Chapter 2.0, Response to Comments

Volume 2

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9-735 Pandora Avenue
Victoria, BC
CANADA V8W 1N9
March 25, 2013

CITY OF LOS ANGELES
APR 1 2013
ENV MGMT DIV
HARBOR DEPARTMENT

Mr. Christopher Cannon
Director of Environmental Department
Los Angeles Harbor Department
425 South Paloes Verdes Street
San Pedro, CA 90731

Dear Mr. Cannon:

The proposed plan for Terminal Island's redevelopment is a matter of great interest to many people – including people such as myself who live in other countries. Many of us still have historic ties to the City of Los Angeles and its surrounding regions. We are always delighted to read about the various projects for historic preservation of historic homes, theatres, and the many public venues that remind us of Old California and its remarkable history. PR-1

I would like to urge the Port and the Board of Harbor Commissioners to place a priority on preserving and reusing the historic buildings on Terminal Island. The remaining historic buildings are the last vestige of the tuna canning industry and the World War I and II shipbuilding programs. Like many old buildings, they can be adapted and reconfigured for new and very creative uses. Of particular concern is the proposed roadway realignments in the Terminal Island Land Use Plan. The historic canneries will have to be demolished and historic buildings destroyed in order to realign Seaside Avenue through Southwest Marine. PR-2

This seems unnecessary. With a little flexibility and creative input a way can be found to preserve this important social legacy and historic district for future generations. I hope you will consider this in the Port Master Plan Update.

Your kind consideration of this matter is greatly appreciated.

Sincerely,

Patricia M. Ross

Patricia M. Ross

Cc: Geraldine Knatz
Marcello Vavala

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Comment Letter PR: Patricia Ross

Response to Comment PR-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment PR-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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From: S.A. Green <greest@yahoo.com>
Sent: Friday, March 29, 2013 10:32 AM
To: Ceqacomments
Cc: Commissioners; Knatz, Geraldine
Subject: Draft Program Environmental Impact Report and Port Master Plan Update

Please include an historic preservation element in consideration of environmental impacts in the Harbor Island area and in the update of the Port Master Plan. SG-1

When my children (now in their 20s) were toddlers, they enjoyed seeing the fishing fleet and the historic structures in the port area. This heritage should be preserved alongside efforts to update the port's functionality.

Stanley Green, P.E.
P.O. Box 95
College Place, WA 99324

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Comment Letter SG: Stanley Green

Response to Comment SG-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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From: LarryFarma@aol.com
Sent: Wednesday, April 03, 2013 9:22 PM
To: Ceqacomments
Cc: Knatz, Geraldine; Commissioners; mvavala@laconservancy.org
Subject: I urge adaptive reuse of historic Terminal Island buildings

I think that adaptive reuse is often a good way to save important features of historic buildings. Some important features of two historic neighborhood movie theaters of mine -- the Loyola Theatre and the Baldwin Theater-- were saved when these theaters were converted to office buildings. LF-1

Sincerely,

Lawence Fafarman

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Comment Letter LF: Lawrence Fafarman

Response to Comment LF-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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From: Philip Belfer <philipbelfer@mac.com>
Sent: Wednesday, April 03, 2013 3:20 PM
To: Ceqacomments
Cc: Knatz, Geraldine; Commissioners
Subject: Preserve Historical Terminal Island

Dear Mr. Cannon:

I am a resident of Long Beach and am concerned that future plans for Terminal Island in neighboring San Pedro/Wilmington may result in the destruction of historically and culturally significant structures. I believe that the Port of LA and the Board of Harbor Commissioners can come up with a plan that will expand rail access to the port and improve port facilities while retaining the historic aspects of Terminal Island for generations to come. While developing the commercial port of today is of extreme importance, so is preserving historic structures to inspire youth with our maritime past. PB-1

Los Angeles has time and again made the mistake of tearing down what should and could have been preserved. Not only do these historic structures remind us of the past, they also provide an opportunity for the Port of LA to engage with the community and bring in tourist dollars as well. PB-2

Please do all that you can to preserve the WW I, WW II and cannery history of Terminal Island and make it accessible to the neighboring communities. Thank you for your consideration.

Sincerely,
Philip J .Belfer
Long Beach, CA

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Comment Letter PB: Philip Belfer

Response to Comment PB-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment PB-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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From: Jay Ross [ross_jay@hotmail.com]
Sent: Saturday, April 06, 2013 4:37 PM
To: Ceqacomments; Knatz, Geraldine; Commissioners
Subject: Terminal Island: Opposition to proposed plan

To
Christopher Cannon, Director of Environmental Management, Los Angeles Harbor Department
Geraldine Knatz, Port of Los Angeles' Executive Director
Board of Harbor Commissioners

I concur with the LA Conservancy that you should not demolish everything on Terminal Island. That's the easy way out, and you will create an area with no soul that no one will particularly want to visit. Historic buildings are attractive to patrons and tenants, not soulless architecture that will replace it. JR-1

The Port Master Plan Update should provide a path forward for preservation of Terminal Island's historic buildings. Preservation and reusing historic buildings should be made a priority, on par with other identified goals within the Plan. JR-2

Designated land uses and policies should allow for the adaptive reuse of historic buildings, rather than their demise. Flexibility is needed within the Plan to ensure historic buildings can and will be adaptively reused while also still addressing fundamental goals for the Port. Placing competing land uses over Southwest Marine's buildings severely limits their ability to be reused and adhere to the Plan. JR-3

Terminal Island's historic buildings can be successfully adapted for new uses. Every effort should be taken to look at creative reuse opportunities and public-private partnerships that can complement Port functions while preserving historic buildings. JR-4

Historic, cultural and archaeological resources should be clearly identified within the Plan. The entire Port has yet to be surveyed and not all eligible historic buildings are indicated or even identified within the Plan. The remaining historic buildings are the last vestige of Terminal Island's World War I and World War II shipbuilding, tuna canning industry, and Japanese-American built environment. As the last physical link to the extraordinary heritage of Terminal Island, the historic buildings should be appropriately maintained and preserved. JR-5

Proposed roadway and rail realignments by the Port should be fully reevaluated, as they will directly call for the demolition of buildings at Southwest Marine. Realigning Seaside Avenue through Southwest Marine will further bisect the historic district and jeopardize its continued eligibility, as multiple buildings will be demolished. JR-6

Jay Ross
1721 Granville Ave
Los Angeles, CA 90025
Ross_Jay@Hotmail.com
310 979 9255

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Comment Letter JR: Jay Ross

Response to Comment JR-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment JR-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment JR-3:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment JR-4:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment JR-5:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment JR-6:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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Donna Ethington
Pacific Yacht Landing
Berth 203 #9, Wilmington, CA 90744
(310) 549-8111

April 5, 2013

Michael Cham
Port of Los Angeles
Planning & Economic Development Division
425 S. Palos Verdes Street
San Pedro, CA 90731

Re: Comments on Draft Port Master Plan Update

Dear Michael,

Thank you for the opportunity to comment on the Draft Port Master Plan Update. DE-1

On behalf of all the Wilmington marinas, I would like to thank the Port for including the ARSSS redevelopment plan in the PMP update. Please include a connection to the ARSSS site in the Pedestrian Pathways and California Coastal Trail (Figures 3 and 4). See additional comments on pages 3 - 5 under 3.2.4 Goal 4: Increase Public Access to the Waterfront.

