

# Natural Resource Conservation



Naval Command, Control and Ocean Surveillance Center, RDT&E Division  
San Diego, CA 92152-5001



## FOREWORD

For more than 142 years, San Diego's Point Loma has been a public trust designated as a military reservation by President Millard Fillmore in 1852. When the Navy Radio Station was established in 1906, the Navy and Point Loma became linked in the pursuit of peace through research and development.

The Naval Command, Control and Ocean Surveillance Center RDT&E Division (NRaD)(previously known as NOSC) recognizes its role and responsibility to this historically significant land, that is, to preserve, protect, and improve the 507 acres that are entrusted to us as stewards. In recent years, our commitment to this responsibility has been a well-executed program to ensure that the natural state of the land is protected.

In partnership, the Naval Command, Control and Ocean Surveillance Center RDT&E Division, the Department of Interior, the Naval Submarine Base, the Veterans Administration, and the City of San Diego have recently prepared a plan that identifies and conserves the areas necessary to maintain the biological diversity of the natural communities – an increasing problem as development and other land uses encroach upon and fragment native habitats. This plan includes provision for a designated reserve sanctuary that will remain undisturbed in perpetuity. Of the 1500 acres that are under various governmental jurisdictions on the Point Loma peninsula, approximately 640 acres are included in the Reserve.

Today, more than 142 years after the military was charged with the protection of Point Loma, we are more aware than ever before of our responsibility to ensure that valuable resources are protected and improved. Our program is one of creative conservation. We are also taking steps to repair or correct erosion problems by revegetating disturbed soil, restoring natural contours, and reconfiguring drainage patterns to check water runoff and soil loss. Our aim is to improve our Point Loma land environment in recognition of the public trust granted 142 years ago.

*(Note: The map shown on the opened cover face is a map of the new Point Loma Ecological Reserve Area)*



## ORNAMENTAL LANDSCAPING

Often, Navy buildings are constructed with austere budgets that do not allow for many open-space embellishments like landscaping. The demolition of buildings, structures, or pavements leave barren earthen areas that are void of vegetation. In 1987, an effort was made to rectify these conditions. A group of NRaD volunteers began to landscape open-space areas by using trees, shrubs, vines, and ground covers. At first, it was with a few ornamental species. These successes begat larger landscape projects with more volunteers and larger quantities of plants. The following is a list of areas that have been planted primarily with ornamental species, but some native species were included.

- Various locations Bayside
- Planters at Underwater Equipment RDT&E Building 165
- Fence vines north of Gate 3
- Training Building A-88
- Model Range Building 374
- Receiving area wall at Headquarters Building A-33 Main Parking Lot
- North Side of Physics Lab Building A-35
- South end of Facility Engineering Office Building 341
- Battery Ashburn Electronics Lab, Building 560S
- Administration Building 87
- Building Complex north of Fort Rosecrans Cemetery, Buildings 586 & 587
- Palm trees at Coast Guard Area
- Command & Control Advanced Concepts and Systems Building 627
- Accounting/Disbursing Building 91
- Cloud Room planters, Headquarters Building A-33
- Personnel Support Detachment Building 400
- South Bank, C3/Surveillance Intelligence Building 600
- Parking Lot Planters, Electronics RDT&E Building 137
- EEO Building 302
- Planters and 5500 SF of sod, Child Care Center Building 370
- Planted 5-12 ft. Washingtonia Palms at Electron Drive and Silvergate
- Planted island at Strothe Road entrance
- Planted island in parking lot and drainage ditch bank at Electronics RDT&E Building 137

- Planted trees north of Mail Center Building 58
- Planted trees north of Electronics RDT&E Building A-84
- Planted 725 donated Japanese Black Pine seedlings in various locations:
  - Areas around Bayside Buildings 137, 165, 1, and 142
  - Areas around Topside Buildings 370, 341, and Gate at Woodward Rd
  - Perimeter around Seaside Trailer Pad 5
- Received 500 Jeffrey Pine seedlings from Forestry Service Office in Alpine; subsequently, planted all of them in one-gallon containers. They are being planted in numerous locations throughout NRaD
- Provided raised wooden planters, topsoil, mulch, and planted plants in planters at Rooftop Conference Center, Headquarters Building A-33
- Bayside Library Building 150
- Planters at Library Entrance, Building 81
- Planters at South Entrance to Headquarters Building, A-33
- Marine Mammal Building 194
- Planted island at entrance to NCCOSC/Fleet Combat Training Center
- Marine Environment Building 112
- Drainage flume at Bayside
- Entrance to NISE WEST (Air Force Plant 19)





