

Trinidad Head Lighthouse Management Plan

EA # DOI-BLM-CA-N030-2016-0013

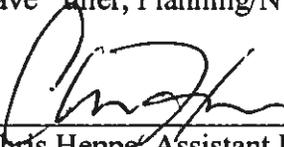
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1. Introduction

Background and Setting

The Trinidad Head Lighthouse is situated on the southern point of Trinidad Head, a rocky peninsula located along the northern California coastline in the City of Trinidad, Humboldt County, California (Figures 1 and 2). The area is culturally and spiritually significant to the Native American communities of the Yurok Tribe, Cher-Ae Heights Indian Community of the Trinidad Rancheria, and the Tsurai Ancestral Society.

Executive Orders dated June 8, 1866 and September 10, 1902 withdrew 60.99 acres of Trinidad Head for lighthouse management by the United States Coast Guard (USCG). The Trinidad Head Lighthouse began operation in 1871 to aid vessels transporting lumber in Humboldt County. The lighthouse station originally contained a lighthouse, navigation system and associated equipment, a housing complex for USCG personnel, and a communication site.

After a review of their needs, the USCG relinquished 46.94 acres on Trinidad Head that was subsequently patented to the City of Trinidad under the Recreation and Public Purposes (RPP) Act. The partial relinquishment was completed on April 14, 1983 and the RPP patent to the City of Trinidad was completed on April 24, 1983. On March 23, 2007, the USCG submitted a Letter of Intent to relinquish the Trinidad Head Lighthouse and the surrounding 12.97-acre parcel to the Bureau of Land Management (BLM). The housing complex on the property has been removed, but the lighthouse, navigation system, and associated equipment remain on the parcel. The lighthouse and surrounding property are no longer needed for navigation purposes because the light system is automated and does not need to be staffed. The USCG completed the transfer of the 12.97 acres to the BLM in May 2014.

Since BLM management started, the Trinidad Lighthouse site has been opened occasionally for lighthouse tours and school field trips. The BLM has mowed and trimmed vegetation to maintain accessibility. The BLM is now developing a long-term management plan for the site. The infrastructure and trails on the areas of Trinidad Head outside the 13-acre BLM parcel are not directly a part of this environmental assessment.

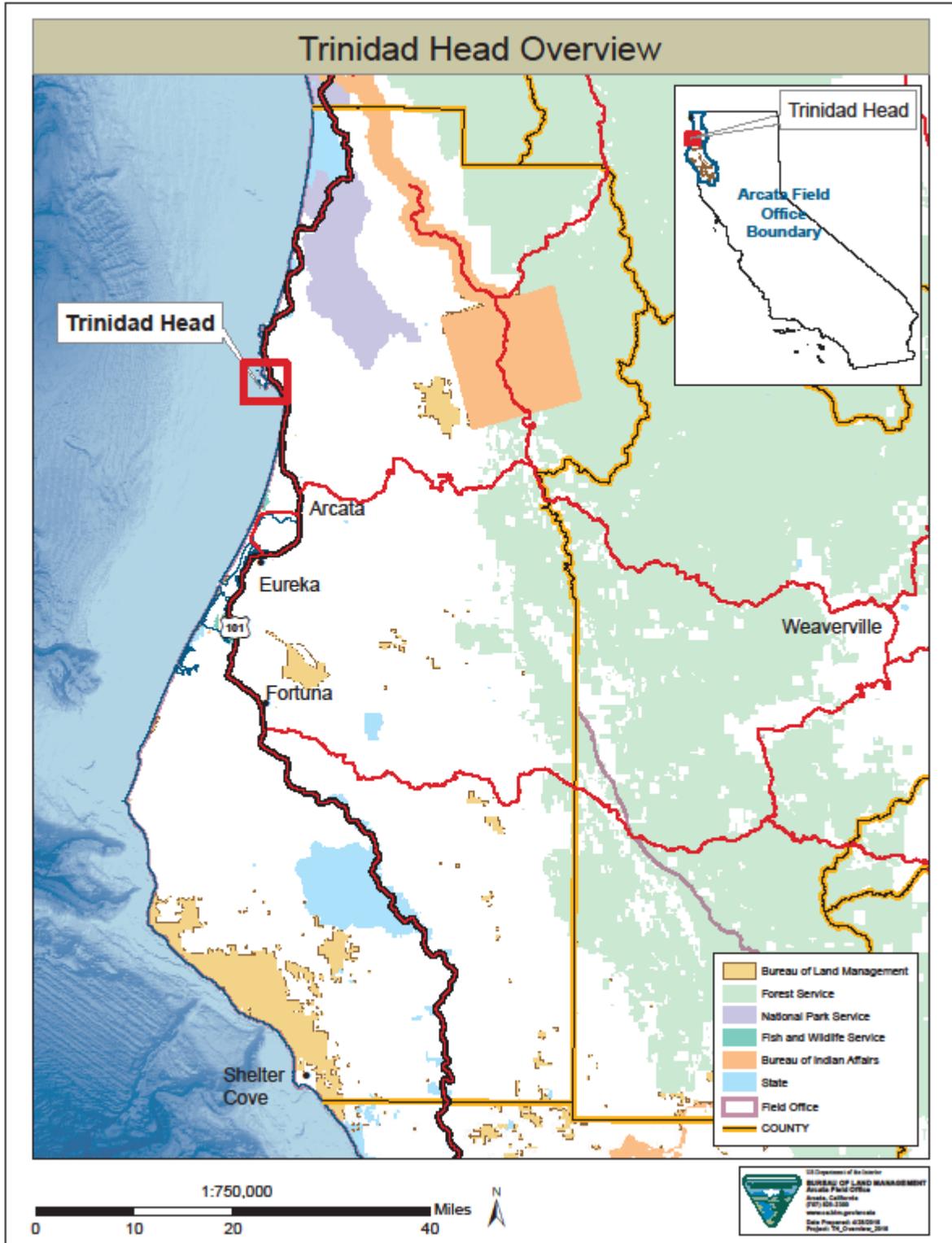


Figure 1. Location map of Trinidad Head in northwestern California.

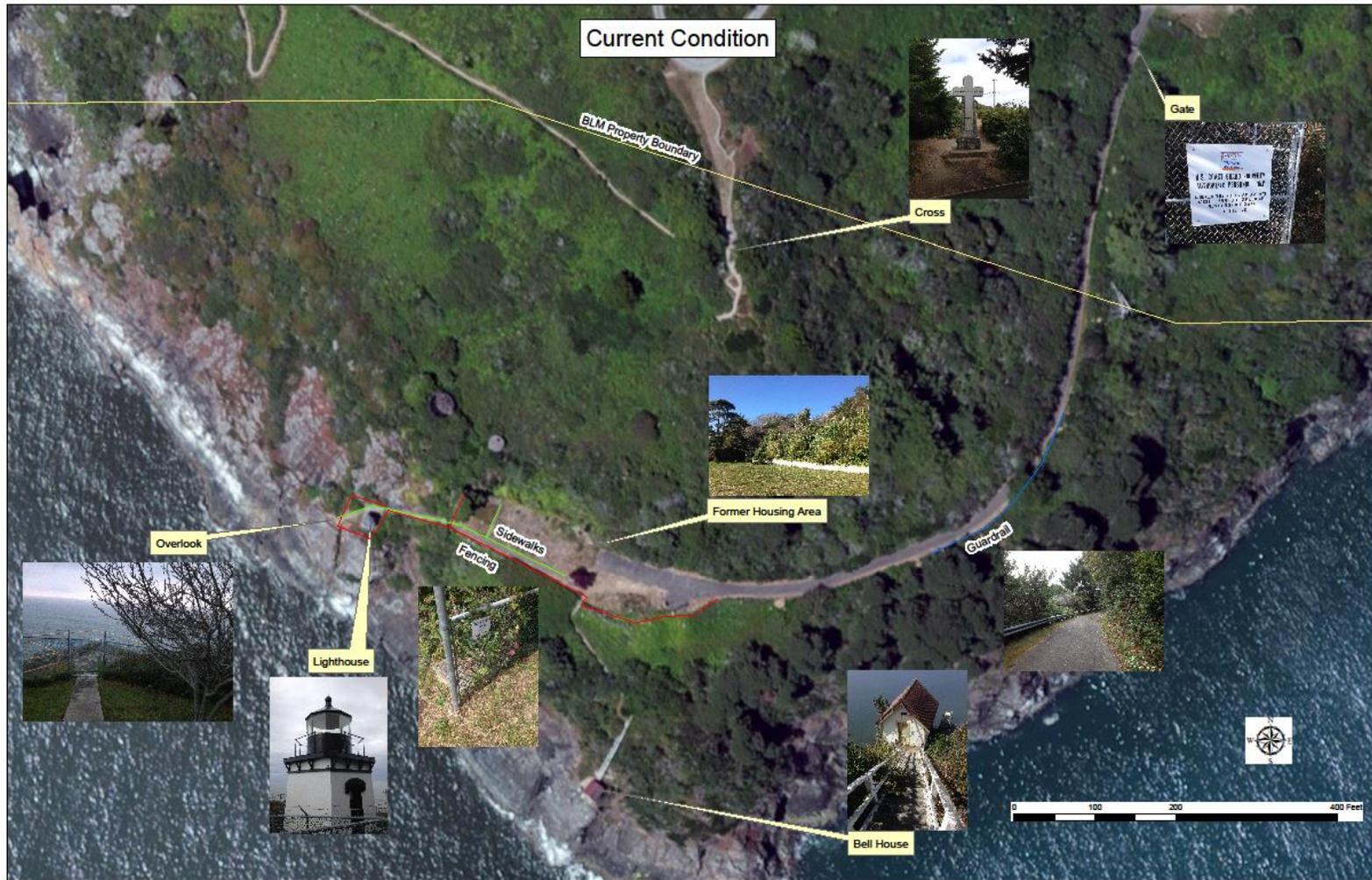


Figure 2. Aerial photograph showing current conditions at the Trinidad Head Lighthouse site.

