Infrastructure for Ephemeral Expenditure at Land's End

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Abstract

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This thesis takes place in the overlap between ecology and architecture. It is an experiment in modifying the tools of architecture (drawing, spatializing, visualizing) with ecological methods and content in order to increase the capacity of built design for evoking the distinctive character of place, in this case, Land's End in San Francisco, California.

Land's End is a park that acts as a border between the city and the ocean, and has historically hosted a strange mix of human activities that resonate with the dark, changeable, and ebullient natural forces much in evidence in this locality. Instead of attempting to tame, preserve or even enhance these shifting, unpredictable human and natural activities, a dually-natured infrastructure is proposed. This infrastructure would not only help provide basic services and support for the restless, shifting, memorable events that take place on this unique site, but more importantly, begin to shift their legibility from acts of negligence, short sightedness or abandonment to acts of sacrificial return.

What though the sea with waves continuall
Doe eate the earth, it is no more at all:
Ne is the earth the lesse, or loseth ought,
For whatsoeuer from one place doth fall,
Is with the tide unto an other brought:
For there is nothing lost, that may be found, if sought,

Likewise the earth is not augmented more,
By all that dying into it doe fade.
For of the earth they formed were of yore;

Edmund Spenser, *The Faerie Queene*, Book V Canto II

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[land's end, san francisco]

I. Introduction

It has long been a goal of architects and others engaged with built designs to include a greater consideration for the parts of our world which are neither designed nor built by humans. Many call this the natural world, but the term 'non-human' will be used here for reasons which will become apparent. The end goal of this increased consideration for the non-human is not well-agreed upon, but can be generally described as a desire to retain, and in some cases, repair the essential qualities of that non-human world. Even less consensus exists around why it would be beneficial to save or repair the non-human world around us, but the most pressing reason behind this concern is that the non-human world provides humans with much that we require to live. Its destruction is our destruction. It is clear, however, that simply understanding that we rely on the non-human world for sustenance has not been enough to prevent humans from regularly overusing non-human resources.

This disconnect between the overuse and need for preservation of non-human resources stems from several complex, interacting issues. One important factor is the current reaction time and relationship between use of the non-human and its destruction, which is often too long and complicated to understand without a high level of education,

leaving the under- or average-educated at odds with centralized planning goals.[1] Another issue is that humans do not currently understand all there is to know about the non-human world, and many plans that assume scientific prediction is infallible have unintended results.[2] Many ecologists, the scientists who most broadly study the non-human world, are beginning to doubt that we will ever be able to fully predict how a non-human world will behave.[3] Ecosystems display a large number of emergent properties, characteristics that are the cumulative effect of many smaller features, but which could not have been understood by a simple adding up of parts.

This does not mean that the behavior of non-human worlds cannot be described or understood, or that non-human worlds cannot be occupied with more or less foresight. However, simply providing increasingly complex descriptions of ecosystem behavior may never produce wide scale, appropriate modulation of human use of non-human resources. It has become increasingly clear that in many cases, direct experience of non-human worlds is one of the most effective motivators for humans to make large, meaningful changes to their way of life that result in more prudent use of the non-human.[4] Signs, bulletin boards, lectures, even research degrees can rarely deliver the same experiential impact as months in the field. Summary is certainly useful, but a vast amount of emotionally affective information is often lost in condensation. A known, experienced, valued thing can be related to with a quality of care that equals and sometimes transcends what informed predictions can regulate. This was part of the reasoning behind the creation of National Parks in the United States, to provide experiences of the places that non-humans produce. But even in National Parks, the influence of human behavior has troubled us, has been over-reaching, requires more modulation. Humans are now interested in more than just wildlife preserves as a way to reconsider their behavior

toward the non-human.

Architecture, with its reliance on both the technical and artistic to achieve its task of building design, would seem to be an appropriate field in which to explore the creation of more experiential connections to the non-human world. However, the majority of the building design community's current efforts toward increased consideration of the non-human world is in modifying the quantitative data upon which architectural design is based. It is largely an effort to include better, more widely-scoped information about the energy consumption of building forms and materials, as well as strategies to reduce that energy consumption. This information comes mostly in the form of numerical data, with some instruction as to how to apply these data sets to building orientation, form, and materiality.

While the intention behind this energy-saving work is certainly to be of benefit to both built designs and the larger world that contains them, it is not clear that this effort forges much of an experiential link between human-built designs and non-human ones. Does a resident of a tightly-sealed passive house better enjoy the forest because of their efficient biomass heater and superior detailing? Does an office worker better enjoy the air quality of their passively heated and cooled office complex simply because the building they occupy has polluted the atmosphere less than a traditional one? These are not good arguments against passive strategies (and indeed, this thesis is not an argument against them), yet these statements reveal what is currently missing from architectural efforts to conserve energy - these strategies offer little experiential connection between energy savings and the intent from which it was initially born. Most passive buildings do not look or feel significantly different from a traditional building, though they may in fact have very significant differences, largely

in hidden systems for heating, cooling and sealing. This is largely due to the fact that if it is data, especially numerical data, that has driven the design choices towards energy efficient solutions, the bare data alone will have had very little to say about the quality of the space.[5] It is left to the designer to decide what the quality of the space should be, and the designer is not informed about quality from a number set, unless they are quite skilled at understanding all of the implications, nuances and origins of the data set they are handling. It is currently quite rare that a designer of built spaces understands much about the energy data sets they use beyond how to use them, and the current trend is toward ease and brevity of use: there is a major effort underway to make energy information available in standard formats rather like nutrition labels for all building products.[6]

This current 'green' design approach, referencing mostly only data sets, and not much of the larger context from which they were extracted, leaves a large barrier between the designer and the very part of the world they had been trying to consider with greater weight. Perhaps even more troubling is the fact that this new connection to the natural world, via the inclusion of energy consumption data sets, does hardly anything at all to connect the *occupants* of the building with the natural world. Building occupants do not strongly experience ducts and sealants no matter how efficient their design.

It is within the nature of scientific endeavors to compartmentalize information and relate one thing to another with ever-greater speed and efficiency. This is a natural outgrowth of the Logical Positivist philosophy that underpins most scientific inquiry.[7] This mode of thinking has been a very productive tool within the field of science, but is not the only way that science communicates information. Could the

anatomy of a mayfly be reduced to numerical data? Could twenty years of observations about the behavior of a species of seabird be told in solely an equational story? Ecology, with its task of comprehensively describing whole life systems and their attended complexity, is increasingly cognizant of the necessity of incorporating ways of knowing beyond the bounds of what Logical Positivism can provide and the reductionism it tends to produce.[8] Architectural endeavors, too, can not use an abstracting, quantifying method as their only or even their main tool for a design task, because of the nature of what it means to design.

It is difficult to narrowly and precisely define what a designer provides in the planning of built space, but it always includes some degree of judgment about how the space should look and feel, its experiential quality.[9] Even if this is not the foremost consideration on the designer's mind, their specifications of materials, forms, and relations of spaces decide the major components of this experience. Designers wishing to directly address their effect on the quality of experienced space often turn to the branch of philosophy known as phenomenology and its various offshoots, which are all considered to be branches of the social sciences. Here the designer wishing to include a greater consideration of the non-human within the human-built runs into a different problem. Phenomenology and its offspring have as yet not said much that is prescriptive about bridging the non-human and human world divide. Instead, most of the descriptions of this problem are a critique of this way of thinking about the issue. Postmodernist Félix Guattari, in his book on the topic, *The Three Ecologies*, maintains that it is impossible to truly sustain a different attitude toward the larger contexts around us, both the near and the far, than we do toward ourselves, especially over the long run and during complicated operations when we must rely on our experience and judgment, not

just data.[10] Design of built structures usually qualifies as a long, complicated operation which relies on experience and judgment. This is a useful insight for understanding why a designer who only allows themselves limited contact with the natural world through data sets will likely produce a design that has a similarly limited connection to the natural world. Following Guattari's logic, then, a designer who wishes their designs to incorporate a larger consideration for the non-human world should, themselves, try to cultivate a greater connection to the non-human world.

Does this mean that a building designer needs to spend more time outdoors? Does this mean that a building designer needs to saturate themselves, physically and informationally, with the ecosystems that surround their built designs? Does this mean that a designer must gain more skill in trying to create experiences of the non-human world, whether these experiences are built or otherwise? These are the questions this thesis undertakes as an exploration.

[land's end, san francisco]

II. Research Methods

Methodological Overview

At every stage of this thesis, attempts were made to adapt architectural tools by combining them with specific ecological methods and content. Architectural tools come in a large variety; indeed, almost no human practice can be excluded from design use, but the architectural tools that were targeted here were those most concerned with capturing the experience of place: researching, analyzing, and materially embodying, as well as those most commonly used in the design process: visualizing, spatializing, and arranging.

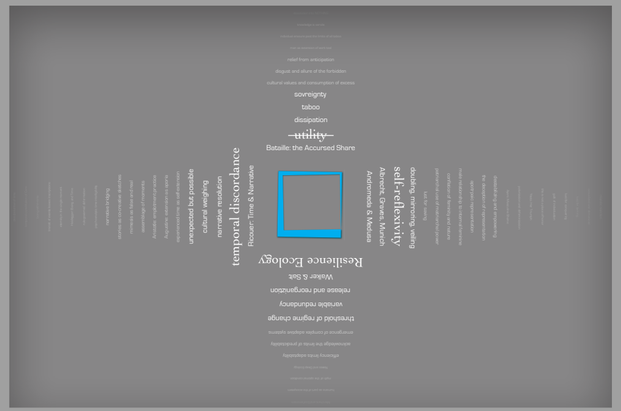
The ecological methods and content used were those that could best saturate the researcher with an experience of the environment for which design was being proposed, as well as those that might open up experiential opportunities for eventual occupants of the proposed designs. This was done as an experiment, without rigorous attempts to predict the intended outcome, but to generate initial results that might be used to guide further experimentation. The architectural tools targeted and ecological methods incorporated into them are enumerated here, but could easily have been combined differently. They shall be described in the order in which they were undertaken, in order to most transparently reveal the effect of the experiment, but their phasing is best outlined separately here.

The general project questions were ones that the author generated while taking academic coursework, and made some initial attempts to experiment with in studio coursework. These studio projects included a roof-top rainwater bath facility, a museum for a polluted urban river that acted as an art-trash collector, and an adaptively re-used water treatment facility that became experimental workspaces for developing neighborhood water retention ponds. These projects provided ample opportunity to look at various interfaces between human and non-human worlds.

The main theoretical sources for this project were identified as a result of the questions these initial efforts generated, and these sources were researched and analyzed concurrently with site observations and site research. Instead of just consulting architectural theory, an ecological framework was incorporated within the philosophical backbone of this inquiry. Site analysis was much longer than an architect would normally allow for, and came close to the amount of time an ecological researcher would require. The techniques of observation were a hybrid of architectural and ecological methods, as will be described in detail later on. Instead of just researching the human history of the site, the non-human history was also examined.

After this research phase, experiments were made in visually embodying the human and non-human aspects of the site as a way of analyzing and synthesizing the research material. The results of this research and analysis were used as guidelines for a subsequent built design phase, which encompassed an urban design and a building design. The urban design arrangements were a response not just to human needs, but also to non-human activities. The building was spatialized with more than just human occupation in mind; it was created as a space that holds a narrative between the human and the non-human at Land's End.

A word needs to be said about the choice of design subjects: much of what was uncovered during the research and analysis phases lent itself to broad, landscape-scale design moves. However, the author of this thesis was trained in building design, and not only lacked some of the training that would have been required to execute a landscape-scale design, but was also more curious as to how this kind of research and analysis experience would affect, not landscape design, which already often conducts this kind of research and analysis, but building design, which currently does not.



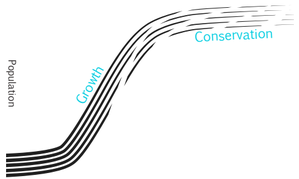
1. Visual Summary of Literature Review

A. Theoretical Frameworks

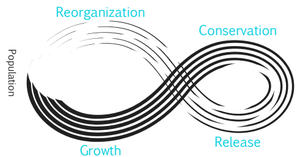
Ecological Problems with Death and Time

It is hard to say exactly when this became apparent, but the following observation became clear after having previously tried to combine ecological concepts with architectural ones: architectural designs tend to have a problem reconciling themselves with death and with time, and these topics tend to be the places where ecology and architecture overlap the least. Because a building design is a vision of the future, and because so much of our current thinking is based on a set of ideas that lead us to believe that if something is well and rationally planned, it will be better than what came before, there is little room for futures that include darkness. Futures that are only a description of the light are fairly static, do not have much plot or narrative, and often seem not to consider their own temporality. While it seems foolhardy to purposefully design for death and waste, no one would deny that these events will occur anyway. Few people observing an ecosystem can ignore death or time, for ecosystems offer ample evidence of how all living things are inexorably subject to these forces in ways that humans sometimes can no longer understand.

Part of the fault in this lies with the field of ecology. Only recently has ecology begun to describe more than just organismal death. The traditional model for the life



2. Traditional Ecological Model



3. Resilience Edology Model

cycle of an ecosystem was one of initial, exponential growth, followed by a period of conservation of population size with increasing complexification of species and the relationships between them. How the system ended or started over was not addressed, as if the process were temporally linear and finite.[11]

Resilience Ecology

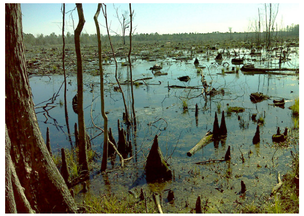
A recent addition to ecological frameworks is the theory of Resilience Ecology, most broadly outlined by the work of Brian Walker and David Salt.[12] The model for ecosystem life cycles in this theory includes a back-loop, an addition of two more phases that explain how ecosystems as a whole disintegrate. The process begins during what they term a 'release' phase, and is caused by disruptions that prevent living things from using the resources around them successfully on a large scale. After the disruptions that have caused this disintegration cease, a period of reorganization occurs, during which new relationships between living things and useful resources are formed. Once this reorganization has occurred and life can operate with some success within the new circumstances of the ecosystem, the growth phase begins a new cycle that leads to conservation.[13] While the release phase may occur whenever a disruption appears, it is when this release disrupts the stable, complex state of conservation that humans tend to have difficulty understanding, accepting, and even more trouble coordinating alongside with such disrupted life cycles.[14]

There are many examples of this, but the simplest and most pervasive for buildings is illustrated by the way water erodes soil. If human-built structures are anywhere near this process, they must take a stance about how to deal with this erosion: accept or deny or something between. The modern response is usually to construct massive built works to resist the force of the water, often without long-term success.

A more nuanced, whole-ecosystem example can be found in the Everglades of Florida, where agriculture has cleared large portions of the swamp. In doing so, the early land clearing removed the mechanism that prevented the swamp from flooding, which was the dense mats of tangled vegetation that had soaked up the excess water. Less expected were the droughts, which were caused by the same action, but were harder to understand. The destroyed native vegetation not only held back the waters, but released them more slowly so that in low-rainfall years, little drought effect had been visible. Even once this was understood, decades of built interventions costing billions of dollars could not bring the water cycles back to normal. Even though large portions of the swamp remain, the effects of clearing changed the balance of the swamp ecosystem to the point that release occurred, too many relationships were disturbed, and reorganization began. The parts of the native vegetation that remain are part of a new ecosystem that has emerged, one dominated by new types of vegetation better able to cope with adjacent agricultural use, but not equally capable of storing and releasing water. All of the water management strategies that had been employed assumed that the remaining swamps would stay as they had been. Once they became something else, these responses were no longer appropriate, and the water still does not move through the landscape in the way that humans had intended.[15]

Resilience ecology advocates that human designs mimic the feature that allows non-human systems to go

4. Original Swamp



5. Clearing for Agriculture

6. Reorganized Swamp

through these kinds of regime changes without permanent failure: variability.[16] Resilience Ecology encourages people to stop thinking that ecosystems ever exist in an sustainable, static state. Instead of designing for optimal efficiency that assumes any constant state, resilience ecologists encourage designers to see the ecosystems they inhabit as dynamic and ever-shifting. One should assume that what is here now will not be here in the same form in the future, and if one depends on something from the non-human world, one should invest in more than one way of interfacing with that non-human resource.[17] This is quite a different portrait of the non-human world than the one usually evoked by architects. Instead of verdant forests forever framed by transparent glass walls, the resilience ecologist recommends considering blinds for when the prairie begins to encroach on the forest.

It is important to note that ecological change is not entirely unpredictable, since there seems to be a certain range of ecosystems that can occupy a given set of physical constraints found in a specific place.[18] A high sierra condition will not likely occur on a low-lying coastal flatland, for instance. But if designers are attempting to give more consideration to the non-human world in their designs, then the world of ecology recommends that they do so by turning away from efficiency and begin exploring variable redundancy in order to survive inevitable, cyclical ecological change.

The Problem of Knowing the Non-Human

It is also important to note that ecologists are also beginning to maintain that humans should not be considered

as separate from the rest of life in an ecosystem. Swamps and farmlands are clearly both a part of the Everglades ecosystem, now. Humans and cattails both shape the terrain.[19] Humans are another organism whose requirements from ecosystems are the same as any other organism's: resources for life. However, humanity's impact on resources does not appear to be co-equal to that of other organisms. The much-touted self-reflexive cognition of humans may make us different from other organisms, but how this self-reflective capability plays out across an ecosystem is often unclear.

It is now questionable as to whether or not there are any ecosystems on Earth that have not been affected by human activity, and it is no longer helpful for an ecologist to think about current ecosystems as undisturbed or pre-dating human effects, except as a hypothetical thought experiment of reconstructed history.[20] This is part of the reasoning behind eschewing the word 'natural' to describe the non-human world around us. What is left that is natural, if that word is to signify that which is untouched by or separate from human behavior?

There is also the problem of whether or not the non-human can actually be known. Besides the obvious problem of communication between humans and non-humans that prevents verification of understanding (can anyone ever really know that their dog loves them?), there is the more difficult question of what it means to know. Phenomenology's antecedent, the philosophy of Hermeneutics, established that all knowing is a culturally embedded way of understanding a given life-world, whether data-driven or experiential, and as such, is incomplete, varying and full of tacit information that can never be fully made overt.[21] Hermeneutics maintains, unlike Logical Positivism, that there is no perfectly accurate understanding of the world, only commonly understood,

accepted portions of coherence. From this perspective, ecology appears as a series of culturally manufactured stories that help humans perceive useful things about the non-human world around them. That these stories include verifiable observational data does not mean that they come closer to a truer picture of non-human life-worlds than, say, native mythologies do. It simply means that these ecological stories contain information that can match the observable world where the numbers have described it, which may or may not be useful. As has been stated, in ecology, numerical data often cannot lead to accurate prediction the way it does in simpler, isolated systems.

By using the term 'non-human' to describe the natural world, the persistent human tendency to tell ourselves stories about how we are different from the rest of the living things around us is accentuated. This mildly hyperbolic word can, at times, begin to feel as though it causes a polarization between the human and non-human, but this thesis argues that the polarity already exists. Only by acknowledging this human-constructed polarity can design, or any other field, progress toward bridging the perceived divide.

Architectural Problems with Death and Time

Although Resilience Ecology does much to help resolve the picture of the non-human world into one that includes more nuance about decay, death, and temporality, architecture still has its own problems with these topics. These problems originate from the same temporally linear, reductionist ways of thinking that ecology suffers from, but has a very different

expression in built design than in analysis of the non-human world. Logical Positivism never had quite the same hegemony in architecture, which has long been understood as a cultural practice that largely defies simple numerical description, and so architecture's recovery from simplified ideas of death and time is not as easy as turning a line into a loop.

Architecture's relationship to death is heavily colored by our culture's perception of death, which is not surprising given that architecture is most often a reflection of the culture for which it is built. Our culture currently gives little room for the consideration, acceptance or inclusion of death with life. 'The architecture of death' most commonly refers to special, removed places to remember the dead, to house people who are in the process of dying, or at a stretch, places where people were killed (but this is reserved for the most extraordinary cases, like concentration camps).[22] In the non-human world, death is more obviously an everyday occurrence, but there is little that modern architecture can offer in recognition of quotidien death besides horror.

While ruins, age value and building death have been explored by the likes of Walter Benjamin, Karsten Harries, and John Ruskin, among others, none of them are exactly addressing biological death, which is what one is continually confronted with in the description and understanding of ecosystems, and is the kind of death that is so uncomfortable for utopian projections to include.[23] There is, however, one philosopher who can be loosely classify as a post-modernist, to whom architects and others have a habit of turning when they wish to consider the inverse of well-planned out future progress: Georges Bataille. His philosophical work, *The Accursed Share*, does much to explain the values of death, sanctioned transgression, and the destruction of excess that we have forgotten during our current age.

Bataille's *Accursed Share*

It is hard to classify what kind of work *The Accursed Share* is: most think of it as philosophy, though Bataille calls it economic theory.[24] The main idea he explores is the concept that there is excess in every society, and that it is very telling to consider how each society chooses to expend its excess.[25]

The first volume is a historical survey of excess expenditure in various cultures, and Bataille starts by describing how the Aztecs believed that destroyed things entered the world of the gods. The Aztecs believed they were giving their excess to the gods when they destroyed it. This accounts for the killing of so many captives and slaves and the burning of valuable items that confounded invading Spaniards. Aztecs gained social status by how much they could afford to give to the gods, how much they could afford to destroy, which was usually all of their excess. This behavior meant the Aztecs were in constant need of capturing more wealth, more excess to destroy, and put them in a constant state of warfare.[26] Bataille contrasts this with aboriginal North American cultures who gained social status by giving their excess away to others. This practice of elaborate gift giving transferred all social competition into the realm of vying for being the most profligate giver. He describes how this struck an ironic balance between the human tendency to hoard and the obvious fact that things eventually disappear.[27] He characterizes the expenditure of excess in bourgeois Europe as one which used all of its excess as capital investment for more productivity, which had the nasty tendency of taking all enjoyment and sense of sovereignty out of life, since there was hardly ever a legitimate release of excess at all. He also shows how this behavior was bound to exceed the carrying capacity of its system very rapidly, as all gained excess is aimed at growth.[28]

In the second volume, Bataille describes specific acts of expenditure of excess. First he looks at sex, which he describes as superfluous because there are living things that reproduce without it (parthenogenesis). He describes how the generation of early taboos against incest, which were economically motivated, and the attendant fear and disgust of tabooed of sex were deliberately constructed and imposed constraints that separated prehistoric humans from animals.[29] He shows how this sexual disgust became conflated with disgust for all other bodily evidence that proved, despite our definitions of ourselves, that we were, in fact, still animals. Excretion and death were lumped together with sex as topics of the strictest taboo.[30] The taboos had to be broken; sex, excretion and death still had to occur, and rituals were created to provide sanctioned places for these biological necessities to happen. The curious side-effect of having placed these activities outside of what was acceptably 'human' was a powerfully cathartic re-unification with the non-human world whenever these taboos were ritually breached.[31]

Bataille continues by elucidating the idea that the thing placed beyond the taboo, the accursed share, is the thing expended in true sovereignty with no thought of future good. He describes a sovereign as one who has no need to do work, no need to think or act like a tool, and only expends, never produces. Working humans both regain their identity as non-tools - and also as non-humans - when they engage in sovereign activities, ones that transgress taboos and are beyond any utilitarian function.[32] The problem, he says, with modern societies is they have no sanctioned transgression of taboos, though the taboos are still broken as often as they

ever were. Therefore, modern societies, especially capitalistic ones, spend too little of their excess, enjoy very little personal sovereignty, and break taboos in dark, violent, and furtive ways.[33]

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Architecture's relationship to time is rather better explored than its relationship to death. The writings of Juhani Pallasmaa, Mohsen Mostafavi and Daniel Leatherbarrow, and others concerned with the phenomenological experience of buildings, as well as the philosophers whose shoulders these writers stand upon, have written at length about the origin of the divorce between architecture, cultural practice and time.[34] Pallasmaa explains how, by privileging certain types of visuals above all other media, architecture has ignored its embodied-ness, its own physical reality. In doing so, architecture has become dangerously abstracted from the holistic experience of life, which includes memory, and therefore, the experience of time.[35] Leatherbarrow has outlined how, with the mechanization of production, architectural parts no longer seem to relate to their environment enough to gracefully withstand the weathering that naturally occurs as they age, as if the designer had not thought beyond their installation.[36] In these thoughtful explanations, though much is clarified by the careful description of how, where, and when architecture fails to address time, there is little in the way of prescription for how to correct this tendency.

