuel moistures required. Crews should not leave area for one-half hour after last flaming.

Unusual hazards: Caution must be used when transporting and using a propane torch. Bottles must be secured in compliance with applicable regulations. Care must be used to insure equipment is in good working order and no propane leakage is occurring.

In summary: There is very little risk involved in conducting this work provided methods and precautions outlined above are followed.

Appendix I. Specific Safety Protocol

GENERAL SAFETY

General safety concerns, such as weather and first aid, are important on all projects. Working in a populated area on the beach can introduce other safety concerns not seen in other projects, such as, although very rare, tsunamis. All workers will be advised of high-risk areas and scenarios and cautioned to use extreme care while working in those areas. A safety talk will occur each day, prior to work commencing. The lead person (CSP CRD Natural Resource Program staff) for the day will give the talk.

Project Handbook: A project handbook will be kept on-site during work hours, throughout the duration of the project. The lead person for each workday will be responsible for the handbook. This handbook will contain all safety measures and plans for the project area, important contact information pertaining to both possible emergencies and general project contacts, permits, and monitoring forms.

First Aid: All employees are issued first aid kits and are trained how to respond to anticipated and unanticipated incidents. First aid kits will be kept on site in all CSP vehicles.

Weather: The weather can affect the project in multiple ways. It is important to keep track of the weather and act accordingly to protect both project progress and personnel on site. Many hazardous conditions could be created during storm events, such as extremely large waves and high tides, wind blowing sand at extreme speeds, and flooding. Each day the project lead will evaluate the work area, tides, and weather forecast. Based on these conditions, the lead person will decide on the course of work for the day.

Earthquakes and Tsunami: Although rare, a large earthquake could easily happen close to the project area, and possibly trigger a tsunami. A NOAA weather radio should be on site and functional to determine the source location of any potential tsunami that might affect the site and when the site might be safe for return if a tsunami does affect the site. If a notable earthquake is felt while working on site, all employees and contractors will leave the project site immediately and run to high ground to listen for further instruction from the NOAA weather radio. Evacuation for more distant tsunamis that have more lead time before impact should also adhere to timelines and evacuation locations appropriate to the potential site impacts.

Tool Safety: Many types of tools will be used throughout the implementation of this plan. Whenever using tools personnel will make sure to keep a safe distance between each other. In addition, all personnel will be reminded daily on how to not injure your back while pulling or lifting.

Heavy Equipment: The use of heavy equipment within beach and dune habitats requires similar safety measures as in any other project, with the exception of the sandy substrate. Sand has physical characteristics that allow fluids to penetrate into the soil quickly and create potentially dangerous situations with quick sand. Heavy equipment operators and other on-site staff will be instructed in the hazards of operating and working in a sandy environment. All heavy equipment operators will be required to have experience working in conditions similar to the proposed project.

Fueling: Heavy equipment will be fueled at the start or the end of every day at a predetermined location (western ¼ of each treatment area). Fuel will be delivered via a fuel dispenser held in the bed of a 4 X 4 truck that will enter the beach from the CBCP vehicle entrance or through the newly created LRSB access path. A snowy plover monitor will walk in front of the vehicle from the waveslope to/from the western ¼ of the treatment area to fuel the equipment.

Hazardous Material Plan: Failure of, or leakage from, vehicles or heavy equipment could result in the release of hazardous substances (primarily petroleum-based products) into the ground or water. The project manager will prepare an emergency spill response plan prior to the start of implementation of the Plan. It will be ensure that a spill kit (including 5-gallon buckets) remains on-site throughout the life of the project, or provides multiple sets of cleanup materials to each crew, if sharing will prevent timely implementation of cleanup plans.

No maintenance or fueling activities will be permitted within 100 feet of a stream, the ocean or a wetland. Equipment will be cleaned and repaired (other than emergency repairs) outside the Park boundaries. All contaminated water, sludge, spill residue, or other hazardous compounds will be disposed outside Park boundaries, at a lawfully permitted or authorized designation.

Equipment is required to be leak free throughout rehabilitation projects. All equipment will be inspected for leaks immediately prior to the start of restoration, and regularly inspected thereafter until equipment is removed from the Park. Leaks that develop will be repaired immediately in the field or work will be suspended until repairs can be made.

In the event of any spill or release of any chemical in any physical form on or immediately adjacent to the project area during implementation, work will be halted or moved to a nearby location, and the site supervisor will immediately notify the appropriate DPR staff (e.g., project manager or supervisor). Appropriate agencies will be notified in the event of significant spillage. Hazardous materials, if present, will be contained and removed from the site prior to resumption of work. Reengineering of all contaminants, including sludge, spill residue, or containers, will be conducted following established DPR procedures and in compliance with all local, state, and federal regulations and guidelines regarding the handling and disposal of hazardous materials.

Noise: Noise levels will temporarily increase at the work site, although the noise generally diminishes rapidly with distance. Equipment operation shall be limited to daytime hours between 07:00 to 18:00 Monday through Friday. Workers in close proximity to the heavy equipment are exposed to high noise levels. Workers shall be advised to wear ear protection when within 15 m (50 ft) of the heavy equipment. Earplugs shall be provided to all workers and extra earplugs shall be stored in all vehicles and equipment. All operations will comply with OSHA regulations. Internal combustion engines used for any purpose at the job site will be equipped with a muffler of a type recommended by the manufacturer. Equipment used for restoration will utilize the best available noise control techniques (e.g., engine enclosures, acoustically attenuating shields or shrouds, intake silencers, ducts, etc.) whenever feasible and necessary.

Fire Safety: Heavy equipment can get very hot during the warmer part of the work season; this equipment is sometimes in close proximity to flammable vegetation. Equipment that is not properly outfitted can generate sparks from exhaust systems. Friction between metal parts crushing rocks could also generate sparks. Spark arrestors or turbo-charging (which eliminates sparks in exhaust) and fire extinguishers are required for all heavy equipment. A fire safety plan will be in place prior to the start of any construction, including availability of identified fire suppression equipment and any required employee training. All work with heavy equipment and propane torch will be conducted during the wet season. At the end of each workday, heavy equipment will be parked over mineral soil to reduce the chance of fire. All equipment will be required to be mechanically sound and free of flammable debris. Park staff will be required to have a State Park radio on site, which allows direct contact to California Department of Forestry and Fire Protection and centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire.

Appendix J. Genetic Guidelines for Revegetation on NCRD Lands and Within CSP

California State Parks and Recreation Commission Statement of Policy

Policy 11.4

Preservation of Vegetative Entities

(Amended 5-4-94)

“In order to maintain the genetic integrity and diversity of native California plants, revegetation or transplant efforts in the State Parks System will be from local populations, unless shown by scientific analysis that these populations are not genetically distinct from populations being proposed for use. If local populations have been decimated, the closest, most genetically similar population(s) to that State Park System unit will be used.”

District Policy:

Locality of Collection:

In order to maintain the genetic integrity and diversity of native California plants, all transplant and propagation in the North Coast Redwoods District will be from **local populations** (preferably from within the same stand). For the purpose of this policy, local is defined as being from the immediate project area (as close as possible, but generally less than one mile). Local populations will be considered decimated, and therefore not available for collection, only if there are not enough plants remaining to accomplish propagation and/or seed collection.