Purpose and Need for Action and Decision to be Made

The BLM needs to develop a plan to manage the lighthouse and the 13-acre site. The plan needs to address:

- Maintenance of the historic integrity of the lighthouse.
- Maintenance and improvement of the facilities and structures on the 13-acre site.
- Opportunities for safe public access.
- Opportunities for interpreting the natural and cultural values of the site and surrounding area.
- Protection and enhancement of natural and cultural resources.
- Opportunities for collaboration and participation with the greater Trinidad community for implementing the actions in the plan.

The purpose of the Trinidad Lighthouse Management Plan is to provide for public involvement and collaboration in managing potential public uses, facilities, and natural and cultural resources at the Trinidad Lighthouse site.

Conformance with Land Use Plan

Although the Trinidad Head Lighthouse parcel was not managed by BLM at the time the last Resource Management Plan was written, management of the site falls within the Scattered Tracts Management Area of the Arcata Resource Area Management Plan (1992). Management of the site would conform to Scattered Tracts Management Area Resource Condition Objective 2: Enhance natural values and provide opportunities for environmental education.

Relationship to Statutes, Regulations or Other Plans

The site would be managed in a manner consistent with the federal Coastal Zone Management Act (1972) as well as the Federal Land Policy and Management Act (1976).

Scoping and Issues

The public scoping period was held from April 15, 2015 through May 31, 2015. A postcard announcing the scoping period was mailed on April 16 to every postal customer with the Trinidad zip code 95570 — 1,681 postcards. A news release was issued on April 10 that announced the management planning process, scoping period and public scoping meetings. Two Scoping meetings were held on April 22, 2015. The first meeting was at the Trinidad Lighthouse from 3:00 – 5:30 PM followed by another meeting at Trinidad Town Hall from 6:00 – 7:30 PM. Nine people attended the meeting at the lighthouse and eleven people attended the meeting at Trinidad Town Hall. The attendees were encouraged to submit written comments. The BLM received 22 written comment letters from individuals and organizations.

On August 5, 2015 representatives from the California Coastal Commission, USCG, City of Trinidad, and Trinidad Rancheria visited the site to discuss potential issues. The BLM Northern California Resource Advisory Committee and other interested members of the public visited the site in September 2015 to discuss potential issues. The BLM asked the Trinidad Rancheria, the Yurok Tribe, and the City of Trinidad to participate as Cooperating Agencies (40 CFR 1501.6, 40 CFR 1508.5) to bring special expertise to the development of this management plan.

The BLM conducted scoping internally among staff specialists. The staff met on June 23, 2015 to review scoping comments and develop a list of issues for analysis through the National Environmental Policy Act (NEPA) process.

Issues include:

- What is the appropriate level of public access to the site in terms of frequency, scope, and magnitude considering protection of natural resources, cultural resources, public safety, and the historic lighthouse structure?
- To what extent should BLM restore native vegetation and remove/control non-native and invasive plants?
- What amount and what type of interpretive and informational signage and other visitor amenities are necessary and appropriate for the site?
- How can coastal vistas be improved and/or maintained while protecting cultural and natural resources?
- How can BLM cooperate with the City of Trinidad and Trinidad Rancheria to provide for public visitation to the site?

Affected resources and resource uses include: vegetation, cultural resources, facilities, and interpretation.

2. Proposed Action and Alternatives

Table 1. Summary and comparison of Proposed Action and Alternatives.

	Proposed Action	Alternative 1	No Action
Access to Site	Portions of the site open to public one day per month plus up to six special events per year. Access via existing driveway only.	Open access to entire site for day use — except to the Lighthouse building and the Bell House building. Access via existing driveway and re-opened connector trail.	Site would remain closed to public except during special events.
Site Improvements	<ul style="list-style-type: none"> • Removal of invasive/non-native plants • Improve visitor safety on existing walkways • Install benches • Improve security of fencing • Maintenance and repairs as necessary for public safety 	<ul style="list-style-type: none"> • Removal of invasive/non-native plants. Add natives • Re-opening of connector trail • Boardwalk and steps to Bell House would be replaced • Fences would be relocated • New viewing platform installed • Permanent spotting scope installed • Obsolete infrastructure removed • Install picnic tables, toilet, trash containers • Existing electrical lines replaced with underground lines. 	Area would continue to be mowed during special events, and historic structures would receive necessary maintenance. Any damage incurred by vandalism or natural events would be repaired as necessary.
Signs	Informational kiosk at gate.	Work with partners to develop interpretive sign plan for Trinidad Head and pier. Install interpretive signs on site.	No signs would be installed
Lighthouse Tours	6 Guided tours per year Additional field trips upon request	Once per month. Additional tours and field trips upon request	Tours would be conducted during planned events.
Special Events	No ceremonies or gatherings would be permitted	BLM would consider permits for ceremonies and celebrations	No special events would be permitted.
Adaptive Management	BLM would monitor vandalism and take measures to prevent damage.	BLM would monitor vandalism and take measures to prevent damage.	Repair damage caused by vandalism as necessary

Proposed Action

Access to Site

Under the proposed action, the public would have limited access to portions of the site one day each month (the first Saturday) but the site would be closed to the general public all other days. During publicly accessible days, site access would be restricted to daylight hours and the public would not have access to the lighthouse, the adjacent overlook, or to the Bell House area (Figure 3). Portions of the fencing not required to restrict public access would be removed.

The existing gate at the end of the driveway would be closed except for the one day per month that it would be opened to the public during daylight hours. Access during all other times would be limited to planned events such as guided tours and school field trips that would be staffed by the BLM or partner groups. It is expected that up to six planned events would occur each year depending on interest. The existing driveway would be the only access trail to the site. Access to the lighthouse and to the Bell House would remain closed except for guided lighthouse tours.

Existing fencing would be kept in place or replaced as necessary to prevent access during closed periods.



Figure 3. Aerial photograph showing proposed changes to Trinidad Lighthouse site under the proposed action.

Site Improvements

Invasive plant species and non-native plants would be removed or controlled as feasible using mechanical and non-mechanical methods. Continued control of these species would be necessary.

Removal of these species would also improve ocean vistas for most of the site.

Invasive, non-native plant species removal design features:

- Minimize ground disturbance. If eradication requires ground disturbance, then, an approved cultural monitor would be present. A list of approved cultural monitors would be assembled in agreement with cooperating tribes, Tsurai Ancestral Society, and BLM. A cultural monitor may not be needed for subsequent treatment visits if cultural monitor on initial treatment clears the site of artifact or other culturally sensitive concerns.
- Minimize vehicle ingress and egress to the extent practicable for purposes such as invasive weed biomass removal, dumpster placement and removal, equipment staging and removal, or emergency response vehicles related to fire or safety, as needed. Staff, contractors, or volunteers would walk from established parking areas below Trinidad Head.
- Use of equipment that requires fuel combustion in the project area should be accomplished during customary prevailing southerly and easterly airflow. This will ensure emissions blowing away from sensitive atmospheric monitoring equipment at the summit of Trinidad Head.
- Support native plant recovery on areas treated for invasive weed species. Develop native plant materials from seed or cuttings from native plants on the head for off-site propagation and replanting or seeding to previously invaded sites being restored to native flora. May use native plant materials developed locally or regionally as well, if timeframes do not support development of plant materials from on-site source material.
- All work will be seasonally timed for greatest eradication effectiveness relative to each target species' biology and the selected method's mode(s) of action.
- Avoid coast Indian paintbrush plants and potential, associated native host plants near the Bell House structure during any invasive, non-native plant removal efforts.

Existing access walkways in the former housing area would be improved to increase visitor safety. One to three benches would be installed on the site.

Improvements would be planned in a manner to minimize the level of ground disturbance required. Every feasible effort would be made not to disturb the ground unless it is necessary.