To find prescriptions for engaging with time, the scope was broadened beyond just architecture's relationship with time. Phenomenologist Paul Ricoeur's two volume work, *Time and Narrative*, was taken as a precedent, with the hope that his insight about how narrative written works negotiate a relationship with time could be applied to architectural design.

Ricoeur's *Time and Narrative*

In this work, Ricoeur maintains that the experience of time is essentially a discordant one. Borrowing from Augustine, he describes how one must leave the present moment, one must extend one's self away from now to recall what has past or look forward to the future. Having to interrupt what is happening now to have a connection with any other moment, and thus any knowledge of the flow of time, leaves one with pieces of a whole that cannot be known all at once.[37]

Then turning to Aristotle for guidance, Ricoeur goes on to explain how, through the construction of narrative, one can produce a harmonic sense of time. By taking various fragments of experience that one is left with outside of the current moment, and stringing them together, narratives are created that bring one to a synthesized experience of these fragments that occurs in something more like a single moment.[38] In a tragedy, this moment would be the dramatic reversal of fate, in other, less well-defined genres, the moment is more elusive, but in all great narratives there is at least one moment when the totality of the fragmented experiences coalesce into an instantaneous realization of the disjointed whole.[39] The awful realization that Oedipus has fulfilled the oracle's prediction, the seemingly trivial announcement of Septimus's suicide at Mrs. Dalloway's dinner party, and Madame Chauchat's disruptive, unexpected departure and return in *The Magic Mountain,* are all such moments.[40]

A key component to the successful stringing together of fragmented events into a narrative that makes a satisfying synthesis is the idea that the production of narrative is simultaneously a cultural practice, and also a creative imitation.

The story creates something new, a harmonious synthesis that provides unexpected illumination, but is also a reflection of what was there before, as the events strung together cannot be so far outside of common cultural experience as to be unrelatable. There is a weighting of events that requires culturally-informed judgment to produce a story that is normal enough to be likely, and yet novel enough to successfully illuminate the idea which links the time fragments together.[41] This is very similar to architectural design, which is also a cultural practice, produces new artifacts, but is also a reflection of the culture it is located within and requires a similar kind of experience-informed judgment.

This thesis is simply attempting to widen the context that architecture draws from to include the fragments of stories that we humans tell ourselves about the non-human world, in addition to the fragments of stories we tell about human activity. This is a relatively new cultural goal, and there is not a lot of precedent for how to weight these fragments into a successful narrative. As a way to ease this process, it was decided that a specific narrative should be chosen, as a guide for culturally-informed weighting of fragments. It needed to be a narrative that contained within it most of the same topics, issues and disjunctions contained in this project. The mythic tale of Andromeda was chosen as just such a narrative, for it has been used during several phases of human history as a metaphor for the way humanity thinks about its relationship to the non-human.

The Myth of Andromeda

Andromeda's tale is tacked on to the end of the tale of Perseus, the first hero of Greece, but Andromeda is the figure of importance here. She was a mythical princess, referred to as 'Ethiopian' but it is not likely that the kingdom she came from was located in modern-day Ethiopia. The modern Israeli city of Jaffa, which is also called Japho or Joppa, is claimed to be a derivation of Iopeia, from Cassiopeia, Andromeda's mother. There is a rock formation off of Jaffa's coast where Andromeda's story is said to have occurred, though of course, being myth, it is unlikely that hard proof will ever establish or disestablish this association.[42]

Regardless, Andromeda was a Mediterranean princess, and her parents were the king Cepheus and the queen Cassiopeia. Cassiopeia boasted with hubris that she and her daughter were more beautiful than the Nereids, the semi-divine sea nymphs who help form the Greek sea god Poseidon's retinue. In revenge for daring to favorably compare the mortal with the immortal, Poseidon roused the sea monster Cetus to ravage the coast of Cepheus's kingdom. A consulted oracle decreed that the attacks would continue unabated until the maiden princess Andromeda was offered as a sacrifice, for no mortal instrument could kill the sea beast. Andromeda was stripped and bound with chains to a rock in a cove near where the sea beast had been sighted, but just as Cetus was about to claim its sacrificial victim, Perseus appeared with divine devices at his aid.

A brief recap of Perseus's tale is required to make sense of his startling appearance here. Perseus was the son of princess Danaë, who was the daughter of king Acrisius,

7. Cetus, Perseus, Andromeda
Corinthian Vase, 5th c. BCE

8. Perseus freeing Andromeda
Greek Vase, 4th c. BCE

9. Perseus freeing Andromeda
Pompeiian Fresco, 1st c. BCE

ruler of Argos in the Peloponnese region of Greece. There is some evidence that these are historical figures, though the accounting of their tale is not considered exact historical fact, as will become evident. Another oracle predicted that Acrisius would be killed by his own grandson, and in a futile attempt to thwart fate, Acrisius locked Danaë in a courtyard with very high walls that no mortal could scale. The Greek god Zeus saw the princess in her outdoor prison and did what Zeus was so often said to have done, and had sexual intercourse with her, resulting in her impregnation. In this particular iteration, he is said to have accomplished this act by transforming into a shower of gold coins that fell upon the princess and seeded her with child. Upon learning of Danaë's condition, Acrisius locked her in a large, bound wooden chest and threw her and her unborn child into the sea. A fisherman on the island of Seriphos, who happened to be the brother of the king of the island, king Polydectes, sighted the chest and drew it from the ocean, rescuing the princess. Polydectes fell in love with Danaë, and wishing to prevent rivalry with the offspring he intended to have of her, Polydectes lured Danaë's young son Perseus into an unfulfillable challenge: to bring him back the head of the Gorgon Medusa.

Medusa is a very interesting figure who bears some description. She was once a very beautiful mortal woman who was caught in sexual congress with Poseidon in a temple of the Greek goddess Athena. Athena chose to punish only Medusa for the desecration of her temple, turning the woman into a vile beast with snakes for hair, and all who looked upon her ugly face were turned to stone in fright. She took up residence with the immortal Gorgons and was called one herself, though she could be killed.

Because Athena disliked Medusa, and gave aid to all heroes, especially those of the line of her father Zeus, she

helped Perseus in his task. She instructed him never to look at Medusa's face, but use a polished shield to locate his target. She persuaded Hermes to lend Perseus an adamantine sword, and instructed Perseus in how to seek out the Stygian nymphs, who had in their keeping a magic wallet that could safely hold any harmful thing, a pair of winged sandals, and a helmet of invisibility that belonged to Hades. Taking these items involved some trickery, but Perseus was successful both in seeking the necessary items and in using them to behead the female monster. He was winging his way back to Seriphos when he saw Andromeda chained to the rocks.

Perseus drew the Gorgon's head from the wallet and used it to kill Cetus the sea beast. He then claimed Andromeda as his reward, and though there was some disagreement initially about the arrangement, he eventually married her and carried her off to Seriphos. He used the Gogon's head to kill the treacherous Polydectes, raised the fisherman brother to the throne, and went on to Argos. He gave the Gorgon's head to Athena, who placed it on her shield, her aegis, as a symbol of power. In Argos, Perseus accidentally killed his grandfather Acrisius, as was foretold. In shame he left and founded a new kingdom, which eventually became the kingdom of Persia.[43]

Critical Examination of the Andromeda Myth

Several historical epochs have worked the Andromeda myth into alternate versions that reveal much about how Andromeda's tale is a metaphor for humanity's vision of itself in relation to the non-human. To best understand this, it

10. Perseus beheading the Gorgon
Greek Vase, 7th c. BCE

11. Perseus slaying Medusa
Boeotian Bowl, 7th c. BCE

12. Gorgon persuing Perseus
Greek Vase, 6th c. BCE

is necessary to begin with our own era's re-interpretation of the tale. Though it is presented as possibly more historically accurate than the common version, presented above, it is important to remember that the way a culture refigures a myth is more telling than whether or not the myth has become more accurate in the retelling. A story's goal is not factual accuracy, after all, although factual accuracy is a pressing concern for our current culture.

There is significant historical evidence that many of the Greek myths, the Andromeda-Perseus sequence among them, are the product of an effort of a conquering, patriarchally-organized, horse-riding culture that invaded the Mediterranean in 1900 B.C.E.[44] It appears as if they overlaid the local myths with their own interpretation, re-writing the narratives of an earlier, matrilineal society with stories about conquering the feminine and the non-human.[45] The significance of this for the Andromeda myth lie in the scraps of the earlier story that have survived.

The first portions of the earlier stories concern Medusa. In these versions, she is a beautiful woman who resists Poseidon's advances and is raped in Athena's temple. It is interesting, then, that Athena chooses to punish the victim of the crime. There is even a version of the myth where Medusa is not a monster at all, but a Libyan queen whom Perseus, as invader, conquers and decapitates. He buries her head in the marketplace as a source of power for his new kingdom, claiming the dead queen's potency in this act. Another fragment describes Hermes, not Perseus, being given gifts from the Stygian nymphs, not tricking the seeresses out of their powerful items. The wallet carries only the image of the Gorgon, as does Athena's shield in the later myth, but its purpose here is as a prophylactic, as a warning against the potent danger of the contents it carries. He has carried off the sacred items, the alphabet belonging to the Gorgons, who are goddesses, not monsters, and pursue him in their frightening masks.[46]

The second set of earlier fragments concern Andromeda. In Palestine (near present-day Jaffa), a similar story is told of the sun-god Bel or Marduk slaying the sea-monster Tiamat. This same story is also told in Hebrew mythology, where Marduk is not slaying a sea-beast, but the sea-goddess Ishtar or Astarte, who is chained to a rock, naked. She is not waiting to be rescued nor is she a pure sacrificial victim, but is being punished for her lecherous ways. Marduk has already killed her pet, Tiamat. Both Andromeda and Astarte's names translate into 'the ruler of men.'[47]

There is a consistent theme of earlier, more powerful feminine figures being vilified and rendered powerless in the transformational retelling from these older fragments into the common version recorded in historical Greece. This phenomenon is in keeping with Bataille's observation that very early mankind, during the civilizing process, rejected the non-human, and with it to some degree, the feminine, as a way to disassociate themselves from that which they could not control. All three victimized female figures, Andromeda, Medusa, and most of all, Cetus, who was originally identified as female, are conflated symbols of non-human and feminine power, a sort of nature-as-mother, from whence we mysteriously came. All three are not only made powerless in the common version of the myth, but their power is actually rendered over to Perseus through killing, through marrying and through wielding of powerful anatomy. The basis of Perseus's power, the first hero of Greece, is conquered feminine and non-human power. Mankind is telling itself that its power comes from the place that is feared, a feminine, non-human origin, and she must be conquered.

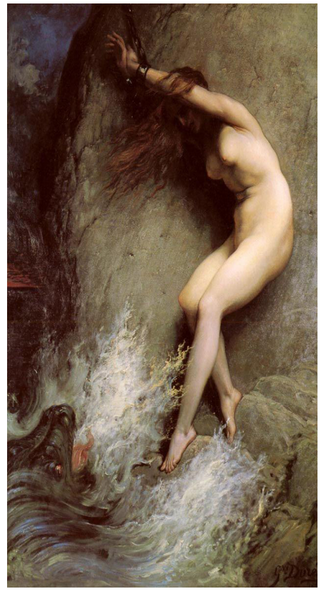
13. St. George and the Dragon
Paolo Uccello, ca. 1470

14. St. George and the Dragon
Russian Ikon, 16th c. CE

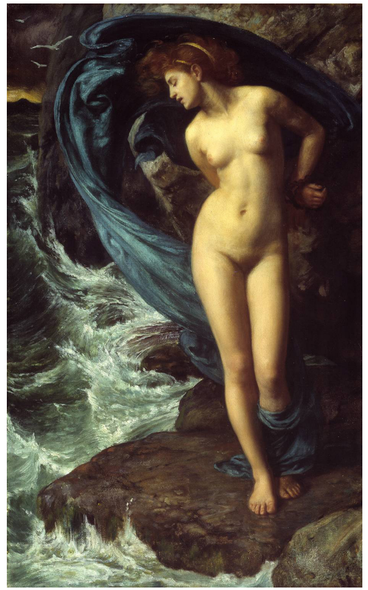
The medieval period reinterpreted the Andromeda myth as the tale of St. George and the dragon. It was widely depicted in image for centuries after its first appearance in the 11th century C.E.[48] It is, in essence, the same story, with the significant differences of the hero being a soldier-saint, his authority stemming from his piety, and the victim being a chaste maiden princess who prays to god for deliverance from her more arbitrary predicament, as no maternal hubris is included. The saint does not claim the maiden as his bride, but delivers her intact chastity back to her kingly father. He also does not kill the beast with immortal help, but uses the maiden's purity to lure the beast, now tame under the saint's influence, into the main square of the king's city. There St. George promises to slay the dragon if the people of the kingdom convert to Christianity, which they promptly do.[49]

These alterations to the story show a shift in attitude toward the feminine and the non-human. The feminine figure has no remnant of power, she can only turn to Father God for agency. The non-human figure is not truly to be feared, it is easily tamed and slain. Instead of seeing the double symbol of our non-human mother as powerful, potent, and vitally important to conquer, her two symbols are easily vanquished and all power is attributed to Yahweh. In renouncing fear of the non-human mother, no longer fearing her defilement or her slaughter, humanity is placing its identity in the hands of one who is so removed from the non-human mother that he casually trades her to sway the loyalty of souls to his cause.

During the Victorian era, the Andromeda myth was once again reworked, this time predominately, though not exclusively by a group of English artists and artisans, many of whom were involved in the Arts and Crafts movement. The Victorians inherited a fascination with the Greeks myths from



15. Andromeda
Gustav Doré, 1869



16. Andromeda
Edward Poynter, 1869

17. Perseus and Andromeda
Frederic Leighton, 1891

18. Perseus and Andromeda
Edward Burne-Jones, 1876

19. The Death of Medusa I
Edward Burne-Jones, 1882

20. The Baleful Head
Edward Burne-Jones, 1886-87

the Romantics, who created highly sexualized images of all of their historical and mythical Greek subjects. Andromeda is at first still depicted as a victim, but over time, came to be portrayed writhing in a kind of sexual ecstasy at Cetus's approach, who takes on markedly male characteristics. William Morris wrote and Edward Burne-Jones illustrated a small tome entitled, 'The Doom of Acrisius,' in which Perseus is sad to slay Medusa, still wanton here, but depicted as pitiful in her femininity, begging for death as a release from her misery in being so hideous. He slays Cetus with his sword, not the Gorgon's head. He shows Andromeda the Gorgon's head in the reflection of a pool, to quench Andromeda's curiosity, and they go on to found Mycenae, not Persia.[50]

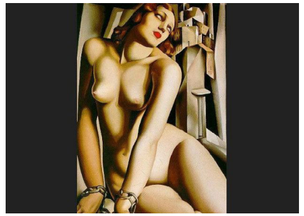
More critical examination has been written about the Victorian Andromeda than any other, mostly because the Victorians left more records about what they thought about her than previous eras had. Adrienne Munich writes the most comprehensively about Victorian depictions of Andromeda in her work, *Andromeda's Chains*. In it, she describes how Andromeda was used a symbol, mostly by male figures, to contain coded messages about repressed and changing gender roles. In an era when faint indications were beginning to show that women might regain some kind of agency, this time a less mysterious power than in ancient Greece, in their value as humans instead of their value as the cradle of life, men were reconsidering whether the female was to be pitied, to be rescued or to be feared once more.[51] Moved to offer women some share of their sense of capable humanity and at the same time quick to deny that women were strong enough to bear such a burden, Victorian men felt conflicted about feminine power.[52]

Thomas Albrecht explores Medusa as a symbol of repressed non-human femininity, and uses visual and literary

depictions of Medusa to illustrate how Victorian men were reconsidering whether the non-human, now considered to be tame at the dawn of industry, St. George's work finished, might still be vestigially powerful.[53] The ancient sea beast had been harnessed, vanquished to the point of loosing its original allure, so that now there was a desire, a fantasy that she might somehow have somehow retained some of her original, stolen power. In this case, art is the mediating prophylactic, the mirror-pool that allows safe gazing upon the potentially dangerous subject.[54] Perseus is now an effete, ineffectual figure; by embodying the feminine he has stolen, he loses power. The long-ago powerful feminine figures are reduced to figures only animated by lust, even if they wished some other fate, and they do not lust for Perseus, but their lost selves. Mankind is telling itself that it has alienated itself from the non-human so far that it now longs to save that which it once repudiated, the dangerous, non-human cradle of life.

Post-modern works depict Andromeda as a paradoxical figure. John Barth depicts her as Perseus's bitter consolation prize, a stand-in for his first love, the slain Medusa. His heroic deeds are now turning him to stone, and only by reuniting with his true love, a conjoined Andromedusa, can he be cured.[55] Jules LaForgue depicts Andromeda as a petulant, ignorant girl who is disappointed by the effeminate Perseus, and realizes too late that Cetus has been her truest companion.[56] In the Lovecraftian Gothic short stories of Caitlin Kiernan, Andromeda is a haunted, doomed creature, but ultimately also a willing, grotesquely sacrificed victim who, in her suffering attains a non-human beauty.[57]

These quite varied portraits share in common a reflection of humanity's growing recognition of a seemingly unrepairable separation from the non-human feminine symbol.



21. Andromeda
Tamara de Lempicka, 1927-28

22. Perseus
Max Beckmann, 1940-41

23. Role Reversal
Jade Christina Green, ca 2010

They reveal an undermining of the heroic masculine which points to a distrust in the power of humanity as an agency capable of any right action toward the non-human feminine. These portraits also call out an end to the romanticization of lust. The maiden is no longer an idealized sexual figure, and she no longer looks for rescue. Instead of identifying with Perseus, humanity begins to see itself in Andromeda, the reanimated feminine. She owes her power not to futile, daring feats that defy reality, but from acceptance of her return to her origin.

After many generations of wearing the guise of heroic Perseus, carried from a lust for conquering, a lust for taming, to a lust for saving, finally we are left with Andromeda's guidance: the return to the non-human feminine is a worthy death, if we could but accept it as such. Whether through actual death or ritual death that transgresses taboo, there will be a cathartic return to the non-human. There is also the notion in Andromeda's example that this figure does not benefit from being saved, that humans do not need to figure out how to save the non-human feminine by carting it off to Persia to use a womb. If she is in peril at all, she is also already saving herself, for Cetus was never a true enemy. Is there a war at all but the one that humans told themselves was happening while misreading a sacrifice? For regardless of human intentions or actions, non-human cycles will relentlessly continue with their processes of life and death. It is the self-awareness of the post-modern Andromeda that makes this bearable: the sacrifice must be made, death will occur, the non-human mother will be denied and defiled, and will be the ruler of men in the end, anyway. Whether the awareness is a comforting or bitter one depends on the amount of acceptance.

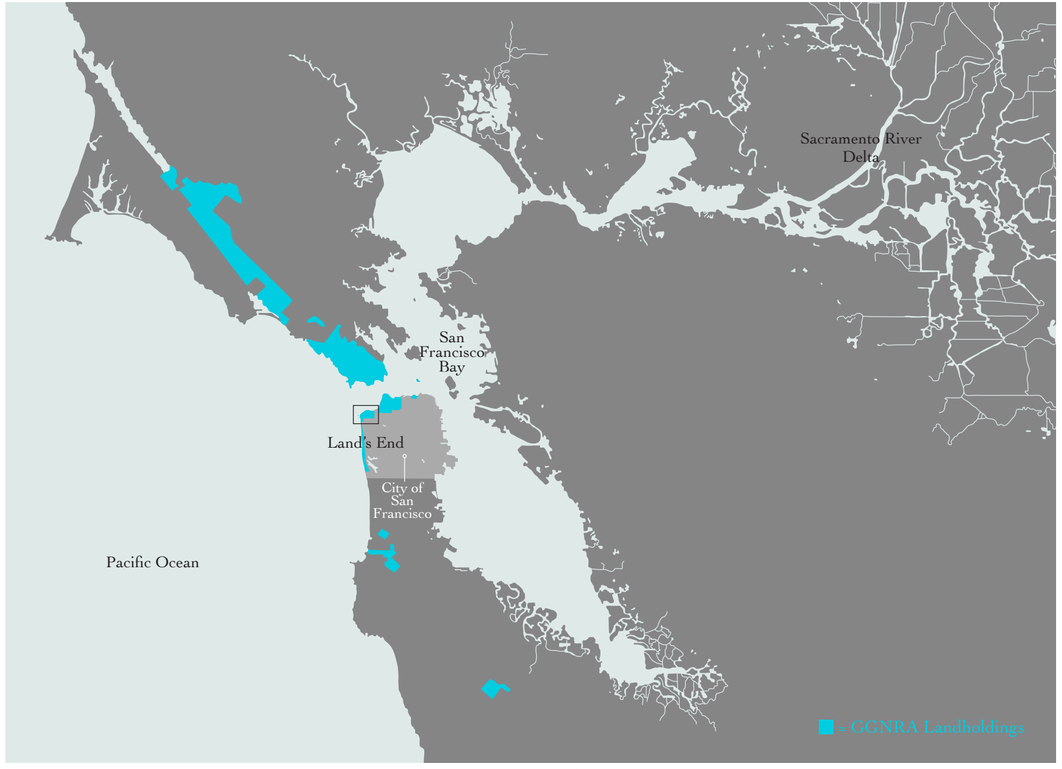
[land's end, san francisco]

B. Site Observations

Site Description

The site for this thesis is Land's End in San Francisco, California. However, this is not a rigorously defined or commonly agreed upon name for this parcel of land, nor are there any others that are better, and so requires some description to define.