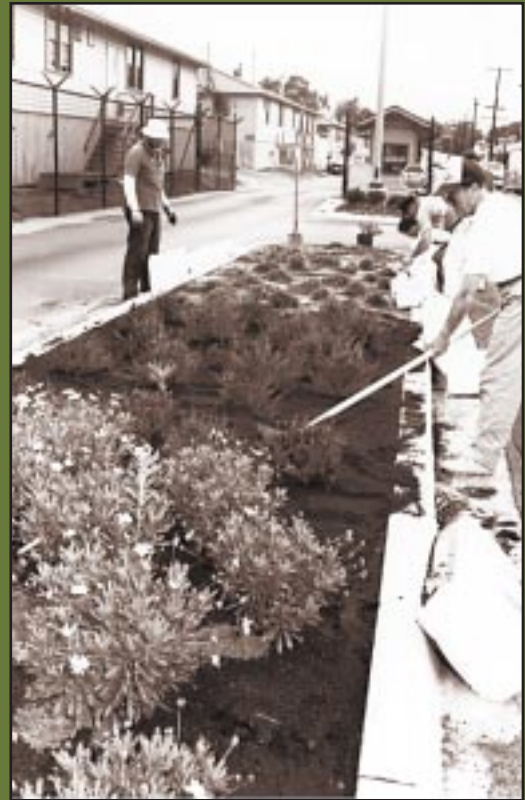
## NATIVE PLANTS

Soon after the landscaping with ornamental plant species had begun, the emphasis began to shift to the use of native plants. Today, although ornamental species may be used on occasion in the developed areas, native species are now mostly used exclusively. With the Point Loma land mass rapidly becoming a critical ecosystem that is diminishing along the southern California coast due to continuing development, the need to be proactive in protecting what remains has become a primary concern that dictates use of native plants to the fullest extent possible. Landscape Architects that design landscaping as part of new building projects are required to select from a palette of native plants. Contractors are required to select from the same palette, and station personnel, in volunteer efforts, use the same plant list selection.

Different Plant Habitats that comprise the Coastal Sage Scrub plant community that covers the undisturbed portions of southern California and also occur on the Point Loma peninsula are identified by area. The map of these areas is instrumental in determining which plants should be planted in those areas that are consistent with the habitat type and appropriate microclimate. Native Plant planting projects performed by the volunteer team are listed below:

- Native Plant Identification Garden
- Administration/Safety Buildings 317/311
- Child-Care Center
- 100 Torrey Pines along Catalina Blvd
- Gate 4
- Engineering Design & Development Bldg 57
- 41 Torrey Pines along North Gatchell Road
- Security Building
- Surveillance Systems Engineering Building 607
- Technical Service Building 650
- Periscope Test Building A-85
- Northwest corner, Wing 1, Headquarters Building A-33
- Naval Health Research Center Building 635
- 13 Torrey Pines along South Gatchell Road
- 750 native plants (in containers) along the easement for the main interceptor line and the sludge return line that were required by the City of San Diego.







## ARBOR days

From time to time, it has been possible to include interested employees in the planting projects around the Naval Command, Control and Ocean Surveillance Center RDT&E Division grounds. When the opportunity availed, plants were purchased from a local nursery and were set out in the locations to be planted. On the designated day, usually a Saturday or an off-Friday, the volunteers would meet, and with limited supervision, would plant the vegetation. Initially, the plants selected were ornamental species, but as Command personnel became more sophisticated in natural resource issues, native plants were used more and more until now they are used exclusively.

The inclusion of the volunteer employees in these arbor days had two primary benefits, besides accomplishing the work. It made more people aware of the quality of natural resources that were around them, and it instilled a "pride of ownership." By having a vested interest, these employees made sure that planted areas were maintained properly.