Questions: Figure 6, Planning Area 2 DE-2

The marinas on the south side of the Consolidated Slip, Island Yacht Marina II and Leeward Bay Marina's annex do not appear in this Figure. Hopefully this is just an oversight. If not, what is the Port's intent?

The north side of the Consolidated Slip indicates maritime support, which is currently Manson Construction. It is our understanding that Manson will not be in that location beyond 2014. Is there another maritime support use being considered for that area? Is this area still under consideration as a future marina relocation site? DE-3

4.3 Demand for Recreational Boating Facilities DE-4

The PMP should reevaluate the need for recreational boatyard repair facilities. When the Port conducted a Boatyard Analysis in January 2012 there were two boatyards in the Port other than the small facility at Cerritos Yacht Anchorage. These two facilities are now closed. Ideally, there should be one boatyard site designated in the outer harbor and one in the inner harbor.

5.3.4 Other Projects

Relocation of SA Recycling DE-5

The updated PMP will analyze relocating SA Recycling eastward to Berths 206-207 to accommodate expansion of the Yusen container terminal. SA Recycling has stated several times in public hearings that it would not be financially feasible to move the scrap facility eastward. To

DE-5 do so could result in the loss of a 50-year Port tenant, a major exporter, and one of only two dry bulk facilities in the Port. SA has invested millions of dollars in environmental and site improvements, new technology and equipment, and is a valued community partner and good neighbor to all in the East Basin.

DE-6 Unlike SA, YTI's operations are mobile. It seems to me that YTI could expand to Berths 206-209 without disrupting the East Basin or driving business and jobs out of the Port or further reducing Port diversity if a short elevated access road was constructed from Berth 212 to 209 over SA's truck lanes. Please evaluate an elevated access road.

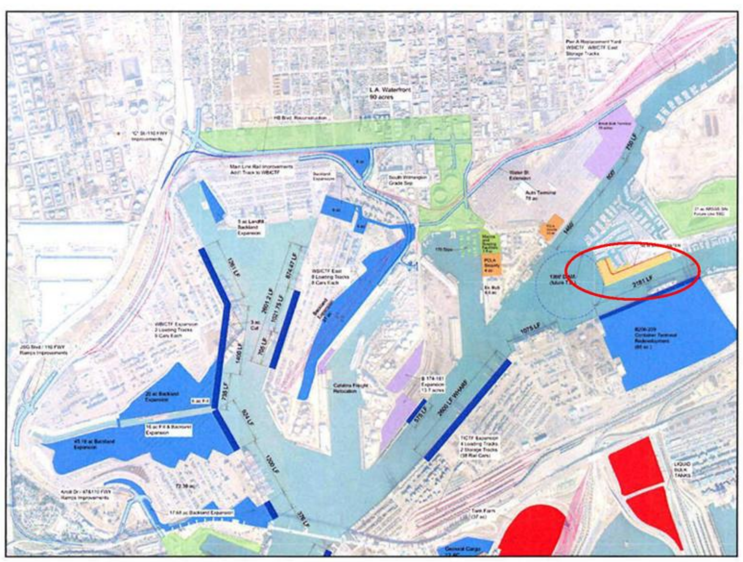
DE-7 For the last 7-8 years there have been 2 or 3 breakbulk ships per week unloading cargo at Berths 206-209 and an occasional auto carrier waiting for berth space at WWL, which has worked well with boating and marina uses in the channel. As 85 acres likely exceeds the needs for breakbulk, please evaluate a multi-use facility – breakbulk or dry bulk and container backlands. Additionally, emissions reduction technology should be made available to breakbulk ships and infrequent callers at these berths that do not have AMP capability.

DE-8 **East Basin Marina Improvements**

The updated PMP will also analyze constructing a breakwater in the East Basin marinas that would displace 170 boat slips, as shown below, to accommodate ships and protect the marinas from tug prop wash generated while moving ships into and out of Berths 206-209.

A breakwater would put Newmark's Yacht Centre, a 65-year Port tenant out of business. Other than a small incident involving a tug maneuvering a Matson ship in extreme weather conditions about 10 years ago, I don't recall any navigational incidents in the East Basin or Cerritos Channel in 30+ years that would warrant construction of a breakwater.

DE-9 According to Table 10, Planning Area 2 Acreages, the Wilmington marinas and Banning's Landing combined occupy 32 acres of land and water space. This represents .4% of the Port's 7,500 acres and approx. 2 miles, or 4.5% of its 43-mile waterfront.



DE-10 Even if Newmark's 170 slips were relocated to Banning's Landing, a breakwater will reduce Wilmington's public waterfront by approx. 2500 feet, or 1%. DE-10

It should be noted that the Wilmington marinas have been in the East Basin since the 1920's. This is the only area in Wilmington designated for recreational boating. Please consider a use for Berths 206-209 that will not displace marinas or reduce Wilmington's scarce waterfront. DE-11

Figure 5. Planning Area 1 San Pedro

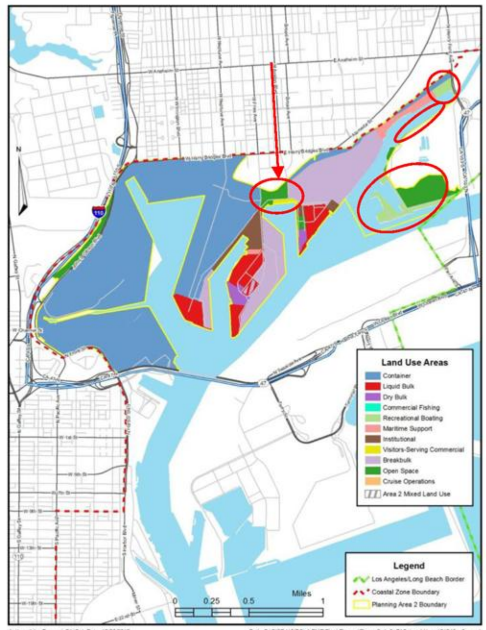


Figure 6. Planning Area 2 Wilmington

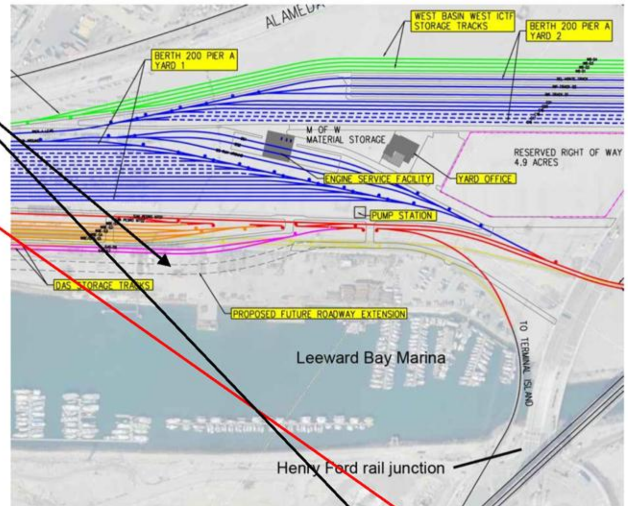
3.2.4 Goal 4: Increase Public Access to the Waterfront DE-12

'As part of a larger community, the Port will provide for enhanced public access to the waterfront and visitor-serving facilities including retail restaurants, museums and parks to both the local communities of San Pedro and Wilmington. Visitor-serving areas should connect with local commercial districts directly outside the port district, such as Downtown San Pedro and the Wilmington Avalon Corridor. Within visitor-serving areas, pedestrian and bicycle pathways should connect a series of commercial and open space destinations as well as allow the opportunity to network into regional resources such as the California Coastal Trail.'