If the plant material or seed **cannot** be collected from **local populations** because: plants are not available or accessible; there is not enough time to collect and propagate material prior to the planting deadline; then collection can occur within the **same CalWater Planning Watershed Unit, or park unit or seed zone** provided the planting area is within an elevation of + or – 800 feet of the collection site.

Collection Diversity:

If available seed and propagation collection should come from a minimum of 10-15 different plants for larger projects to insure that sufficient genetic variability is obtained.

Emergencies:

In emergencies (large fires, emergency slope stability projects etc.) consideration of the use of commercial stock will be given provided that the stock meets the location and elevation constraints outlined above.

California State Parks and Recreation Department Operation Manual
Policy 0310.4.1
Genetic Integrity Policy

“In order to maintain the genetic integrity and diversity of native California plants, revegetation or transplant efforts in the State Parks System will be from local populations, unless it is shown by scientific analysis that these populations are not genetically distinct from other populations for use. If local populations have been decimated, the closest, most genetically similar population(s) to those being lost from the State Park System unit will be used (California State Parks and Recreation Commission Statement of Policy

Policy 11.4)

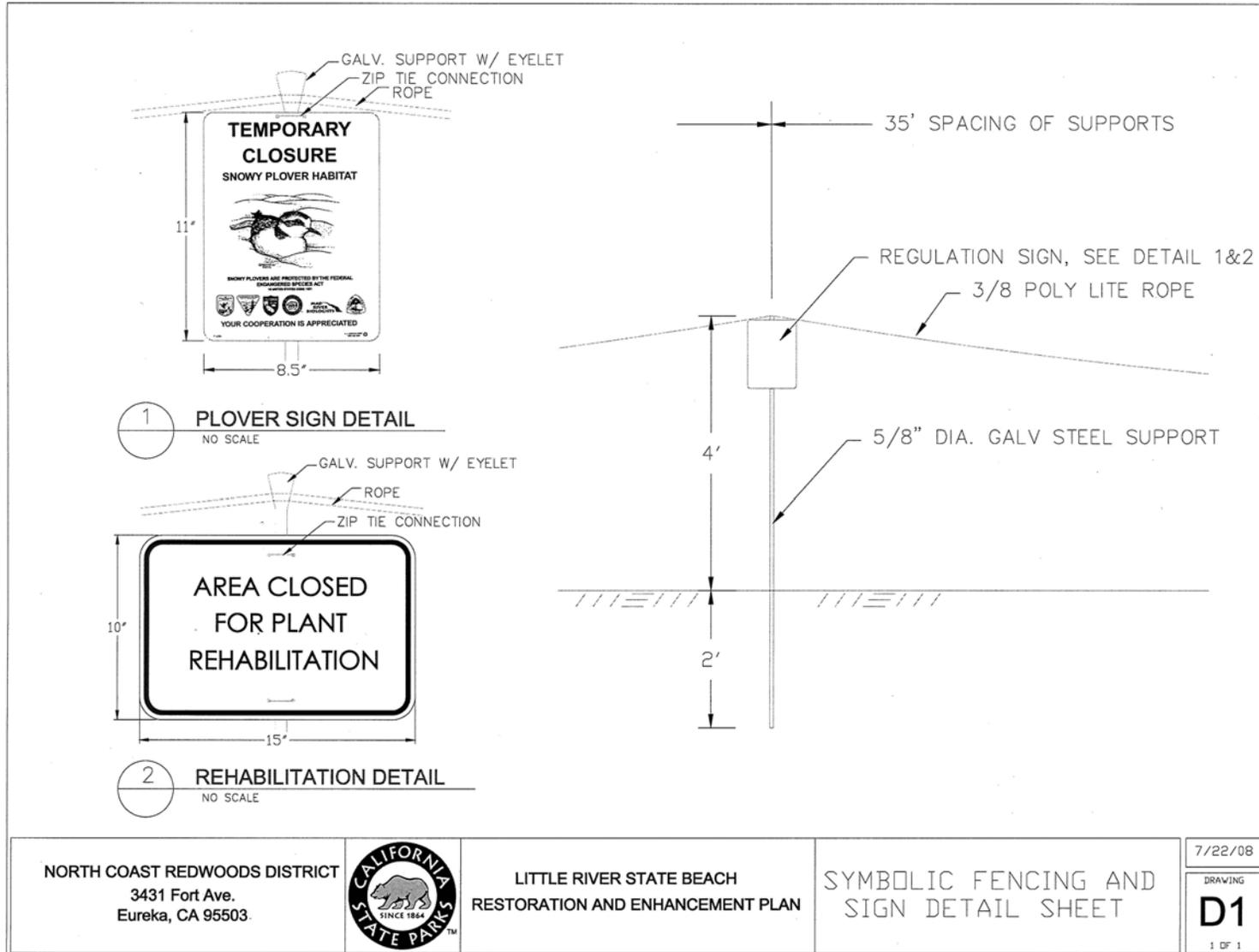
Sources of materials for revegetation will be, in preferred order:

1. Seeds, plants, cuttings salvaged from the site prior to disturbance;
2. Materials from similar vegetation and sites within the unit;
3. Materials collected offsite, but within the same ecological region, elevation, and site characteristics as the site to be revegetated.

If seeds or plants must be acquired from commercial sources, the origin of the materials should be from within the same ecological region, elevation, and site characteristics as the project area.

In order to eliminate the possibility of genetic contamination of any naturally occurring population at or near a revegetation site, threatened or endangered plant taxa will not be used for revegetation unless the revegetation is being done as part of a restoration plan for that taxon (see DOM Section 0310.5.3.1).