Signs

One information kiosk would be placed at the gate, the BLM would coordinate with the City of Trinidad, and the Trinidad Rancheria regarding placing information about the site on off-site signs as the opportunity allows.

Lighthouse Tours

Guided lighthouse tours would be conducted up to six times per year with additional tours for planned events and school field trips.

Special Events

Special events requested by the public such as ceremonies or gatherings would not be permitted.

Adaptive Management

BLM would monitor the frequency and magnitude of any damage to the site caused by visitors or vandals. BLM is required to protect the cultural and natural resources within the site as well as provide for visitor safety. BLM could take measures including (but not limited to) altering the level of public access, improving security of fencing, increasing informational signage, adjusting the design of infrastructure, removing amenities, and installing surveillance cameras to prevent damage to cultural and natural resources.

Alternative 1

Access to Site

Under this alternative, the public would have open access during daylight hours to the site except to the lighthouse building and the Bell House building. Existing gates and fences would be removed and/or moved so that the public could access the site consistent with the rules that govern the City of Trinidad's Trinidad Head Trail.

Public access to the site would be provided by both the existing former driveway and along an old and overgrown foot trail (connector trail) traversing the rocky slope to the north of the former Coast Guard housing area (Figure 4). The sidewalks in the former housing area (which currently do not meet Federal and State accessibility standards) would be removed and replaced in the relatively same footprint area by a five foot-wide concrete trail. This wheelchair-friendly trail would end approximately 50 feet from the lighthouse where the grade is too steep for wheelchair use.

The connector trail would be “re-opened” by brushing out vegetation and leveling the tread surface (see Figure 5). For the most part, all work would be done using hand tools such as shovels, Pulaskis, and McCleods. Larger branches could be removed using chainsaws. Trail rock (3/8 inch-minus crushed) may be needed to provide a firm and durable surface. The trail tread width would range from 2 – 3 feet and a vegetation clearance averaging approximately six feet. A wooden viewing platform (approximately 8 feet by 8 feet) would be developed adjacent to the trail and located where views of the ocean, rocks and islands, and the lighthouse are prominent. Due to the topography, the connector trail would not be at a proper grade to meet wheelchair accessibility guidelines.



Figure 5. 1962 Aerial photograph of Trinidad Head showing connector trail from Lighthouse site to existing routes.

The existing steps and boardwalk that lead from the former housing area to the Bell House building would be replaced or repaired as necessary to provide for safe public use. The public would be able to access the area near the Bell House building but a terminus to the public trail would be constructed to keep visitors away from the signal. The US Coast Guard recommends staying at least 100 feet away from the signal due to the intensity of the noise.

Existing fences near the lighthouse would be relocated to keep the public away from this historic building and reduce the potential for vandalism. A new viewing platform would be constructed adjacent to the lighthouse (where the single pipe viewing area is currently) that would be safe for public use.

Site Improvements

The lawn and old, uneven, and narrow sidewalks in the former housing area would be removed. The lawn area would be re-shaped using heavy equipment such as a backhoe. Additional soil may have to be deposited to create some undulating mounds that mimic a more natural appearing landscape. Native plants would be planted.

Invasive, non-native species would be removed to the extent feasible. This would be accomplished through mechanical and non-mechanical vegetation removal and control methods. Control of these species would be ongoing. Removal of these species, as well as the non-native, red claws (*Escallonia rubra*) hedge, would also improve ocean vistas for the site.

Infrastructure currently on site, but which is obsolete or no longer necessary, would be removed. This includes: the water tanks upslope from the former housing area, the guard railing along the current driveway, and portions of the existing chain-link fence. The existing electrical lines would eventually be replaced with underground lines routed through conduit.

New recreational amenities in the former housing area would include concrete picnic tables, a concrete vault toilet, and animal-proof trash containers. Installation of the restroom would require digging a hole with a backhoe approximately six feet deep with a dimension of 8 feet by 10 feet. Vegetation would be maintained in a manner to maintain views of the lighthouse and ocean vistas. In addition, a permanent spotting scope would be placed along the edge of the former housing area to allow for better viewing of the ocean and rocks to the south. A viewing platform would be constructed to the west of the lighthouse where there is currently an uneven rocky viewing area with a single pipe railing.

Improvements would be planned in a manner to minimize the level of ground disturbance required. Every feasible effort would be made not to disturb the ground unless it is necessary.

Invasive, non-native plant species removal design features would be the same as described in the Proposed Action.

Informational and Interpretive Signs

BLM would work with the Trinidad Rancheria, Yurok Tribe, and City of Trinidad to develop informational and interpretive signs and/or kiosks with a consistent design so that signage around Trinidad Head and Trinidad Pier are coordinated. Two to three interpretive panels would be developed and placed in the former housing area.

Lighthouse Tours

The Trinidad Head Lighthouse would be opened for guided public tours once per month and for field trips for schools and community groups as requested. The level of interest in tours would be monitored and the frequency of tours would be adjusted to match the level of public interest. The BLM would work with tribes and community organizations to help schedule and support these events and for public outreach.

Special Events

The BLM would consider issuance of written authorizations for ceremonies and celebrations provided that such events would be consistent with the goals of protection of cultural and natural resources.

Adaptive Management

BLM would monitor the frequency and magnitude of any damage to the site caused by visitors or vandals. BLM is required to protect the cultural and natural resources within the site as well as provide for visitor safety. BLM could take measures including (but not limited to) altering the level of public access, improving security of fencing, increasing informational signage, adjusting the design of infrastructure, removing amenities, and installing surveillance cameras to prevent damage to cultural and natural resources.

Alternative 2 (No Action)

Under this alternative, current management would continue.

Access to Site

The gate would remain closed and the site closed to the public except during planned events (e.g. Trinidad Fish Festival, other community or group events) when the site would be staffed with BLM personnel and/or staff from community organizations. The number of planned events would range from 4–6 per year. During these events, the lighthouse would be opened for tours. In addition, school field trips would occur on an occasional basis.

Site Improvements

No improvements to the site would occur (Figure 6). The former housing area would be mowed and trimmed prior to special events. Portable toilets would be brought to the site, as necessary, during special events. The lighthouse would be maintained as a historical structure (painting, repairs, etc.). Fencing would not be replaced but repaired as necessary to ensure public safety. Any damage incurred by vandalism or natural events would be repaired as necessary.



Figure 6 Aerial photograph showing conditions at the Trinidad Lighthouse site under the No Action Alternative.

Signs

No signs would be installed.

Lighthouse Tours

Tours of the lighthouse would be conducted during the planned events (see above).

Special Events

No ceremonies or celebrations would be permitted.

3. Affected Environment

Vegetation (including Threatened and Endangered species and Invasive, non-native plants)

The proposed project area is home to coastal bluff scrub, Sitka spruce, Douglas-fir, and red alder plant communities. Incidental non-native, but non-invasive plants can be found associated with prior and recent human occupation such as domestic apple (*Malus domestica*), purple leaf plum (*Prunus cerasifera*), and red claws. Non-native, naturalized plant communities comprised of annual grasses and other species associated with disturbance are present.

Common native shrubs and herbs found on Trinidad Head include coyote brush (*Baccharis pilularis*), California wax myrtle (*Myrica californica*), salal (*Galtheria shallon*), blue blossom (*Ceanothus thrysiflorus*), ocean spray (*Holodiscus discolor*), evergreen huckleberry (*Vaccinium ovatum*), poison oak (*Toxicodendron diversilobum*), sticky monkey flower (*Mimulus aurantiacus*), twinberry (*Lonicera involucrata*), silk tassel (*Garrya elliptica*), California blackberry (*Rubus ursinus*), cascara (*Rhamnus purshinana*), common cow parsnip (*Heracleum lanatum*), Pacific reedgrass (*Calamagrostis nutkaensis*), swordfern (*Polystichum munitum*), giant vetch (*Vicia gigantea*), fireweed (*Chamerion angustifolium*), false lily of the valley (*Maianthemum dilatatum*), wild cucumber (*Marah fabaceus*) and strawberry (*Fragaria chiloensis*). Patches of conifers and hardwoods are composed of Sitka spruce (*Picea sitchensis*), Douglas-fir, (*Pseudotsuga menziesii*), and red alder (*Alnus rubra*).

Coast Indian paintbrush (*Castilleja litoralis*) is included in the California Native Plant Society Inventory of Rare and Endangered plants on list 2B.2 (*rare, threatened, or endangered in CA; common elsewhere*). This plant has been observed in small numbers around the rocky outcrops adjacent to the Bell House. While this plant is recognized by CNPS as rare, it does not meet BLM Bureau Sensitive requirements. *Castilleja* species are hemi-parasitic, in that while they photosynthesize, they also gain nutrients, water, and fixed carbon compounds from a broad range of native host plants through their roots. This plant is not accessible to the general public.