Areas included in the arbor days were:

- Cloud Room and Rooftop Conference Center Planters, Headquarters Building A-33
- Technical Office Building 627
- Kaneohe MCAS NOSC laboratory where 100 palms and other native plants were planted
- Electronics RDT&E Building A-84
- Engineering Design & Development Building 57
- Naval Personnel Research and Development Center Arbor Day at Technical Equipment Building 319
- South end of east side of Headquarters Building A-33









## HYDROSEEDING

Many barren slopes and disturbed areas have been hydroseeded in the last eight years for habitat restoration and to avoid continued erosion. The Coastal Sage Scrub community on Point Loma is divided into five specific plant habitats. Each habitat has a collection of several significant plants. Seed mixes have been developed for hydroseeding, and the type used depends on the area to be hydroseeded. The habitats for which seed mixes have been developed are:

- *Maritime Succulent Scrub*
- *Coastal Sage Scrub*
- *Southern Maritime Chaparral*
- *Grassland*
- *Southern Foredune*

Each seed mix includes seeds of approximately twelve species, virgin wood cellulose fiber, binder, 0-38-0 fertilizer plus 19% popcorn sulphur, and 38-0-0 urea formaldehyde. Areas that have been hydroseeded include:

- 2,000 SF on slope west of Electronic Warfare Building 589
- 3,000 SF on bank west of Electronic Countermeasures Building 586
- 5,000 SF on bank west of Satellite Communication Lab Building 593
- 9,000 SF on bank east of Child-Care Center Building 370
- 6,000 SF on bank east of Gate 4
- 3,000 SF on south side of RDT&E Building 15
- 80,000 SF on bank west of Technical Service Building 650.
- 9,000 SF on slope east of Administration Building 317
- 14 acres along the easement for the main interceptor line and the sludge return line required by the City of San Diego
- 5,000 SF along west shoreline bluffs where subsiding bank was reconstructed
- 56,000 SF west of Personnel Support Detachment where subsiding bank was reconstructed
- 60,000 SF at Transdec slope west of Catalina Blvd.



Whenever possible, some type of irrigation system is installed to support plant survival and growth anytime planting is done. In most cases, this involves a drip system since it is desirable to irrigate individual plants rather than large areas of turf or ground cover. The volunteer employees have become quite adept at installing drip systems and customarily do it at the same time the plants are being planted. By installing drip systems, the degree to which plants are watered can be controlled much better, the plants are “deep” watered, and since the water percolates into the ground, it does not run off or evaporate; thus, it is also a water resource conservation measure. It is also the most effective way of irrigating new plants and particularly trees.

## SPRINKLER SYSTEMS

Areas where drip systems have been installed by volunteers are:

Child-Care Center Building 370

Ocean slope south of Integrated Combat Systems Test Facility Building 609

Drip system for Native Plant Garden

Sprinkler system on bank west of Satellite Communications Lab Building 593

Drip system for Electronics RDT&E Building A-84

Drip system for Japanese Black Pines at Child-Care Center Building 370

Drip system for Japanese Black Pines at Building 341

Drip system for south entrance planters at Headquarters Building A-33

Drip system for Torrey Pines along Catalina Blvd

Sprinkler System on east bank at Gate 4

Drip system in islands at Gate 4

Sprinkler system at Engineering Design & Development Building 57

Drip System for planter at south end of west side of Headquarters Building A-33

Drip system at Security Building 27

Drip system at Surveillance Systems Engineering Lab Building 607

Drip system at Library Building 81

Drip system at NISE WEST Entrance

Drip system at northwest corner, wing 1, Headquarters Building A-33

Drip system at Naval Health Research Center Building 635





## JUTE MATTING

We have jute matted about 238,000 square feet of major slopes at ten different locations to help temporarily stabilize newly formed slopes until hydroseeding has germinated and taken hold for its permanent protection. Most of this jute mat has been installed by Facilities Engineering Branch personnel working during their lunch hours on their own time to complete the efforts.

Locations of jute mat installations are:

- 31,500 SF on ocean slope south of Integrated Combat Systems Test Facility Building 609
- 3,000 SF on slope west of Satellite Communications Building 593
- 10,000 SF on slope west of Periscope Test Building A-85
- 2,000 SF on south side of RDT&E Building 15
- 84,000 SF on slope west of Technical Services Building 650
- 60,000 SF on Transdec slope west of Catalina Blvd
- 30,000 SF on slope west of Personnel Support Detachment Building 400