Appendix K. Symbolic Fencing Design



NORTH COAST REDWOODS DISTRICT
3431 Fort Ave.
Eureka, CA 95503



LITTLE RIVER STATE BEACH
RESTORATION AND ENHANCEMENT PLAN

SYMBOLIC FENCING AND
SIGN DETAIL SHEET

7/22/08

DRAWING

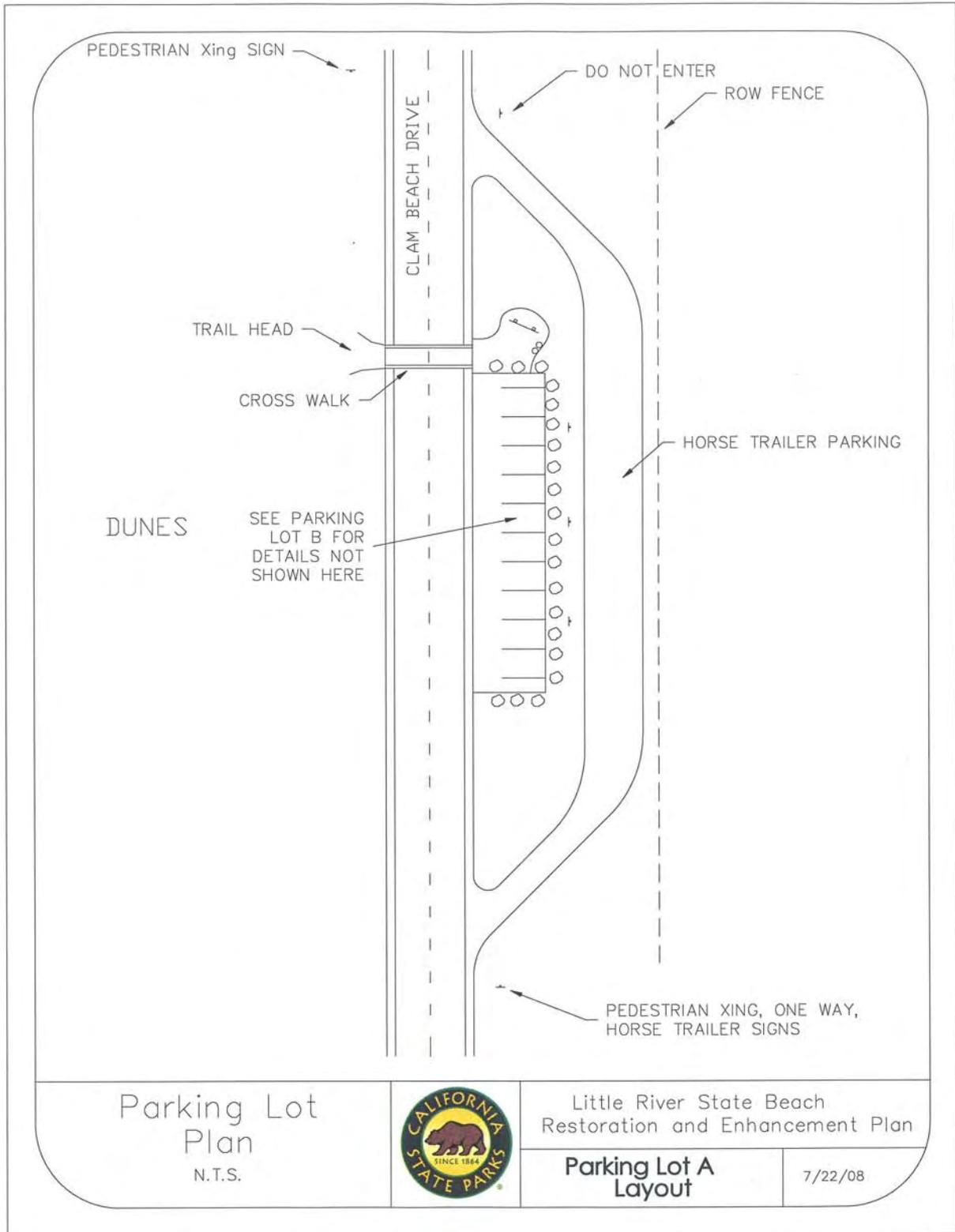
D1

1 OF 1

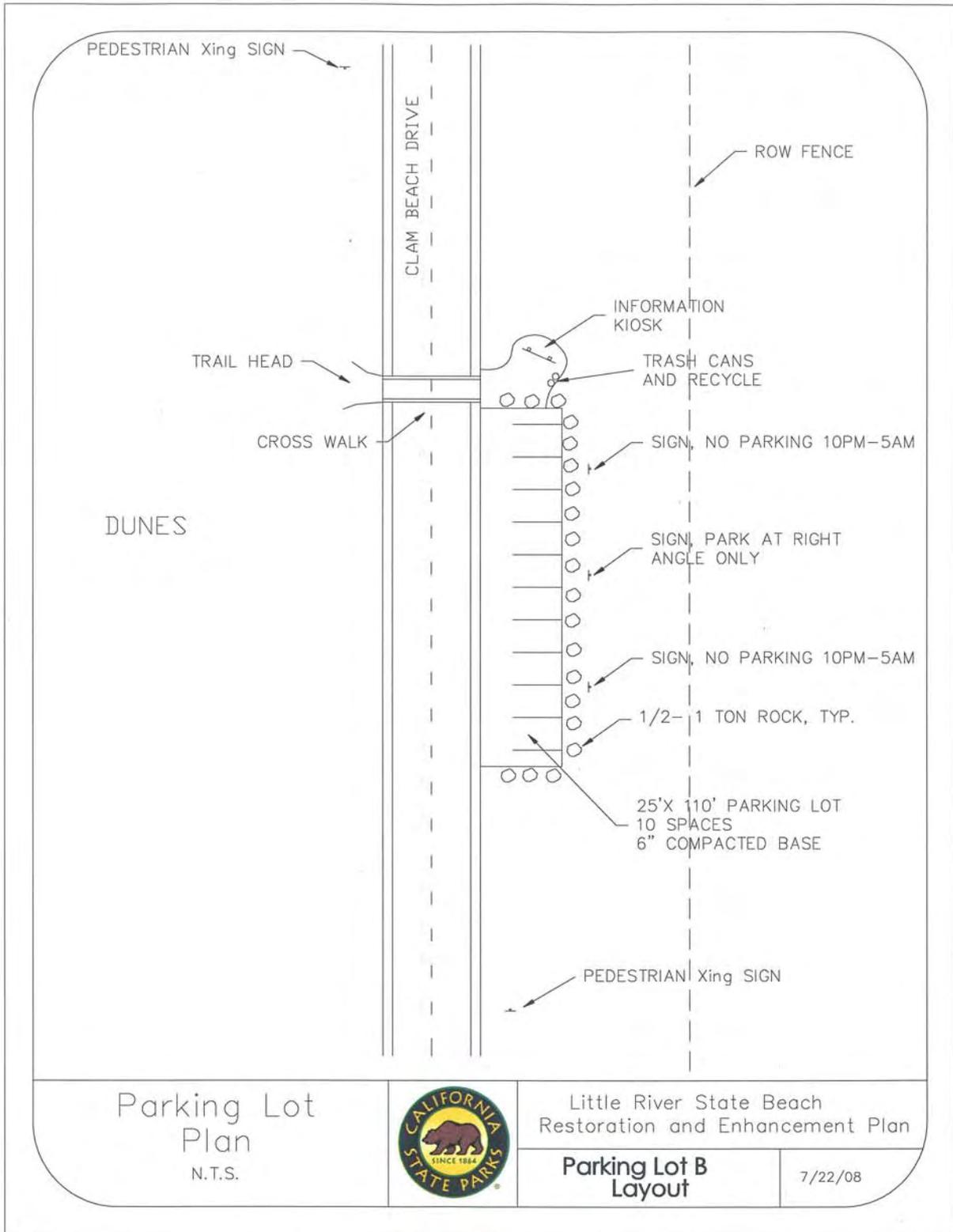
Appendix L. CBCP/LRSB Parking Lot Handicap Improvement Plan