In the above side-by-side comparison of the San Pedro and Wilmington waterfronts it is clear that the community of San Pedro has multiple connections to a contiguous public waterfront, whereas Wilmington's waterfront is fragmented with only one connection from the community to its waterfront at Banning's Landing. Wilmington's marinas are separated from the community by shipping terminals, major truck routes, rail lines and other heavy industrial uses.

There are potential opportunities in the next 20 years to enhance Wilmington's public access to its waterfront by connecting all parts of its waterfront to the community.

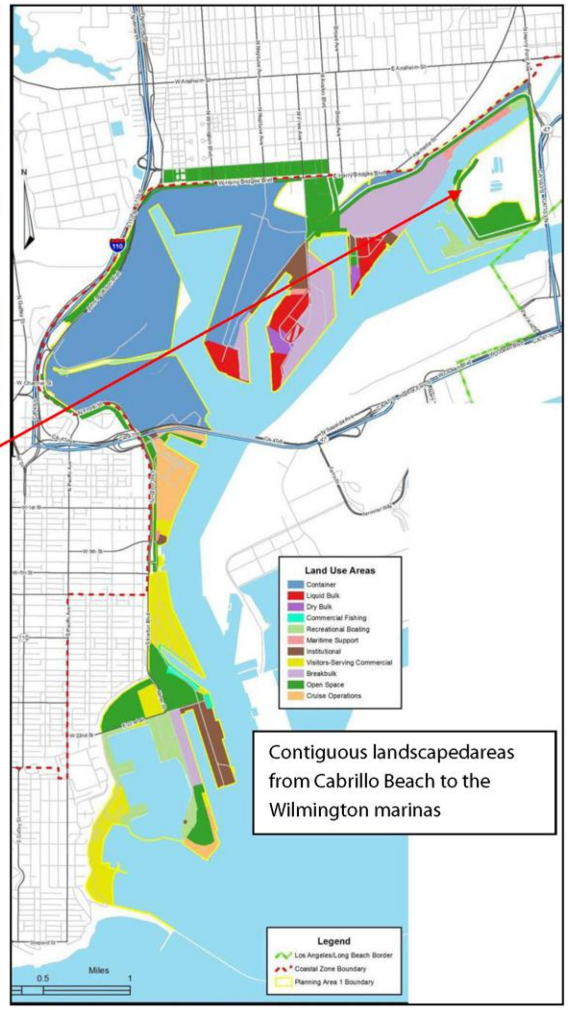
DE-13 For instance, these two projects, the proposed access road from Avalon Blvd to Leeward Bay Marina (part of phase II of the Berth 200 railyard *) and the ACTA Truck Expressway (if amended to add an at-grade vehicular bridge to the support columns in the Consolidated Slip) can make this continuous connection from Banning's Landing to the marinas and ARSSS open space possible.



This connection would also resolve the ingress/egress problems at the Henry Ford rail junction (above photos) by allowing pedestrians, bicyclists and motorists to enter and exit the East Basin marinas at Avalon Blvd, and provide an unobstructed route for police and other emergency response vehicles.

* PCAC recommendation #101 - 6/3/10 - Board approved staff recommendation to include an access road to Leeward Bay Marina in the Berth 200 rail yard project improvements, and to designate harbor land as right-of-way for the future access road to be constructed when Harbor funds become available.

It would further benefit the harbor area communities by creating a contiguous landscaped boundary around the Port as envisioned in PCAC recommendation #42, approved by the Harbor Commission 2/15/07, and improving linkages in pedestrian and bike paths and California Coastal Trail. DE-14



The Wilmington Boat Owners Association is working with the Port of Long Beach to create a <u>tree-lined, landscaped buffer</u> that will be planted on Port of Long Beach property along Shore Road from the wetland area to Island Yacht Marina II to help complete the landscaped boundary within the Wilmington marinas.

<u>Please include in Goal 4 language that recognizes the Port's intent of creating a 'physical, distinctive, recognizable, aesthetically landscaped Port boundary in the ongoing development of the LA Waterfront,' as approved by the Harbor Commission on 2/15/07, PCAC recommendation #42.</u>

Please review all PCAC recommendations to ensure Board approved projects and mitigation measures are carried forward to the updated PMP.

Thank you for considering these comments. I look forward to your responses.

Respectfully,

Donna Ethington, Board member
Port-Community Advisory Committee
Wilmington Neighborhood Council
Wilmington Boat Owners Association

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Comment Letter DE: Donna Ethington

Response to Comment DE-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-3:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-4:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-5:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-6:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-7:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-8:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-9:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-10:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-11:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-12:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-13:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DE-14:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Linda L. Alexander
1179 W. 11th St., # 1
San Pedro, CA 90731
310-548-5395 lalex@cox.net

April 6, 2013

Michael Cham
Harbor Planning and Economic Analyst
Planning and Economic Development Division
Port of Los Angeles
425 S. Palos Verdes St.
San Pedro, CA 90731

Dear Michael,

I would like to comment on the Port's Master Plan. As you know our Central San Pedro Neighborhood Council was unable to forward the Port Relations' committee recommendations to the full vote for the board which would have occurred on Tuesday, April 8. However, I am in full agreement with the committee's recommendations: LA-1

1) That the Port maximize the use of its downtown San Pedro Cruise Terminal facilities before considering the construction of, or expansion to outer harbor cruise facilities e.g. at Kaiser Point.
2) That the Port incorporate into its current Master Plan Update a method of tourist and visitor transportation between the waterfront, Cabrillo Beach and downtown San Pedro via street car or alternate light rail system. LA-2
3) That the Port dedicate a parcel of land on Terminal Island no smaller than one acre at the former site of the historical Japanese "Lost" Village and facilitate the construction of a Japanese History Museum on that site to commemorate the rich history and contributions which the Japanese people made to San Pedro. LA-3

Thank you for the opportunity to comment on this important plan.

Sincerely,

Linda Alexander, President
Central San Pedro Neighborhood Council
(title for purposes of ID only)

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Comment Letter LA: Linda Alexander

Response to Comment LA-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment LA-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment LA-3:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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Cham, Michael

From: Sue Castillo <redsue12@gmail.com>
Sent: Saturday, April 06, 2013 1:32 PM
To: Cham, Michael
Subject: Comments on the Port's Master Plan

Categories: Red Category

As a stakeholder within the boundaries of the Central San Pedro Neighborhood Council, I support the comments of Central San Pedro Neighborhood Council's Port Committee which strongly requests the following: SC-1

1) That the Port maximize the use of its downtown San Pedro Cruise Terminal facilities before considering the construction of, or expansion to outer harbor cruise facilities e.g. at Kaiser Point.