The site was chosen because it contains the remnants of the Sutro Baths, which will be described in greater detail further on. These historic ruins are the surviving fragments of what was the largest indoor saltwater bathing facility in the world when it opened in 1896, and which burned to the ground in 1966.[58] There had been an interest in using the baths as a place to test the reclamation of urban bathing areas as a way to bodily connect humans with the non-human systems around them, but this idea was challenged by the site itself. Not only is there strong local opposition to any change to the baths ruins, but the ecological evidence points to an ecosystem in release phase, slowly undergoing a regime change from beach to estuary. While this makes for a very interesting and instructional subject for study, and indeed, many of the subsequent design moves are based on examples found in the baths ruins, it no longer seemed advisable to simply renew the baths for human use. At this point, the site boundaries were thrown out wider to include

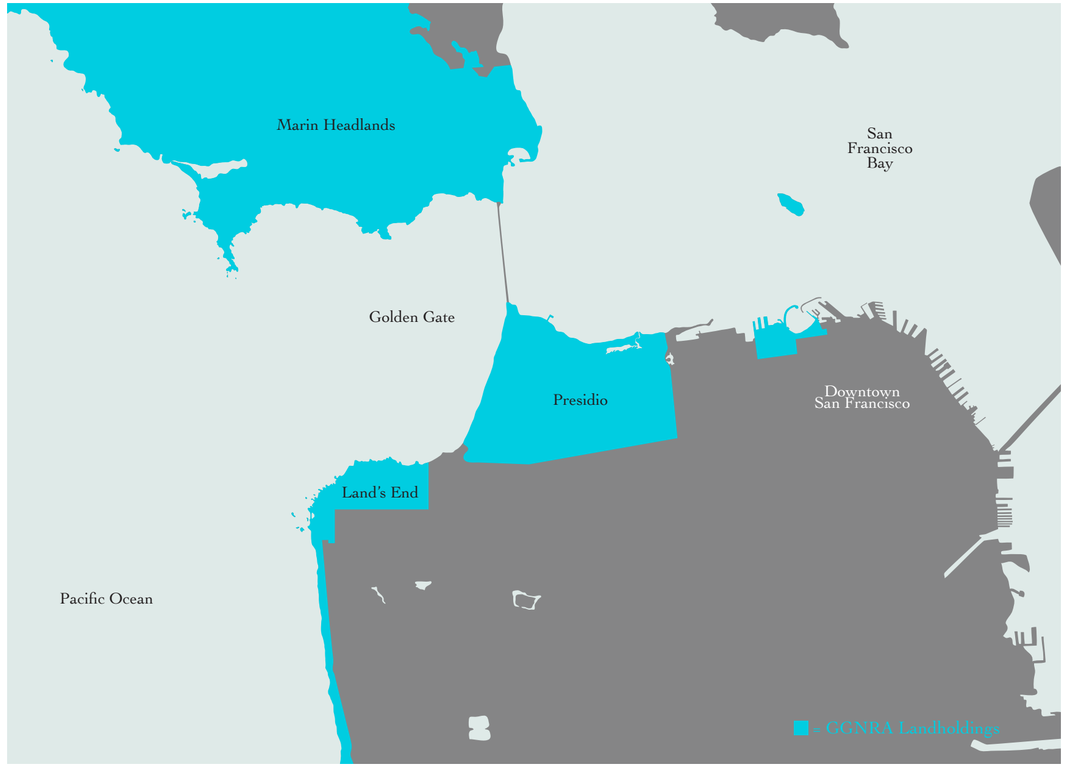


24. Map of the San Francisco Bay Area

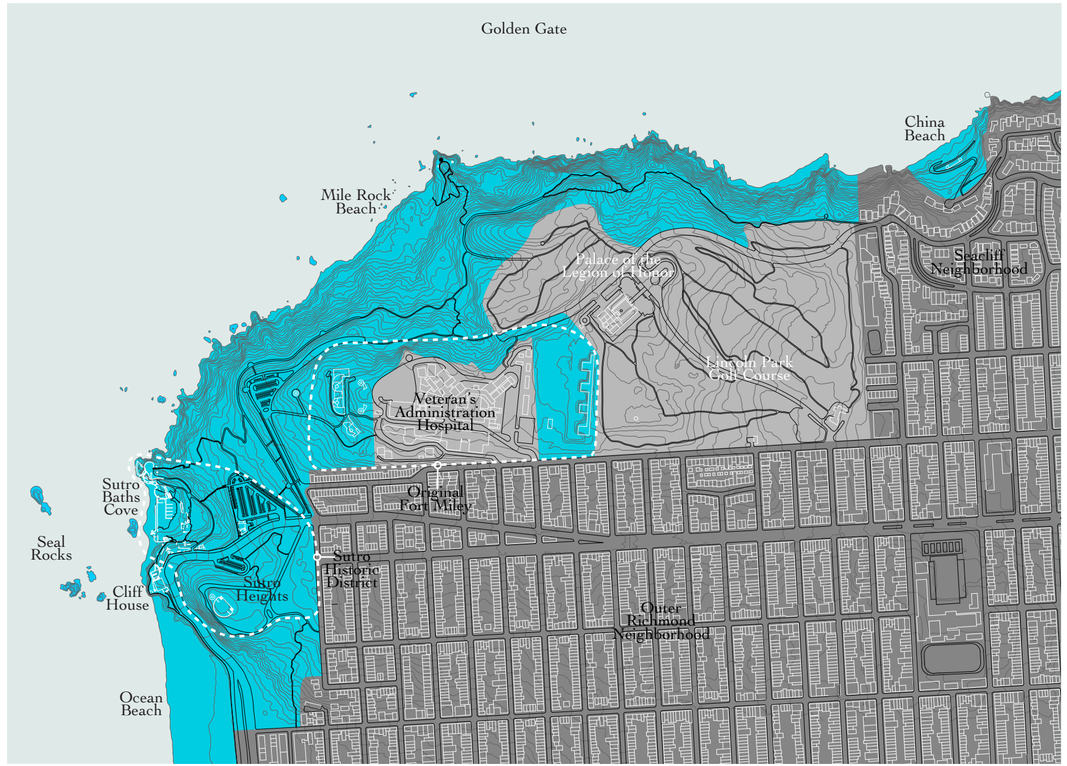
the whole park that contained the baths ruins. This is the Land's End area. Because the Sutro Baths were the original site of research for this project, they were the most intensely studied part of Land's End.

Land's End is situated at the northwest corner of the city of San Francisco. The city is located on the southern peninsula that lies between the San Francisco Bay, the largest estuary on the west coast of the Americas, and the Pacific Ocean. Less than two miles separate this southern peninsula from a northern peninsula, part of Marin County, that helps enclose the bay. The narrow opening between the two peninsulas is called the Golden Gate. Land's End is bordered on the north by the Golden Gate and on the west by the Pacific Ocean. Its other two borders front the neighborhoods of Outer Richmond and Sea Cliff, which are moderately dense urban residential districts.

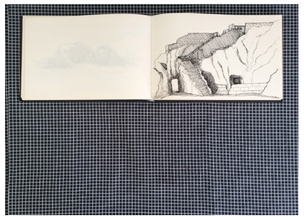
The reason there is difficulty in naming Land's End is that the land parcel has had a piecemeal history and use. Most of it is currently owned by the United States Department of Interior, National Parks Department, and is part of a large park called the Golden Gate National Recreation Area (GGNRA), whose landholdings extend across three counties. The GGNRA is a conglomeration of open spaces for which various local grassroots political movements sought protection during the 1970s.[59] The Land's End parcel was a combination of the remains of an old army base, Fort Miley, along with what is sometimes called the Sutro Historic District, which contains the remnants of the baths and also the remnants of the Sutro Heights estate. There are also very steep coastal areas never claimed by anyone until they were incorporated into the park. The San Francisco Veteran's Administration Hospital, which was originally on Fort Miley grounds, was left out of the GGNRA parcel, as was Lincoln Park, a San Francisco city park



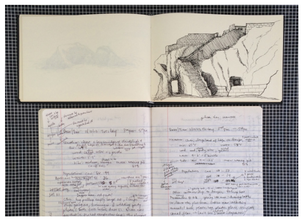
25. The Golden Gate and Vicinity



26. Land's End and Vicinity



27. Traditional Architectural Field Notes



28. Including Naturalist's Field Notes

that contains a golf course and houses the San Francisco Palace of the Legion of Honor, which is an art museum. These parcels of land twist past each other in a confused array.

The National Park Service calls this portion of the GGNRA 'Land's End' and this name has been used on and off by locals throughout the last century. It is also sometimes called Point Lobos, although this confuses it with Point Lobos in Monterey, and does actually signify a specific promontory within the larger Land's End area. Most San Franciscans refer to the specific area within the park that they intend to visit when they designate a destination.

Submersion in Site

One of the first modifications to common architectural practice in this project was to study the site far longer than an architect normally would, coming closer to how long an ecologist would study a site. From mid-August to mid-December 2013, the site was visited two to four times a week, usually for about two hours, but sometimes as little as one hour or as long as seven hours. During these visits, typical architectural methods were used for observing the site, including sketching and extensive photo documentation. However, at the same time, field notes were taken about both the human and non-human populations on the site, as well as some general data on meteorological conditions. These field notes resemble the kind of journal entries that naturalists used to make a century or two ago when first surveying undiscovered territories. The format is not rigorous, but is more of a tool to allow the scientific eye to wander over the landscape and begin to consolidate an understanding of place. Data is collected, but of more importance are the general observations, which allow the field observer to think in written format, and look over their thinking at leisure once they are no longer in the field. These types of notes do not require a particularly deep understanding of ecology, but are effective in attuning the observer to the non-human (and also the human) world. Samples of these observational journal entries can be found in Appendix A, and the descriptions they contain are summarized as follows.

The climate was cool and mild, and heavily influenced by the close proximity to the ocean. The general weather conditions varied from dense, low fog to completely clear and sunny, with high overcast as an intermediary state. The weather tended to the foggy side during the first month, but was predominantly clear for the next three months. California was experiencing a drought at this time, part of a La Niña - Southern Oscillation cycle. The prevailing daytime winds came from the west-northwest, with a late summer shift sometimes to the southwest or west. Rare inversion currents came from the south-southeast, as did nighttime off shore breezes. Wave height was at times high but never extreme, as there were no major storm events during the period of observation, nor were there extremely large tidal height differences.

Air Temperature Range:	74 - 45 ° Fahrenheit
Water Temperature Range:	63 - 50 ° Fahrenheit
Wave Height Range:	1-8' with up to 12' swells
Observed Tidal Range:	+6.8' to -1.4'

29. Strong WNW Onshore Winds

30. High Tide, December 4

31. Low Tide, August 23

32. Several Gull Species on Fisherman's Rock

33. Gulls and Pelicans on Seal Rocks

34. Vertical Zonation of Invertebrates in the Intertidal Zone

The land consisted of steep, rocky cliffs bordered by the ocean, with small coves carved out in places, some with small beaches. The Sutro Baths ruins were in the largest of these coves. The land was undergoing active erosion. During the period of observation, the beach at the Sutro Baths' cove lost up to five feet of sand at scour points. Many rocks projected above the ocean's surface just offshore, and were usually covered with sea birds. The hills above the cliffs were tree-covered, and interlaced with paths and remnants of past human activity. Both human and non-human systems appeared to be predominantly in the release phase of ecological life cycling.

Seabirds and shorebirds dominated Land's End: they were by far the most numerous non-humans on site, and their presence, their smells, their feathers, their cries were thickly laid over the landscape. The seabirds were mostly gulls* along with cormorants and pelicans. Shorebirds sighted include plover, surfbirds and black turnstones. The numbers of sea- and shorebirds made it clear that the waters held abundant sea life, as did the almost weekly sightings of harbor porpoises, sea lions, harbor seals and during one week, what can be assumed to be two migratory gray whales. At the intertidal zone, numerous crustaceans and other invertebrates were observed in typical vertical zonation patterns, crowding along the water's edge with light and dark patches. Their populations included aggregating and green sea anemones, sea stars, mussels, acorn barnacles, limpets, periwinkles, and lined shore crabs.

Numerous seaweed species typical of the central California coast were also observed below the tide line, including coralline algae, bullwhip kelp, and dead men's fingers. Because Land's End experiences strong scouring and deposition of sand at the tide line, these algae were often buried, bleached and re-exposed, their ghostly fronds a curious anomaly until time revealed the whole process.

*Names of the specific species are found in Appendix C, both for ease of reading and because the species were not taxonomically identified in the field.

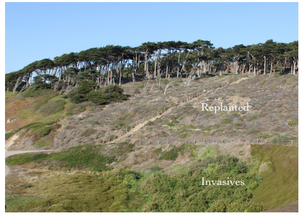
There were several pools of water still held in the ruins of the baths which were now thickly bordered by marsh grasses. This water contained extensive algal vegetation, some of which caused strong turbidity, and was therefore likely single celled and suspended in the water. There were also at least one algal species that was matting, and another filamentous. These algal populations underwent just over four eutrophication cycles during the observation period, where they exhibited explosive growth followed by a massive die-off period. This eutrophication was a bit of a mystery at first, and prompted the author to do water quality testing. The test results were less interesting than all of the attention the testing caused. Many passersby wanted to know the health of the water.

Initial water quality sampling revealed that the water in the pools was composed of a fresh water layer at the surface, with increasing salinity (not reaching ocean salinity) as depth increased. This is consistent with an estuary system. The source of freshwater was a spring located approximately 100 feet east of the pools. The water was free from pesticides and heavy metals, but tested positive for the presence of harmful E. coli bacteria. The water exhibited an elevated pH, had higher than normal sulfate levels, and a lower than average dissolved oxygen content. It was also quite warm, averaging only 2-5° F below the air temperature during the day, and consistently exceeding nighttime air temperatures by 2-5° F. A table listing the water quality test results can be found in Appendix C. These results indicate a stagnant, slightly nutrient-overloaded water system. Where these nutrients were originating from is still unclear, but the high amount of

35. Main Pools

36. Settling Pool

37. Seep Springs



38. Native vs. Invasive Vegetation


39. Native Re-Planting


40. Native Beach Strawberry

sulfates without high amounts of phosphates implies that it is something more than just typical urban runoff.

The pools of water in the ruins were used extensively by the sea birds for bathing, and they were joined by the presence of water fowl, whose numbers grew as the season changed to winter. The water fowl sighted were mallards, ring-necked ducks, coots, grebes, and great blue heron. Above the pools on the forested hills, the terrestrial bird populations observed were red-tailed hawks, crows, ravens, Brewer's blackbirds, hummingbirds, and sparrows. The burrows of ground squirrels were identified, but their makers never sighted. A coyote was observed early one morning, and other notices of coyote sightings were frequently posted in the park.

The land vegetation was difficult to understand through observation only. Most of the vegetation was low ground cover, with scrub brush in areas where there was likely more fresh water. The brush had been thinned in some areas, and the debris left behind. The ground cover appeared to consist of two distinct populations, one invasive and more successful (grew in larger patches, had healthier foliage) and another that signs indicated were native, but had been recently planted. The native vegetation did not appear to be as healthy as the invasives; many of the places where small flags indicated previous plantings were now bare ground. Many of the natives that survived had shriveled, discolored foliage and did not cover the ground. Invasive ground covers included mattress vines, ice plants, and stink beans. Native ground covers included the beach strawberry, dune tansy, and bush lupine.

There were also significant stands of Monterey pine and Monterey cypress covering the park above the eighty foot elevation level, but many appeared diseased, and some had been pruned. There appeared to be an extensive human

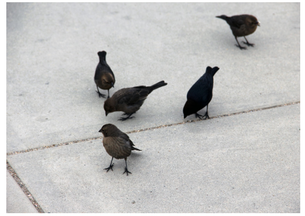

Marsh Grasses

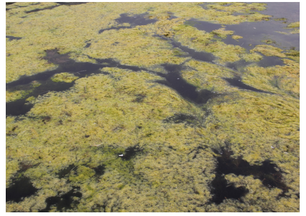

Bathing Seabirds


Coyote


Filamentous Algae


Non-Native Monterey Cypress


Brewer's Blackbirds


Matting Algae


Invasive Mattress Vine


Red-Tailed Hawk

41. Biota of Land's End

42. Tourists

43. Recreationalists

44. Wanderers

modification program affecting the land vegetation. Later site visits revealed actual work parties undertaking a thinning of invasive plants and planting of native plants.

The extent of human occupation appeared to have shrunk from that of previous periods, with new, small built structures mostly around the upper plateau above the Sutro Baths cove. Humans had left extensive remnants of previous habitation on the site, which looked to have been displaced and weathered by the oceanographic and geological forces working on the site.

Humans were a constant presence on the site, engaged in three distinct use types: tourists, local recreationalists, and a looser third category including wanderers, revelers or scavengers. Tourists stayed to the view points and concession facilities for the most part, and were by far the largest group. Local recreationalists were the next largest group, and were engaged in hiking, running, walking, cycling, skateboarding, fishing, surfing, wading, parasailing and small boatcraft. This group were often accompanied by dogs both on and off leash. The last group, the wanderers, revelers and scavengers were those who engaged with the ruins or the steep cliffs, often going past marked barricades or into dangerous, off-trail terrain. Sometimes they did damage to the ruins or other material. Sometimes they harvested local biota (fish, crab, mussels). Sometimes they altered the site with graffiti, midden heaps or other extemporised outdoor art. Some, though it should be stressed not all, were likely homeless, and some though certainly not all were observed to be under the influence of drugs and/or alcohol. They tended to by young (less than 30 years of age), and usually came in groups of 3-7. Much, though not all of their activity appeared to be nocturnal, as evidenced by ashes left from small bonfires, vast amounts of broken glass from bottles, and odd assortments of discarded clothing items.

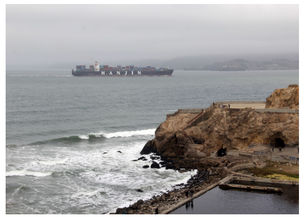
There were more than double the numbers of people on the site on the weekends than on weekdays.

Ships could be seen coming in and out of the Golden Gate, or more rarely, crossing closer to shore, headed along the coast. Ship traffic most often included the frequent back and forth of container ships, both laden and empty along with their accompanying pilot boats, tugs and barges. Pleasure craft were the next most frequent type of watercraft seen, both wind and motor powered. Fishing rigs were sighted, mostly at the end of the summer season. Military ships and coast guard vessels were sighted, but least frequently.

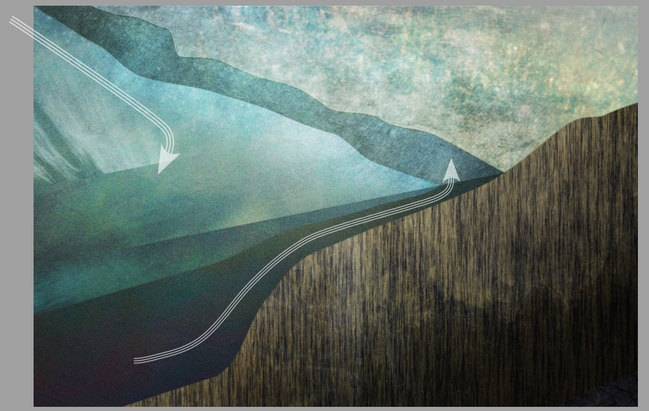
Although the Sutro Baths ruins are not the main site of design intervention, they must be credited with teaching the author about interactions between human structures and non-human forces. By spending many hours in this place, by drawing, photographing, testing water quality, by walking through the landscape slowly, by allowing the gaze to wander aimlessly up and down its steep hills, by simply putting in enough hours to be present when small, crucial acts were performed, by living in this place, the whole body could come to know it. While some frame the decay of the ruins as a reclamation by the non-human, the author came to see this process as a slow revealing of what the original buildings had changed about the non-human things that pre-dated them. The water had enough time to show how the seawall deflected the waves, the algae had enough time to show how the concrete pool beds isolated them from the sea, the sand had enough time to show how the foundations found poor purchase in the loose shoulders of the land. These lessons formed the foundation upon which later design was based.

45. Revelers

46. Scavengers



47. Container Ship Entering the Golden Gate



48. Diagram of Coastal Upwelling

C. Site Histories

Non-human History

Several oceanographic and geological phenomena are crucial for understanding the condition of Land's End and the life, both human and non-human, that it hosts. The ocean is very active next to Land's End, and so are its life forms, but the land is a little undernourished, and is home to many scavengers.

The most influential non-human phenomenon that affects Land's End is the coastal upwelling that occurs right offshore. Coastal upwelling is caused by the prevailing counter-clockwise spin of air over the basins of northern hemisphere oceans, which is in turn caused by the spin of the Earth, or the Coriolis effect. This effect can be described as follows: when air from the ocean meets land, it tends to be blocked by land masses and runs parallel to the shore. The spin of the earth skews this to the left in the northern hemisphere, and at the western edges of continents or the eastern sides of ocean basins, this is in the offshore direction. This action moves the surface water, which is similar in temperature to the air, away from the shore. What takes the place of the surface water one would expect to find near the shore is very cold, very deep water that wells up from the ocean floor. This does not happen as a sequenced act, it is continually occurring.[60]

49. The Effect of Salty Fog

50. Seep Surfacing at Beach

51. The Mile Rock Seep in 1930

The very cold water upwelling from the oceanic depths does two interesting things. The first is that it brings with it the detritus, the decayed waste and dead fragments of ocean life that sank beyond the day-lit zone where they could have remained in the recycling of life nutrients. This is a major limiting factor for oceanic life, the fact that shed nutrients are so often lost to the darkness. Upwellings return these lost nutrients to the lit surface, and are incredibly productive waters, which is evidenced by the large numbers of marine mammals visible at Land's End.[61] If the upwelling occurs near a hot landmass, as it is for much of the year near central California, it also has the effect of creating fog much the same way droplets form on the outside of a glass of ice-cube chilled water in hot weather. Coastal upwelling is the engine driving Land's End's (and San Francisco's) famed fog.[62]

The moisture in the air is not entirely from precipitation, however. Some of it is particularized ocean water, and is therefore salty. This salty fog discourages plant growth on land, not entirely, but enough that the native biome for this region is sand dunes with patches of grass and brush. While there is little left of the sand dunes either in Land's End or elsewhere in the city limits, the salty fog still corrodes away material on land, which is often most visible on metal surfaces. The fog causes a fairly constant, if thin level of precipitation onto the ground and powers several small underground streams, or seeps. Because the soil is quite loose, these seeps are able to move the land above them fairly quickly. The steep topography, caused by wave erosion, makes these seep shifts rather dramatic. It has been impossible for any road or path that traverses Land's End to last more than a decade intact.[63] The cove that housed the Sutro Baths contains one major and several minor seeps, and these made the baths expensive to maintain: the pools were built on shifting soil.[64]

The soil itself is another major determining factor for life at Land's End. The geological history of Land's End is entirely aquatic-influence. During warm interglacial periods, the area was part of an enlarged San Francisco Bay, and received the finer still-water deposits that abound in an estuary: mud and silt. During cold glacial periods, this area was next to the extended Sacramento river (the Bay was gone during these periods) and received coarser river sediments: sand and gravel.[f] Much of the upper soils are packed sand and silt eroded from the Sierras, deposited during the Cenzoic period, and subsequently uplifted. These soils are part of what are known as the Merced and Colma Formations.[65] These are overlaid with loose sand from Sacramento River deposition, also later uplifted. Below the sand is graywacke, a metamorphic rock that dates from the mid to late Jurassic period.[66] It was formed when underwater landslides compacted marine sediments consisting of plankton shells, detritus, sand and finer rock debris. This conglomerate was further compressed over time, and also subsequently uplifted.[67] Graywacke is stone, but not a very hard stone, fairly easily eaten away by wave action. Land's End is a geologically unstable place, even without considering the nearby San Andreas fault, which runs out to the sea somewhere just south of the park.[68]

Land's End's adjacency to the Golden Gate means that it shares in the effects of the Golden Gate's currents, which are treacherous. An enormous amount of water moves back and forth between the ocean and the Bay, around 390 billion gallons, usually twice daily.[69] In fact, there is a permanent outflow of water at the surface, and a permanent inflow of water near the floor of the Golden Gate. The tides simply change the relative proportion of these waters.[70] The Bay itself is relatively shallow, around fourteen feet, on average, but the Golden Gate plummets to 300 feet in depth.[71] More water leaves than enters, since the entire Central California

52. Hard-Packed Sand

53. Graywacke

54. Coastal Erosion

55. Advisory Notices


56. Aerial Photograph of San Francisco's Outside Lands ca. 1920


57. Outer Richmond Neighborhood, 1947

watershed, an area of around 22,500 square miles empties through the Bay and the Golden Gate.[72] This much water moving so frequently through such a narrow space results in very strong, very complex currents. Rip currents are common, and there are advisory notices all around the beach areas of Land's End, warning about the risk of drowning.