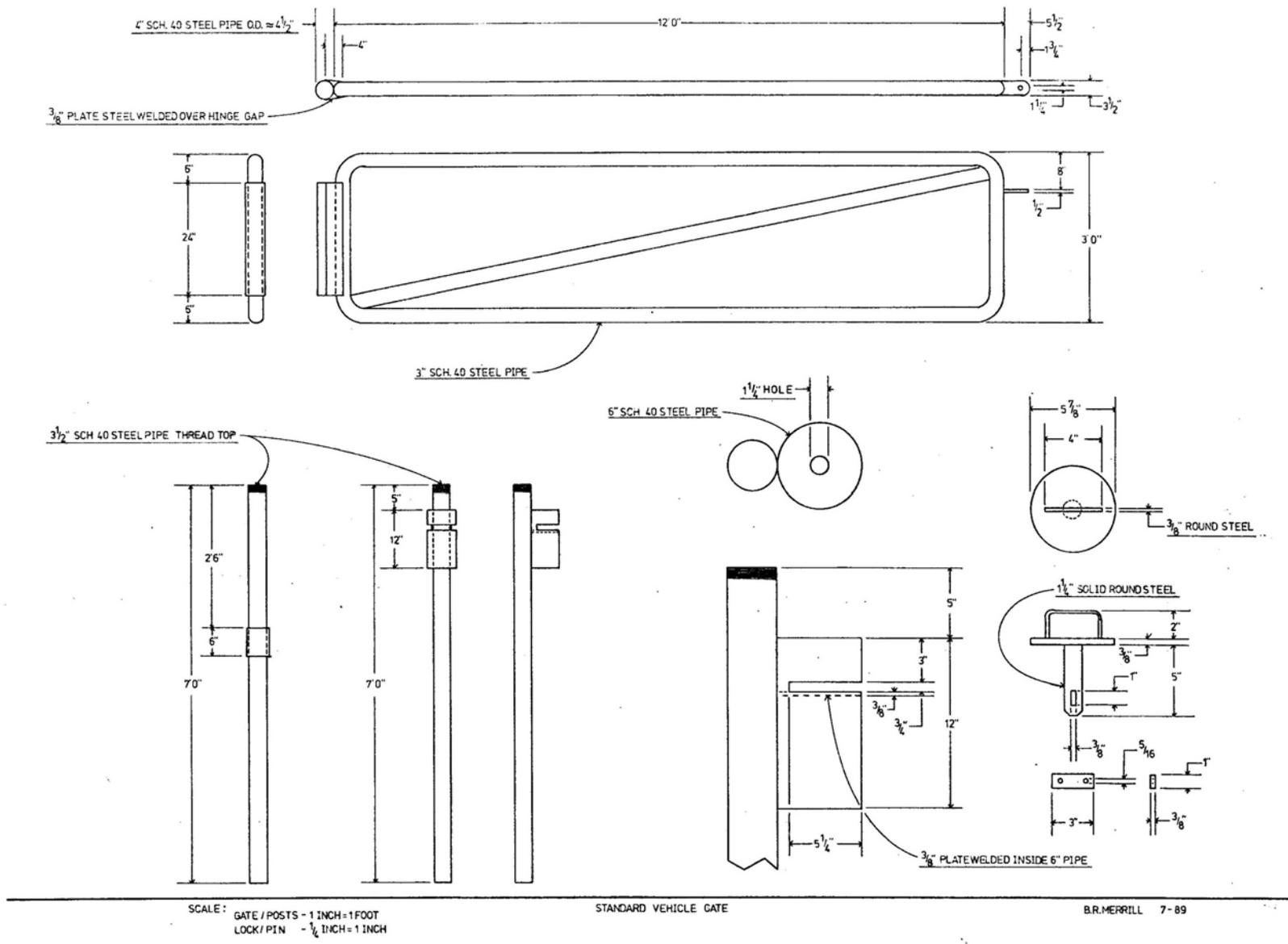
Appendix M. LRSB Parking Lot A Design



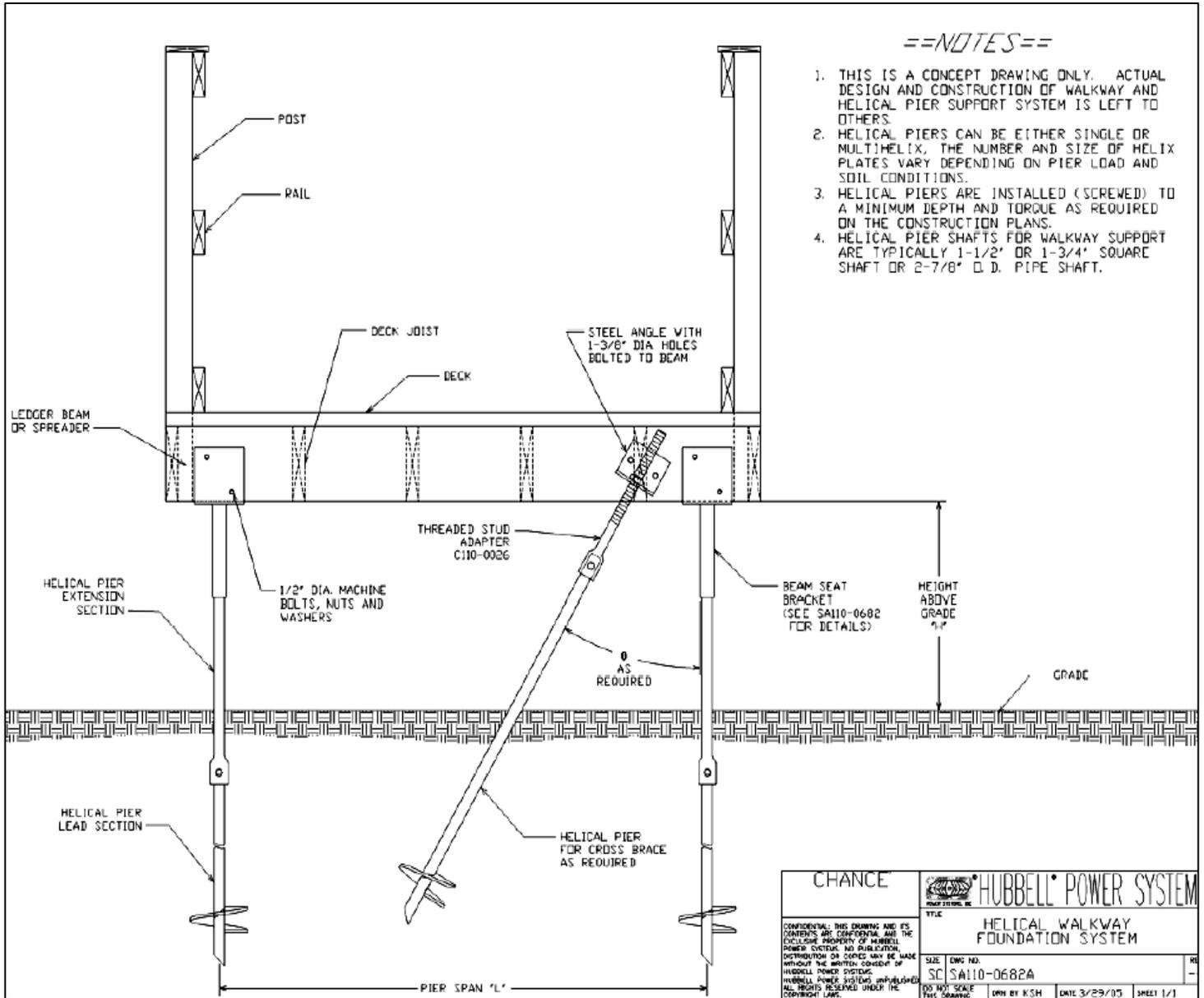
Appendix N. LRSB Parking Lot B Design