## SOIL EROSION MITIGATION

Soil and shoreline erosion along the Point Loma Peninsula has been a continuing problem due to steep terrains, weathering of coastal bluffs, and man's neglect in looking at the total environmental picture when disturbing the grounds for construction purposes. In some areas, the erosion process has actually accelerated and has required large maintenance dollars to correct. Since 1979 and up to the present time, NReD has taken an active role in mitigating erosions around the peninsula. This mitigation has consisted of frequent visual surveys, evaluating the total erosion impact of a given design, wide use of gabion cells, regrades and placement of free fill dirt excavated from the peninsula, jute matting and hydroseeding of newly created stable slopes, repair and placement of new paved swales along the shoulders of the roads, repair of deteriorated storm drains and outfalls, installation of new storm drains and ocean outfalls at strategic locations, and placement of heavy rip raps along the shoreline. These erosion mitigation efforts have become a model for Naval Facilities Engineering Command Natural Resource Projects.

Over the last fifteen years, this Center has been actively involved in the following contracted, or self-help type of work in mitigating soil and shoreline erosions:

a. We have regraded sites and free placement and compaction of free native fill dirt from sources at numerous areas around Point Loma. The regrading reconveyed surface storm runoffs, stabilized slopes, corrected soil subsidence, filled sink holes and severely eroded canyons, and created numerous building pads and parking lots. This effort has involved free placement of

dirt, about 205,000 cubic yards, over a dozen major problem areas at no cost to the Government. Some of the benefits from this effort are: creating trailer pads at Seaside, a building pad for Bldg 32, new parking lots at Patterson Road Main Entrance, Bluff Park, Bldgs 200, 311, 600, and 605; preserving and protecting the major utilities along west shoulders of Catalina Blvd; eliminating slope instability at Bluff Park, Bldgs 400 and 85; and filling of sink holes and deteriorated ravines at the Sewer Treatment Plant, Seaside, and FCTCP boundary.

b. We have placed over eight major outfalls and numerous storm drains along the ocean bluffs where surface runoffs concentrate and collect for proper conveyance to the ocean. This effort has eliminated or minimized rapid erosion of the ocean bluffs and has prevented major scarring of the terrain.

c. We have jute-matted about 230,000 square feet of major slopes over one-half dozen locations to help temporarily stabilize newly formed slopes until hydroseeding has germinated and taken hold for its permanent protection.

d. We have hydroseeded about 300,000 square feet of newly graded slopes over a dozen locations using seed mix indigenous to the Point Loma peninsula to restore the original dwindling habitats of some endangered or sensitive species to minimize soil erosion from wind action and surface runoffs.

e. We have installed gabion cells at numerous locations to create access roads and parking lots, protect ocean bluffs, stabilize slopes, divert or properly convey concentrated storm surface runoffs, anchor ocean outfalls to the bluffs, and protect boat ramps from wave actions and tidal changes.

f. We have installed heavy rip rap along the shorelines to mitigate wave actions from eroding the ocean bluffs and to protect pump stations located on the water's edge.

g. We have installed or repaired storm drains at many locations where concentrated storm runoffs collect. This serves to protect bare ground, roadways, and building sites from erosion.

h. We have installed or repaired paved swales at many locations along the main roadway system to properly convey storm surface runoffs into existing catch basins, gabion-lined channels, and ocean outfalls. This has prevented erosion of bare ground and has protected the integrity of our extensive paved roadway system and has minimized the expenditure of maintenance dollars for road upkeep.

i. We have planted many drought-resistant plants indigenous to the area along the slopes of Point Loma peninsula to help stabilize them and restore habitable environment suitable for the protection and continued propagation of endangered birds and other species.





## MiSCeLLANeOUS ACTiViTiES

A number of other activities have been undertaken, mostly by volunteer employees, that have repaired, restored, or in some way, enhanced natural resources. These activities are ongoing. The most recent effort involves constructing a turnout for tourists where they can pull off the highway, view the Transdec Pool and the Reserve beyond, and read several interpretive signs. Contiguous to this area will be an interpretive trail that will have groupings of native plants with appropriate signs. The trail will be parallel to the highway and will be accessible from the highway. All tourists traveling to the Cabrillo National Monument will pass by this area. The public will be able to walk along this trail and observe very closely the specimens of all the significant plants that occur on Point Loma. This walkway and the plantings are being constructed at very little cost to the government.