2) That the Port incorporate into its current Master Plan Update a method of tourist and visitor transportation between the waterfront, Cabrillo Beach and downtown San Pedro via street car or alternate light rail system. SC-2

3) That the Port dedicate a parcel of land on Terminal Island no smaller than one acre at the former site of the historical Japanese "Lost" Village and facilitate the construction of a Japanese History Museum on that site to commemorate the rich history and contributions which the Japanese people made to San Pedro. SC-3

I appreciate the effort and intention of this Land Use Master Plan update and thank you, both for the opportunity to provide input, and for listening to Central San Pedro Neighborhood Council's requests and incorporating them wherever possible." SC-4

Sue Castillo
809 S. Grand Avenue
San Pedro, Ca 90731

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Comment Letter SC: Sue Castillo

Response to Comment SC-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SC-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SC-3:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SC-4:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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From: LeFevre/Esprabens [solarium@pacbell.net]
Sent: Sunday, April 07, 2013 7:10 PM
To: Ceqacomments
Cc: Knatz, Geraldine; Commissioners
Subject: preservation of Terminal Island historic buildings

Christopher Cannon
Director of Environmental Management, Los Angeles Harbor Department

Dear Mr. Cannon,
I would like to take this opportunity to express how important I feel that the Master Plan Update allow Terminal Island's historic buildings to be adaptively reused. As a native Angeleno and one who now considers San Pedro my second hometown, I wholeheartedly support the preservation aspects of the important history of Terminal Island. CE-1
Please consider the following:

- That the preservation and reuse of historic buildings be on par with other identified goals within the Plan. CE-2
- Land uses and policies should allow for the adaptive reuse of historic buildings, rather than their demise. I was glad to hear at Thursday public hearing an example of artists wanting to incorporate art, restaurant and a brewery within these spaces. CE-3
- I understand that the entire Port has yet to be surveyed and not all eligible historic buildings are indicated or identified within the Plan. Let us acknowledge those who lived and worked on Terminal Island before being sent to internment camps during World War II, as Jeanne Wakatsuki Houston describes in her historical novel Farewell to Manzanar. CE-4
- These historic buildings are the last vestige of the Wars' shipbuilding, tuna canning industry, and Japanese-American built environment. CE-5
- I understand that proposed roadway and rail realignments by the Port should be fully reevaluated, as they will directly call for the demolition of buildings at Southwest Marine. CE-6

I hope that the revitalization of our waterfront and its future can stand alongside the preservation of Terminal Island's past.

Sincerely,
Christine Esprabens
1711 S Walker Ave
San Pedro, Ca 90731

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Comment Letter CE: Christine Esprabens

Response to Comment CE-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment CE-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment CE-3:

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Response to Comment CE-4:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment CE-5:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment CE-6:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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Please, Please, Please, listen to the LA Conservancy regarding Terminal Island. Is California's Japanese History to become obsolete? Architecture is history in form.

LA CONSERVANCY RECOMMENDATIONS:

-
- **The Port Master Plan Update should provide a path forward for preservation of Terminal Island's historic buildings.** Preservation and reusing historic buildings should be made a priority, on par with other identified goals within the Plan. DSS-1
- **Designated land uses and policies should allow for the adaptive reuse of historic buildings, rather than their demise.** Flexibility is needed within the Plan to ensure historic buildings can and will be adaptively reused while also still addressing fundamental goals for the Port. Placing competing land uses over Southwest Marine's buildings severely limits their ability to be reused and adhere to the Plan. DSS-2
- **Terminal Island's historic buildings can be successfully adapted for new uses.** Every effort should be taken to look at creative reuse opportunities and public-private partnerships that can complement Port functions while preserving historic buildings. DSS-3
- **Historic, cultural and archaeological resources should be clearly identified within the Plan.** The entire Port has yet to be surveyed and not all eligible historic buildings are indicated or even identified within the Plan. DSS-4
- **The remaining historic buildings are the last vestige of Terminal Island's World War I and World War II shipbuilding, tuna canning industry, and Japanese-American built environment.** As the last physical link to the extraordinary heritage of Terminal Island, the historic buildings should be appropriately maintained and preserved. DSS-5
- **Proposed roadway and rail realignments by the Port should be fully reevaluated, as they will directly call for the demolition of buildings at Southwest Marine.** Realigning Seaside Avenue through Southwest Marine will further bisect the historic district and jeopardize its continued eligibility, as multiple buildings will be demolished. DSS-6

Denise and Stephen Smith

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Comment Letter DSS: Denise and Stephen Smith

Response to Comment DSS-1:

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Response to Comment DSS-2:

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Response to Comment DSS-3:

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Response to Comment DSS-4:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DSS-5:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment DSS-6:

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Draft Port Master Plan Comments

My comments related to the Draft Port Master Plan fall into two categories: agreement with the Central San Pedro Port Committee comments, and additional comments related to Development Goal 3-1-5 of the Plan. FA-1

The Port Committee of the Central San Pedro Neighborhood Council at the beginning of the public hearing process on the Draft Port Master Plan generated a long list of recommendations which we wanted to be included in the revised Plan. We strongly stand by those recommendations and have added three additional ones for inclusion into the public comment record:

1. Before the Port builds any outer harbor cruise line facilities, the downtown cruise terminal should be at maximum use;

2. The Port will expand waterfront tourism and visitor transport between the waterfront, Cabrillo Beach and downtown San Pedro through expansion of the street car rails, or developing a system of light rail; FA-2

3. The Port will dedicate a parcel of land at least one acre in size on Terminal Island in order to construct a Japanese History Museum on the site of the historical Japanese Village, honoring and memorializing the contributions the Japanese people made to San Pedro; FA-3

My comments related to Development Goal 3-1-5 are twofold. One, I wholeheartedly agree that all historical resources within Port boundaries should be preserved. Preservation of historical resources, however; is much more than a simple monument, sign or video of the resource commemorating the resource once it has been destroyed for container backland storage. Secondly, I strongly urge the Port to develop a robust "historic resources policy" as stated in Section 3-1-5. Shouldn't this type of policy have been developed before the Port began its revision of the Master Plan? Further, the development of this policy should be accomplished through public meetings that include interested local citizens, and groups that have expertise in preservation undertakings, such as the Los Angeles Conservancy and the Historic Trust. FA-4 FA-5

Sincerely,

Frank B. Anderson
515 North Meyler St.
San Pedro, Ca. 90731-1840
H 3108339113 C3103875665
Fbmjet@aol.com

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Comment Letter FA: Frank Anderson

Response to Comment FA-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment FA-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment FA-3:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment FA-4:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment FA-5:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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SA Recycling

3200 East Frontera Street
Anaheim, CA 92806
Office: (714) 630-2000
Fax: (714) 283-2706
www.sarecycling.com

Subject: Port Master Plan Update

To: Michael Cham
Planning and Economic Development Division
Port of Los Angeles
425 S. Palos Verdes Street
San Pedro, CA 90731

Date: April 2, 2013

Statement submitted on behalf of SA Recycling to the Port of Los Angeles concerning the Draft Program Environmental Impact Report (PEIR) and the Port Master Plan Update (PMPU). SAR-1

During the past year, SAR has participated in the various workshops and public hearings on the drafting and approval process of the Port master plan amendment. We are pleased to have the opportunity again to express our position on the revised draft Port document before it is submitted to the Board of Harbor Commissioners for its approval.

Though SAR in general supports the creation of a Mixed Use designation of 102 acres (which includes SAR's current location) in the latest draft of the Port Master Plan Update, SAR does object to the condition which is stated on page 35 of the Master Plan Update as follows: SAR-2

"*This project would relocate the existing 26-acre dry bulk facility currently located at Berths 210-211 eastward to a similar sized facility at Berths 206-207. This relocation would only occur if container operations at the adjacent container terminal at Berths 212-226 were consolidated with Berths 210-211. If the Berth 212-226 container terminal does not expand, SA Recycling could remain at Berths 210-211*".