Abundant sea life was the first thing that humans noticed about Land's End. The rocks off of the Sutro Baths cove are called 'the Seal Rocks,' and were covered with California sea lions until consistently available food appeared after the building of Fisherman's Wharf in downtown San Francisco.[73] However, the harsh conditions on land made human settlement difficult. The majority of the housing in the Outer Richmond and Sea Cliff neighborhoods were built between the 1900s and 1950s, a hundred years after San Francisco was handed over to the United States by Mexico.[74] All of the land west of San Francisco's middle spine of tall hills was called 'the Outside Lands' and was late to develop because of the distance, the hill barrier, and the shifty sand dune terrain. It still takes less time by foot, by bicycle, by public transportation or private car to get to the suburb of Oakland than it does to get to Land's End from downtown San Francisco.[75] The non-human discourages permanent settlement for humans at Land's End.

Human History

The first people to inhabit Land's End were the Native Americans who lived on San Francisco's peninsula, the Ohlone. They used Land's End as a seasonal camp for collecting

shellfish, and left behind shell middens, which still exist on site.[76] Some of them are intermingled with the ruins of the Sutro Baths, others are further north along the coastline, and the park keeps them unmarked to discourage their displacement. The Ohlone lived relatively undisturbed in the Bay Area for tens of thousands of years until the Spanish arrived in 1769.[77] The Spanish easily enslaved the Ohlone, whose numbers had never exceeded ten thousand. Between harsh treatment and the unintentional spread of new diseases, the Spanish wiped the Ohlone out by 1850.[78]

The Spanish left little mark on Land's End except to name Point Lobos, which is a shortened form of Punta de Lobos Marinos, revealing that the Spanish noted the presence of the sea lions on Seal Rocks.[79] In 1848, San Francisco was made part of the united States, and Land's End along with it.[80]

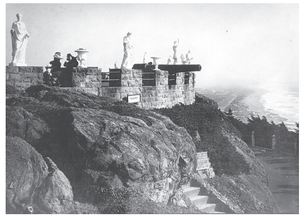
Amusements on the Back Porch of the Continent

In 1858, the Cliff House was built from the salvaged timber of a shipwreck, and perched on the most southern rocky point of Land's End.[81] It was reached by horses and carriages that drove across the dunes to enjoy the seaside. It became a popular day trip spot for San Franciscans, and eventually the Point Lobos road was built to connect the city to the Cliff House, which at that point had undergone an upgrade.[82] When Geary Boulevard crossed the entire city a decade later, this increased the traffic to the Cliff House, and also to the newly completed Golden Gate Park whose western terminus is just below Land's End.[83]

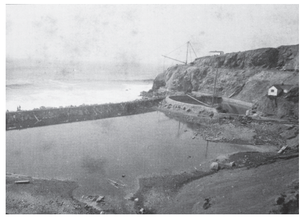

58. Ohlone Shell Midden


59. 3rd Cliff House, 1885

60. Adolph Sutro



61. Sutro Heights parapet, ca. 1890



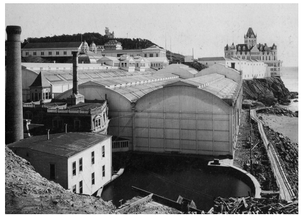
62. Aquarium, ca. 1890

In 1883, Adolph Sutro purchased the Cliff House, most of Land's End (excluding Fort Miley and an adjacent pauper's cemetery), a large ranch to the southeast of Land's End, as well as extensive property in the central ridge hills.[84] This property altogether is estimated to have been about one twelfth of the land in the current city of San Francisco.[85] A German-Jewish immigrant who arrived in San Francisco in 1851, Sutro had stubbornly and successfully petitioned the U.S. Congress to lend him their support in a private business venture to build a drainage tunnel under the silver mines in the Comstock region of Nevada. The tunnel earned him millions of dollars, almost all of which he invested in San Francisco real estate and in his properties at Land's End.[86] He led a city-wide effort to plant trees to stop the erosion of his sandy lands, including the Monterey pine and cypress that currently cover Land's End.[87]

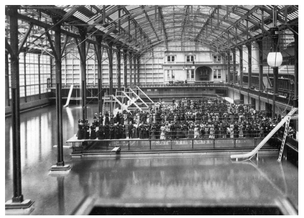
Sutro got a small cottage as part of his Land's End parcel and used it as a vacation home. He renamed the area 'Sutro Heights' and began extensive landscaping efforts, at first just around the cottage, and then down in the cove below.[88] He renovated the Cliff House around this time as well, re-establishing it as a family-friendly wooden Gothic castle.[89] He used his experience with tunneling to begin altering the tidal basins in the cove so that they would hold more water and planned to turn them into an outdoor aquarium. He hollowed out the side of one cliff, turning it into a wave collecting pool, and blasted a canal through the bedrock to an adjacent settling pond. A seawall was constructed to protect the settling pond, but it took three tries to get the rock and concrete wall to stay put in the shifting sand. Visitors to the Cliff House began stopping off at Sutro's gardens and pools, and Sutro encouraged this, building a viewing parapet at the Heights and making even larger plans for the pools below.[90]

63. Sutro Historic District

64. Sutro's Street Car Line, ca. 1930



65. Sutro Baths, 1894



66. Sutro Baths, 1894

At this time Sutro was beginning a political career. Both because of his ethnicity and also because he had used Congress, not the San Francisco banks, to push forward his Nevada drainage tunnel, Sutro had never been socially accepted by the wealthy elite of San Francisco.[91] The populist party asked him to be their candidate for mayor, and he agreed, making many statements about how he would rather win the favor of the working man than his fellow millionaires.[92] At the same time, Sutro decided to turn his nascent aquarium into indoor saltwater bathing facilities. He held a competition for a design and poured over a million dollars into its construction. Large steel truss systems provided the main structure, with wood and concrete connecting them to the ground. Glass clad most of the exterior.[93]

Sutro refused to open the baths to the public when they were finished in 1894, because the street car line that by then had been established out to Point Lobos raised the fare once the baths began construction. When the street car line refused to lower the fare, Sutro built his own street car with a depot at the entrance to the baths.[94] He made statements to the local papers that he did this because he wanted to ensure that the working man could afford to come out to his baths.[95] In 1896, once his street car line was finished, the baths opened.[96] This was the same year that he was elected as mayor.

The pool buildings enclosed just under 13,000 square feet, and featured one large swimming pool of unheated seawater, five smaller pools with seawater at varying temperatures, and a freshwater plunge pool supplied by the seep springs.[97] The wave collection pool could not provide adequate inflow of fresh seawater, so coal-powered pumps had to be installed.[98] There were thousands of dressing rooms, several restaurants, gallery seating for thousands of spectators and an arcade

where Sutro put on display an odd assortment of things he had collected on his travels.[99] The income from bathers did not begin to cover the operating costs, so spectacular events were organized to attract visitors, and one pool was covered with wood planks to make a permanent stage. Sutro began to charge ten cents for swimming and five cents just for looking, which at the turn of the last century, clothing being what it was, made it into a kind of peep show.[100] Though Sutro said that the baths were part of an effort to provide hygienic refreshment for the working class, it is clear that from the start the place had an air of a cheap theatricality, even borrowing amusement rides from a nearby fair at one point.

Sutro died two years after opening his baths, and his estate was cash poor and land rich. His daughter sold much of the real estate, and his grandson took over the management of the baths, but they never turned a profit.[101] They required constant repairs, having been built over a sandy cove that housed an active spring that sometimes used to pool up into a small estuary. Several attempts at make-overs tried to renew the public's interest in the baths, but they remained a novelty for weekend amusement. In 1934, an ice skating rink was built over a drained portion of the baths to draw new crowds.[102] By this time a whole host of amusement activities has sprung up around the Cliff House and the Sutro Baths, and the entire district was a kind of west coast Coney Island. There were odd collections of buildings encrusting the hillside below the Point Lobos road with small shacks containing displays of things like medieval torture instruments, stuffed animal carcasses, mummies and an extensive collection of automatons known as the Musée Mécanique.[103] The theme was almost always related to death or sex, and viewing could be had for very little money.

67. Sutro Baths, 1905

68. Sutro's Original Collections, ca. 1910

69. Sutro Skating Rink, ca. 1940

70. Fire at Sutro Baths, 1966

In 1952, the Sutro heirs sold the baths to the owners of the largest neighboring amusement park, who drained the remanining baths. Extensive repairs and necessary improvements to meet new health codes would have made their operation cost prohibitive.[104] Even with the income from the skating rink, restaurants, and collections, the new owners also lost money. The baths were closed down in 1966, and a mildly suspicious fire burned the structure to the ground in June of that year.[105] The owner had sold the property to a developer, but when the fire put the forgotten behemoth back into San Francisco's scope of notice, great public outcry arose in protest against the idea that the cove be turned into just another residential development.[106] The Sutro Heights had been bequeathed to the city of San Francisco as a park by Sutro's heirs in 1938, and it was proposed that this parcel and the baths cove be put under national park protection. In 1977, the baths, the heights, and the Cliff House were all made a part of the Golden Gate National Recreation Area.[107]

Defense and Commerce in the Golden Gate

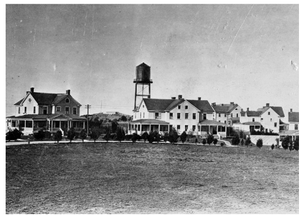
Defending the Golden Gate from invaders by sea was the key to protecting the Bay Area before the advent of modern air and submarine defense. The first thing the Spanish built when they arrived was the Presidio of San Francisco, an army base with guns pointed over the straits of the Golden Gate.[108] The Presidio was still in use for coastal defense, now by the United States when, in 1890, the U.S. Army claimed the parcel of land that would become Fort Miley.[109] Situated on the upper hills of Land's End, Fort Miley was part of a plan for more extensive, future coastal fortifications.

In 1898, during the Spanish-American War, a signal corps encamped at Fort Miley to alert the possible approach of enemy ships.[110] In 1899, construction began on a battery for two disappearing guns, and a third non-disappearing gun was added in 1903.[111] The emplacement was called Battery Chester, and it could deliver thousand pound projectiles to any of the three main approach paths to the Golden Gate. A separate emplacement for sixteen mortar cannons, Battery Livingston-Springer, was built just to the east. Smaller emplacements were built down on the sea cliffs and at Sutro Heights, as well.[112] These emplacements were part of a larger effort for coastal defense of San Francisco, which left many similar gun emplacements on the west coast of both the northern and southern peninsulas that frame the Golden Gate. None of the guns were ever fired at an enemy.[113]

A parade ground, barracks and offices were built to the east of the emplacements in 1900, but by the 1930s, the parade grounds were converted into a Veteran's Administration Hospital, and the surrounding barracks and offices were demolished.[114] The guns at Battery Chester became obsolete, and were scrapped for metal in 1943.[115] Another, longer-range set of guns, Battery 243, were put in just behind Battery Chester in 1944.[116] These newer guns were designed to target submarines, and are among the last emplacements built in the United States for traditional coastal defense.

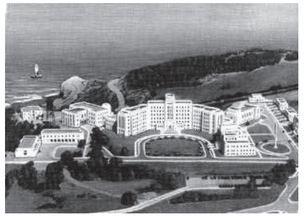
It was not only the military who watched the Golden Gate, however. During the Gold Rush (1848-1855), a small lookout station was built on Point Lobos, above what would become the Sutro Baths cove, for the Merchant's Exchange.[117] They used semaphore (flag) signaling to report ship names and insignia back to the Embarcadero, where stevedores, hoteliers, taxis, and tug boat operators alike could prepare for

71. Disappearing Guns at Battery Lancaster, ca. 1900



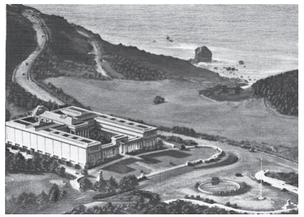
72. Fort Miley, ca. 1910

73. Battery Chester



74. San Francisco Veteran's Administration Hospital

75. Octagon House, 1927

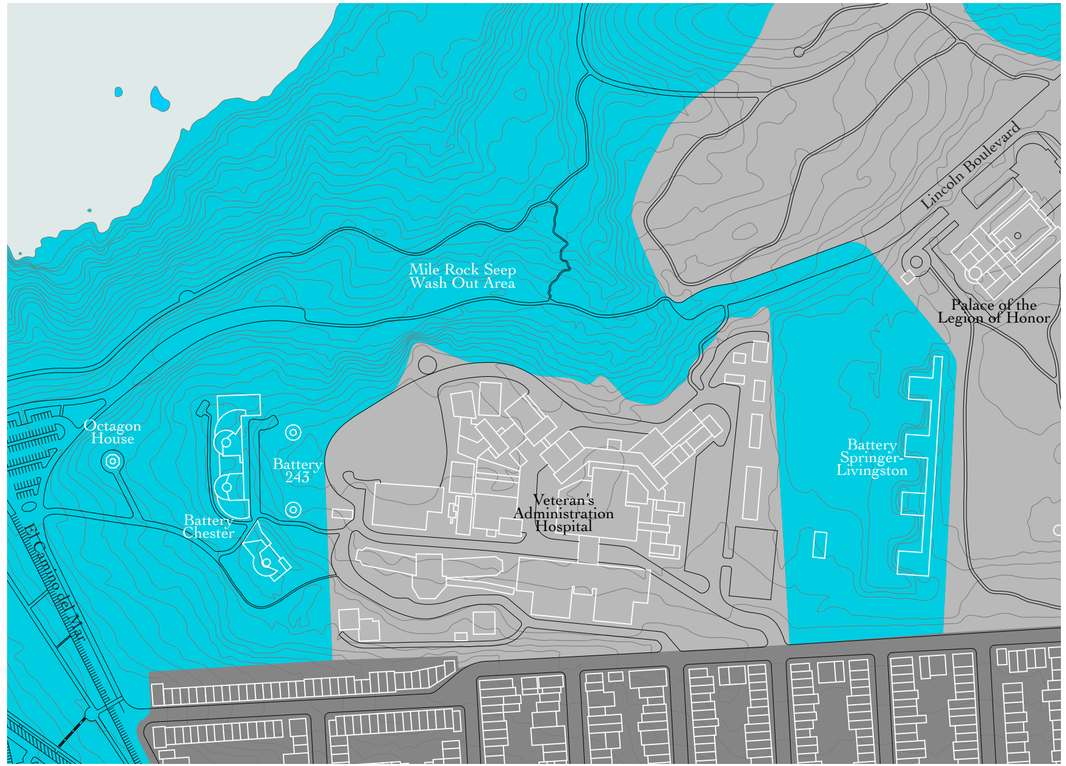


76. Legion of Honor and Lincoln Golf Course

the ship's arrival.[118] When telegraph lines were laid in 1853, the flag signaling became obsolete, but the station remained important.[119] When Sutro bought his land, including Point Lobos, the lookout was moved north. It was moved again either due to coastal erosion or possibly the obstruction of scenic views, and in 1927, came to occupy an octagonal shaped house just below Battery Chester that stands today.[120] The last lookout died in 1975, and his family was allowed to stay in the house until the last member died, in 2002.[121]

Though Lincoln Park is not a part of the GGNRA, its lands are commingled with theirs, so a short description of Lincoln Park is necessary. Once a pauper's cemetery (1860-1909), the land was converted to a park in 1909, and named in honor of the Lincoln Highway, which had its western terminus at the east edge of the new park.[122] The Lincoln Highway was the first transcontinental highway in the United States. Local golfers had already started laying out holes over unused portions of the cemetery, and in 1909, the San Francisco Parks Commission completed the course, and some, but not all of the bodies were relocated.[123]

In 1923, the promontory above the golf course was chosen as the site for the California Palace of the Legion of Honor, a three-quarter scale replica of the Palais de la Légion d'Honneur in Paris.[124] The building faces eastward toward the city, its back to the ocean. It housed the art collection of its donor for display to the public. It is now part of the network of Fine Arts Museums of San Francisco, and houses mostly impressionistic works.[125]



77. Fort Miley and Vicinity

A National or City Park?

In 1968, all of the land not occupied by the Veteran's Administration Hospital, including the gun emplacements and the Octagon House, was transferred to the National Park Service.[126] In 1971, the National Archives expressed an interest in using Fort Miley's eastern gun emplacement, Battery Livingston-Springer, as a site for a new archives building.[127] A local doctor's wife who lived across the street, Amy Meyer, started a citizen's political action group to oppose this development.[128] Around this same time, Alcatraz Island, no longer a prison, was up for new ownership, and there was no consensus about how to best use the iconic island. There were also citizen's action groups working to protect large undeveloped portions of the Marin Headlands, and they had won some initial protective legislation, but were looking for what they considered the ultimate protection, national park status.[129]

These efforts coalesced into the establishment of the Golden Gate National Recreation Area in 1972.[130] The Fort Miley lands were added in 1975.[131] Many other former military parcels, including the Presidio, were eventually added, as were other undeveloped land parcels.[132] Land's End is simply one amongst many fragments that the GGNRA administers. Most of the budget for the GGNRA went to the purchase of land, not the maintenance or creation of infrastructure, since the park was supposed to secure open space.[133] However, because the park holds large portions of land inside the city of San Francisco, it gets large numbers of visitors who require services. It has been difficult for the GGNRA to receive funding to provide these services because of the difficulty the park has had getting the national government to recognize the park as having more than regional significance. There are some parts of the park, Alcatraz and the historic fort buildings, which have received National Landmark status.[134] But Land's End, along with many other portions of the GGNRA, does not contain intact phenomena that meet these qualifications. The Sutro Baths ruins have failed to gain National Landmark status twice, due to 'incohesiveness.'[135]

In 1994, the political identity of the GGNRA was challenged when the Presidio was finally released from military use. The Presidio already had achieved National Landmark status, and had long been slated for incorporation into the GGNRA, but when the 104th Congress was asked to sign legislation to provide the $25 million operating budget to preserve building stock that no longer housed useful government activity, a political impasse occurred.[136]

Republican representatives in the U.S. Congress had just completed a successful series of military base closures, and were looking to continue this release of federal lands into state or private management by closing down some national parks in order to reduce national government spending. Some of these Republicans, led by Representative John Duncan, began to question why open space in an urban area should be made into a national park.[137] The Presidio seemed to be of more importance to San Francisco than the nation at large, they argued, and should therefore be maintained by San Francisco, not the nation. Their argument found traction because the operating budget of $25 million, required to maintain the building stock, makes the Presidio the most expensive of all national parks.[138]

The city of San Francisco could not afford the maintenance of the Presidio, either, and so the Republicans argued that the Presidio should be released into private hands.

A bill was introduced to create a Park Closure Commission, and the expensive Presidio was a key piece of ammunition for the bill's proponents. Other bills were introduced to limit the National Parks' budget and preservation practices.[139] This activity was part of the reason behind the national government shutdown that occurred between December 16, 1995 and January 5, 1996. Democratic President Bill Clinton would not sign an omnibus package of legislation for the 1996 federal government budget proposed by the Republican-led Congress, which contained drastic cuts to National Park spending and no budget for the Presidio's operation, amongst other budget cuts.[140]

Democratic Representative Nancy Pelosi, a San Francisco native, helped broker a deal to end the shutdown. Her contribution was to draft legislation to be added to the budget that created a new federal government entity, the Presidio Land Trust, directly answerable to the Secretary of the Interior.[141] The PLT's directive is to obtain tenants for the Presidio who can, between them, cover the Presidio's operating budget. The PLT consists of national park and other government personnel, but also private citizens with the requisite experience in property management. The PLT was given ten years to meet their fiscal goal, and if they failed, the Presidio was to revert to sale to the private sector.[142] 2013 was the ten year deadline for self-sufficiency, and it was met, largely through income from rent to private organizations and individuals with a mix of profit priorities and interests.[143]

The impact that this political scuffle had on Land's End is that the GGNRA as a whole has never been granted much money from the federal government during the intervening years.[144] They are able to use the profits they make from entry fees, which at Alcatraz, are substantial. They are also able to use the revenue they make from property rental outside of the Presidio, which is significant because they assumed ownership of many former military facilities.[145] Because policy requires that the GGNRA give preference to non-profits outside of the Presidio, and because so much of their land is located in urban areas with high maintenance costs, this revenue is often inadequate for covering basic operational demands.[146]

A private, nonprofit volunteer organization, the Golden Gate National Parks Conservancy, fills in much of the financial gap. Created in 1981, the Conservancy funds conservation, research, interpretation, and trail construction and maintenance within the GGNRA.[147] The majority of their funding is directed toward habitat restoration, secondarily toward trail construction, and lastly toward new construction of interpretive centers.[148] The Conservancy is behind the removal of the invasive vegetation in the Sutro Baths cove and the replanting of native species, as well as brush and tree thinning. They also provided the majority of the funding for the Land's End Visitor Center and the adjacent parking lot, completed in 2012 and 2008, respectively. Conservancy employees and volunteers operate the Land's End Visitor Center.[149]

A Critique of Current Management Practices

The Golden Gate National Parks Conservancy's mandate is primarily the preservation of the GGNRA. There is language in their mission statement about community building, and their substantial volunteer membership and activities attest to their ability to bring people together to work on preservation and stewardship, and to raise money for these activities.[150]

78. Land's End Visitor Center, Exterior

79. Land's End Visitor Center and Vicinity

80. Land's End Visitor Center, Interior

What is unfortunate, however, is that these activities are aimed primarily at the non-human, with the human factored in solely as a resource. This has a negative effect on a place like Land's End, whose visible history has been created by a compelling commingling of non-human and human forces. It preferences the non-human to the detriment of the human, at times seeming to place them at odds with each other.