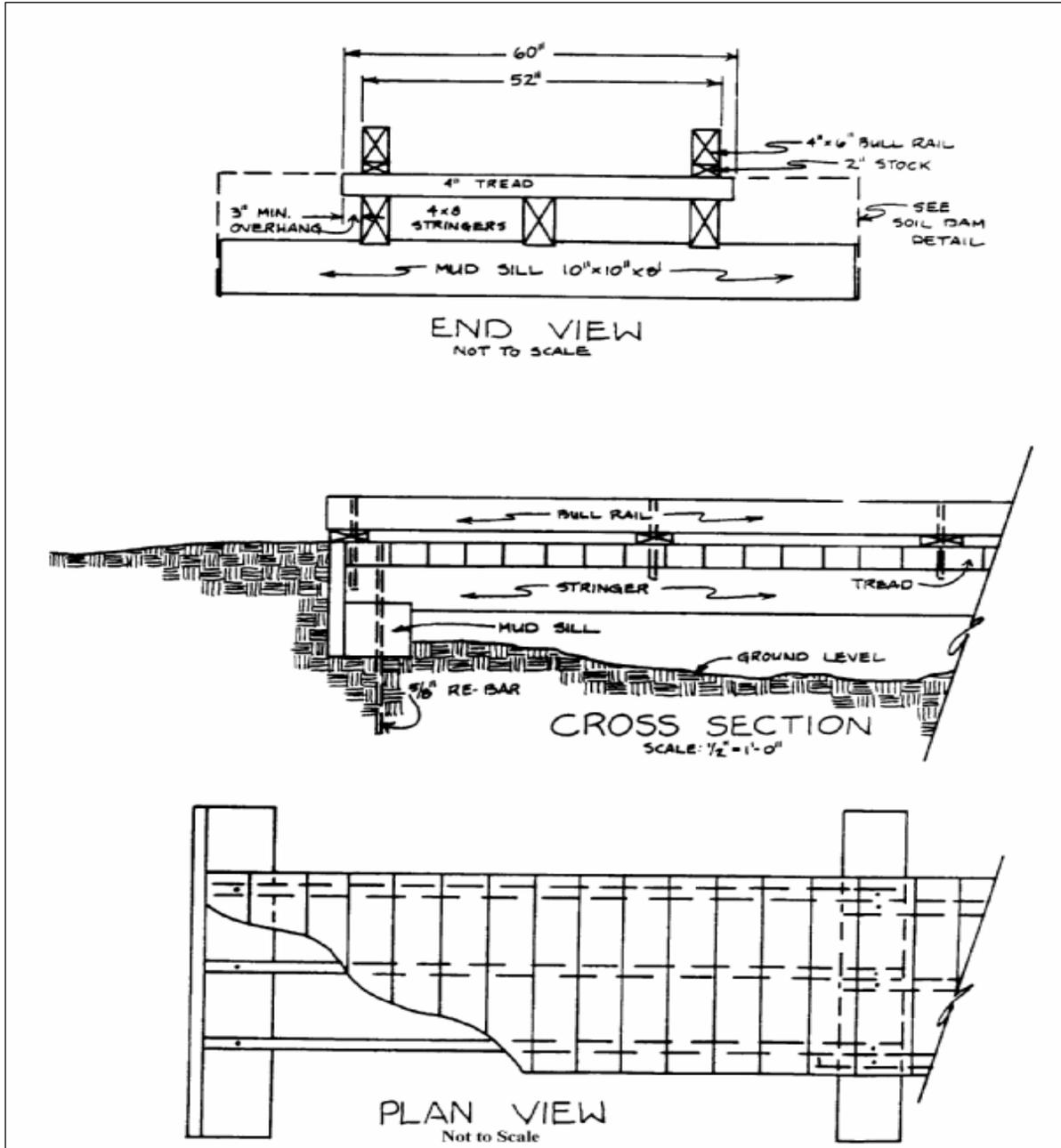
Appendix O. LRSB Gate Design



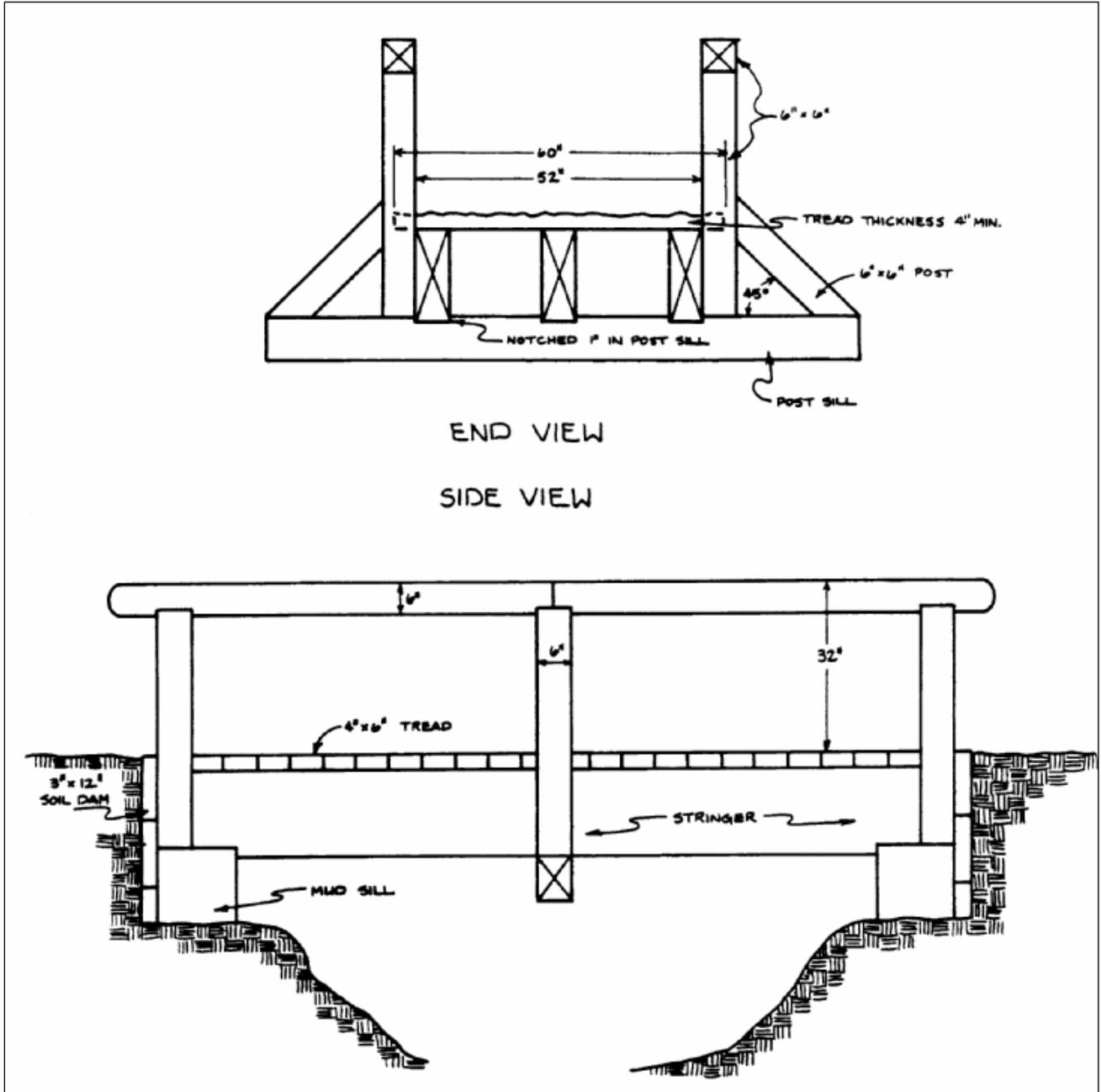
Appendix P. LRSB Boardwalk Helical Screw Design