The only Bureau Sensitive (CNPS list 1B.2 - *rare, threatened, or endangered in CA and elsewhere*) plant reported to occur in the Trinidad USGS 7 ½ minute quadrangle is Mendocino coast Indian paintbrush (*Castilleja mendocinensis*) from Wedding Rock in Patrick's Point State Park. This site was surveyed in 2014, and only coast Indian paintbrush was reportedly found. Other species that are on CNPS Lists 2 or 4, but not Bureau Sensitive, that have the potential to occur on habitats available on Trinidad Head and potentially within the 13-acre project area are black crow berry (*Empetrum nigrum* (list 2B.2)), running pine (*Lycopodium clavatum* (list 4.1- limited distribution)), *Romanzoffia tracyi* (2B.3), and Waldo daisy (*Erigeron bloomeri* var. *nudatus* (2B.3)).

In addition to federally endangered, threatened and candidate plants under the Endangered Species Act, Bureau Sensitive plants also include those species that are not federally listed, but are designated by the BLM State Director for special management consideration. The California State Director has also conferred sensitive status on California State Endangered, Threatened, and Rare species, species with a California Rare Plant Rank of 1B (plants rare, threatened, and endangered in California and elsewhere) as well as species meeting the Special Vascular Plants, Bryophytes, and Lichens List maintained by the California Department of Fish and Wildlife that are on BLM lands or affected by BLM. To date, there are no known Threatened or Endangered plants, or Bureau Sensitive plants in the project area, and will not be discussed further in the document (with the exception of coast Indian paintbrush with respect to invasive, non-native plant eradication context).

There are several well-established and increasing infestations of invasive, non-native plant species impacting approximately 1.5 acres of the 13-acre project site. Collectively, these species have displaced native vegetation, reduced cultural resources available to Native Americans, native floral resources for pollinators and wildlife, obstructed views of native spruce stands and forest understory vegetation, and obstructed views of the ocean, rocks, and offshore wildlife.

Infestations are most prevalent in areas of past soil disturbance and prior building sites. Many of the invasive plants are associated with historical landscaping, such as English ivy (*Hedera helix*), periwinkle (*Vinca major*), cape ivy (*Delairea odorata*), cotoneaster (*Cotoneaster* spp.), montbretia (*Crocasmia X crocosmiiflora*), rose (*Rosa* sp.) and calla lily (*Zantedeschia aethiopica*). Other invasive plants are more likely to have invaded opportunistically with disturbance and through vectors such as wind or birds, such as pampas grass (*Cortaderia jubata*) and Himalaya berry (*Rubus armeniacus*). Invasive, non-native plants are opportunists and take advantage of native plant communities that have experienced some key level of disturbance. Once established, these invasive plants lack local insect predators or wildlife herbivores that would keep their populations and distributions in balance relative to native plant communities.

- English ivy – English ivy is a creeping, perennial vine native to Europe. English ivy spreads by adventitious (developing roots at nodes) root development of its stems and rhizomes. Ivy spreads prolifically by seed with a dense mat that covers and crowds out native vegetation. Additionally, ivy can climb vertical structures and trees, most often flowering and fruiting in these aerial settings. English ivy grows year round and thrives in direct sunlight. Fruit is present in the winter, which provides food for birds and leads to greater wildland spread of

disseminated seed. English ivy is toxic, and wildlife do not eat the vegetation. Manual/mechanical methods are labor-intensive, but effective if careful attention is paid to removal of all root nodes and stolons. Treatment of aerial vines is accomplished through cutting and removing sections of all vines around the base of trees.

- **Periwinkle** – Periwinkle is a creeping, perennial vine native to southern Europe and North Africa. It spreads by sprawling stolons (stems) that root at the nodes. It does not spread by seed. When produced, seeds rarely mature. It covers and crowds out native vegetation. It has no native insect predators. It does not grow well in dry soil or direct sunlight, but does well in moist and shaded areas. Manual/mechanical methods are labor-intensive, but effective if careful attention is paid to removal all root nodes and stolons. Mowing or cutting is not effective, and results in abundant regrowth.
- **Cape ivy** – Cape ivy is a perennial, creeping vine in the sunflower family and is native to moist, mountain forests of South Africa. It spreads vegetatively by stolons and fragmentations of stolons. Stolon fragments are extremely hardy and fragments that are dried out can rehydrate and take root if a node exists on the fragment. In most cases, Cape ivy does not generally produce fertile seed as it reportedly has self-incompatible seed. It spreads, covering and crowding out native vegetation. It has no native insect predators. Its period of rapid growth is February through June. Manual removal is effective if retreated at regular two-month intervals to remove any overlooked and resprouting plants. Material must be completely dried out before disposal.
- **Cotoneaster** – Cotoneaster is a woody, perennial shrub native to China and the Himalayas. Cotoneaster reproduces by seed, and seed-dispersal is facilitated by birds. It fruits in the fall, and berries persist through winter. Plants can self-pollinate and do not need external pollinators. Seed longevity is not known, but multiyear follow-up is advisable following manual or mechanical removal. Cotoneaster resprouts from its stump (coppice sprouting) if the shrub is simply mowed or cut. Effort to reduce coppice sprouting can be minimized by timing the initial removal effort to just after fruit set. This maximizes depletion of stored energy in the root system, thus weakening the plant. If plants are cut after fruit set but before fruit ripening, there is less chance of mature berries falling to the ground to create new plants.
- **Montbretia** – Montbretia is a perennial flowering plant of the iris family and is native to the grasslands of southern and eastern Africa. It grows and spreads through underground corm production forming a vertical chain of corms with the oldest and largest corms the deepest, and the smaller and younger corms closer to the surface. This quality has led them to become invasive and difficult to control.

- Calla lily – Calla lily is a perennial, herbaceous, rhizomatous plant of the Arum family, and is native to marshy areas of South Africa. It can displace native plants, and all parts of the plant are poisonous. Calla lily prefers moist environments. Removal requires digging of rhizomes, which may be most effective at peak flowering in July. Control of rhizome material until carbohydrate exhaustion is essential.
- Rose – The rose found at Trinidad Head is a woody, thorny shrub that has escaped from garden settings and creates impenetrable thickets. Mechanical and manual removal can be achieved, but it is difficult. Control of root material until carbohydrate exhaustion is essential.
- Pampas grass – Pampas grass is a robust, perennial, tuft-based grass native to South American countries including Argentina, Chile, Ecuador, Peru, and Bolivia. Pampas grass displaces native plants and is spread by wind-dispersed seed, up to 100,000 per flowering stem. Seeds do not last, however, and are most viable six to eight weeks following dispersal. Disturbed soils are receptive sites for new pampas grass seedlings. Pampas grass does not do well in shade, but thrives in full sun. Pampas grass does not tolerate frost or drought. Manual removal control methods are effective, as long as the entire root crown is removed. The bulk of the plant can be removed with mechanical equipment, such that the root crown is easier to access with hand tools. Piled plants must be properly disposed of as they can re-root into themselves.
- Himalaya blackberry – Himalaya blackberry, native to western Europe, grows year round as a dense thicket of long, bending branches (canes) that have hooked prickles. It spreads by abundant seed production with dispersal facilitated by birds and other wildlife. Seeds can remain dormant in the soil for many years. The plant is fairly intolerant of shade. Mechanical or manual cane cutting and manual rootwad removal is effective as long as it is thorough. Annual inspection and retreatment is necessary to ensure removal success.

Recreation

Trinidad Head (Figures 1 and 2) is located south of Trinidad State Beach and north of Trinidad Pier and Harbor. Trinidad Rancheria and the City of Trinidad jointly own the parking area located at the base of Trinidad Head. The parking lot is used by visitors to access Trinidad State Beach, Trinidad Head Trail, Trinidad Pier, Harbor, boat launch, plus the beach adjacent to the boat launch (referred to as “Launcher’s Beach”), and the Seascape Restaurant. This parking area (estimated capacity of 75–90 cars) is often full during fair weather conditions, year round. The lower portion of the access road is owned by the Trinidad Rancheria. The Trinidad area contains abundant coastal recreation sites that draw visitors to the area, especially during the summer months.

The Trinidad Head Trail was developed and is maintained by the City of Trinidad. This one-mile trail circumnavigates most of the 43-acre parcel, and provides access to the Trinidad Lighthouse site (Figure 2). The trails and access road are open from dawn to dusk. Small spur trails of the main trail provide coastal views as well as views of the redwood forests on surrounding hills and views of the city. Visitation data for the Trinidad Head trail is not available. Observations of trail users indicate that popular trail-related activities include experiencing coastal vistas, viewing marine wildlife, dog walking, bird watching (both marine and terrestrial birds), and engaging in physical exercise. No bikes are allowed on Trinidad Head.