An example of this can be illustrated in the tangle over the program for the Land's End Visitor Center. When the Cliff House was renovated in 2004, square footage was lost in order to restore the Cliff House to one of its earlier, neoclassical incarnations. There was no longer room for the National Parks' interpretive center, which was increasingly staffed by the Conservancy, or for the Musée Mécanique, the best preserved remnant of Land's End's human past, which was moved, under great local protest, to Fisherman's Wharf.[151] There were promises made to house these functions in a new visitor's center above the Sutro Baths cove, which at that time was in the planning phase. Funding for the visitor's center never significantly materialized in the GGNRA's budget, and finally the Conservancy stepped in. With partnership from a single wealthy donor, the Conservancy commissioned a small building overlooking the baths cove which contains a gift shop and café which are run and staffed by the Conservancy to help them raise funds.[152] There are a few interpretive installations and park brochures, and very well-used toilet facilities. There is not adequate space for the GGNRA to store or display the many artifacts that relate to Land's End, there is no space for park rangers to hold educational events, and the Musée Mécanique has had to stay put across town. The architects who designed the new visitor's center (EHDD) were constrained to a very specific parcel of land and Conservancy funding, in the end, dictated the limited program and square footage.[153]

While the addition of permanent restrooms, outside of restaurant facilities, was a much needed and appreciated addition to Land's End, the building does little for the human communities that pass through Land's End, except for the tourists. None of the recreationalists can hold meetings or classes there, and the wanderers, the true heirs to Sutro's amusement district, usually stay far away from a structure clearly meant for only sanitary purposes. It is hard to tell from the information displayed in the visitor's center what the baths ruins are, and none of the military or mercantile history is evident. It was intended to earn the Conservancy some money and provide a place to come in from the cold, but once inside, it is evident that human engagement is not the building's, or its funder's priority. Users bounce back out into the harsh weather after they grow tired of looking at expensive coffee table books or contemplating an overpriced cup of coffee, having learned little about their surroundings.

It is not in the Conservancy's mandate to pass on local history, to consider the larger urban context the park lands are situated in, or the park's connections to the city around it. Nor is it in their mandate to facilitate human use of urban parks.[154] By focusing on attempts to restore non-human systems to the state they existed in before humans arrived, much of which can only hope for long-term success, they are, perhaps, trying to restore a kind of balance. There also seems to be a kind of perverse delight enjoyed in the ongoing ruination of so many human structures, as if the non-human were winning some kind of war by growing over and consuming the human-built remains. One Conservancy administrator said that the dominant land use for Land's End is now as habitat for wildlife.[155] This is more of an intention rather than current fact, however, as the constant and often disruptive presence of humans and human-built structures on

81. Visitor Center to Far Left, Abrupt Edges Revealed

82. Unclear Destinations

83. Unclear Use

84. Barricades above Wave Pool Canal

85. Spontaneous Trash Collection

86. Disturbed Wildlife

the site attests.

Off-trail excursions are frequent, native replantings are trampled upon, wildlife is scared off by dogs and wandering climbers. Trash cans are infrequently emptied and are too sparse to prevent wide-scale littering, and though the new bathrooms are helpful, they cannot and do not service such a large area. It is little wonder, then, that the baths pools contain harmful bacteria and eutrophy regularly. The human and non-human exist together entwined and entangled at Land's End, and simply providing extremely limited services to the human population has not made this intermingling more graceful or healthful for either party. Instead, it sets up an atmosphere of war between the two, where it is not clear if it is the non-human or the human which has been abandoned in this place, but unintentional desolation is overwhelmingly prevalent. Seabirds pick at trash and humans jump back in surprise at hungry scavengers.

The National Park Service is as much the author of these effects as the Conservancy. Though the Conservancy has more funding to spend at Land's End, the Park Service has ultimate legal responsibility for it. Their current management policy appears to be a benign neglect, which is partly financial but also must stem from the fact that park administrators are no better equipped to deal with urban-scale issues like infrastructure legibility than Conservancy volunteers. National Parks preserve and interpret monuments and wilderness, but Land's End is not either of these. National Parks were, however, created with the intention of protecting the places where humans can experience the non-human, or to preserve monuments.[156] Because the human and non-human are entangled with each other in such a confusing array in Land's End, it is a place where typical National Park policies are not particularly applicable.

What seems particularly dangerous about the present situation is the usual comment from both park officials and visitors who are asked about the site: that it needs to be cleaned up. While the littering and excretion could certainly be curbed, a border between the human and non-human world is never likely to be clean by urban definitions. The ocean still relentlessly corrodes, humans will still be unsettled by the frayed edge of their settlement, even if a nice lawn and picnic tables were rolled out everywhere - even if a more sensitive, appropriate series of park infrastructures were laid down. It is uncomfortable for humans to resist the heroic impulse to tidy up the non-human when it is so active and in close proximity to a city, but Land's End already shows how futile such tidying efforts would be.

A 1993 National Park plan for the baths cove, an early study plan for the visitor's center, included wood walkways above the ruins and the wetlands, and contain a visitor's center with the appropriate square footage for the intended program.[157] But even though the accompanying report acknowledged the treacherous terrain and weather conditions, as well as the unique access currently granted to the ruins, the proposed buildings and walkways still manage to look as though in five to ten years the whole thing would have been unintentionally falling apart on its treacherous footings, the visitor's center undercut by erosion, the ruins choked with unnecessary clutter from wave-broken boardwalks. Accessibility would have been increased, but for whom?

These proposed paths seemed to be for tourists, who are the ones who seem intimidated by the rough terrain off-trail. Should they be encouraged to penetrate into Land's End when they seem content to be bussed in to enjoy its views and leave an hour later, pre-printed photographs in

hand? Would additional paths be for those who already enjoy the ruins? They are presently undeterred, in fact, seem to revel in the sense of adventure required to brave the uneven, slippery footing all over Land's End. Such urban exploration is rare in this age of litigation, and it seems a spoil sporting thing to sanitize it. In this, it seems fortuitous that the GGNRA has been underfunded in recent decades: the park has not had money to clean the place up, and it has deteriorated into a finely brewed mess one should be hesitant to disrupt.

In fact, this thesis changed directions significantly after the author spent time in Land's End. It was mentioned previously that there had been an interest in reclaiming the baths as an urban bathing facility, but the fact that the cove has long been undergoing the process of shifting from beach to estuary, along with the water quality issues in the pools, the near-constantly inclement weather, and the treacherousness of the adjacent ocean water led to the conclusion that the cove, and Land's End in general was not really a place much conducive to bathing.

Land's End is not a place of retreat to cleanse and refresh oneself or to relax in safe waters. Even the history of the baths reveal that this was never really what happened in the original baths structure, either. It is and has been a place of spectacle, both human and non-human spectacles, of secret spectacle, of spectacles on the back porch, hidden from view of the rest of the city. It became clear that Land's End is already a host to plentiful, appropriate human recreation, though the park lacks the ability to collect money that could support infrastructure for these activities. These human activities make it an inappropriate place for pure habitat restoration, whose efforts are and will continue to be undermined by the close proximity of the city, no matter how well educated the populace of that city is about the necessity of a healthy non-human world. Humans will continue to come to Land's End, and merely denying them services only makes their presence more disruptive.

But most of all, Land's End suffers from legibility issues which need to be addressed by any design intervention intending to communicate an understanding of the place. Though many describe it as a place where 'nature' and 'culture' are at war, this is far from the case.[158] The conflicts that arise are entirely between human uses. Tourists are unsure of where the paths lead, hikers are frustrated with tourist detritus at view points and shared parking lots, Conservancy volunteers are annoyed by how the wanderers, revelers and scavengers disregard their re-planting efforts.[159] The wanderers, revelers and scavengers intimidate tourists, hikers and volunteers alike since their activities are mostly considered illegal, and therefore conducted out of plain sight. Unresolved tensions certainly abound, but it was never very likely that it was actually the non-human on the other side of any perceived battle line. On the contrary, if the non-human world is undergoing release in this location, it is hardly surprising that the place attracts so many humans looking to release things in various ways.

87. Graffiti Art and Trash at Upper Balcony

88. Graffiti Art at Lower Wave Pool Canal

89. Graffiti Art on Point Lobos Road

[land's end, san francisco]

III. Experiments in Embodiment

To Visually Embody a Place

To follow the logic that the experience of a place is equally as important as information about a place, especially when trying to incorporate the human and the non-human, one should therefore try to communicate the experience of a place when trying to describe it. Architectural site analyses and design graphics, however, often fail to communicate place-based experience. Site diagrams relate statistics, dates, and sizes, among other things, but the graphic styles employed are often unrelated to the experience of the place, can in fact be incongruent with that place. Sharp, cleans lines and eye-grabbing colors may not be appropriate when talking about a place that lacks clear land use and is undergoing massive corrosion and erosion. Inappropriately charactered graphics may still communicate information about a place with factual accuracy, but their experiential aesthetic miscommunicates.

To avoid this, design projects for this thesis that were meant to describe Land's End or insertions for Land's End were not just a matter of representing information, but aimed at a phenomenological embodiment of Land's End, as well. The term 'embodiment' is used here in the sense that Merleau-Ponty used the term, to call awareness to the fact that knowledge, that cognition, occurs in a human body, though we often forget that it does.[160] Our knowledge is

conditioned by the filter of our body, in ways that we often do not acknowledge. To embody a place means to include not only the facts about a place, but to also bring in all of the tacit, background impressions that are not so easily assigned. This is not an argument for the purely intuitive, it is a purposeful inclusion of what can be termed 'common sense.' How often does someone report the facts about a particular place, only to have missed the basic flavor that every child could agree upon? Visual embodiment is a consideration of the difference between description and experience, and the discrepancy between only having read about a place and actually having been there is the area of our concern.

These attempts at visual embodiment were at times a difficult process, part intuitive, part analytical. The efforts were certainly experimental in the truest sense of the word: methods were guessed at, tried, and sometimes failed, sometimes seemed to succeed. Integration of these methods has not yet been reached, nor any consistent style achieved. However, by attempting to cast a wider net in visual graphic production, there was more room to experiment with cross-pollinations of ecological and architectural methods.

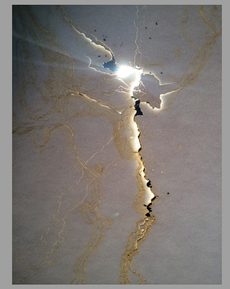

[land's end, san francisco]

A. Graphic Analysis

An Atlas of Land's End

The first portion of design conducted for this site was a series of maps that were meant to communicate the various human and non-human behaviors observed and histories uncovered. These maps were experiments in hybridizing ecological and sociological analysis with visual art techniques. As an experiment, several iterations were made so that a wide variety of methods could be combined. The goal was not straightforward communication of factual information, but instead, the combined use of factual and experiential information to visually evoke or embody Land's End.

In the first map, the marks or inscriptions of motion at Land's End were photographically cataloged, categorized, physically modeled, locationally marked and then blended together in a digital format (Adobe Photoshop) that allowed their commingling in a manner similar to how they are found on site. The inscriptions were categorized into one of the four phases of an ecological life cycle: growth, conservation, release or reorganization. This categorization affirmed the sense that Land's End is predominantly undergoing release.



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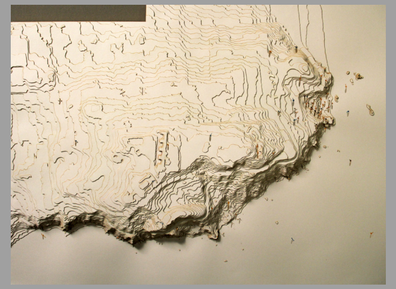
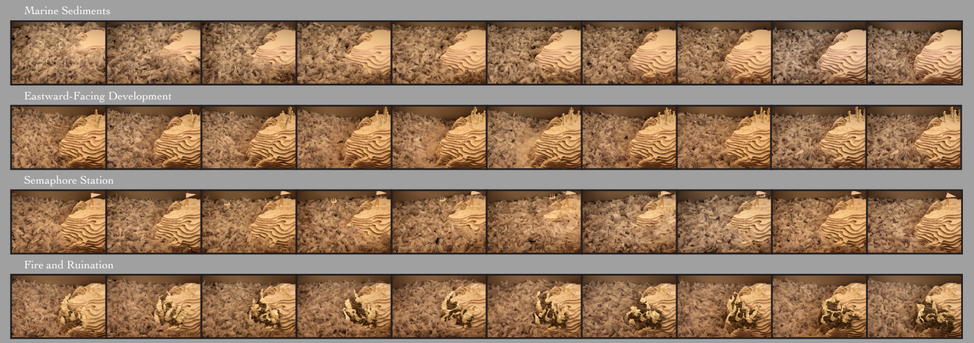


Topographical Base

Site Inscribers

90. Map 1: Site Inscriptions

The second map is a composite of images produced by a stop motion animation. This animation was a recreation of the human and non-human histories of Land's End. The resulting composite communicates the ghostly aspect of Land's End, with littering ephemera producing a well-worn patina, even just within the short time of a re-enactment.



91. Map 2: A Stop Motion History of Land's End

The third map is an analysis of the influences that different scales have had upon Land's End, and uses the concept the trophic level mapping to reveal the relative importance of different forces. Each of the major past and current issues that have affected Land's End, both human and non-human, were visually overlaid onto a fragment of Land's End where that issue had the most effect. This fragment was then identified and graphically connected to the scales at which it operates/operated. It is clear from this analysis that the local neighborhood has had the least amount of influence over Land's End.

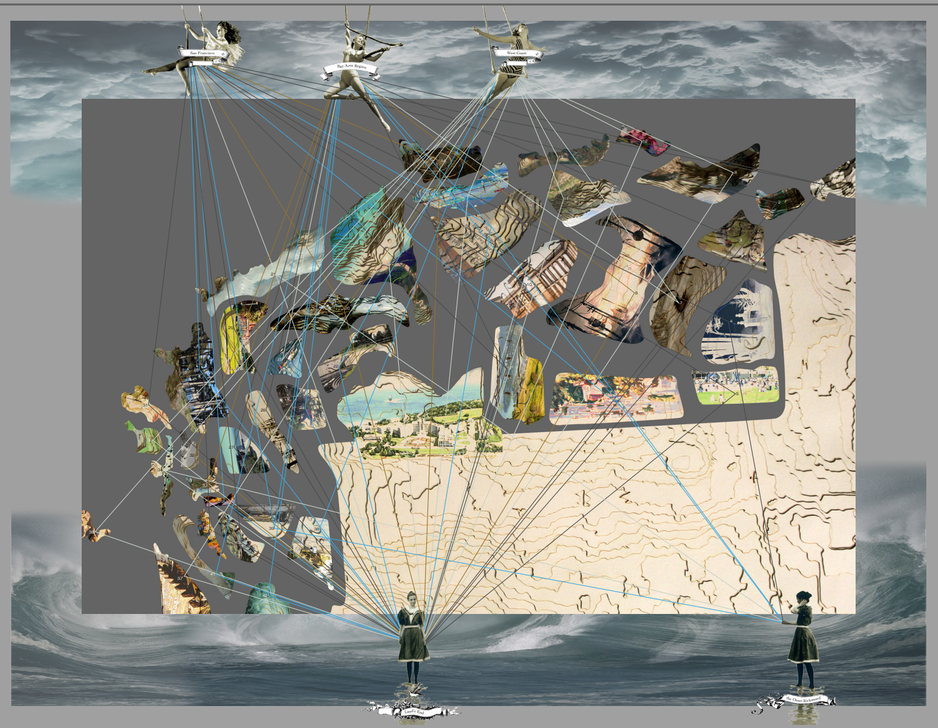
hydrology/physical oceanography

nature vs culture construct

development patterns

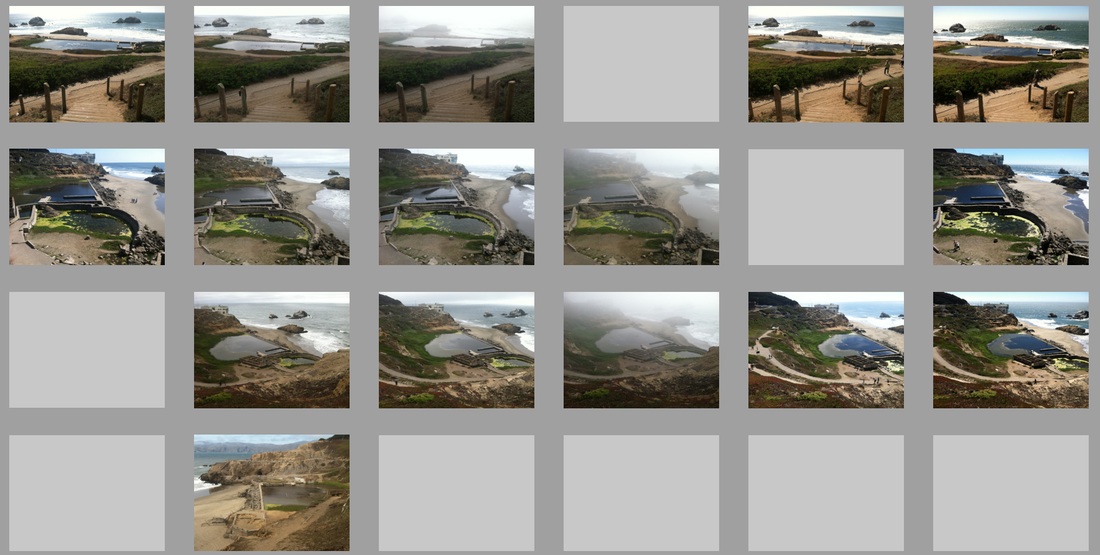
culture war

1/bay area conservation legacy
2/highest open space protection status in national parks?
3/scope limited to increased access, habitat restoration
4/pauper's cemetery covered by golf course
5/funding problems for nationally-held city parks
6/low density
7/narrowness of the golden gate
8/constant wind and wave erosion
9/apocalypse as an end to the nature-culture war
10/facing toward the city, away from the ocean
11/rugged topography
12/coastal upwelling
13/marine sediments
14/unrestricted modifications because of low visibility
15/strong tides
16/wayfinding problems
17/nimbysim
18/VA hospital
19/nutrient-rich seeps
20/'end' of the western wilderness
21/fog belt
22/former military holdings that supressed development
23/largest estuary on west coast of americas
24/non-overlapping variety of uses
25/presidio precedent
26/sailor-socialite disconnect
27/conservation shadow: whose views are saved?
28/vegetation age and stability
29/self-funding requirements
30/constant eutrophication
31/peep show
32/unprecedented large-scale engineering works
33/vampirism as an end to the nature-culture war
34/california current deflection
35/encrusting collections of the tabooed
36/rich aquatic nutrients fuel increased life
37/north-south seasonal beach scouring
38/what is of national significance here?
39/literal and travel time distance from city center
40/sutro's works as political propaganda
41/engineering to prevent natural cycling
42/loose sand thwarts development

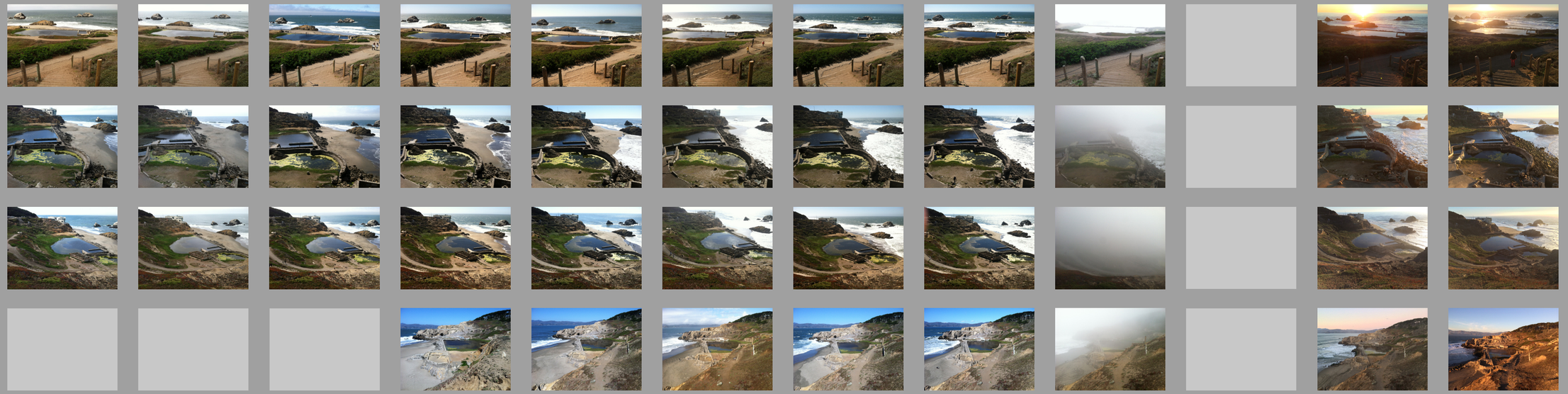


92. Map 3: Scalar Levels of Influence

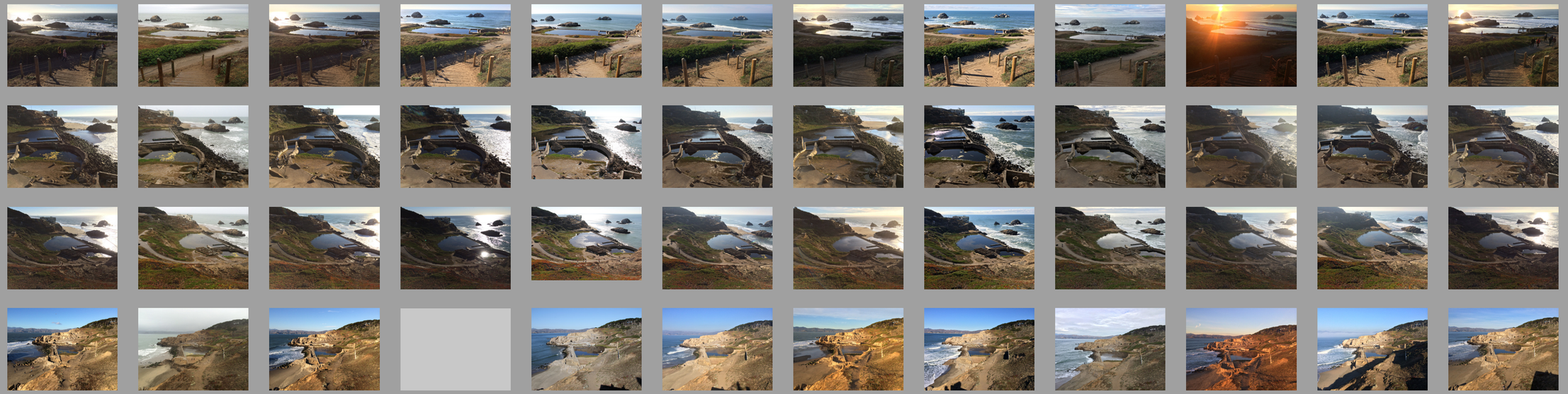
The fourth and fifth maps are photographic ones. The fourth map is a collection of the photographs taken on site observation visits, from four distinct and repeated vantage points. The gray frames indicate when it was impossible to collect the photograph, which was largely, though not exclusively due to environmentally-caused malfunctioning of photographic equipment. The record of the frequency of environmental interference is itself a kind of portrait. A large gap in the middle has been compressed, and corresponds to salt corrosion that destroyed nearly a month's worth of photographic data. The fifth map is an exploded perspective of the Sutro Baths cove, that allows the viewer to zoom into key features of the cove as well as panoramically view the cove as a whole.