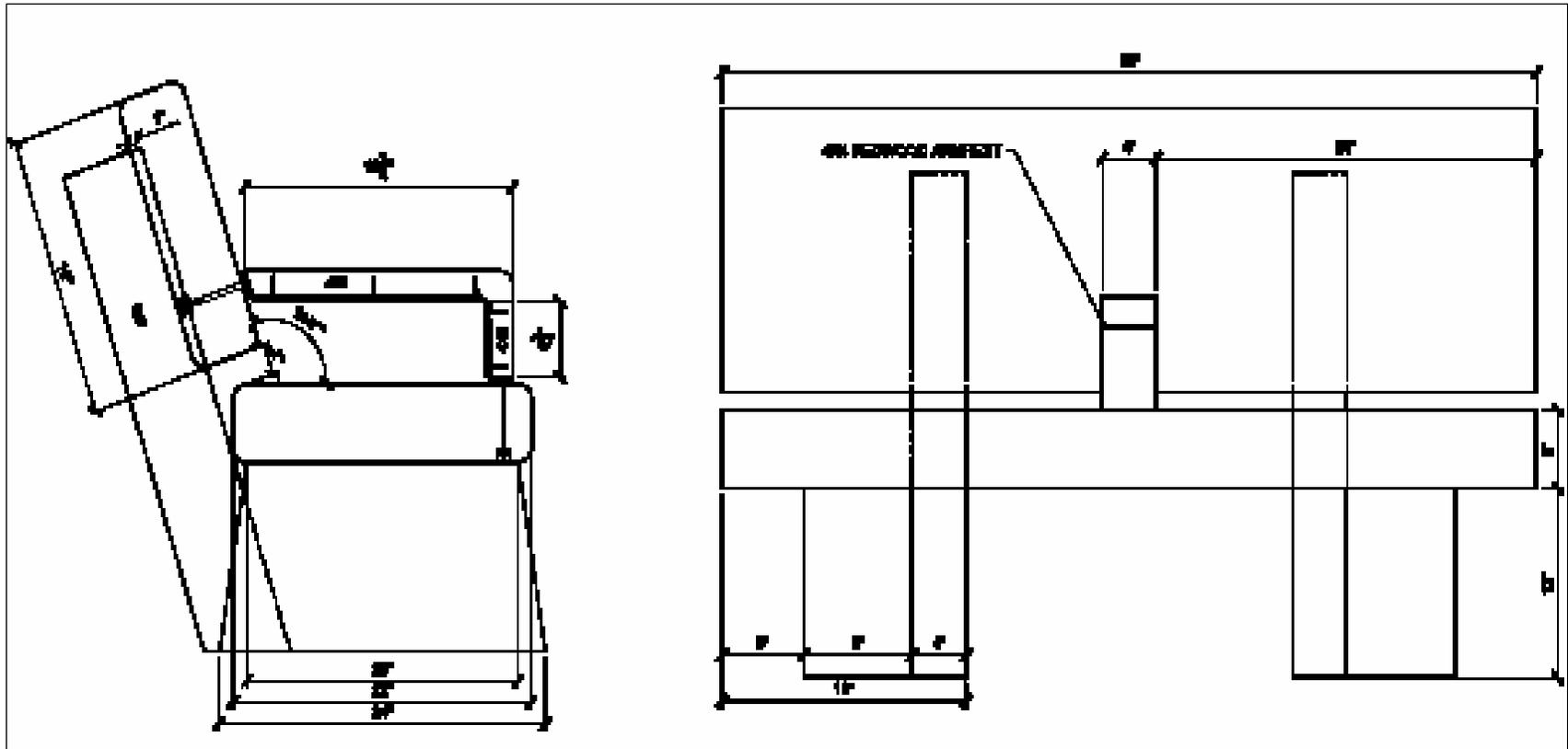
Appendix Q. LRSB Boardwalk Design



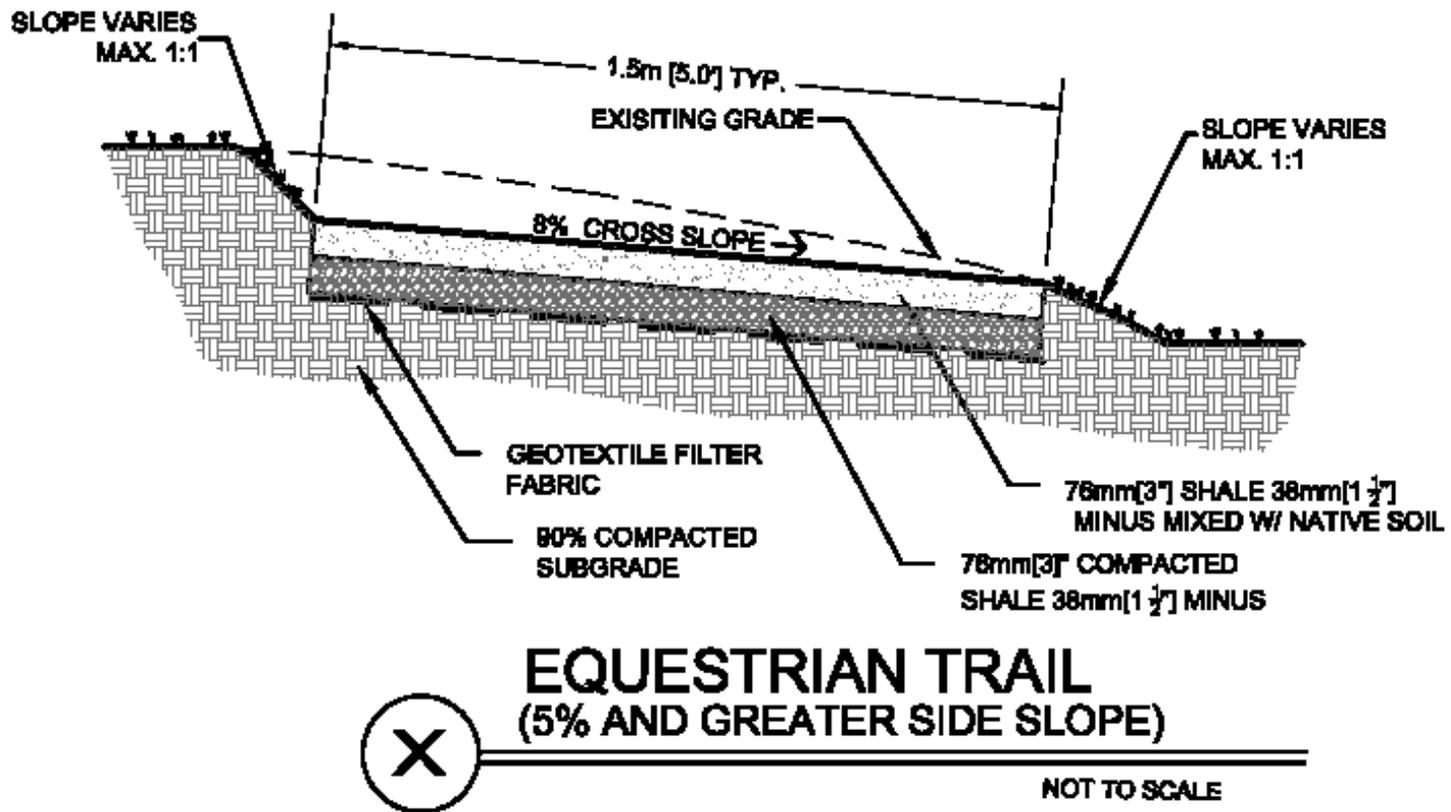
Appendix R. Detail Drawing of the LRSB Boardwalk Bridge