The Trinidad Lighthouse site provides coastal vistas to the south and west of Trinidad Head. The Trinidad Lighthouse has been maintained as a historic structure. The Fresnel lens and light that operated prior to recent BLM management were removed by the U.S. Coast Guard and replaced by the external light. The absence of a light at the top of the structure allows for visitor access to the top of the lighthouse. A locked gate restricts access to the Trinidad Lighthouse from the former housing area. To the west of the lighthouse a rocky viewing area at the edge of a cliff allows for coastal viewing to the north, west, and south (Figure 2). The viewing area includes a small pipe railing. The BLM has determined that the current condition of the viewing area is unsafe for the public therefore, access to this area during public events is not allowed.

A set of stairs to the south of the former housing area leads to the Bell House. The Bell House, also a historic structure, houses and operates the automated foghorn (Figure 2). The facility is maintained by the U.S. Coast Guard. The stairs accessing the Bell House are in poor condition and dangerous to the public, thus BLM has not allowed access to this area during public events.

The Trinidad Lighthouse parcel is closed to the public except during planned events. In 2015, the BLM, along with partners, opened the site six times for planned events. These events included tours of the lighthouse and educational presentations and draw between 200 to 400 visitors each. In addition, the site has been opened over 12 times for school field trips. Since May 2014, the BLM once, for a special event, provided access using the Trinidad Rancheria shuttle.

To provide for easier access and use of the area, the BLM maintenance staff mows the grass in the former housing area and installs a portable toilet for public use prior to each planned event.

The lighthouse and surrounding infrastructure have been vandalized in recent years. Acts of vandalism have included defacing the lighthouse, damaging fences, damaging locks, and littering. In addition, it has been determined that illicit drug use has occurred at the site.

Environmental Education, Interpretation and Youth Engagement

The BLM currently offers a broad range of environmental education activities in the Trinidad area in connection to the California Coastal National Monument (CCNM). Extending these CCNM programs to include the Trinidad Head Lighthouse, (which is not part of the CCNM), has enriched existing educational programming in Trinidad.

Hands on the Land

Trinidad is a Hands on the Land (HOL) site. HOL is a national network of outdoor classrooms on public lands. HOL sites develop education programs in partnership with local schools and communities to foster connections with nature and provide hands on experiences.

For many years, teachers at Trinidad School have been using the CCNM and local public land as an outdoor classroom to teach “Science, Technology, Engineering, and Mathematics (STEM) curriculum. Trinidad Union School teachers are using place-based learning as a strategy that captures students' imaginations and advances environmental stewardship and civic engagement.

The Trinidad Head Lighthouse would add to the Hands on the Land site by offering teachers opportunities to achieve local history common core educational standards.

Teachers on Public Land

BLM hosted a teacher from Trinidad School in summer of 2014 to develop place-based curriculum in Trinidad. Curriculum was developed and has been used by local teachers in preparation for a class field trip to the site. Since May of 2014, approximately six different schools have requested and attended field trips to the Trinidad Head Lighthouse.

Interpretation and Outreach

Currently there are no interpretive wayside exhibits, alternate interpretive media, informational signs, brochures, or kiosks on the 13 acres parcel.

Existing interpretation at the Trinidad Head Lighthouse consists of personal interpretation. In collaboration with local partners such as the Trinidad Museum, Trinidad Coastal Land Trust, Trinidad Rancheria, and the City of Trinidad, the Lighthouse has been open for public visitation and field trips as requested.

BLM staff and partners facilitate connections between visitors and the Trinidad Head Lighthouse through living history performances.

Youth Engagement

Take it Outside! (TIO) is the BLM’s flagship youth engagement program. It was established to help ensure that children, youth, and families have access to outdoor experiences on public lands. TIO stresses health, family, fun, and stewardship and connects young people and families with their public lands, while fostering future generations of public land stewards.

Trinidad Head Lighthouse is included in the Trinidad Head Quest, developed by the BLM, Humboldt State University students and Humboldt County Office of Education, aimed at getting families outdoors together. Redwood Edventure Quests (www.redwood-edventures.org/quests) are scavenger hunts with interpretive clues.

CCNM partners in collaboration with the BLM developed a 32 page Trinidad Junior Explorer Activity Book that includes Lighthouse based activities and stories are free and available in Trinidad.

Cultural Resources

The Trinidad Head Lighthouse site contains cultural resources that reflect prehistoric coastal and marine subsistence activity by members of the Yurok tribe, and historic-era maritime activity by European Americans. The most visible cultural materials on the BLM-managed parcel are associated with the operation of a lighthouse that was constructed in 1871.

Prehistoric Overview

Trinidad Head lies within the Yurok Ancestral Territory, and is a place of cultural and spiritual significance to Yurok people. Formal archaeological investigation within the site (the Area of Potential Effects or APE) has been limited to documentation and assessment of the lighthouse and associated structures for inclusion on the National Register of Historic Places. The remaining portion of the parcel has not been formally surveyed for cultural resources due to topographic challenges (steep slopes and cliff sides) and dense vegetation covering the landscape.

Additional cultural resource investigation of the Trinidad Head outside of the APE has been formally conducted in two episodes. In 1976, Pamela Roberts surveyed 42.6 acres of Trinidad Head and a 70 ft. wide by 450 ft. long stretch of land extending from Van Wycke Street to the Coast Guard property boundary for the United States Coast Guard. Roberts reports that only about 10 acres of this survey area were accessible due to thick vegetation or steep slopes. No archaeological sites were found in the surveyed area. A second archaeological survey of Trinidad Head was completed in 1982 by Ann King Smith for the North Coast Land Trust. King Smith also reports that only about 10 acres were accessible for survey. No surface cultural resources were found.

Ethnographic consultation by King Smith (1982) with three members of the Yurok tribe revealed that Yurok people would burn off areas of the vegetation in order to make the area more accessible and to encourage new growth of desirable plants useful for subsistence and that Trinidad Head is one of the most important natural features of the area and is a very significant place to them.

Limited ethnographic and archaeological work completed in the vicinity of the headland indicates that the village of Tsurai (CA-Hum-169) is located on the north shore of Trinidad Bay, about ¼ mile east of Trinidad Head. Tsurai was occupied by the Yurok from about 1620 through 1916 A.D. (Elasser and Heizer 1966:58), with at least seventeen Yurok names attached to the Trinidad Head landform (Waterman 1920:270). Heizer and Mills (1991) report on the archaeological study that took place at the village in 1949 by the University of California Department of Anthropology. This investigation revealed prehistoric- and historic-era layers of deposits. The prehistoric layer contained stone, shell, and bone artifacts that would have been used for hunting or collecting a variety of terrestrial and marine animals, or for gathering and preparing plant materials for food. A Tsurai Management Plan was finalized in 2007 that focused on a 12.5 acre Tsurai Study Area owned by the City of Trinidad. The Yurok village of Tsurai is located within this study area.

Historic-Era Overview

Heizer and Mills (1991) have organized European American settlement periods of the Trinidad area during and beyond the use by the Yurok into three episodes: Discovery and Exploration (1775-1800A.D.), Exploitation: The Fur Trade (1800-1849 A.D.), and Decline and Fall: The American Invasion (1850-1916 A.D.).

On June 11, 1775, a wooden cross was placed atop the Head by Spanish explorers Don Bruno de Hezeta (Captain of the frigate *Santiago*), and Don Juan Francisco de la Bodega y Quadra (Captain of the schooner *Sonora*) to observe Holy Trinity Sunday. This action led to the naming of the area as Trinidad. A cross made of granite, placed on the northern end of the Trinidad Head landform within the BLM-managed parcel in 1913, commemorates the place where European Americans first proclaimed interest in the area. Trinidad Head is listed in the California Inventory of Historic Resources (1976), and the cross is registered as California Historic Landmark number 146.

During subsequent years, various ships would enter the bay in an effort to establish a knowledge base of uncharted territory, expand affiliated territory, and improve transportation of goods. These efforts led to minor fur trade activity in the early 1800s. But for the most part, visitation to the area would remain sparse and sporadic. It wouldn't be until the effects of the California Gold Rush began to ripple out that a European American presence would take hold in the Trinidad area.

During the year 1850, numerous ships entered the bay. One result of these visits was that on April 8, 1850 a town site was surveyed with several temporary buildings put in place. The town flourished as industry emerged, such as harvesting and transporting lumber. Use of the wharf at Trinidad and elsewhere along the coast raised the need for strategically placed lighthouses. By one report, between the years of 1850 and 1865 at least 25 ships sank off this section of coast. In June 1860, an appropriation was made for forty-two acres on the southern portion of Trinidad Head for the purposes of constructing a lighthouse. The purchase was completed in 1866.