We urge the Port to remove this condition and recognize the need for SAR to remain in operation at its existing site. We would like to comment further on the revised draft Master Plan Update by offering, what we believe to be, a compelling argument for keeping the bulk scrap operation at the existing location. In fact, we suggest that the Port seriously consider providing SAR in the future with the use of an additional/ adjacent wharf.

1

SAR-3 We have stated previously that during the past 50 years, SAR and its predecessor business entities have made enormous financial commitments to upgrade the site which was heavily contaminated and needed major infrastructure improvements. Since 1996 the company has spent millions on remediating the soil at the site thus saving the Port that expense. The company has also spent additional millions on infrastructure improvements such as upgrading the electrical grid, the storm water management systems and the water quality treatment facility, reinforcing the soil and constructing a new concrete cover and improving access into the site. SAR shared the expense 50/50 with the Port on constructing a new rail spur into the leasehold.

In addition to the land improvements, the company has spent huge amounts of its financial resources to construct a state-of-the-art electric shredder, upgrade its electric shear, install a non-ferrous metal recovery plant, and, most importantly, the company has implemented multiple environmental air quality and water control systems which are above and beyond most governmental regulations during the past 15 years. *(For a list of the major items please see footnote below*).* SAR had received numerous air quality and other environmental awards for these projects and for its leadership role in meeting the public goals of "greening" the Port of Los Angeles. In 2010 SA Recycling received the San Pedro Bay Ports Clean Air Action Plan Air Quality Awards presented by the Ports of Long Beach and Los Angeles as a Significant Early Action to Reduce Emissions. To receive and be honored for this award SA Recycling retired, replaced, and retrofitted cargo-handling equipment at its facilities in both Ports, exceeding state clean-air regulatory requirements. In August of 2012, SA again was honored with a Clean Air Action Plan Air Quality Award for exemplary efforts to reduce air pollution from its local maritime and goods-movement operation. These awards, given by the Port exemplify the commitment SA Recycling has to the environment and the community it serves.

SAR-4 SAR's recycling operation helps provide the region with the ability to meet the state mandated recycling goals while generating revenues for the Port and the City from one of its major exporting Port facilities. SAR's electric shredder and shear operations process over a million tons of shredded and HMS #1 scrap annually, which is exported to over 15 countries around the globe. The facility at Terminal Island employs over 150 men and women (30% of them have been with the company for 30 plus years) and generates thousands of additional peripheral jobs in connection with its recycling activities. In fact, SAR generates more jobs per acre than most other tenants in the Port *(as a rule of thumb a container terminal hires approximately one job per acre, SAR generates 6 jobs/acre).* SAR is committed and hopeful of adding to its workforce in the coming years.

2

Although in recent years the global and US economy had experienced a severe slowdown, which impacted the scrap business, we do anticipate that the market will gradually improve and the demand for SAR's bulk products will grow. The shipment of scrap is once again starting to reach our historic volume of over 1 million *MT/year) and shipping by bulk is once again becoming more economical. Given this situation,* the facility will be severely strained to accommodate the movement of the higher annual volumes. We anticipate that as the GDP continues to improve, there will be greater supply and demand for bulk scrap. It is imperative that SAR have the flexibility and the physical capability of responding to the constant fluctuations of the market and the economics of efficient and competitive shipment of the materials. We would like the Port to give serious consideration to expanding **SAR's leasehold by the addition of another Berth.** For example, by being able to use Berth 209, the company could load two vessels simultaneously with products destined for overseas shipment. SAR may also possibly need an additional 5-10 acres of backland adjacent to the second wharf in connection with the ship loading operations. SAR's anticipated growth in the volume of bulk shipments will benefit the Port with additional wharfage and dockage revenue. Scrap dry bulk shipments play a vital role in the region's economy and contribute positively to the Port's/ City's financial status. Therefore, it behooves the City to encourage and assist in the growth in the shipment of this very important bulk export product. SAR-5

We believe that the Port's estimates on future growth of the overseas shipment of scrap and related bulk products is understated at 1.2% (see Chart in Section 4.1.2) and should be more closely aligned with the estimated/ projected growth in the GDP. Furthermore, this projection appears to be in conflict with the Port's own, recent Scrap Metal Study which projected that recycling volumes will increase at a 3.1 % (percent) compounded annual growth rate. SAR concurs with the findings of that Study and urges the Port to plan for that higher level of growth in the scrap market and provide for increased flexibility and efficiency in the shipment of such products at the existing site as the most advisable and feasible long term alternative. SAR-6

For those reasons we want to work with the Port to find a workable solution that would address the Port's goal of providing for additional terminal operations while protecting the future tenancy and expansion of SAR's dry bulk export activities. As mentioned previously, the Port's latest draft Plan states that "*relocation (of SAR) would only occur if container operations at the adjacent container terminal at Berths 212-226 were consolidated with Berths 210-211. If the Berth 212-226 container terminal does not expand, SA Recycling could remain at Berths 210-211".* SAR-7

We urge the Port to **delete this condition** and **instead consider an engineering solution** put forth by SAR that would provide for a feasible, physical **connection between the two terminal**

3

SAR-7 **areas** (Berths 212-226 and Berths 206-209) **that are separated by the SAR leasehold.** During the past months we have proposed to the Port an alternative of constructing an elevated roadway which would connect the two terminal areas **without** having to relocate the bulk scrap operations. By constructing such a connection the Port could provide an operational link between the adjoining container terminals, while allowing SAR to stay at its current location. We also believe that such an option would be significantly less costly than the prohibitive costs associated with an attempted relocation of SAR, which most likely would result in the likely shutdown of that operation and the loss of hundreds of jobs.

SAR-8 As we have stated previously in our formal submittals to the Port, SAR believes that there are serious complications presented by the Port's proposed relocation alternative. The complications we foresee with the possible relocation of SAR to Berths 206-208 are the following:

- SAR has concerns that the Port Plan is placing two incompatible uses in close proximity of one another and does not address the various, potential conflicts that inevitably would arise when such incompatible uses -one industrial and the other recreational- are located next to each other.

SAR-9
- The proposed site configuration is too narrow to accommodate the key operational elements such as the mega-shredder, the shear, the rail spur and having a sufficient area for ship loading, which would, at best, mean a drastic reduction in the scale of operations and the level of employment.

SAR-10
- The site is limited to the loading of one ship at a time which negatively impacts the company's ability to efficiently load the multiple vessels which frequent the company's berth. The efficiency of the company's bulk loading capacity has been curtailed in the past as well as currently by the limitations of a shorter than preferred, needed wharf. Instead, SAR is in need of a second Berth.

SAR-11
- The relocation site is also too small to accommodate any future expansion. Given the projected volumes of scrap in the Port's *Scrap Metal Study*, in about 15 years the relocation site will be at least 10-15 acres too small to accommodate such growth in the volumes.