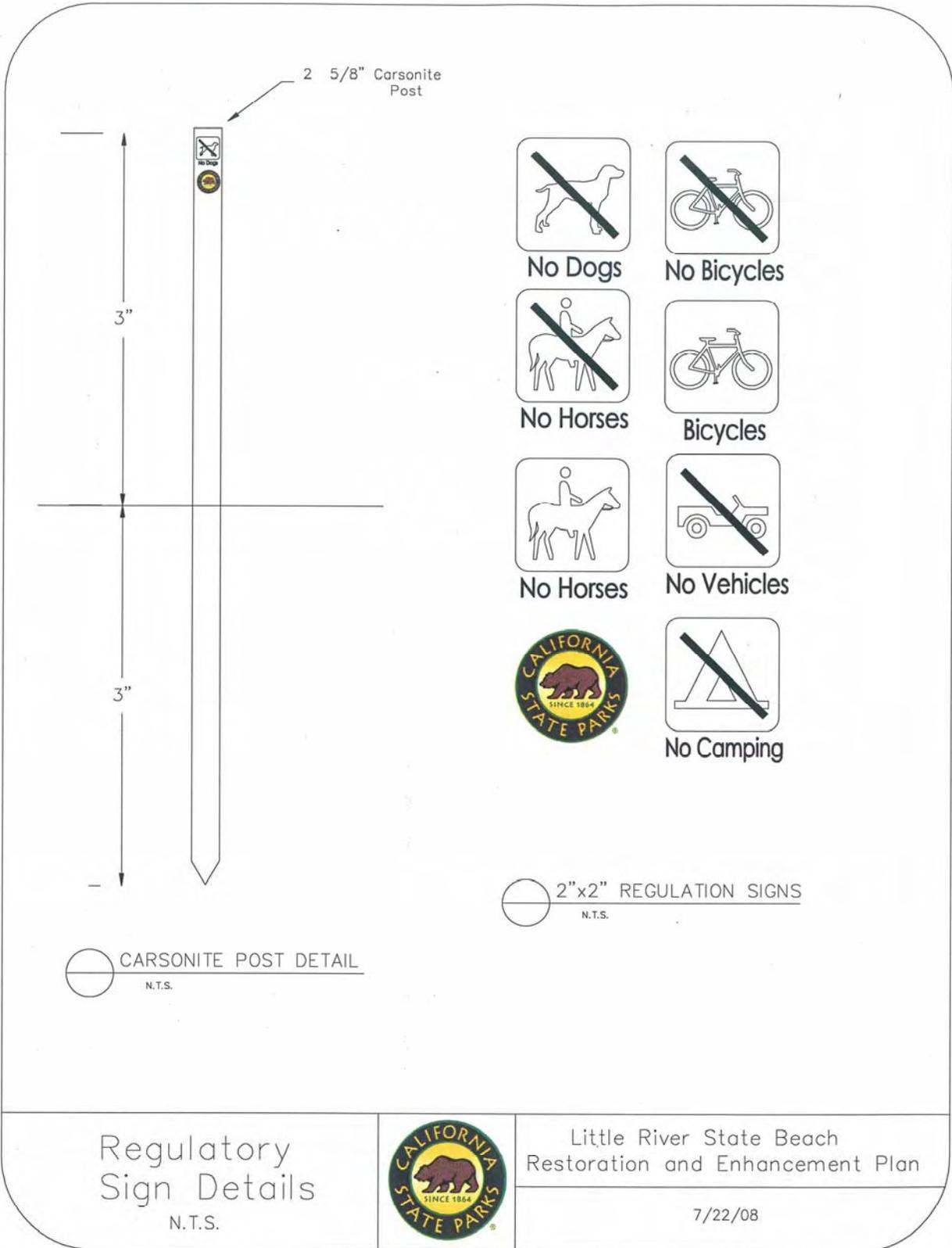
Appendix S. Detail Drawing of Boardwalk Benches



Appendix T. LRSB Equestrian Trail Detailed Plans



Appendix U. Little River State Beach Boundary Signs



Appendix V. Example of Parking Lot Signs

REGULATION SIGN

90"

2"x2" CORTEN STEEL

COMPACTED CRUSHED ROCK

30"

6"-18"

24" MAX

1 15"x10" PARKING SIGN
N.T.S.

2 12"x18" PARKING SIGN
N.T.S.

3 TYPICAL SIGN DETAIL
N.T.S.

4 24"x24" PED XING SIGN
N.T.S.

5 18"x18" SIGN
N.T.S.

6 12"x18" ADA SIGN
N.T.S.

7 12"x18" HORSE SIGN
N.T.S.

8 18"x24" ONE WAY SIGN
N.T.S.

9 18"x18" DO NOT ENTER SIGN
N.T.S.

Sign Details
N.T.S.