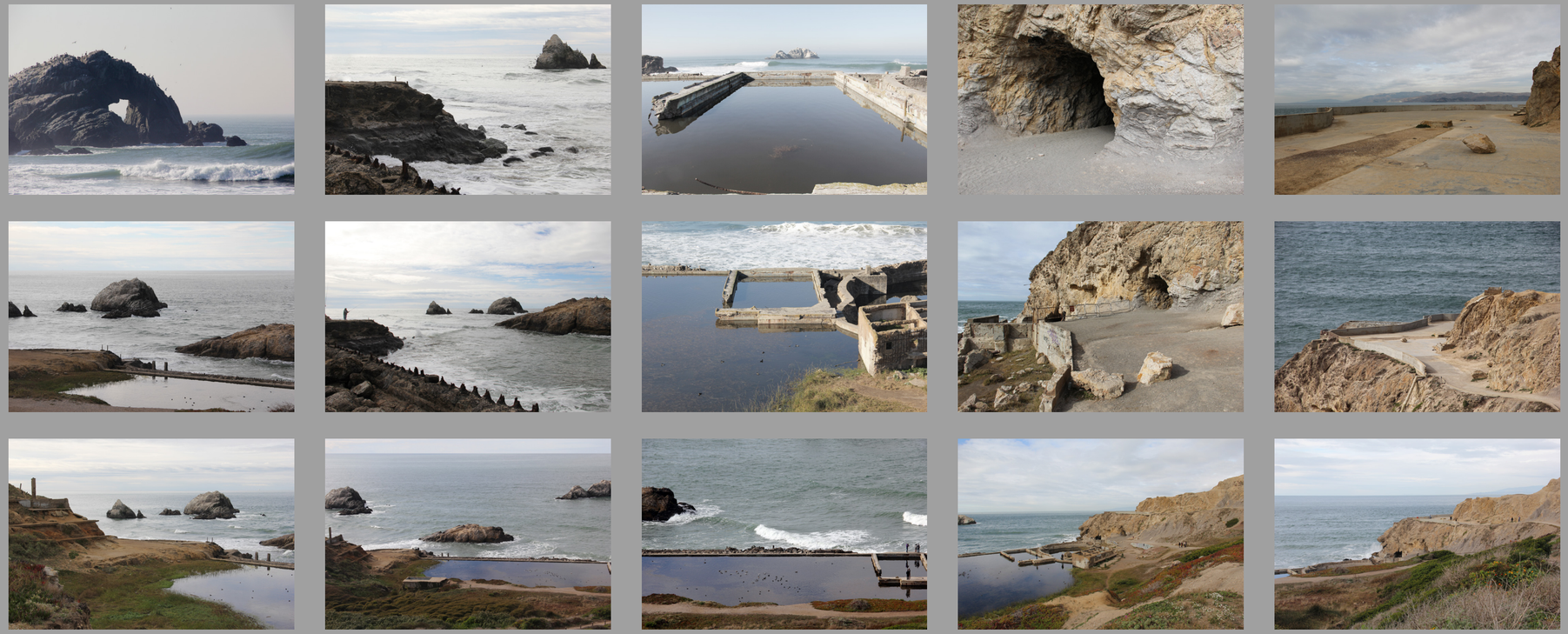
93. Map 4: Time and Tide



Map 4, continued



Map 4, continued



94. Map 5: Narrative Sequence of Sutro Baths Cove

What these graphic analyses reveal is that Land's End is truly not a war zone between the human and non-human, as National Park and Conservancy officials maintain. It is more like a seam that tenuously connects the two, and as each part moves, pulls on the threads connecting it to the other. If it looks like a scar, the resemblance is only with that of a scar after healing has begun, after the sides have begun to knit together, but never reaching the state of being fully healed. There is no unstaunched bleeding, very little gore, just the very worn tracks of ceaseless tension.

The marks that human and non-human forces leave behind tell a story that shows a strange resonance between the two: both stories are about loss. The non-human story is about the powerful, dangerous movement of water that unexpectedly brings forth new life. The human story is about watching the horizon in fear and expectation, and hidden beneath this gaze, taboo transgression in a setting that is too restless to let the city grid move in. Here, too, powerful forces moving at high speed have left an uncovered territory, an unclaimed, unclaimable patch of land where the unexpected was allowed to flower into strange forms of amusement. This kind of land use is of inestimable value to an urban area, where humans living in high density with each other must continually repress many aspects of their animal natures to live in compromised harmony.

The tension in Land's End is not one that requires resolving, perhaps can never be resolved. The ocean will erode what is near its edge, the salty fog will corrode the metal fastenings humans use in their buildings, the city grid will wilt and shrivel as it approaches the precipitous cliff edges. None of these are acts of aggression, they are a collision of powers working at different purposes. Instead of pretending this unresolvable tension does not exist, or quixotically trying to intervene between these forces, an embodied design for Land's End must acknowledge the deep and strange comfort that comes from being in a place where, despite much effort, the human world is still shackled to the non-human world. A designer hoping to evoke Land's End must value the wanderers, revelers and scavengers who are attracted to this seam and its rare space for the forbidden, must cherish an experience that acknowledges the wisdom that life, both human and non-human, is sometimes dissonant, and this dissonance can still be a beautiful part of the sometimes cruelly-balanced whole.

[land's end, san francisco]

B. Urban Design

How to Hold Back the Expected?

The urban design for this project came out of a line of inquiry inspired by the previous site observation, research and graphic analysis: how does one provide a place of sanctioned taboo transgression in this age? If the loss of the Sutro Baths meant that taboo transgression has been consigned to hidden glens and small pocket terraces below the lip of the cliffs, how does one hold back the normal, expected structure of the city to allow what is underneath to see the light of day? Drugs, sex and rock and roll seem to be the only commonly understood territory of modern transgression, but even their claim on this function is continually under assault. It was obvious that constructing a biker bar was not an answer to Land's End's legibility issues.

It had already become clear over time that there were essentially three zones in the park, the first one being comprised of the steep cliffs and small beaches that are hostile to any human occupation that lasts more than a day or so. The second is comprised of the maintained properties along the Point Lobos and El Camino del Mar Roads, which include the Cliff House, Louis' Diner, the Land's End Visitor Center, the Veteran's Administration Hospital, the Palace of the Legion of Honor, and the Lincoln Park Golf Course. These form a hybrid city zone, not as dense as the surrounding

95. Ocean's Claim

96. City Hybrid

97. Intermediary

neighborhoods, but with human habitation and use as their primary aims. The third and most elusive zone is roughly between the other two. This is where the ruins of the baths and gun emplacements lie, this is where the wanderers and revelers leave their midden heaps, this is where spontaneous land art is formed and left for passersby to do with as they will. This zone is like an upwelling, an intermediary where the typical city structure has been held away by the topography and soil, and what is usually left in the dark has been allowed to surface. Here, taboo is already transgressed, barriers are ignored, illegal activities sprout.

There are already almost clear edges to these zones, in the form of the two main graded paths that attempted to cross Land's End. The lower graded path was created by Sutro's private street car line. It has been washed out in one section, but is mostly used as the main route for the Land's End Coastal Trail that the Conservancy has been rehabilitating for the last decade.[161] The upper graded path was a road put in by developers in the 1920s, but the middle portion was washed out by the main seep above Mile Rock Beach so quickly that all plans for development were thrown out.[162] The road was called El Camino del Mar, and still bears this name for its western portion. Its eastern portion is called Lincoln Boulevard, because of its association with the Lincoln Highway.[163] El Camino del Mar and Lincoln Boulevard host parking and easy access to views of the Golden Gate, but portions of it are sometimes indistinguishable from the coastal trail. Certainly at the ends of each graded path, it is not clear which kind of experience a walker is committing to, whether it be an easy vista stroll, or a rugged coastal trail. The El Camino del Mar/Lincoln Boulevard path sometimes has benches and trash cans, but at other times is designed solely for car traffic. The coastal trail is a hiking trail, with no services other than modest trail reinforcements.

The urban design proposed for Land's End is a clarification of these two paths into distinctly different experiences for the two main Land's End user groups who use paths. The lower path would be clearly a coastal trail, from start to finish. It only requires clarification at its western entry to achieve this. The upper road would be fitted out with more amenities to make it a comfortably walkable vista path for the casual tourist: more benches, more trash cans, more bathrooms and paving that allows food carts and service vehicles easy access. Some of the parking would be moved to ensure that a walkable path is maintained. Large parking lots below the Octagon House and above the Sutro Baths cove would be removed in favor of more extensive street shoulder parking along this new vista path. This would aide park users in finding parking near whatever destination they prefer instead of unnecessary privileging the western edge of the park. Roundabouts would be added where the Mile Rock seep makes permanent vehicle traffic impossible, and the stretch in between would continue in the character of a comfortable urban walkway. The stretch that is prone to wash-outs would either be spanned with light truss bridges or a plan for continual reformation of the road would be made.

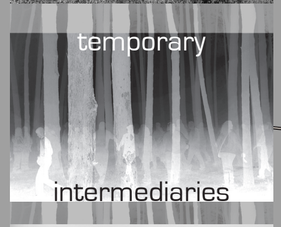
By providing services for tourists and clarifying the nature of the two paths, the tourists and local hikers will more easily be able to identify what kind of experience they prefer and enjoy that experience with less disruption. The off-trail enthusiasts would need encouragement, however, to understand where it could be appropriate to wander, revel and scavenge. For this, a change in the land use could provide better co-existence for current park users.

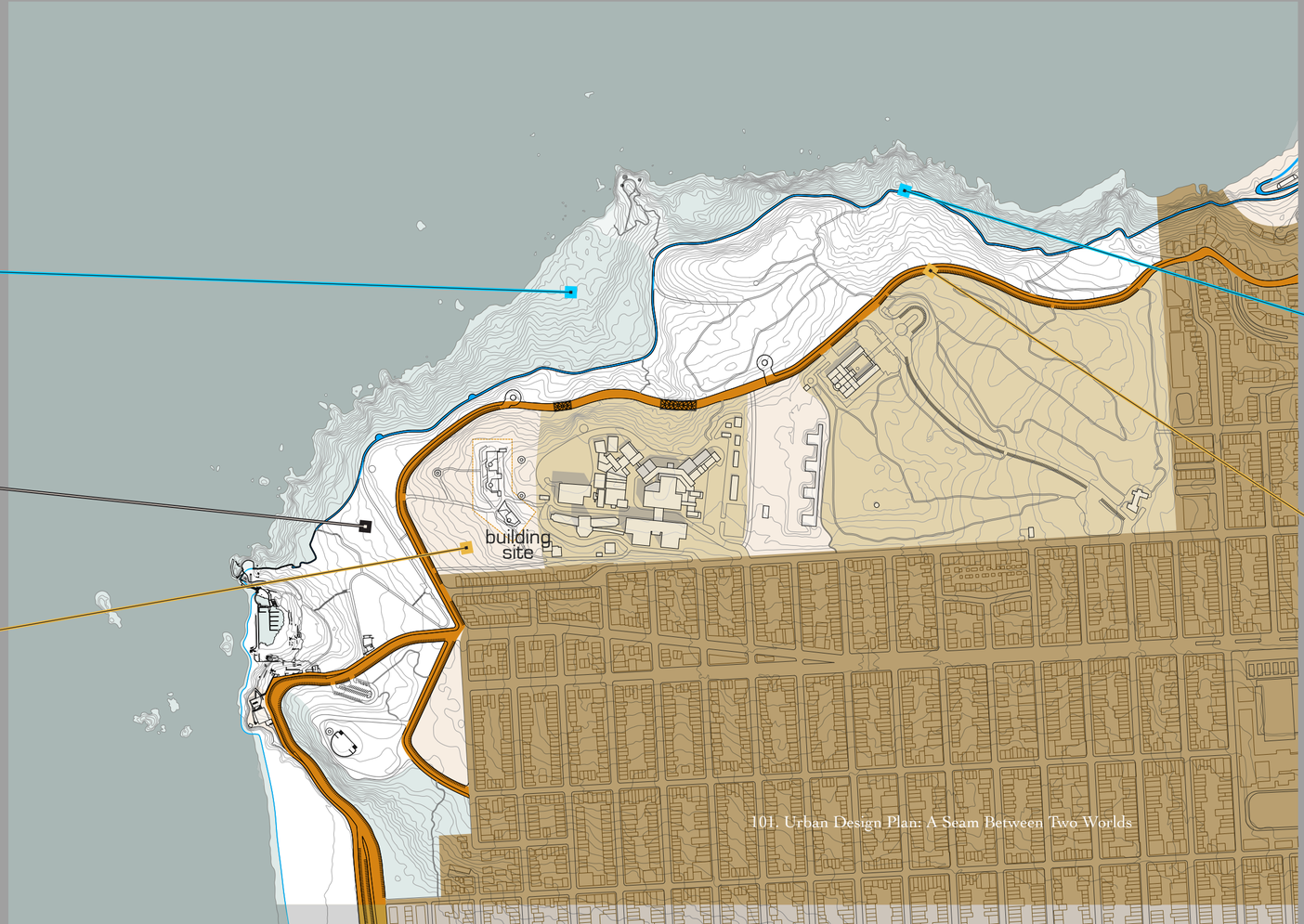
The zones on either side of these paths would reflect their current uses, only with a little more clarity once the paths are better delineated. The zone below the coastal

98. Coastal Trail

99. Lincoln Boulevard

100. Indeterminate Hybrid





101. Urban Design Plan: A Seam Between Two Worlds

102. Existing Ephemera: Mile Rock Labyrinth

103. Existing Ephemera: Camera Obscura

104. San Francisco Food Trucks

path would be designated for non-human use, with the goal of no impact left by humans. The zone above the vista path would be for permanent human occupation, with traditional building and maintenance methods used. The zone between the two paths would be for entirely temporary human uses, especially those favored by off-trail enthusiasts. The GGNRA would collect revenue from these temporary events, and the infrastructure needed to support them would come from the infrastructure along the vista path (seating, trash cans, bathrooms, mobile eating opportunities) as well as other, temporary infrastructures. An important exception to this would be the gun emplacements, which would host a hybrid use between typical urban occupation and temporary human use. Other, small hybrid zones would exist below Sutro Heights, where topography dictates that the non-human prevails, as well as at Mile Rock Beach, where high human traffic necessitates the inclusion of some light-impact, perhaps temporary infrastructure.

Ephemeral Infrastructural Installations

These temporary uses need only be a seasonally-modulated increase in frequency of activities that already occur in Land's End. This part of the GGNRA already generates most its income from the property rental fees from food concessionaires, from the Cliff House and Louis' Diner.[164] During warmer fall months, these might be joined by food trucks, already a staple of urban dining in San Francisco, if the necessary infrastructure were implemented.

The views that the Cliff House diners are willing to pay a premium for are also appreciated by those looking for a dramatic backdrop for memorable events. Parts of Land's End can already be rented out as a venue for gatherings, and this use could be increased with infrastructure to provide a little shelter from the wind in strategic locations. Installations to help aid these uses could be designed with a variety of purposes, from educational, artistic, and interpretive, to functional (seating, wind breaks, etc.) They might also be mixed-use venues for a wider variety of outdoor gatherings, including dining, concerts, other performances, or ad-hoc classrooms.

If Land's End once more overtly hosted events for human consumption in this manner, there would be more opportunity for park users to become more than passers through. These chimeric structures would amplify what is unique about Land's End, what distinguishes it from other parts of the GGNRA. There are better-preserved non-human zones (Marin Headlands), and there are more developed hybrid-city zones (Presidio) elsewhere, but only Land's End has been a host to such interestingly resonating human and non-human extravaganzas. A commingling of useful and excess-consuming spectacles helps provide sanctioned opportunities to transgress taboo, and would once more make Land's End a place overtly designated for humans to return their animal selves, instead of relegating these ongoing activities to the dangerous cliffs.

These urban scale interventions have been left at the early schematic phase, both because the author was not trained in landscape design, but also because the original query was how ecology overlaps with building architecture. An urban design is proposed so that any such building has a better orientation to the landscape, but the smaller details of the paths and their services are secondary to this question.

105. Abandoned Infrastructure

106. Sacrificial Infrastructure

107. Work Yard

C. Building Design

A Work Yard for Wanderers

A building is proposed to act as a place for the design and construction of the temporary infrastructures destined for the middle zone, the upwelling. It would be, in fact, an initial installation, one that makes other installations possible, that births them. A collaboration of people from across discipline types would help prevent these efforts from devolving into well-lit interpretive signs or prison-worthy bathrooms, so the building's primary aim is as shelter for the work of a creative collaborative.

Installations and venue platforms that help park users come to understand Land's End better, mostly through direct experience, would likely be the work of a non-profit, or a collaborative of non-profits. Non-profits already form the bulk of GGNRA occupants, so potential collaborative participants already abound within the GGNRA.[165] A prime candidate for this work would be the Headlands Center for the Arts, which occupies former military buildings across the Golden Gate from Land's End. The HCA grants residencies to artists for fixed periods of time and allots them studio space. The HCA already preferences applicants who express a desire to fabricate art that interprets the GGNRA landscape.[166] This non-profit might be joined by the Institute at the Golden Gate, the ecology research arm of the Golden Gate National Parks

108. Headlands Center for the Arts

109. Institute at the Golden Gate

110. Foundation for Deep Ecology

111. Battery Livingston-Springer

112. Work Yard at Livingston-Springer

Conservancy, or the Foundation for Deep Ecology, both of which are near neighbors of the HCA in the Marin Headlands.[167]

While these non-profits might collaborate in this space, the idea would not be for them to take permanent residence here. Instead, the intention would be for them to join with the efforts of the wanderers, revelers and scavengers at Land's End. Ideally, the non-profits would fund residencies for qualified researchers, designers and fabricators to take up residence at Land's End, get to know its landscape deeply, and then build light structures to aid in the temporary events that the park would begin officially hosting. Their residence would help to ensure that they come to know Land's End, its human and non-human inhabitants, and enlist their aid in evoking Land's End in their work.

This building would do what both human and non-human life at Land's End already does, it would grow from the body of structures that have been left behind. The most intact of these is Battery Chester, the westernmost gun emplacement. Its stable bulk amidst the shifting sands would be re-inhabited, its shapes, once directed at enemies never fired upon, would be exploited to new ends: the deployment of ephemera across the landscape.

Using the gun decks as work yards would be a new iteration of the way the two more eastern sets of emplacements are already being used: the Veteran's Administration Hospital uses them for storage and for work yards for their landscape and building maintenance activities.[168] The GGNRA would be following an already-successful re-use model on site.

The Raw Nutrients of Battery Chester

The structure of Battery Chester should be briefly described to make their re-inhabitation more understandable. The emplacements for Guns One and Two are fused together, and were built into a partially excavated hill with one side left open for access, the other three sides below soil grade. Gun Three's emplacement was built into an excavated pit, also with one side left open for access. All three emplacements follow the same general plan, but with modifications for orientation. The guns occupied a large, sunken deck. Guns One and Two needed deep wells for their counterweights, but Gun Three did not. The counterweight wells are currently filled with soil, for safety reasons. As can be observed in section, the gun decks were surrounded by massive, buried concrete walls.[169]

Directly to the north of each deck is a hoist for shells, embedded in a blast-proof roof. The blast-proof roofs are an entire story of concrete, twelve feet thick, that sit over the powder magazines. In the event of an accidental explosion of the stored powder, the blast-proof roofs would have collapsed in on themselves, preventing the explosion from damaging nearby equipment. Below the gun decks are small workrooms with doors and windows cut into the exposed back sides of the emplacements. Each emplacement has a lookout carved into the side of the gun deck. Three small, semi-detached outbuildings housed a generator, a power converter, and a plotting room for determining trajectories.

The outbuildings and the roofs of the gun decks show evidence of corrosion of their steel reinforcement, as do the steel doors and window coverings, but the massive portions of the emplacement are in much the same condition that they

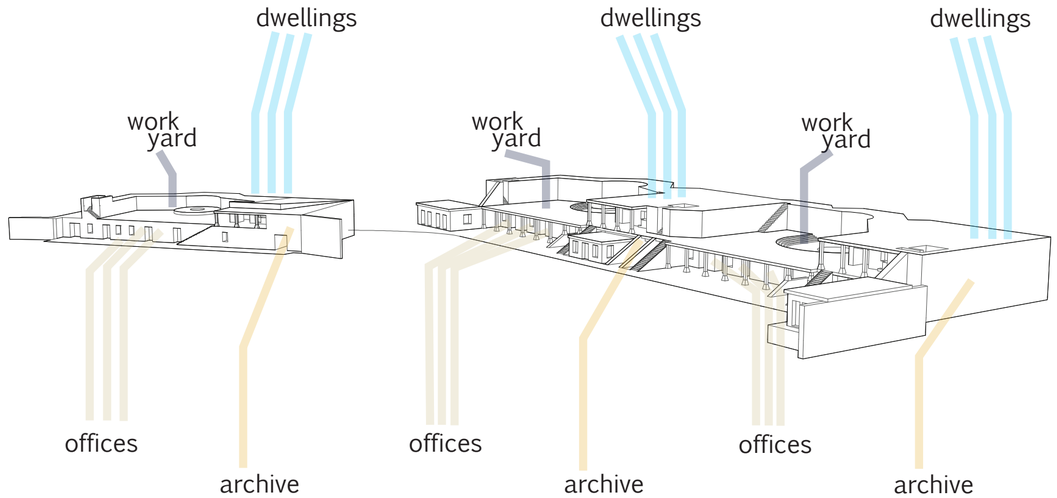
113. Gun Deck One

114. Gun Deck Three

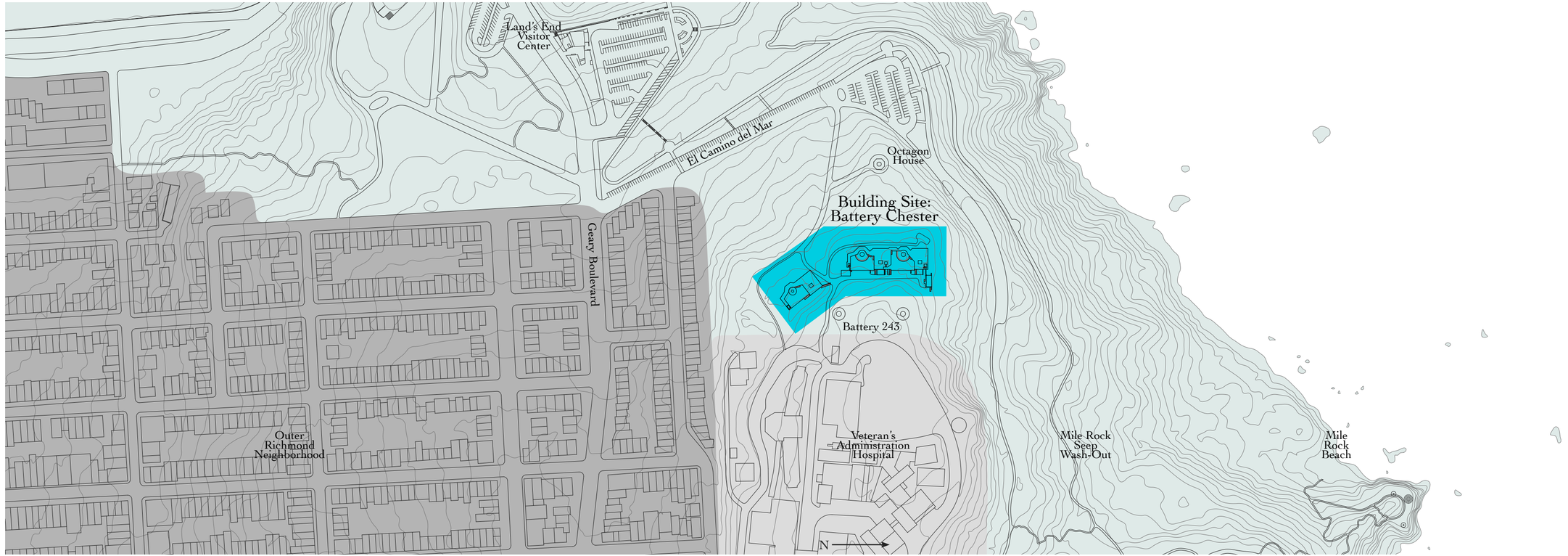
115. Gun Two, Back Side Access

were in when they were constructed over a hundred years ago, and will likely remain in for several hundred more years.