Some of the miscellaneous activities that have been completed, mostly by volunteers, are:

- Placement and spreading topsoil at Electronics RDT&E Building 137
- Installing stepping stones at Administration Building 302
- Placement and spreading topsoil at Child-Care Center Building 370



- Moving and transplanting plants from Guard Post 1 to Gate 2
- Interpretive Signs for the Native Plant Identification Garden
- Removing 523 plants from Secure, Assembly, and Test Building MILCON site and transplanting them at the Bayside Park
- Laying rock rubble and cobble by hand at headwall outfall west of Periscope Test Building A-85 slope to disperse water being discharged from outfall to avoid erosion
- Grubbing bank west of Catalina Blvd next to Transdec. placing, spreading, and compacting 20,000 cubic yards of soil excavated from the Point Loma embankment that was beginning to slide and would have failed in the next two years, thereby undermining utilities and the Catalina Blvd roadway (all at no cost to the government)
- Repairing erosion along coastal bluffs west of Technical Services Building 650 by using 40,000 CY of soil excavated from Sewer Treatment Plant (very little cost to the government)
- Repairing erosion along shoreline north of Point Loma Sewer Treatment Plant
- Repairing subsiding bank west of Personnel Support Facility Building 400 by placing and compacting 30,000 CY of soil excavated from the Point Loma Sewer Treatment Plant (no cost to the government)





*African thistle*

## EXOTIC PLANT REMOVAL



*Acacia longifolia*



*Nicotiana glauca*



*Carpobrutis edulis*

Exotic plant species can be defined as all species of plants and animals not naturally occurring, either currently or historically, in any ecosystem of the United States. Over the years, as more exotic landscape species have been introduced, much of it has become acclimated and has escaped into the surrounding lands. There are about 1,500 acres on the Point Loma peninsula under governmental jurisdiction. Approximately one-half of that land is considered biologically sensitive. 640 acres are currently being considered for designation as an Ecological Reserve Area. Sprinkled throughout those areas are random stands of exotic species that are highly undesirable. Some of the acclimated exotics are very competitive and have taken over former areas of native plant species. Not only is it essential to avoid introducing more exotic plants, it has become essential that an exotic plant removal program be initiated to protect the native species.

Of particular concern are four specific species: *Acacia longifolia*, *Carpobrutis edulis*, *Nicotiana glauca*, and *African thistle* (tumbleweeds).

The Facilities Engineering Branch volunteers continue, on a time-available basis during lunch hours or after work, removing exotic specimens to reduce the infestation of exotics that proliferate.

Any reduction of exotics will enhance the survival of sensitive plants that are vital to the survival of endangered or threatened birds and other species inhabiting this area. The Facilities Engineering Office has purchased a small mulcher for use in disposing of removed acacias. As long as the acacias are removed when they are not setting seed, the material can be recycled as mulch to thus become a benefit.

Executive Order 11987 dated 24 May 1977 specifically prohibits introduction of an exotic species into an existing ecosystem. A broad interpretation of that Executive Order would imply that every effort be made to remove exotics from an ecosystem, particularly one of biological significance.





## CONCLUSION

The Point Loma land mass is rapidly becoming a critical ecosystem that is diminishing along the southern California coast due to continuing development. That concern and the need to be proactive in protecting what remains has become a primary concern of several environmentally-oriented agencies and societies. In the spirit of recalling that "...since we do not own the land we occupy, but hold it in public trust, our roles as caretakers and stewards of the land become more visible...." The Naval Command, Control and Ocean Surveillance Center RDT&E Division takes its role as stewards of the land seriously. This document should attest to the intensity of that attitude.

One of the primary objectives of the Command is to create and encourage an awareness among both employees and the public of the need for wise use and proper management of resources of the earth upon which our lives and welfare depend. Though financial resources are constrained, the Command's staff has resolutely responded, and the majority of restoration, preservation, and enhancement projects have been done on a volunteer basis. That in itself has rich rewards.

Point Loma provides a green belt, natural buffer, and open space between the rugged coastal bluffs of the western slope and the urbanized community of the eastern hillside. The absence of development on the top or ridge of the peninsula, combined with vistas from Woodward, Sylvester, and Gatchell Roads on portions of NCCOSC RDT&E, add up to a unique visual resource.

Of the 1500 acres on the Point Loma peninsula under governmental jurisdiction, nearly half, about 750 acres, is considered undisturbed and biologically sensitive. Of that area, 640 acres are being set aside as an Ecological Reserve Area. Approximately 45% of that acreage, 290 acres, is within NCCOSC RDT&E jurisdiction. This Command is highly supportive of that undertaking and eagerly anticipates an active role in the management of the Reserve.