The lighthouse was activated on December 1, 1871. The tower is a square pyramidal shape constructed of stone and brick, at a height of 25 feet with the height of the focal plane above the ocean set at 196 feet. The original optic was Fourth Order, Fresnal; this optic was replaced in 1947 with a 375 mm optic and the original optic was donated to the Trinidad Civic Club for display in a Memorial Lighthouse at the base of Trinity Street on the Trinidad Bay. The lighthouse was listed on the National Register of Historic Places (#91001098) in 1991, and is described in the National Park Service Inventory of Historic Light Stations (1994). The National Register nomination identified four periods of significance: 1850-1874, 1875-1899, 1900-1924, and 1925-1949 under the themes of Commerce, Transportation, Maritime History, and Architecture.

An accessory structure on the Head is the Bell House/fog signal building constructed in 1900. It is frame construction and it housed the fog bell, until a compressed air horn replaced the fog bell in 1947. This building is included as a contributing building on the National Register of Historic Places listing. The operation of the fog bell required being struck by a bell hammer that was controlled by a clockwork mechanism powered by weights. After an incident where the weights broke loose and fell down the cliff, a weight tower was attached to the building. This tower is no longer present; however, a

hole is seen in the fog signal building where the clockwork mechanism connected to the bell hammer. The fog bell is now suspended from a wooden framework adjacent to the Memorial Lighthouse. According to research conducted by personnel at the Trinidad Museum, the Trinidad Fog Bell House is the only remaining bell house in California.

Housing quarters for the lighthouse keeper were located 150 feet southeast of the lighthouse and consisted of a white frame two-story house. An addition to the house in 1911 that mirrored the existing structure nearly doubled its size. A barn completed the housing complex. The housing footprint changed in 1961 when the historic house and barn were razed and a modern triplex was built by the U.S. Coast Guard.

Water was supplied by capturing and storing rainwater from the roof. Often, rainwater alone would not meet the culinary water needs and water was hauled in by truck or ship. Later, a natural water spring was located that augmented the rainwater and hauled water supply. In 1960, a water line was laid from the city of Trinidad to the housing area.

The housing complex built in the 1960s to replace the original keeper's house was evaluated in 1991 as not contributory to the site's eligibility for listing on the Register. The triplex housing structure was removed by the U.S. Coast Guard in 2007. The remaining visible features associated with the housing complex include two wooden water tanks placed upslope from the housing quarters and portions of the sidewalk that extended from the house to the lighthouse. The U.S. Coast Guard relinquished the Lighthouse and 13 acres of land, but not the Bell House, to the BLM in 2014.

The land parcel has not been the subject of a Class III Intensive Cultural Resource Inventory. A surficial survey would be difficult, if not impossible, to conduct on the steeply sided, heavily vegetated area, as noted by Roberts (1976) and King (1982) when they conducted archeological inventories on adjacent land on the Head.

Past constructive and destructive activity has disturbed the lighthouse/bell house/housing area to such an extent that the likelihood of encountering intact, prehistoric cultural materials while implementing the proposed action is minimal. Nonetheless, there may be remnant historic-era and more deeply buried prehistoric-era materials in the lighthouse/bell house/housing area. However, any historic-era materials that might be encountered are considered to be non-contributory to the property as listed on the National Register.

Tribal Concerns

Two federally recognized tribes (the Yurok tribe, and the Cher-Ae Heights Indian Community of the Trinidad Rancheria) and one tribal 501(c)3 organization (the Tsurai Ancestral Society) have participated in the development of the California Coastal National Monument Trinidad Gateway Project Strategic Plan and have contributed comments pertaining to the Trinidad Head Management Plan.

According to a statement issued by the Trinidad Rancheria Tribal Council (2/28/2013), the Trinidad Head is known by the name Tsurewa, or Chue-rey-wa in the new Yurok alphabet. With regard to the development of alternatives for the Trinidad Head Lighthouse Management Plan, the Tribal Council has stated it "would like to see a Medium Access Option in lieu of the High or Low Access" and offered specific

recommendations about Events/Access, Security, Facilities/Amenities, and Environmental components (letter dated 12/8/2015).

The Tsurai Ancestral Society represents descendants of the Trinidad Head Tsurai Village, and they have expressed concern about the effects of past development of the Head and that future “development of any kind is sure to disturb both cultural and natural resources...”.

The BLM will build on the positive relationship it enjoys with these tribes and continue to solicit input on management of the Trinidad Head.

4. Environmental Effects – Direct, Indirect and Cumulative

Proposed Action

Direct and Indirect Effects

Vegetation and Invasive, non-native plants

Native vegetation would be enhanced under the Proposed Action through gradual removal of competing and invasive, non-native plant species; followed by natural recovery by native plants. Supplemental plantings of locally sourced, native plants consistent with the flora found on Trinidad Head would further enrich vegetation enhancement. Losses of native vegetation is unlikely to occur, but there could be short-term, localized native plant damage associated with invasive, non-native plant removal efforts when native plants are intermingled with the target weeds. There would be no impact to coast Indian paintbrush plants as any manual treatment efforts would avoid them as well as any nearby native plant species that may be hosts.

Recreation

In addition to continuing access through planned events and field trips, the proposed action would allow public access to the site during daylight hours at least once per month. The planned events held in 2015 that included lighthouse tours and educational presentations drew large numbers (200-400) of visitors and it is expected that such events in the future would draw a similar number of visitors. The regularly scheduled monthly access (first Saturday of each month) to the site would restrict the public to the former housing area and not allow access to the lighthouse or include the educational presentations. It would be expected that, during fair weather, visitation to the site would increase but the magnitude of increased visitation is uncertain. After the first one to two years, a decrease in visitation may be experienced on the local/regional basis; however, an increase in visitation could occur on the national and international agenda as tourism boards become more aware of the lighthouse schedule.

Increased frequency of access to the site could increase the number of opportunities visitors would have to enjoy coastal vistas and views of the lighthouse. Increased

opportunities would be spread throughout the year allowing visitors to experience the site during a variety of conditions. Increased opportunities could reduce crowded conditions at the site compared to the No Action Alternative.

Proposed improvements to the walkway and addition of benches on this site would allow for easier access, allow visitors to rest, and linger at the site while experiencing coastal vistas. The addition of an informational kiosk would provide visitors with interpretive information, rules and regulations and regularly scheduled open days and planned events. BLM infrastructure would be placed in areas where they do not obstruct or conflict with the coastal vistas.

Removal of non-native and invasive plants would likely result in an improvement of viewing opportunities of both the lighthouse and the coast.

Information from monitoring of the number of visitors using the site, and associated impacts, during regularly scheduled open days could trigger adaptive management actions. If the site becomes overcrowded, and the level of visitation does not attenuate over time, additional measures could be taken to lessen impacts. Further monitoring would be required to determine the effectiveness of any adaptive management measures.

Given the limited number of days the site would be open to the public, it is expected that vandalism will continue to occur at the site at relatively the same rate and magnitude as is occurring presently. Individuals willing to venture into closed areas out of public view have greater opportunities to engage in destructive behaviors. Monitoring the frequency and magnitude of vandalism may lead to attempts to improve the security of the area or further restrict access, as necessary, to protect cultural and natural resources.

Offsite effects of the Proposed Action may include increased crowding in the parking area and increased crowding on the Trinidad Head Trail. Increased crowding could negatively impact visitors in the area visiting the Trinidad Wharf, restaurant, Trinidad State Beach, or the Trinidad Head Trail. It is likely that most periods of overcrowding would occur during planned events that draw hundreds of people. These events would be limited to 6 days per year. It is possible that regularly scheduled open days would produce periods of overcrowding, especially on days with clear, sunny weather. Given the climate of the area, clear, sunny days occur infrequently. As mentioned above, increased visitation could attenuate over time as the public becomes accustomed to regular access to the lighthouse site.

Environmental Education, Interpretation and Youth Engagement

The Proposed Action would allow BLM to continue the existing environmental education activities in the Trinidad area in connection to the California Coastal National Monument (CCNM) and Trinidad Head Lighthouse, (which is not part of the CCNM).

Trinidad would continue to be a Hands on the Land (HOL) site and the Trinidad Head Lighthouse would be available to teachers through requested guided field trips. The Proposed Action would allow for additional guided school field trips to the Trinidad Head Lighthouse using existing curriculum.

The Proposed Action would not allow for interpretive wayside exhibits on the 13-acre parcel. The proposed action would allow for an informational kiosk at the entrance, a site-specific brochure, and alternate interpretive media options since there is currently cell phone reception at the site.

Personal interpretation would continue with guided tours to the Trinidad Head Lighthouse through living history performances and partner interpretative programs.

Cultural Resources

Intact surface and sub-surface cultural deposits are most likely located outside of the highly developed lighthouse/bell house/former housing area. These areas include the slopes to the north of the lighthouse area and the cliffsides and shoreline below the lighthouse/bell house area. The Proposed Action has been analyzed according to which area of the APE the action would occur.

Under this alternative, activities involving ground-disturbance that may affect cultural resources include the removal or possible replacement of fencing, the installment of benches along the walkway, and the possible use of mechanical methods to remove invasive, non-native vegetation species.