The offices below the gun decks would be re-occupied for their same original purpose, and the powder magazines could be used as archives for the extensive ephemeral artifacts that the Sutro Baths, the gun batteries, and mercantile lookout left behind. These artifacts (play bills, menus, tickets, photographs, bathing costumes, rescued building hardware, shell casings, activity logs, a rumored thirty foot telescope, and pieces of the arcade collections) are currently being held in storage in the GGNRA archives, which is nearly over its capacity, and has no room to display these items.[170] Researchers would have easy access to them as a topic of study, and they might be put on display, or incorporated into installations when their age of final expiration approaches.

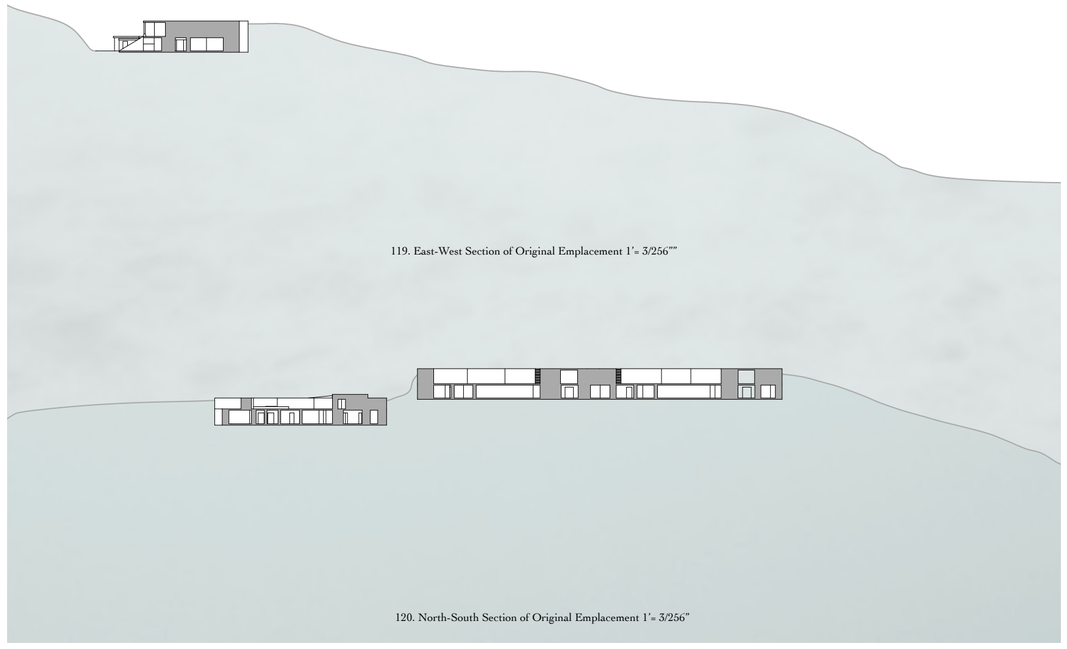


116. Use Program



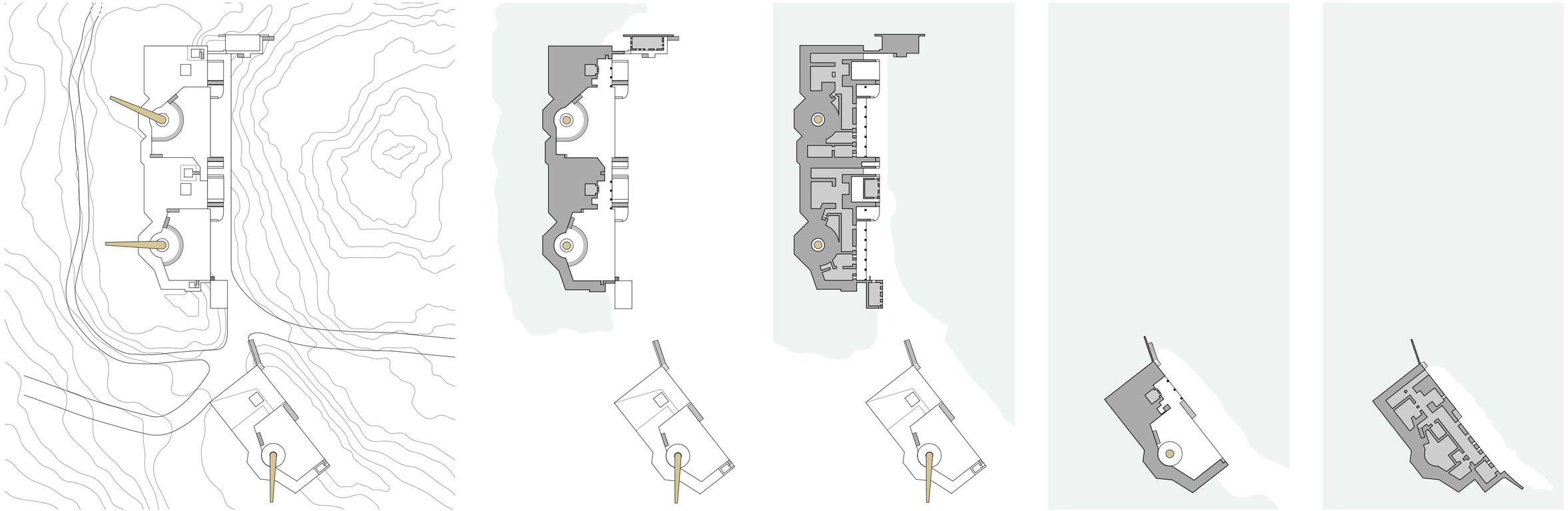
117. Vicinity Plan of Battery Chester

118. Aerial View of Battery Chester



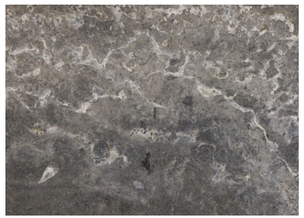
119. East-West Section of Original Emplacement 1'= 3/256""

120. North-South Section of Original Emplacement 1'= 3/256"



121. Original Emplacement Plans 1'= 3/256"

122. Diamond-Tipped Chainsaw Cut Texture



123. Magnesium Rod Cut Texture

Temporal Choreography

The proposed new structure has components with two distinctly different temporalities, the first causing permanent transformation of the gun emplacements which is required to make them fit for human occupation. The existing structures were not designed with ease of human movement in mind, they were designed for the smooth functioning of large guns, and as such are not easy to navigate. These permanent changes would include cuts into the emplacements that would make room for new circulation. The cuts announce that this is no mere fetishization, no attempt to borrow the authority of the previous forms, but the beginning of their end, a proclamation of their value as a body to feed upon. The cuts would inscribe a variety of textures on the emplacements. Diamond-tipped chainsaws and magnesium rods would be used to remove the concrete, and they would leave behind subtly striated and unevenly dissolved finishes, respectively. A series of ramps and stairs would be overlaid into these cuts.

The ramps and stairs would make the emplacements more easily traversable, and are designed to operate with no further design intervention: even if the emplacements are never occupied, they make the emplacements permanently accessible to humans. The ramps and stairs are designed with two aims: their massive sizing and material composition is comparable to that of the emplacements, so that they will last as long as the emplacements do. They are configured to allow the slopes on the back sides of the emplacements to continue re-filling in the cuts that previously allowed access, and act sometimes as berms, sometimes as soil movement directors, and eventually, as retaining walls.

124. Cuts and Stairs, Gun 2

125. Rail Detailing with Infilled Materials

126. Rail Detailing +50 yrs.

The railings for these structures, however, are detailed for easy purchase of overlaid material. This is something the Sutro Bath ruins indicated: sometimes where materials had rotted out, it was clear materials could be re-inserted if enough time had elapsed, almost an invitation to future generations. The unused catch points for these materials provide excellent purchase for floating trash, both human and non-human, and keeps ephemera from endlessly circulating over the sands. The railings would not last as long as the main body of the structure, and would, within twenty to fifty years, join the observable state of decay that so many of the ruins already offer without impeding access to the stairs and ramps themselves.

The ramps and stairs are a mediating, more permanent infrastructure, and a second, more ephemeral, lighter structure is proposed to sit lightly over the emplacements. This second structure is designed to last about as long as a typical contract for non-profit occupation within the GGNRA: ten to twenty years. This structure would house researchers, artists and fabricators, provide common social space for them, and provide some shelter from the elements over the work yards on the gun decks.

This more temporary layer would be structurally comprised by a light weight wood member frame, easy to fabricate and install, like bones that stand up on end against the wind. These wood bones would be clad with polycarbonate panels of various opacities, a cloak thrown over the shoulders to keep off the chill. The bones and cloak would rattle in strong winds and amplify the soft ping of heavy-falling mists. In a few places, the wood bones would also help with security, but the structure as a whole would be very open, with a high level of exposure to the elements. Only compartments to store valuables and small, conditioned living spaces would be

127. Cuts and Ramps, Gun 1

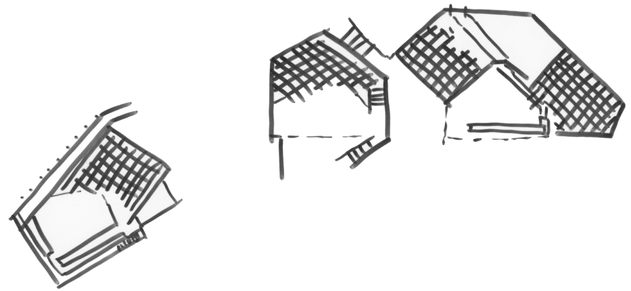
128. Wood Pilings Shackled to Emplacements

129. Wood and Concrete Set Lightly Into Sand

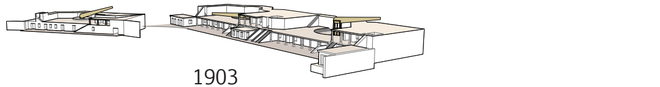
totally secure. The rest would operate as Land's End does, trusting the topography to encourage respectful distance.

The form these bones and cloak take is of a series of simple grids, patches of rationalized lines that unwind and wrap around the emplacements like a shroud, arms extending down across the gun decks like waves breaking on rocks or ribbons of tattered cloth in the wind. The shed roofs, their slope required to shed rain from the polycarbonate panels, are arranged to echo the slope of the hilltops that once occupied the emplacement sites. The wood bones touch down onto the surface of the emplacement and are shackled to it with simple steel angles and bolts. When the temporary structure is gone, a scattered print of the unwinding grids will be left like shrapnel from the guns that never fired. The grid of bones also extends off of the emplacements to allow easy hook up to the new electrical and plumbing services required. Here the bones form a shelf supported by concrete footings, which would likely shift in the sands over the course of ten to twenty years. Subtle buckling of the wood-bone shelves would increase with time, finally indicating when the period of collaborative residency should consider its own life cycle.

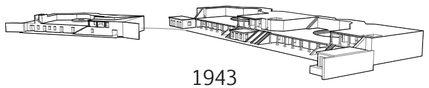
However, this structure is a not a mere aping of Land's End's textures, forms and processes; this structure, above all, is arranged as a very specific series of sequenced spatial experiences. Because a human-built structure is not a product of non-human forces, even when it wants to be friendly to the non-human, because it is a cultural artifact, it relies on the kind of emergent behavior that humans express: it is the narrative of a story, one that is realistic enough to be probably but novel enough to be illuminating; it is Andromeda's story. Each gun emplacement has unique, irregular features, and the most interesting of these were used as markers to connect to the Andromeda narrative.



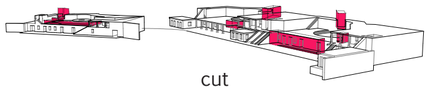
130. Unwinding Grid of Cloak and Bones



1903



1943

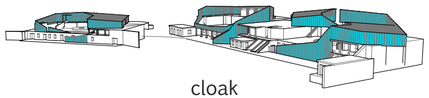


cut

procession

living pods

bones



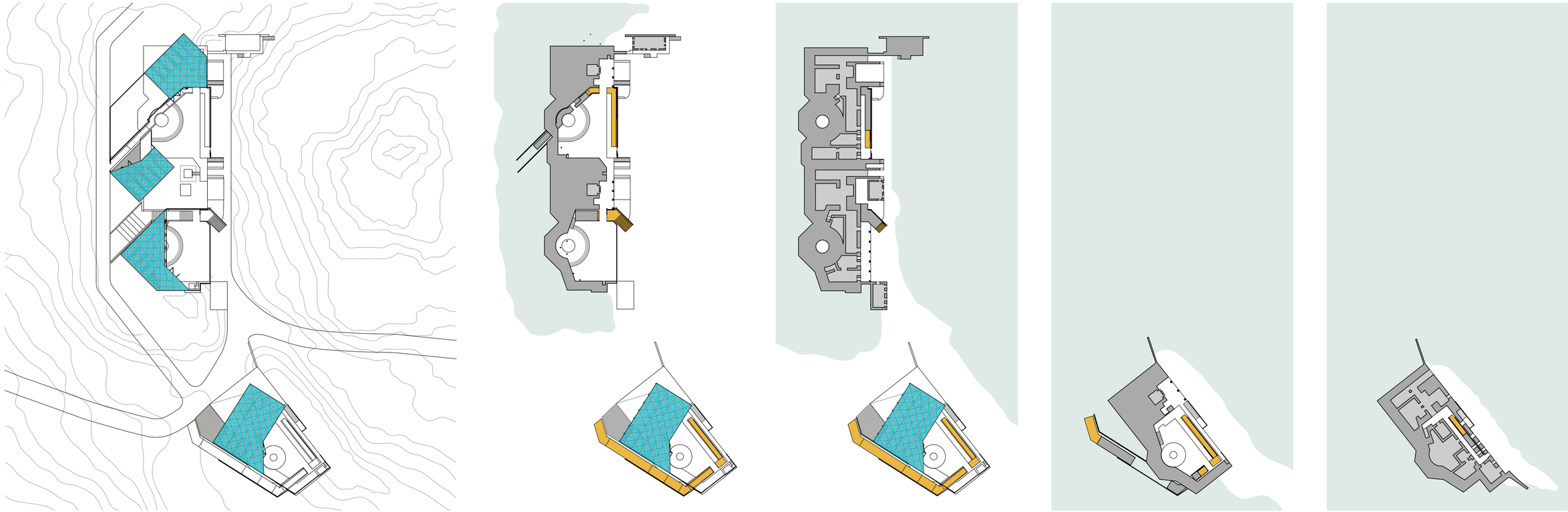
cloak

+25 years

131. Temporal Axonometric Progression of Additions

132. East-West Section of Re-Inhabited Emplacement 1"= 1/86"

133. North-South Section of Re-Inhabited Emplacement 1"= 1/86"



134. Re-Inhabited Emplacement Plans 1'= 3/256"

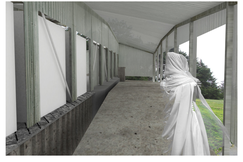
Sacrificial Procession of the Maiden, Ruler of Men

The emplacements are approached from a steeply ascending, wooded path that branches off from El Camino del Mar. Currently, the emplacements are hardly visible, sunken below the earth and veiled with trees, until one is right on top of the gun decks. This makes visual understanding of the emplacements difficult, and though the cloak-shroud would make the emplacements a little more visible, they would not greatly increase their visual understanding. Both old and new built designs must be moved through to be understood.

Gun Three is visible first, and has an open lawn in front of it that allows panoramic views of the Outer Richmond neighborhood and Ocean Beach below it. This is the place where humans feel comparable to immortals, perched above the end of the world, the unbroken horizon visible in the distance. The cloak and bones are a back porch here, an open secret, a sheltered squatter's roost. Because of the open lawn, there are stronger winds, stronger lateral forces on the cloak here, but instead of massively reinforcing the wood supports, the cloak is rent, openings allow the wind to move through more freely, hubris exacts its payment in the form of a shiver down the spine. This work yard is put to best use on projects that will be exposed to the same kinds of winds, the invited gales a testing ground for wind hardiness. The permanent ramp spirals inexorably down around the gun deck into the bowels of the old emplacement, revealing passageways into the unknown dark, the beginning of a voluntary sacrifice.

135. Back Porch of the Immortals






136. Stop Motion Sequence: Back Porch for Immortals

Gun Two is visible once a left turn is taken into the back side hill cut, when the wound is entered. A large stair curves around the north end of Gun Two, slowly scooping up the procession, leading it out of the narrow cut in the hill, winding around the works in progress on the gun deck, and gently leading to shallow stairs that turn the viewer back to where they started; entry is subtly denied. The cloak is separated by the procession and the upper gun deck laid bare for solitary contemplation of the fog breathing through the trees. Translucent walls leave the upper deck isolated, exposed, naked on the rock. If the sun is kind, it can be a respite. If the wind is cold, memories of a lost kingdom, a lost family, mingle with the lowing of fog horns who lament

137. Inverse Hearth

138. Stop Motion Sequence: Inverted Hearth, Sacrifice Denied

140. *Stop Motion Sequence: Altar for the Feast of the Body*

lost cargo.

Another examination of the procession route reveals an overlooked door. It exposes another passage, one leading to Gun One, the secluded place where the trees frame secret views of the Marin Headlands, glowing bits of gold interlaced alluringly between the dark trunks. A ramp leads down, the grade softer this time. The cloak is parted, open, inviting, as the earth comes up gradually to enclose the sides of the ramp. The procession is pulled smoothly around an easy curve and suddenly - a room full of upturned faces, expectant eyes - the procession is a spectacle on the proscenium of a stage! The ramp slowly curves down into the work yard, setting the procession down gently into the crowd, the body surrendered, consumed, rent, and made anew, while the white shroud (or is it a bridal veil?) floats in the winds above.

139. Altar for the Feast of the Body

[land's end, san francisco]

IV. Project Reflections

The Limits of Self-Reflexive Architecture

When dealing with emergent systems like coastal upwellings, like well-loved ruins, like spontaneous land art, it is difficult to plan ahead for eventualities. There are many variables, and it does not appear to be wise to attempt to control or even count all of them. This is very antithetical to the way we currently plan and construct buildings. During the course of this project, much was uncovered, at times painfully, about these sorts of conceptual disjunctions that separate the evocation of ecosystems and building design. The most difficult disjunction was the one between understanding the character of Land's End and attempting to strike a balance between not disturbing that character and still proposing something new, something needed.

Of all of the tools gathered for this project, the only one that consistently addressed every dilemma that arose was the Andromeda myth. At times it seemed a mere perpetuation of Western colonization efforts to use a classical Greek myth as an interpreter of a site half a world away (or more) from the story's origin. However, following the historical variations of the Andromeda myth seemed to eventually link an ancient Greek princess to a scoured, broken shoulder of a Western American city. The wisdom that a voluntary sacrifice is a good way to face the horror of the ending of a continent,

the end of the human world, Land's End, was the thread that stitched this project together.

The thought of attempting to evoke or embody an entire landscape in a single building still seems at times like the hubris of a mortal, and yet, invaluable insights were gained in this attempt. Allowing the ruins to be teachers, seeing how they revealed things about the natural world that was not visible until human structures and time revealed their effects was a cherished piece of learning.

Even more valuable was the realization that the way a building design connects to, touches down on to, unfolds (or does not unfold) onto the landscape reveals the designer's attitude toward that landscape - but - the unfolding can only fit holistically with the larger building in a graceful way if the designer is embodying that same attitude toward the landscape in the rest of the building. A smug, self-sufficient building cannot, at the last gasp, pretend to care about its neighbors in a convincing manner. The attitude of the designer for this project was a quiet awe in the face of spectacle, a sincere wish to help keep alive the mediating effect of the temporary, whimsical human responses to these spectacles, and a deeply felt appreciation for the bittersweetness of the partially-rent seam between two worlds that revealed itself. The connection between the building and the landscape here is one of anguished, but voluntary sacrifice that borders on negligence of personal comfort. It would be hard to imagine building occupants who would embrace this kind of experience if they did not have the same attitude toward Land's End that the designer holds. It is impossible for a designer to force building occupants to adopt any particular attitude, even if they frame views convincingly or creatively thread a narrative through space.

What proved most elusive was the ability to mark this building as a sacred precinct, as a place where the sacrifice (of personal comfort, here) is a sanctioned transgression of taboo, of cathartic release back to our non-human origins. Beyond the device of clearly evoking Andromeda's narrative to emphasize that this is a self-conscious effort to make a statement about the relationship between the human and the non-human in this place, which a building occupant may never glean, there is little in current architectural expression that can sanction transgression of taboo. The self-reflexiveness of this designer's architecture is currently limited in its vocabulary, and stumbles on expression of the ideas that humans and non-humans are not as separate as humans insist, and that the stories that humans tell to demarcate the boundary between themselves and non-human worlds reveal hidden human attitudes about the non-human world. Here this project stops, and further inquiry can begin in some other format.

Appendix A

Site Observation Journal Entries

The following pages contain the raw data collected on site at the Sutro Bath Cove, between mid-August and mid-September, 2013. The site observations continued through mid-December. The relevant quantitative data has been summarized in the main text, but the qualitative information cannot be compressed in this manner, and is therefore presented as a sample here.

The air and wind temperatures, tide heights, and moon phases were obtain through the National Oceanographic and Atmospheric Administration.[171] All other data is original. Wave heights were estimated by comparison to known heights of nearby objects. Wind direction was measured using an iPhone application compass and the weather vane at the Cliff House.

A reader might notice that the population counts were not rigorous, but rather, a method for attuning the observer to the organisms who, through their noticeable presence, made themselves known over time. When a population count range is given, the first number indicates the initial count upon arrival, and the second number indicates the last count before leaving.