SAR-12
- The new facility would have to be fully upgraded to withstand the weight of scrap metal piles along with the existing old wharf where the pavement thickness is currently insufficient for the use of the large cranes used by SAR for loading scrap onto the

4

docked vessels. Prior to that, the entire site will have to be fully upgraded to the standards required for SAR's type of recycling operation. SAR-12

- We also foresee a serious problem with the rail alignment going to YTI's future, expanded terminal which will cause continuous and unavoidable disruptions at the front gate of SAR. The proposed site also will require a suitable rail spur into the SAR site (with *appropriate grade, switch control, rail curvature that can accommodate multiple rail car access to the site).* SAR-13

- Even if the above stated deficiencies at the new site can somehow be addressed and resolved, SAR believes that the logistical aspects of any relocation in the future would be extremely problematic. The availability of the new site will need to be coordinated with SAR's relocation. This means that SAR will be forced into a duplicate operation as **SAR must be able to continue to operate at its current location until all key elements are in place and operational at the new site; such as** the rail, the wharf, the shredder, the shear, the MRP and other components- to assure that SAR will not have to shut down its operations and layoff its workers for any period of time prior to its move. SAR-14

- Clearly, from our perspective the relocation site has serious deficiencies. Coupling that with the enormity of the cost of moving our entire operation would seriously jeopardize the company's ability to relocate. If the current recycling facility at Berths 210-211 is removed and shut down, according to the Port's Staff Report: ***"the region would not have enough capacity to meet demand unless a new facility is built."*** We agree. However, the smaller recycling facility at the suggested relocation site is not financially and operationally feasible and should be discarded as an alternative. SAR-15

- Finally, SAR would like to express its objections to debating the merits of relocating SAR **at this point in time.** It was not that many years ago when we were assured by Port management that our current site suited the Port's long term plans. Based on that assurance, the company moved ahead with the investment of tens of millions of dollars in new equipment and facilities. Those sunk costs will need years to recapture. To relocate our business in the near future could result in major operational disruptions and certainly would require considerable additional costs for constructing new facilities and equipment , as we have stated previously, some of which- such as a mega shredder- may not be able to be permitted at the location next to the recreational small craft marinas. Also, the prohibitive cost of such an undertaking would take additional decades to recover. SAR-16

5

SAR-17 **Recommended solution:**

SAR appreciates the Port's efforts at finding a long term solution for the continued presence of SAR's dry bulk operations. We do believe that such an effort should be based on reality. For the reasons stated above, the Port needs to recognize the fact that the option of relocating SAR's operation to Berths 206-208 is clearly unrealistic and infeasible. We strongly urge the Port to reconsider and discard any option which negates an opportunity for SAR – a tenant at the Port for 51 years- to continue to be a valuable and **viable tenant at the Port for decades to come and** encourage the Port staff to work with SAR to address the issues presented by the continued tenancy of SAR at its current location. **We believe that this option is the only feasible one.** At the same time we also recognize that some changes in SAR's circumstances may be warranted given the Port's goal of marketing the surrounding area as a viable container terminal. **SA Recycling supports the draft Port Master Plan Update as long as it allows for continued bulk operations at Berths 210 and 211, as well as for the possible addition of another wharf available for loading bulk cargo and the construction of an elevated connecting roadway between the two adjacent terminals, but have serious reservations about any plan that would relocate the dry bulk scrap operations. Thank you for your consideration.**

Statement submitted by Barna Szabo on behalf of SA Recycling on April 2, 2013

SAR-18 **Footnote:*

The improvements implemented at SAR's Terminal Island facility are as follow:

1) Paved all 23 acres, raising the ground level to 6' in 1998
2) Installed 24" underground pipes to handle the water storm system 1998
3) Installed 10 water tanks holding 750,000 gallons of reusable water and upgraded onsite advanced water treatment system; one of the most cutting-edge systems in the country
4) Upgraded the rail road system to handle 16 RR cars in 1998
5) Placed the mega shredder in service in 2006 and Regenerative Thermal Oxidizer (RTO) in 2011 - air filtering system
6) Metal recovery plant upgraded in 2010
7) Constructed steel sound wall around the water front and east side
8) Added new employee lunch room and locker room
9) *A majority of our equipment has been upgraded to Tier III engine diesel emission standards. The balance will soon to follow.*

The cost of all these improvements totaled around $ 88.5 MM during the last 15 years.

For the proposed schematics of the elevated terminal connecting road way please see attached.

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Comment Letter SAR: SA Recycling

Response to Comment SAR-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-2:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-3:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-4:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-5:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-6:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-7:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-8:

The Expanded Terminal Project is addressed in the PEIR as an "other" project, which is defined as "projects that have been approved in a certified CEQA document and/or are undefined (i.e., in the conceptual design stage) that are identified for public disclosure purposes, consistent with the PMPU." Since some projects included in the PMPU, such as the Expanded Terminal Project, are in the conceptual design stage, sufficient project details are not available to support a programmatic evaluation of potential impacts. These other projects are addressed in Draft PEIR Chapter 4.0, Cumulative Analysis.

The existing SA Recycling facility is proximal to the East Basin marinas, where recreational vessels are berthed. Relocating SA Recycling to an adjacent berth would not be expected to alter existing conditions with respect to the potential for interferences with recreational boating in the vicinity of the East Basin marinas.

Response to Comment SAR-9:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-10:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-11:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-12:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-13:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-14:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-15:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-16:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-17:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment SAR-18:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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Cham, Michael

From: Saiget, Thomas K <thomas.k.saiget@exxonmobil.com>
Sent: Thursday, April 04, 2013 9:37 AM
To: Cham, Michael
Subject: Comments on the Port Master Plan Update

Msg Class:Unclassified

Hey Michael,

Could you please record our comments on the Port Master Plan Update? I did not see an input form like the Draft PEIR.

ExxonMobil Pipeline Company requests that the Port Master Plan Update and Program Environmental Impact Report designate Southwest Terminal Area 2 as dual usage, Container and Liquid bulk. EXXON1-1

The rezoning of the area north of the Terminal Island Water Reclamation Plant from liquid bulk to container will result in an unnecessary environmental impact due to the deconstruction of fully functional liquid bulk tanks and reconstruction of new tanks less than a mile away. EXXON1-2 The environmental impact of the demolishing and remediating the existing site, producing new tanks, reconstructing the tanks at a new site, and extending infrastructure to the new site should be included in the EIR. EXXON1-3 The Port should also consider the financial loss associated with liquid bulk tenants if relocations were forced upon them because of the cost burden. This could significantly impact the Port's ability to diversify revenue and import liquid bulk commodities necessary to meet California's projected energy demand. EXXON1-4

Thomas K. Saiget
Business Development Advisor
ExxonMobil Pipeline Co.
O: (713)-656-9694
M: (832)-317-1697

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Comment Letter EXXON1: ExxonMobil Pipeline Company

Response to Comment EXXON1-1:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

Response to Comment EXXON1-2:

This comment addresses the PEIR and states that the impacts of demolishing and remediating the existing site, producing new tanks, reconstructing the tanks at a new site, and extending infrastructure to a new site should be evaluated in the PEIR. Impacts from construction and operation of the proposed appealable/fill projects, including liquid bulk facilities, are discussed programmatically in the appropriate sections of Draft PEIR Chapter 3.0, Environmental Analysis. As noted in Draft PEIR Section 3.04, Level of Analysis, the PEIR does not include a detailed environmental review of the proposed appealable/fill projects and land use changes since, consistent with CEQA Guidelines Section 15168, sufficient details are not currently available. Therefore, for most resource areas, assessments of the proposed appealable/fill project and land use changes in the PEIR rely primarily on qualitative assessments. Quantitative assessments are completed to the extent that data allow. Consistent with the timing for specific proposed appealable/fill projects, when appropriate levels of detail regarding the projects become available, project-specific environmental documents will be prepared, concentrating on site-specific issues and focusing on quantitative assessments.