Much has been done, and much remains to be done...



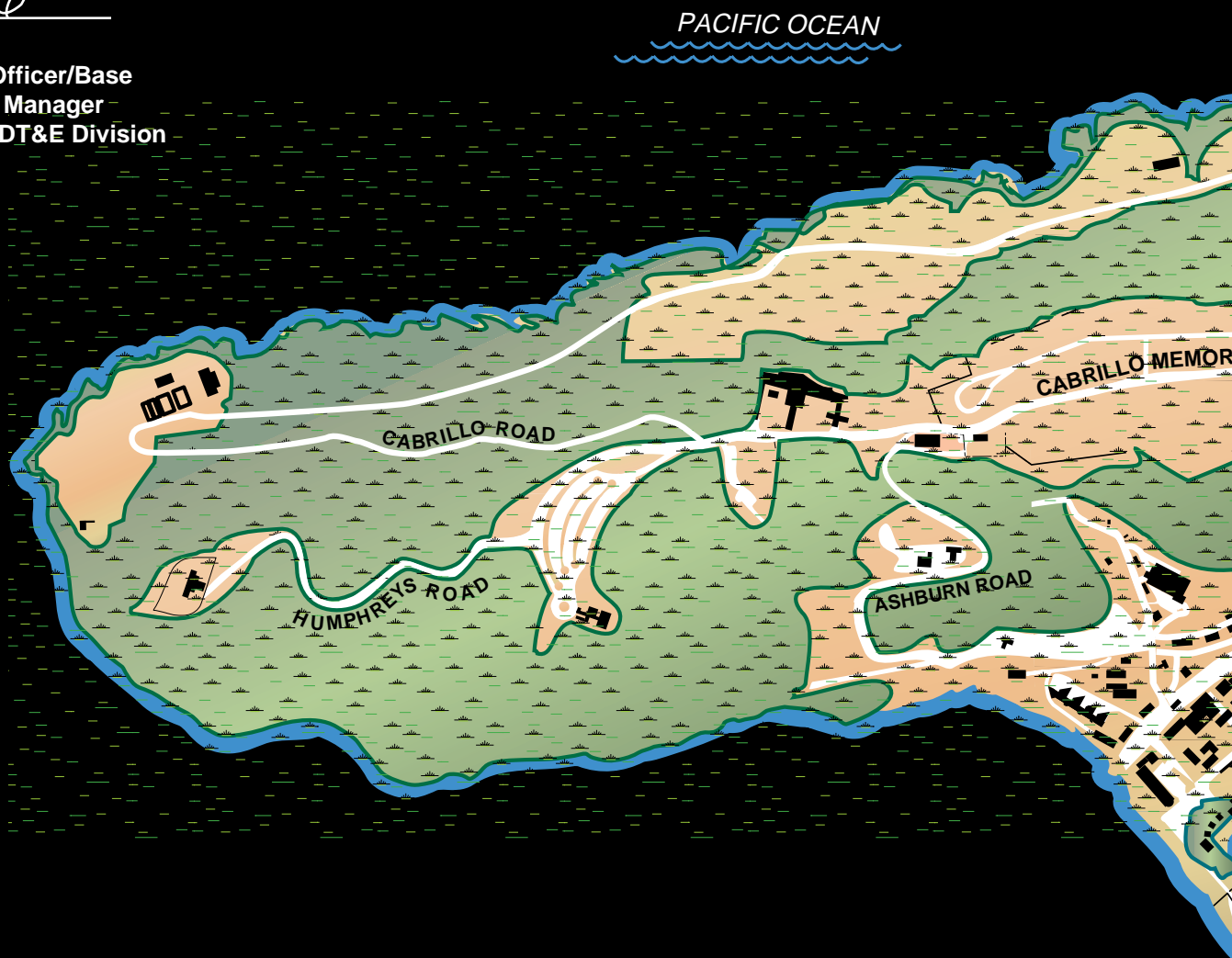


Reviewed and approved by

A handwritten signature in black ink, appearing to read "J. M. Smith", is written over a horizontal line.

Executive Officer/Base  
Operations Manager  
NCCOSC RDT&E Division

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