Little River State Beach
Restoration and Enhancement Plan

7/22/08

Appendix W. Animal Proof Trash Receptacles and Interpretive Display

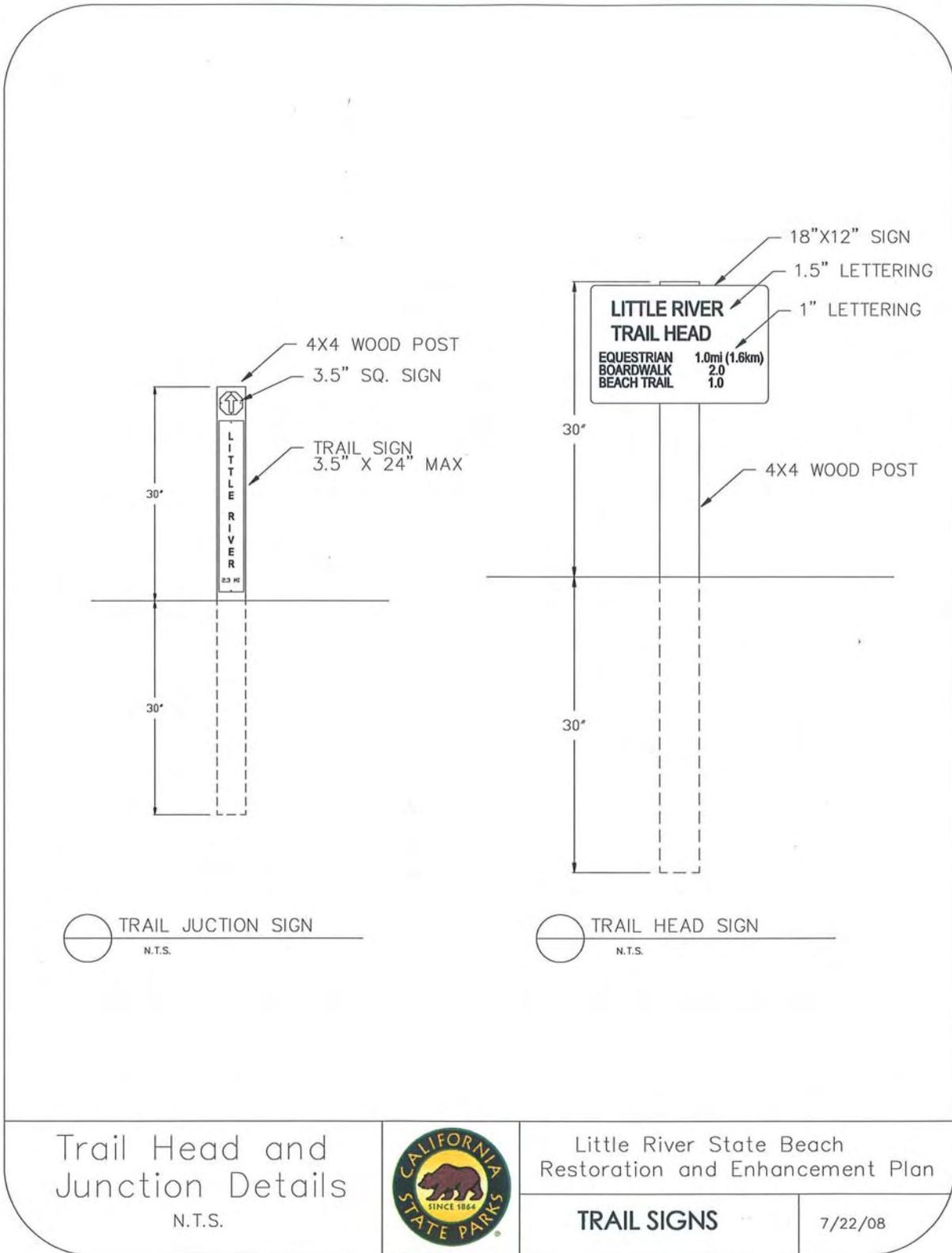


An example of animal proof disposal trash receptacles to be used at the proposed LRSB parking lots.



An example of the interpretive display case to be used at the three of the proposed LRSB trailheads.

Appendix X. Example of Trailhead and Junction Signs



Appendix Y. Western Snowy Plover Monitoring Requirements

Training requirements necessary for conducting Western Snowy Plover surveys and other activities (from Appendix J, pages J-2 – J-3, Western Snowy Plover Pacific Coast Population Recovery Plan, USFWS 2007)

Training and Qualifications

Prospective snowy plover surveyors should have good vision, the ability to spend several hours in the sun, and the ability to walk long distances in loose sand. In addition, the U.S. Fish and Wildlife Service have developed minimum training requirements for western snowy plover survey, management, and research activities. Five activity levels are recognized:

Level 1: Winter surveys, or surveys outside known nesting areas.

Level 2: Breeding season surveys and censuses.

Level 3: Erecting exclosures around nests.

Level 4: Breeding season studies or surveys that include handling eggs.

Level 5: Banding and color marking adults or chicks.

While activity levels 1 through 5 are increasingly intrusive, they are not strictly sequential. For example, a field worker may receive training and be certified at level 3, but cannot participate in level 1 or 2 activities without training specific to those levels.

No Section 10(a)(1)(A) permit is required for Level 1 activities, but training is encouraged. Level 2, 3, 4, and 5 activities require a Section 10(a)(1)(A) permit from the U.S. Fish and Wildlife Service. Field workers must be certified at the appropriate activity level to qualify for a permit, or to work independently under the holder of an existing permit.

Classroom instruction (or equivalent field instruction) will be made available for those involved with snowy plover surveys, management, and research (recovery task 1.1.5). At least 4 hours of instruction are required, on topics including:

1. Biology, ecology, and behavior of snowy plovers;
2. Identification of adult plovers, their young, and their eggs;
3. Threats to plovers and their habitats;
4. Survey objectives, protocols, and techniques;
5. Regulations governing the salvage of carcasses or eggs;
6. Special conditions of the existing Recovery Permit;
7. Other activities (for example: banding, determining incubation stage, erecting exclosures).

In addition, field instruction is required for activity levels 2, 3, 4, or 5. Instruction should take place under the direct supervision of a 10(a)(1)(A) permit holder. Activities for field training include:

1. Locating, identifying, and monitoring nests (levels 2, 4, and 5);
2. Handling eggs and capturing and handling adults or chicks (levels 4 and 5);
3. Erecting exclosures around nests (level 3).
4. Specifics on the target activity for which a permit has been issued;
5. Practical field exercises;
6. Field review of appropriate classroom topics.

Previous experience with snowy plovers, piping plovers, or other closely-related species will not substitute for the training described above. Further detail on obtaining permits, or becoming certified to work under an existing permit, is available through these offices.

CALIFORNIA

U.S. Fish and Wildlife Service
Sacramento Fish and
Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825
(916) 414-6600

U.S. Fish and Wildlife Service
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003
(805) 644-1766

U.S. Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92011
(760) 431-9440

U.S. Fish and Wildlife Service
Coastal California Fish and Wildlife
Office
1125 16th Street, Room 209
Arcata, California 95521-5582
(707) 822-7201

OREGON

U.S. Fish and Wildlife Service
Newport Fish and Wildlife Office
2127 S.E. OSU Drive
Newport, Oregon 97365-5258
(541) 867-4550

U.S. Fish and Wildlife Service
Oregon State Office
2600 SE 98th Avenue, Suite 100
Portland, Oregon 97266
(503) 231-6179