The work to be conducted in the lighthouse/bell house/former housing area is in a location where soils have been disturbed during several episodes of building construction and subsequent demolition. The potential of finding cultural resources is minimal.

The removal of invasive, non-native vegetation in areas outside of the historic lighthouse/bell house/housing area would occur in areas of dense vegetation where archaeological survey has not been completed. Prehistoric-era resources may be found in surface, or sub-surface, deposits in which case there is a potential for this action to have a direct effect on cultural resources.

Measures taken to reduce impacts to cultural resources during vegetation removal projects would include the presence of a qualified archaeologist and tribal monitor to monitor the work. If prehistoric or historic cultural resources are discovered during any construction activity, work would be temporarily suspended and a qualified archaeologist would evaluate the resources.

Alternative 1

Direct and Indirect Effects

Vegetation

Impacts of Alternative 1 are similar to the Proposed Action; however, Alternative 1 may lead to a greater increase in native plant presence and recovery around the historic Coast Guard barracks site. Site improvement efforts targeting the flat, pampas grass inundated lawn area would be recontoured to a more natural appearance and planted with native species consistent with the flora found on Trinidad Head.

Recreation

Alternative 1 would allow the lighthouse site to be accessed by visitors every day during daylight hours, consistent with access to the Trinidad Head Trail and essentially integrate the site into the existing Trinidad Head Trail system by providing a loop trail along the southern portion of Trinidad Head. In addition, it would allow for regularly scheduled lighthouse tours once per month that could be similar in nature to the planned events described in the Proposed Action. Given the increased frequency of lighthouse tours (12 per year rather than 6 per year as described in the Proposed Action) it is likely that the number of people (~100-200) at these events would be less than those events held every other month. The frequency of events could be adjusted to meet public interest. Reduced crowding could result in improved experiences for visitors.

Alternative 1 would allow public access to the southern portion of the site and allow visitors to view the Bell House.

Alternative 1 would re-establish a trail from the former housing area that would connect to the Trinidad Head Trail near the cross monument (Figures 4 and 5). The length of this trail would be approximately 1/8 mile and would be relatively steep. The re-established trail would provide a varied hiking experience for visitors, new coastal vistas, and create a loop trail on the southern end of Trinidad Head.

Additional recreational amenities would include installation of picnic tables, trash receptacles, a toilet, improved stairs to the Bell House, improved walkways, and a permanent spotting scope. These improvements would facilitate picnicking, improved coastal vistas, as well as improve visitor safety and experience.

Recreation facilities would be incorporated into the landscape and not interfere with the overall visual quality of the area. Kiosks, restroom, picnic tables, benches, and overlooks would be designed to meet a Visual Resource Management (VRM) Class II. The objective of VRM Class II is to retain the existing character of the landscape with low levels of visual change that do not attract the attention of the casual observer.

Coordinated signage of the site with the Trinidad Head Trail and Trinidad Wharf would provide opportunities for the BLM, City of Trinidad, and Trinidad Rancheria to integrate information about the area and provide consistent information regarding safety and protection of natural and cultural resources. Interpretive signs or kiosks at the lighthouse site would provide an opportunity to interpret natural and historic information.

The removal of non-native and invasive plants, the re-establishment of native plants, the re-shaping of the former housing area, and the removal of obsolete infrastructure would result in the site appearing more natural. This would also lead to improved coastal vistas and visual resources as human-made structures would be limited on site.

Alternative 1 would allow for Special Events such as ceremonies or celebrations that are consistent with protection of cultural and natural resources and leave no permanent impact. Considerations for approving requests for such events would be dependent on factors such as impacts to other visitors (both onsite and offsite), and potential for impacts to resources. Such events would be expected to be infrequent and have limited impacts.

Monitoring the impacts of visitation to the site would allow for change to signage, fencing, and amenities as necessary to reduce and/or minimize impacts to cultural and natural resources.

Given that access to the site would be daily and connected to the Trinidad Head Trail, it is expected that the level of vandalism to the site would decrease. Individuals wishing to engage in acts of vandalism would not have the protection of operating within an area closed to the public thus increasing the probability of experiencing penalties for engaging in such behavior.

The addition of a trash receptacle and a toilet would necessitate regular site maintenance by BLM, partners, or contractors. It would be likely that vehicle trips to the site would be necessary to perform maintenance. Regular BLM presence may deter vandalism.

Offsite effects of Alternative 1 may include increased crowding of the Trinidad Head Trail and the parking area. It is likely that increased crowding could occur during periods when lighthouse tours and events are scheduled. Increased crowding would be expected to be much less, perhaps half of that described for the Proposed Action because such events would be more frequent, although days with clear skies and sun would be likely to increase visitation.

Given the number and magnitude of actions included in Alternative 1, various components of the Alternative would be implemented in phases and would take five to ten years to fully implement, depending on funding. Therefore, the impacts associated with the full implementation of this Alternative would not be realized immediately.

Environmental Education, Interpretation and Youth Engagement

Alternative 1 would provide increased opportunities for education, interpretation, and youth programs in Trinidad. Through engaging people of all ages in learning about the interconnections among people, cultural heritage, and the natural world, Trinidad Head Lighthouse would be a destination for residents of the local and regional area, non-locals, and organized groups.

Interpretive opportunities would include self-guided tours, lectures, signage, brochures, and other media for Trinidad Head Lighthouse. Innovative technology would be considered to reach visitors, especially those off-site.

Hands on the Land programs would be expanded to incorporate students from outside the local area and would connect education to other lighthouse stations along the California and Oregon coastline.

Interpretive themes for wayside exhibits, alternate interpretive media, informational signs, brochures, and kiosks would be developed with local partners.

Alternative 1 would provide visitors to the Trinidad Head Lighthouse both personal and non-personal interpretation.

BLM staff and partners facilitate connections between visitors and the Trinidad Head Lighthouse through living history performances. Important stories recorded by historians

and past lighthouse keepers have provided the information necessary to develop historically accurate scripts for actors to perform.

Youth Engagement

Take it Outside! (TIO) is the BLM's flagship youth engagement program. It was established to help ensure that children, youth, and families have access to outdoor experiences on public lands. TIO stresses health, family, fun, and stewardship and connects young people and families with their public lands, while fostering future generations of public land stewards.

Trinidad Head Lighthouse is included in the Trinidad Head Quest, developed by the BLM, Humboldt State University students and Humboldt County Office of Education, aimed at getting families outdoors together. Redwood Edventure Quests (www.redwood-edventures.org/quests) are scavenger hunts with interpretive clues.

CCNM partners in collaboration with the BLM developed a 32 page Trinidad Junior Explorer Activity Book that includes Lighthouse based activities and stories. These connect young people and families with their public lands and are free and available in Trinidad.

Cultural Resources

The actions that have the highest potential to affect surface and subsurface cultural materials include those that are slated outside of the highly disturbed lighthouse/bell house/housing quarters area. These activities include the re-opening of the connector trail by brushing out vegetation and leveling the tread surface, and construction of a wooden viewing platform.

Most of the Alternative 1 actions in the lighthouse/bell house/housing area are not likely to affect cultural materials since these materials would have been disturbed or removed during past construction and demolition activities. These actions include: replacing or repairing the existing steps and boardwalk from the Bell House building to the former housing area, relocating or removing existing fences, building a viewing platform near the lighthouse to replace a single pipe viewing area, re-contouring the lawn, removing invasive vegetation species, and installing concrete picnic tables and animal-proof trash containers.

Activities that may have direct effects on any remnant buried prehistoric deposits in the lighthouse area include those that involve deeper ground-disturbing components, such as excavating soils to a depth of 6 feet in order to install a vault toilet, and replacing existing electric lines with underground lines routed through conduit.

This alternative calls for the removal of the historic water tanks and the sidewalks within the former housing area. This activity will have a direct effect on the larger historic lighthouse site because they are features that are associated with the lightkeeper's housing and lifeway. The water tanks point to the difficulty of obtaining culinary water, and the practicality of capturing rainwater. These themes may be useful in interpretive programs about historic use of the Trinidad Head. However, the water tanks and sidewalk were not identified as contributing features when the lighthouse was nominated

to the National Register of Historic Places, and their removal will not affect the qualities of the site that made it eligible for listing on the National Register.

The management plan calls for improvements to be planned to minimize the level of ground disturbance. Prior to any ground-disturbing activity, a qualified archaeologist and tribal cultural monitor would be notified in order to monitor the work. If prehistoric or historic cultural resources are discovered during any construction activity, work would be temporarily suspended, a qualified archaeologist will evaluate the resources, and any necessary notifications would be conducted.