Response to Comment EXXON1-3:

Please see Response to Comment EXXON1-2.

Response to Comment EXXON1-4:

This comment addresses the PMPU and does not raise issues that require a response under CEQA. Please refer to Final PEIR Appendix A, Port Master Plan, for information provided in response to this comment.

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GRESHAM | SAVAGE
ATTORNEYS AT LAW

Aaron.Gettis@GreshamSavage.com · San Bernardino Office
(909) 890-4499 · *fax* (909) 890-9877

April 4, 2013

VIA E-MAIL [ceqacomments@portla.org]
& GOLDEN STATE OVERNIGHT

Port of Los Angeles
Chris Cannon, Director of
Environmental Management
425 South Palos Verdes Street
San Pedro, CA 90731

Re: Comments on Cultural Resource Sections of the Draft Program Environmental Impact Report

Dear Chris Cannon:

On behalf of our client, U.S. Borax Inc., a wholly owned subsidiary of Rio Tinto Plc., we are submitting the enclosed Comments on the Port of Los Angeles Master Plan Update Program Environmental Impact Report provided from the URS Corporation. GSNT-1

In short, we believe the Program Environmental Impact Report's analysis as it relates to the U.S. Borax-Rio Tinto Processing Plant lacks sufficient detail and support for the Report's conclusions. In opposite, we have provided a comprehensive analysis that we feel illustrates our position in this regard as it relates to the cultural significance of the Processing Plant.

Thank you for your time and consideration of our comments and analysis.

Very truly yours,

Aaron C. Gettis, for
GRESHAM SAVAGE
NOLAN & TILDEN,
A Professional Corporation

Enclosure

Since 1910
SAN BERNARDINO 550 East Hospitality Lane, Suite 300 · San Bernardino, California 92408
RIVERSIDE 3750 University Avenue, Suite 250 · Riverside, California 92501
SAN DIEGO 501 W. Broadway, Suite 800 · San Diego, California 92101
LOS ANGELES 333 South Hope Street, 35th Floor · Los Angeles, California 90071

GreshamSavage.com R710-009 -- 1093288.1

URS

Memorandum

Date: April 2, 2013

To: Mr. Aaron C. Gettis
Gresham Savage Nolan & Tilden, PC
550 East Hospitality Lane, Suite 300
San Bernardino, CA 92408

From: Mr. Jeremy Hollins, MA
URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037

Subject: **Comments for the Port of Los Angeles Master Plan Update Program Environmental Impact Report**

Dear Mr. Gettis:

GSNT-2 The following comment letter has been prepared to provide public comments for the Port of Los Angeles Master Plan Update (PMPU) Program Environmental Impact Report (PEIR), which was released for public review and circulation in March 2013, by the Port of Los Angeles. This comment letter specifically addresses the historical resource evaluation of the U.S. Borax-Rio Tinto Processing Plant within the PMPU PEIR, and it's accompanying technical report *Historic Resources Evaluation Report for the Port of Los Angeles Master Plan Update, ADP No. 110518-060* (HRER). This comment letter is being provided at the behalf of Rio Tinto, who are the property owners of the U.S. Borax-Rio Tinto Processing Plant, located at 300 Falcon Street, Wilmington, California, in the Port of Los Angeles.

In summary, Rio Tinto respectfully disagrees with the PMPU PEIR finding that the U.S. Borax-Rio Tinto Processing Plant appears to be eligible for listing to the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), and a Los Angeles Historic-Cultural Monument (LAHCM). Rather, based on an earlier historical evaluation prepared by URS Corporation (URS) (refer to Attachment A for a copy of the URS report), the U.S. Borax-Rio Tinto Processing Plant does not appear to be considered a historical resource for purposes of the California Environmental Quality Act (CEQA), as defined in State CEQA Guidelines Section 15064.5. While CEQA does not limit a lead agency's discretion to make a historic significance determination of any potential resource, such a determination needs to be supported by substantial evidence, and not based upon unsubstantiated or unsupported opinions. (See State CEQA Guidelines, Section 15064.5(a)(3)). This comment letter details the differences in professional opinion between the reports, the regulatory context, focusing on research efforts, period of significance, applicable criteria, integrity analyses, and comparative properties.

GSNT-3 **Regulatory Context**

The following provides an overview of the regulatory context the U.S. Borax-Rio Tinto Processing Plant was evaluated under, as part of the *Memorandum of Record for the Historical Evaluation of the U.S. Borax-Rio Tinto Processing Plant* (*Memorandum*), PMPU EIR, and HRER. Overall, for purposes of CEQA, a historical resource (these include built-environment and historic and prehistoric archaeological resources) is considered significant if it meets the criteria for listing to the NRHP, CRHR, or local register.

The NRHP criteria are set forth in 36 Code of Federal Regulations 60.4 and include resources that:

R710-009 -- 1089445.1

URS

A. Are associated with events that have made a significant contribution to the broad patterns of our history; or GSNT-3

B. Are associated with the lives of persons significant in our past; or

C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

For the CRHR, the criteria are set forth in CEQA Guidelines Section 15064.5 and include resources that:

1. Are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Are associated with lives of persons important in our past;

3. Embody the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. Have yielded, or may be likely to yield, information important in prehistory or history.

LAHCM designation is reserved for those resources that have a special aesthetic, architectural, or engineering interest or value of a historic nature. The Cultural Heritage Ordinance establishes criteria for designation; these criteria are contained in the definition of a Monument in the Ordinance. A historical or cultural monument is any site (including significant trees or other plant life located thereon), building, or structure of particular historical or cultural significance to the City of Los Angeles, and include resources that:

1. In which the broad cultural, political, economic, or social history of the nation, state, or community is reflected or exemplified;

2. Which are identified with historic personages or with important events in the main currents of national, state, or local history;

3. Which embody the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period, style, or method of construction;

4. Which are a notable work of a master builder, designer, or architect whose individual genius influenced his or her age.

Historical resources must also retain their historic integrity. Historic integrity is the ability of a property to convey its significance, and is comprised of seven aspects: location, design, setting, materials, workmanship, feeling, and association. The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance.

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GSNT-4 **Previous Studies and Research Efforts**

The U.S. Borax-Rio Tinto Processing Plant has been evaluated for significance on two separate occasions: 1) in January 2013, as part of the attached *Memorandum of Record for the Historical Evaluation of the U.S. Borax-Rio Tinto Processing Plant* (*Memorandum*) (Attachment A) prepared by URS Corporation; and 2) in February 2013, as part of the PMPU PEIR HRER. These two reports differ regarding evaluation of the significance of the property; however, the *Memorandum* prepared by URS Corporation, is considered the most accurate, rigorous, and authoritative in terms of its identification and evaluation of the U.S. Borax-Rio Tinto Processing Plant, and thus should be relied upon most heavily for CEQA compliance.

The URS report is considered the most extensive due to in-depth primary and secondary source research focusing on U.S. Borax, Rio Tinto, the Port of Los Angeles, the U.S. Borax-Rio Tinto Processing Plant itself, and other major themes investigated. URS performed a record search through the California Historical Resources Information System (CHRIS) for the subject property and one-mile search radius, property-specific historic research, and an architectural survey of the subject property.