Date and Time Duration: 8/16/13 Friday 14:30-16:00

Weather Conditions: overcast, low fog lifting
- Air Temperature: 72° F
- Water Temperature: 57° F
- Wind Direction/Quality: WNW, weak onshore
- Wave Height: 2-4 ft.
- Tide Conditions: early flood tide, 2.8 ft.
- Moon Phase: waxing gibbous, 53%

Population Counts
- Cars in Land's End Visitor's Center Lot: 40-50
- People: 20-40
- Seagulls of Various Species: 40-50
- Other Seabirds: cormorants on rocks 50-100, pelicans on rocks 10-20, 600-800 unidentifiable seabirds on rocks
- Other Biota:

General Notes

First visit to cove. Mostly tourists, one fisherman, a few younger, single ruin-lookers, rest are couples/families/friend groups. More older, single view-takers on benches above. One man walking the stairs for exercise. Land's End Visitor's Center not as bad as the pictures led me to believe. Heavy smell of guano hangs in the air, seems to be coming from the Seal Rocks, which are covered with sea birds.

Date and Time Duration: 8/21/13 Wednesday 15:00-16:20

Weather Conditions sunny, few clouds off coast
Air Temperature: 70° F
Water Temperature: 62° F
Wind Direction/Quality: W, very weak onshore
Wave Height: 4-6 ft.
Tide Conditions: late ebb tide, 1.4 ft.
Moon Phase: full

Population Counts
Cars in Land's End Visitor's Center Lot: 74-83
People: 23-47
Seagulls of Various Species: 100+
Other Seabirds: cormorants on rocks 100+, other unidentifiable seabirds on rocks 200-400.
Other Biota: 2 dogs, 1 hawk, 20+ small black finches in upper parking lot, 10-20 small black crabs in tide pools (appear to be filter feeding), 1000s of mussels below high tide line, clear vertical zonation with seaweed and barnacles, and lichen

General Notes
3-4 fishermen, 1 from the upper platform, 2 from the rocks. 2 small boats offshore, also fishing, 2 more small fishing boats further out. 1 person with feet in surf. 1 large container ship on the horizon, 3-4 smaller power boats coming and going through the Golden Gate. A plastic sign for HESS energy investment caught in one of the barricades. Why is it there? An abandoned pair of jeans on the upper trail. There aren't a significantly larger number of ppl. than on the cloudy day, though there are more cars. A couple posing for self photos down in the wave pool. How did they get down there? Still the smell of guano on the wind, though less.

Date and Time Duration: 8/23/13 Friday 15:11-22:40

Weather Conditions med-high overcast, with later clearing
Air Temperature: 57° F
Water Temperature: 63° F
Wind Direction/Quality: WNW, moderate onshore
Wave Height: 3-5 ft.
Tide Conditions: flood tide, 0.5-6.1 ft.
Moon Phase: waning gibbous, 74%

Population Counts
Cars in Land's End Visitor's Center Lot: 60-42
People: 49-37
Seagulls of Various Species: 45-0
Other Seabirds: cormorants on rocks 100+, 6 flying pelicans near shore, 40-80 plovers on beach.
Other Biota: 1 sea lion, 5-10 black finches, 1 hawk

General Notes
They harvest wind energy at the Cliff House. Public urination. 2 ppl fishing from the beach. 4 container ships coming in, 1 leaving. Fishing rig 'Melva W' close in by Seal Rocks. 1 person with ankles in water (young teenage boy). Observed how birds use the air current above the main pool as dryer and launcher. Vehicle wheel tracks coming from Ocean Beach (must have connected during a lower tide). Racoon-looking tracks next to southern rocks.

Date and Time Duration: 8/27/13 Tuesday 15:18-17:50

Weather Conditions overcast, low fog wall on the sea
- Air Temperature: 64° F
- Water Temperature: 61° F
- Wind Direction/Quality: SSW, gusty onshore
- Wave Height: 3-5 ft., white capping
- Tide Conditions: high then ebb tide, 4.1-2.5 ft.
- Moon Phase: waning gibbous, 65%

Population Counts
- Cars in Land's End Visitor's Center Lot: 42-24
- People: 56-7
- Seagulls of Various Species: 0-400+
- Other Seabirds: (no recording birds on far rocks) 5-20 pelicans near shore often diving/swimming
- Other Biota: sand flies (pernicious), drug hunting dog getting training (trainer yelling loudly), 1 hawk hovering over cove, 5-10 black finches bathing in exit trough down in cove

General Notes

2 small fishing boats, 4 long line fishermen on the beach. They tell me they catch striped sea bass, and they are dressed as if for winter (it is windy). Walked around the N. Point, follows old railroad grade, fog made it unearthly, could hear waves below. Caught a tagger in the act in the wave canal. Evidence of a fire on the lower wave platform. Gaggle of 'art kids' (1 with guitar, 1 with a bouquet of flowers, all dressed in black, teenaged), climbing over everything.

Date and Time Duration: 8/28/13 Wednesday 13:35-15:00

Weather Conditions thin, consistent fog, growing heavier
- Air Temperature: 69° F
- Water Temperature: 60° F
- Wind Direction/Quality: WNW, mild onshore
- Wave Height: ebb tide, 3.8 ft.
- Tide Conditions: 4-6 ft.
- Moon Phase: waning quarter, 50%

Population Counts
- Cars in Land's End Visitor's Center Lot: 50-45
- People: 37-49
- Seagulls of Various Species: 25-150+
- Other Seabirds: 5 pelicans near shore, diving and swimming, 100+ other tubenoses on beach
- Other Biota: 1 dolphin or porpoise, 1 hawk

General Notes

The temperature plummeted (down to 58) when the fog got heaviest. Scottie Jones spotted waves for me so I could investigate the outer wave pool. 3 ppl fishing, one had a dog and was on the beach, 1 on fisherman's rock, 1 out in the wave pool, took refuge in the cut off passage when waves came. Waves that do make it into the collection pool send an impressive shock wave back that dampens the oncoming waves. 1 woman doing plein air painting at 40' path. Paddle boarder, some surfers at Ocean Beach. 1 person with ankles in water, fishermen use it to wash hands. 2 dare-devil types who bike along the narrow inner sea wall. 3 small teenage groups climbing ruins.

Date and Time Duration: 8/31/13 Saturday 12:20-14:00

Weather Conditions low, medium thick fog
- Air Temperature: 60° F
- Water Temperature: 59° F
- Wind Direction/Quality: SW, gusty onshore
- Wave Height: 4-6 ft., rogue sets at 8 ft.
- Tide Conditions: ebb tide, 3.8 ft.
- Moon Phase: waning crescent, 37%

Population Counts
- Cars in Land's End Visitor's Center Lot: 225-231
- People: 112-125
- Seagulls of Various Species: 39-0 (dog near)
- Other Seabirds: 1 pelican, 20+ new gulls: white bodies, mottled gray wings, dk. eye smears
- Other Biota: 5+ black finches bathing in lowest canal

General Notes

So full! So many ppl! 3 surfers by fisherman's rock, many more at O.B. People looking at a new plasticene model of Land's End at parking lot. More small children and greater variety of ethnicities. The wave pool is the most filled with water that I've seen it yet. Pillow, shoes and sweater to E. of upper shipwreck platform rocks. Bra down by S. pool seep. 7-12 young kids playing badminton on beach, ankles in water, while their adults harvest mussels from the rocks. Wedding photography using upper sky cable anchor as a posing platform. Spoke to Conservancy volunteer who was weeding out invasives, later his wife also.

Date and Time Duration: 9/2/13 Monday 14:50-16:00

Weather Conditions sunny, small fog patches quickly burned off
- Air Temperature: 73° F
- Water Temperature: 60° F
- Wind Direction/Quality: W, mild onshore
- Wave Height: 2-3 ft.
- Tide Conditions: ebb tide, 2.2 ft.
- Moon Phase: waning crescent, 18%

Population Counts
- Cars in Land's End Visitor's Center Lot: 300+
- People: 160-200+
- Seagulls of Various Species: 47-0
- Other Seabirds: 5 pelicans near shore, diving and swimming, 100+ other tubenoses on beach
- Other Biota: 1 whale just outside Golden Gate entry, 5+ dogs

General Notes

Labor Day, so peak human population. 2 small tent structures, many blankets on beach, 10+ ppl with ankles in water. Photo shoot in front of boiler room (album cover?). 5+ container ships, 10+ sail boats, 10+ power boats. A couple trek through the wave canal to the outer pool. Many people on blankets on the bluffs, waiting for sunset. Many surfers at O.B., as well as parasailing. The rope over the wave canal has broken! Hope it wasn't when anyone was using it. Good we didn't use it.

Date and Time Duration: 9/5/13 Thursday 13:00-15:30

Weather Conditions sunny, thin fog far off shore
- Air Temperature: 70˚ F
- Water Temperature: 60˚ F
- Wind Direction/Quality: SW, strong onshore
- Wave Height: 5-6 ft., white capping
- Tide Conditions: ebb tide, 0.4 ft
- Moon Phase: new

Population Counts
- Cars in Land's End Visitor's Center Lot: 58-52
- People: 42-27
- Seagulls of Various Species: 12-100+
- Other Seabirds: 14 pelicans near shore, flying low in squadron formation, >100 birds on outer rocks
- Other Biota: 1 hawk being harried by 4 crows

General Notes

The wind seems to be pushing the water back onto the shore, looks higher than the tide prediction says it should be. Finally saw a fish being caught, seagulls were anxious about trying to get a bit. Hand sized, perch shaped. A group of HS students came through, teacher had a megaphone, they had worksheets to fill in. Sand blown in eyes! Otherwise feels like being out to sea, wind is strong and heavy with chilled water. Old military boat, tanker, being hauled out. 1 elderly fisherman, also collecting mussels in wave pool, dressed to withstand waves. Faint vehicle tracks coming from O.B., wind erased. The birds are huddled on leeward side of rocks, or have gone elsewhere more protected. Waves filling wave pool strongly, makes me think it is more a function of local wind, not wave height.

Date and Time Duration: 9/7/13 Saturday 10:30-12:30

Weather Conditions sunny, not a cloud in the sky
- Air Temperature: 71˚ F
- Water Temperature: 60˚ F
- Wind Direction/Quality: W, hardly a breath
- Wave Height: 3-4 ft., rogue sets of 6+ ft.
- Tide Conditions: flood tide, 3.3 ft.
- Moon Phase: waxing crescent, 9%

Population Counts
- Cars in Land's End Visitor's Center Lot: 300+ (capacity)
- People: 61-73
- Seagulls of Various Species: 0-30
- Other Seabirds: 5 pelicans near shore, mostly cormorant back on outer rocks
- Other Biota: 2 hawks

General Notes

There is something incredibly soft and mild about the air, almost creamy. As before, when there is no wind, there are sand flies! Strangely manic young man who is walking along beach rocks, and seawall, heedless of waves. Most people seem to be going off on the hiking trails, not down to the beach. 1 tug with barge, 1 fisherman on F. rock. 1 coastguard helicopter, 1 Cessna passing twice. The wave pool is catching waves today without wind. Flow through the channel is good, much clearer. Many surfers at O.B., and many photographers in the cove. They say they are whale watching, leaving as I got there. For some reason that I can't understand, the tide seems high but the link to O.B. is still visible. Has the beach changed height?

Date and Time Duration: 9/10/13 Tuesday 10:00-12:36

Weather Conditions patchy clouds, fog bank approaches offshore
- Air Temperature: 60° F
- Water Temperature: 58° F
- Wind Direction/Quality: SW, gusty onshore
- Wave Height: 2-4 ft., breaking near
- Tide Conditions: late flood tide, 4.8 ft.
- Moon Phase: waxing crescent, 14%

Population Counts
- Cars in Land's End Visitor's Center Lot: 33-47
- People: 9-18
- Seagulls of Various Species: 12-25
- Other Seabirds: 7 pelicans near shore

Other Biota: 1 hawk

General Notes

A box of debris on the edge of the far S. pool, why didn't they take it up, if they collected it? Mad woman on old jetty stairs. Far more ppl in singles than on weekend. Few surfers on O.B. Sand on beach has been blown into wave formations. 1 sailboat, 1 pilot boat. Many ppl just look at the cove, and don't go down. Afraid of the grade? The seagulls leave the main pool when I carry my tripod past it. A mother shows her son a small black finch eating the bugs off of car grilles. There seem to be fewer gulls - no ppl to feed them? Doesn't quite fit the pattern.

Date and Time Duration: 9/11/13 Wednesday 10:30-12:00

Weather Conditions high overcast, air hazy with moisture
- Air Temperature: 65° F
- Water Temperature: 60° F
- Wind Direction/Quality: WSW, mild onshore
- Wave Height: 2-4 ft.
- Tide Conditions: late flood tide, 4.5 ft.
- Moon Phase: waxing crescent, 19%

Population Counts
- Cars in Land's End Visitor's Center Lot: 56-43
- People: 17-22
- Seagulls of Various Species: 6-36
- Other Seabirds: 13 pelicans near shore

Other Biota: pod (5-15) of harbor porpoises, going back and forth across the cove waters, rounding up balls of fish that the pelicans and seagulls attack from the air. 15-25 black finches.

General Notes

Most ppl watch the porpoises as they go by, and their hunting lasts approx. 20 min., until they encounter the surfers at O.B., then they veer out to sea. Lots of woody debris on the beach. What look like duck tracks through the algae in the pools. Small black finches have started making a new, loud noise. 1 fisherman with 2 long line poles near N. rocks, on cell phone the whole time. A wedding dress washed up on the rocks! 1 fishing boat, 2 pilot boats, 3 container ships. Another box to collect trash has appeared, this one near S. sand cliffs. 1 photographer on the lower wave platform, perched over canal precariously. There is a lot of graffiti collecting. It must have been recently painted over when I first got here. The fisherman showed someone how to get out to the wave pool.

Date and Time Duration: 9/14/13 Saturday 11:40-12:20

Weather Conditions clear, v. windy, white caps everywhere
- Air Temperature: 65° F
- Water Temperature: 59° F
- Wind Direction/Quality: WNW, strong onshore
- Wave Height: 3-5 ft., rogue sets 8+ ft.
- Tide Conditions: ebb tide, 1.4 ft.
- Moon Phase: waxing gibbous, 63%

Population Counts
- Cars in Land's End Visitor's Center Lot: 300+ (capacity)
- People: 73-52
- Seagulls of Various Species: 0-0 (wind?)
- Other Seabirds: 9 pelicans cruising way up high

Other Biota:

General Notes

More sailboats than I've ever seen, perhaps 40+, then the Oracle/America's Cup boat comes screaming out of the Golden Gate, all tilted in the strong wind. (America's Cup occurring in SF Bay this month). Many parasailors on O.B. Ppl not lingering in cove, and standing at the top watching their clothes get twisted around in mock horror. Someone doing yoga on fisherman's rock, swaying in the wind. Another person down on the beach doing fast boxing forms. Smell of guano is high up on the cliffs above the lookout. People mostly going out to coastal trail, again.

Date and Time Duration: 9/17/13 Tuesday 12:30-14:00

Weather Conditions clear, even windier
- Air Temperature: 63° F
- Water Temperature: 58° F
- Wind Direction/Quality: WNW, v. strong onshore
- Wave Height: 4-7 ft.
- Tide Conditions: early ebb tide, 0.3 ft.
- Moon Phase: waxing gibbous, 91%

Population Counts
- Cars in Land's End Visitor's Center Lot: 53-58
- People: 13-26
- Seagulls of Various Species: 0-18
- Other Seabirds: 23 pelicans cruising way up high

Other Biota: 1 hawk

General Notes

Most seabirds are huddled on the leeward side of the rocks again. A group of 7 men with telescopes on the upper shipwreck platform, tell me they are there to see a pair of blue footed boobies said to be resting on a migration route, out on the Seal Rocks. Many parasailors on O.B. Waves are screaming onto shore, booming loudly in the tunnel, but the wave collecting pool is not particularly full. It is low tide. The current of water coming through the canal is quite strong, though, indicating that at higher tides it is collecting quite a lot of water, though turbid. 1 container ship, going out empty. Lots of sand in the air. Windows of Visitor's Ctr, Cliff House all coated with salt spray. Sea foam sometimes gets airborne, bouncing around the rocks and the beach.

Appendix B

Species Identified at Land's End

gulls: *Larus pacificus, Larus californicus, Larus occidentalis, Larus canus, Larus heermanni*

coromorants: *Phalacrocorax penicillatus*

pelicans: *Pelecanus occidentalis*

plovers: *Charadrius nivosus*

surfbirds: *Aphriza virgata*

black turnstones: *Arenaria melanocephala*

harbor porpoises: *Phocoena phocoena*

sea lions: *Zalophus californianus*

harbor seals: *Phoca vitulina richardsi*

gray whales: *Eschrichtius robustus*

sea anemones: *Anthopleura elegantissima and xanthogrammica*

sea stars: *Pisaster ochraceus*

mussels: *Mytilus edulis*

acorn barnacles: *Balanus*

limpets: *Lottia strigatella and pelta*

periwinkles: *Littorina planaxis*

lined shore crabs: *Pachygrapsus crassipes*

coralline algae: *Calliathron cheilosporioides*

bullwhip kelp: *Nereocystis luetkeana*

dead men's fingers: *Codium fragile*

mallards: *Anas platyrhynchos*

ring-necked ducks: *Aythya collaris*

coots: *Fulica americana*

grebes: *Aechmophorus occidentalis*

great blue heron: *Ardea herodias*

red-tailed hawks: *Buteo jamaicensis*

crows: *Corvus brachyrhynchos*

ravens: *Corvus corax*

Brewer's blackbirds: *Euphagus cyanocephalus*

hummingbirds: *Selasphourus rufus*

sparrows: *Passer domesticus and others*

ground squirrels: *Spermophilus beecheyi*

coyotes: *Canis latrans*

mattress vine: *Muehlenbeckia complexa*

ice plants: *Carpobrotus edulis*

stink beans: *Albizia*

beach strawberry: *Fragaria chiloensis*

dune tansy: *Tanacetum cemphoratum*

bush lupine: *Lupinus arboreus*

Monterey pine: *Pinus radiata*

Monterey cypress: *Cupressus macrocarpa*

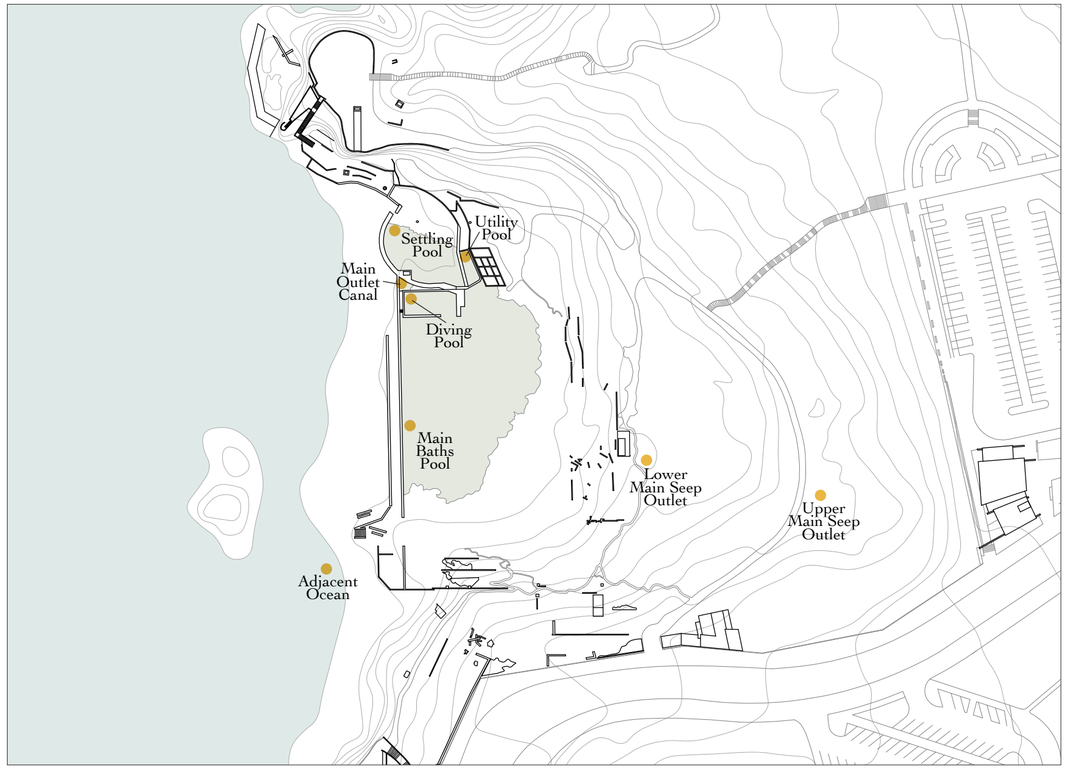
All taxonomic identifications were made using *Natural History of San Francisco Bay*, by A.R. Okamoto and K.M. Wong, as well as *Walking and Exploring San Francisco's Pacific Shore: Golden Gate to Fort Funston*, C. Thickstun.[172]

Appendix C

Water Quality Test Results for Sutro Baths Ruins

Collection Site	Dissolved Oxygen mg/L	Salinity percent	pH	Alkalinity ppm	Phosphate ppm	Nitrate/Nitrite ppm	Sulfate/H.Sulfide ppm	E. Coli presence	Pesticide trace presence	Lead trace presence	Temperature °F
Upper Main Seep Outlet	9	0	7	-	-	-	-	no	no	no	60
Lower Main Seep Outlet	9	0	7	-	-	-	-	no	no	no	60
Main Baths Pool	6	0-2 (gain with depth)	10	240	0	0/0	150/0.3	yes	no	no	62
Diving Pool	5	1	9	-	-	-	-	yes	no	no	62
Utility Pool	6	0.5	9	-	-	-	-	yes	no	no	65
Main Outlet Canal	5	3	9	-	-	-	-	no	no	no	58
Settling Pool	3	2	10	-	-	-	-	yes	no	no	63
Adjacent Ocean	9	36	8	-	-	-	-	no	no	no	55

For exact location sites, see map on following page.



141. Map of Water Quality Testing Sites

All tests performed on a single day Nov. 7, 2013, therefore, the sample size is not sufficient to consider these results definitive.

For all water samples, one large sample was taken from the water source using a plastic bottle (weighted when in pools with low water levels), and individual samples were taken from this single, large sample for each individual test. All testing equipment was disinfected with bleach wipes and washed thoroughly with distilled water between testing.

The testing equipment came from water health monitoring and salt water aquarium testing kits: for dissolved oxygen levels, the Salifert Dissolved Oxygen Test Kit was used. For pH, Alkalinity, Phosphate, Nitrate/Nitrite, Sulfate/Hydrogen Sulfide levels, the Watts Premier All-in-One Water Test Kit was used. For E. Coli presence, trace pesticide presence, and trace lead presence, the First Alert WT1 Drinking Water Test Kit was used. Salinity was determined using a refractometer (manufactured by Agricultural Solutions), and temperature with a thermometer (standard alcohol bulb).

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