Alternative 2 – No Action

Direct and Indirect Effects

Vegetation

Under Alternative 2, there would be little to no direct impact to native vegetation. However, lack of invasive, non-native plant management would likely lead to the steady encroachment upon, and displacement of, native plant populations and communities. Alternative 2 would also provide a constant source of wind-dispersed seed, bird and wildlife transported seed, and other forms of reproductive spread by its continued presence on the 13-acre site. Allowing such a concentrated source of invasive, non-native species on Trinidad Head, presents an ongoing threat to the greater Trinidad Head area. While much of Trinidad Head is well vegetated with dense, native vegetation that provides resistance to primary infestation by many invasive species, episodic or long-term changes in vegetation brought by climate change, drought or wildfire, for example, could make many areas vulnerable to infestation and spread.

Recreation

Under the No Action Alternative, the lighthouse site would be open for Planned Events up to six times per years with each event expected to draw 200–400 visitors per event. In addition, occasional field trips would occur, as requested. Repairs or improvements to facilities would only be made to ensure public safety.

Without removal of non-native and invasive vegetation, they would more than likely spread and increase in size until the area is less natural in appearance and reduce the scenic quality of the area. As fencing and other infrastructure decays, additional visual resources could be impacted.

Under the No Action Alternative, it would be expected that vandalism would continue at the current magnitude and frequency as described for the Proposed Action.

Offsite impacts of the No Action Alternative would be similar to those described for the Proposed Action.

Cultural Resources

Work conducted in the highly disturbed lighthouse area (fence maintenance, walkway maintenance, etc.) will be conducted in a location where soils have been disturbed during

several episodes of building construction and subsequent demolition. For that reason, the potential of finding cultural resources is minimal.

If prehistoric or historic cultural resources are discovered during any construction activity, work will be temporarily suspended, a qualified archaeologist will assess the discovery and determine the need for further notification.

Cumulative Effects

Proposed Action

Vegetation

The Proposed Action would provide a benefit to vegetation resources through reduction in reproductive sources of invasive, non-native plant species that have increased over the past several decades in the project area. Presently, the existing populations of invasive, non-native plants pose a reasonable threat of infestation and displacement to intact, native plants of Trinidad Head, particularly if an intact area should experience a disturbance that leaves an area susceptible to infestation. As the level of invasive, non-native plant populations in the project area is reduced, so is the threat of invasion to the site.

Recreation

Abundant coastal recreation opportunities exist in the Trinidad area. The Proposed Action would allow public access to the Trinidad Head Lighthouse site and additional 12 days per year compared to the No Action Alternative. Although the Trinidad Head Lighthouse site is unique, access to the site is a minor addition to the existing and reasonably foreseeable future coastal recreation opportunities available in the Trinidad area.

Cultural Resources

The cumulative effect of the Proposed Action on cultural resources would be due to visitor impacts occurring during times when the area is open. Although less impactful than those anticipated for the Alternative 1, these impacts might include trampling and/or churning of site soils, cultural features, and artifacts; artifact breakage; and increased potential for unlawful collection and vandalism. The addition of these impacts would be undetectable compared to the previous impacts, and reasonably foreseeable future impacts, at the site.

Alternative 1

Vegetation

The cumulative effect of Alternative 1 is the same as the Proposed Action.

Recreation

Under Alternative 1, the Trinidad Lighthouse site would essentially become an addition to the existing Trinidad Head Trail of approximately 0.25 mile and allow daytime access to the site 365 days per year. This alternative would allow access to view the historic lighthouse and the Bell House as well as coastal vistas on the south end of Trinidad Head.

Although the Trinidad Head Lighthouse site is unique, access to the site is a minor addition to the existing and reasonably foreseeable future coastal recreation opportunities available in the Trinidad area.

Cultural Resources

The proposed action would create opportunities for higher numbers of visitors to access the area. Hence, there may be a cumulative effect on cultural resources due to visitor impacts. These impacts might include trampling and/or churning of site soils, cultural features, and artifacts; artifact breakage; and increased potential for unlawful collection and vandalism.

The addition of picnic tables, vault toilet, and trash receptacles will have an impact on the cultural landscape and viewshed of the historic lighthouse area and could also take away from the spiritual nature of the area for the Yurok people.

The addition of these impacts would be undetectable compared to the previous impacts, and reasonably foreseeable future impacts, at the site.

Alternative 2 - No Action

Vegetation

Within the Trinidad Head assessment area, Alternative 2 could negatively impact vegetative resources through continued presence, spread, and production of reproductive invasive, non-native plant parts capable of infesting new, uninvaded areas. Native plants provide floral resources to insects, pollinators, birds, wildlife, and people. A loss in native plant diversity can have an impact on a disproportionate number of other organisms that rely upon them, and for which people may or may not yet be aware.

Recreation

Under the No Action Alternative, visitors would be restricted to accessing the site during special events, which would occur up to six times per year. During these events, visitors would have access to the historic lighthouse.

Cultural Resources

No cumulative effects would occur under this alternative.

5.0 Tribes, Individuals, Organizations and Agencies Consulted

The following persons, organizations, and agencies were consulted during preparation of this analysis. Inclusion of an organization or individual's name below should not be interpreted as their endorsement of the analysis or conclusions.

Jacque Hostler-Carmesin, Trinidad Rancheria

Leslie Sanders, Trinidad Rancheria

Bob McConnell, Yurok Tribe

Dan Berman, City of Trinidad

Sarah Lindgren, Tsurai Ancestral Society

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6.0 References

U.S. Department of Treasury. (Various Years) *Annual Report of the Lighthouse Board*. Prepared by the Department of Treasury and the Department of Commerce and Labor. Annual reports are available at U.S. Government Depository libraries, which are found at <http://catalog.gpo.gov/fdlpdir/FDLPdir.jsp>.

Bossard, Carla C., John M. Randall, and Marc C. Hoshovsky. 2000. *Invasive plants of California's Wildlands*. University of California Press.

California Inventory of Historical Resources (OHP 1976). *Northwest Information Center, Sonoma State University*. Clifford, Candace, Project Manager

U.S. Department of the Interior. 1994. *Inventory of Historic Lighthouses*. U.S. Department of the Interior, National Park Service, Cultural Resources, National Maritime Initiative. Washington, D.C.

Heizer, Robert F. and John E. Mills. 1952. *The Four Ages of Tsurai*. Authorized facsimile published by Trinidad Museum Society, Trinidad California, 1991.

Kew Royal Botanic Gardens. 2016. Plant and Fungi Species Browser. <http://www.kew.org/science-conservation/plants-fungi/species-browser?query&habitat=0&family=0&country=0>. Accessed March 17, 2016.

King Smith, Ann. 1982. *Preliminary Report on California Indian Cultural Resources for Trinidad Head, Humboldt County, California*. Prepared by Ann King Smith, Archaeologist, Redwood National Park, Arcata, California for North Coast Land Trust to be included in the City of Trinidad Application for Land for Recreation, Statement Pursuant to 43 CFR 2741.3. On file at the BLM Arcata Field Office.

Nelson, Sharlene and Ted. 1993. *Umbrella Guide to California Lighthouses*. Epicenter Press, Kenmore, WA.

Reed, Johannah. 2012. *The Effect of Hemiparasitism by Castilleja species on Community Structure in Alpine Ecosystems*. Pursuit: The Journal of Undergraduate Ecosystems Research at the University of Tennessee. University of Tennessee. <Http://trace.tennessee.edu/pursuit>. Volume 3:2.

Roberts, Pamela. 1976. *An Archaeological Survey of Trinidad Head In Humboldt County, California*. AIR #S-263. Manuscript on file at the Northwest Information Center, California Archaeological Inventory, Department of Anthropology, Sonoma State University, Rohnert Park, California.

Shanks, Ralph. 1978. *Lighthouses and Lifeboats on the Redwood Coast*. Costano Books, Novato, CA.

Tesitel, Jakub, Lenka Plavcova, and Duncan Cameron. 2010. *Interactions between hemiparasitic plants and their hosts*. Plant Signal Behavior. Sep;5(9):1072-1076.

Trinidad Head Study Committee. 2013. *Trinidad Head Study Committee Final Report*. Committee to Trinidad City Council, Trinidad, CA.

Trinidad Museum. 2013. *Fall Newsletter*, Patti Fleschner, President. Trinidad Museum, CA.

University of Georgia Center for Invasive Species and Ecosystem Health and National Park Service, et al. 2016. *Invasive Plant Atlas of the United States*. Last updated October 22, 2015. <http://www.invasiveplantatlas.org/index.html>. Accessed March 17, 2016.

U.S. Department of Agriculture Natural Resource Conservation Service. 2016. *Plants Database*. Last updated <http://plants.usda.gov/java/>. Accessed March 17, 2016.

U.S. Department of the Interior Bureau of Land Management. 1992. *Arcata Resource Area Resource Management Plan and Environmental Impact Statement Record of Decision*. Record of Decision, Environmental Impact Statement, Arcata, CA.

Waterman, T.T.1920. *Yurok Geography*. Authorized facsimile published by Trinidad Museum Society, Trinidad California, 1993.