In addition to an intensive survey of the property, URS conducted site-specific research on the subject property and the immediate vicinity. Some of the unique materials that URS reviewed included the following: architectural drawings of the U.S. Borax-Rio Tinto Processing Plant; historic-period photographs of several Borax facilities throughout California; corporate literature and memoranda; legal property documentation; site plans and survey information; previous environmental reports; and, building permits. Additional research efforts were conducted at the California State University of Long Beach Special Collections, the San Pedro Bay Historical Society, Long Beach Historical Society, Los Angeles Department of Building and Safety, City of Los Angeles Bureau of Engineering, Los Angeles Harbor Department Historical Archives, Wilmington Historical Society, and the 20 Mule Team Museum in Boron, California. Lastly, informational requests were also made to Alameda Naval Air Museum, Wilmington Chamber of Commerce, and the Boron Chamber of Commerce. A more in-depth discussion of the research efforts and pertinent copies of research materials are included in Attachment A of this letter.

Overall, this is a tremendous effort to research one property; however, the efforts were needed to fully evaluate and document the historic context and theme of the U.S. Borax-Rio Tinto Processing Plant and U.S. Borax. In comparison, this level of analysis was not possible by investigators of the HRER, since most primary and secondary sources were not available or used, and an intensive survey of the entire property was not feasible due to time and schedule constraints.

GSNT-5 **Period of Significance and Applicable Criterion**

According to National Register Bulletin 39, period of significance refers to the span of time during which significant events and activities occurred. Events and associations with historic properties are finite; most properties have a clearly definable period of significance.

The HRER asserts that the U.S. Borax-Rio Tinto Processing Plant is eligible for the NRHP and CRHR under Criteria A and 1, with a period of significance of 1924 through 1957. However, though the U.S. Borax-Rio Tinto Processing Plant has been located at the property since 1924, the industrial complex is not representative of a significant event associated with the trends or events that have made a significant contribution to the broad patterns of history. Additionally, no justification of a finite event or association with this facility dating to 1957 was provided in the HRER Property-Specific History that defines the period of significance.

As indicated in the *Memorandum* in Attachment A, the U.S. Borax-Rio Tinto Processing Plant was constructed on Mormon Island to take advantage of ready access to the Panama Canal and the proximity to raw materials being extracted in Death Valley. At the time of the refinery's completion, international shipping to and from the Port of

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Los Angeles through the Panama Canal had been common practice for about a decade. The U.S. Borax-Rio Tinto Processing Plant was built years after several other more important buildings and structures were already constructed, shipping such commodities as lumber, petroleum, and citrus products. In addition, the process of transporting ore extracted from Death Valley to a coastal plant for refining and shipping was not an innovation facilitated by the subject property. In fact, this method was popularized in the late 1800s when twenty mule teams traversed the desert to carry the minerals to rail lines that would ultimately deliver the ore to the original Pacific Coast Borax Company Refinery on Alameda Point. Further, the HRER offers no evidence to demonstrate that this change in 1957 affected the mission of the U.S. Borax-Rio Tinto Processing Plant. For example, no information was provided that explains how the plant was changed in 1957 and how this event could have affected operations. There is no indication that the plant operated with fewer staff or started using different equipment/processes that year. GSNT-5

According to historical research completed by URS, Rio Tinto affirms that no significant events occurred at its U.S. Borax-Rio Tinto Processing Plant and the property is not representative of any type of achievement or development associated with industrial refining or commerce. Therefore, the U.S. Borax-Rio Tinto Processing Plant is not associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing in the NRHP under Criteria A or in the California Register of Historical Resources (CRHR) under Criterion 1 or to be considered a historical resource for purposes of the California Environmental Quality Act (CEQA). Similarly, based on this research, the U.S. Borax-Rio Tinto Processing Plant does not reflect or exemplify broad cultural, political, economic, or social history of the nation, state, or community. As such, the property does not appear to be eligible for listing as a Los Angeles Historic-Cultural Monument (LAHCM) under LAHCM Criterion 1, contrary to the findings in the HRER. GSNT-6

Further, the HRER identifies the plant as a 'good example' of the property type, and that U.S. Borax's visibility in the Port 'surely contributed to the commitment of other industrial ventures' at the Port. This is the basis for the property being associated with significant events; however, it is a speculative statement not based on historical fact or supported by evidence. Again, as stated in Section 15064.5 of the State CEQA Guidelines, a structure may be considered by the lead agency to be a historical resource, provided the determination is supported by substantial evidence. In all likelihood, another Port tenant would have occupied the site if U.S. Borax did not. GSNT-7

Lastly, no evidence is provided of similar industrial ventures that relocated or established operations in the Port because of U.S. Borax's presence. Rather, the Port's available berths, deep harbors, and proximity to railroad transportation were surely the drivers for industrial ventures to occupy the Port. For a property to be associated with significant events, it must have a connection to a 'distinctive' event, and that event must be a specific or a pattern of events. Based on this, the facility is not representative of a distinctive event or pattern of events; if anything, it would be all the industrial ventures in this area that led to the Port's growth and not simply this one facility because it is a good example of the property type. GSNT-8

Alterations GSNT-9

URS identified and documented in detail many alterations to the U.S. Borax-Rio Tinto Processing Plant in their *Memorandum* that the HRER did not include and consider in their evaluation.

To determine its architectural significance, the U.S. Borax-Rio Tinto Processing Plant requires evaluation as individual buildings designed in the Utilitarian Industrial-style, as well as individual components to a potential historic district. Based on historic research and field survey in Attachment A performed by URS, the U.S. Borax-Rio Tinto Processing Plant does not appear to possess distinctive characteristics of a significant Utilitarian Industrial design. While the plans for the U.S. Borax-Rio Tinto Processing Plant depict several characteristics

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GSNT-9 typical of the Utilitarian Industrial-style typical in California in the 1920s, the property, in its current form, lacks the majority of these distinctive architectural characteristics and its architectural integrity has been significantly compromised. Presently, many of its large multi-pane windows have been in-filled. The non-historic period conduit, ventilation, and industrial equipment added to the facility have obstructed and significantly altered historic-period materials. These alterations include the replacement of original board-formed wall texture with a smooth stucco exterior wall treatment as well as the modification and removal of the stringcourse and rectangular capitals for the installation of industrial equipment. The absence of these original designed features undermines the distinctive architectural characteristics of the U.S. Borax-Rio Tinto Processing Plant. Additions to the Warehouse and the Connecting Shed are not true representations of the original design. Also, the simple, rectangular chimney was not depicted in the 1924 drawings and does not match the original design of the building. The modern alterations and upgrades to the refinery complex detract from its intended architectural character. Lastly, the oldest extant portion of the building is completely covered by a non-historic period addition and is not visible. The removal of the addition would affect the materials of the extant portion, diminishing it's ability to convey its earliest construction episode.

GSNT-10 Further, while the facility was constructed using reinforced concrete construction method, the facility is a late example of this method of construction. In fact, the company had pioneered the method at the Alameda facility 32 years previously and at Bayonne, New Jersey 27 years before, and by 1924, the construction method was relatively common and countless better examples exist to illustrate such a method.

While the design of the U.S. Borax-Rio Tinto Processing Plant was undertaken by Albert C. Martin, a master architect, the property does not embody notable architectural designs attributed to Martin's significant works. Along with the 1927 Inn at Furnace Creek which he crafted for the Pacific Coast Borax Company in Death Valley, Martin is known for his major contributions to the Los Angeles skyline with his designs of the Los Angeles City Hall (1926), St. Vincent's Church (1923), and the Department of Water and Power Building (1963).

GSNT-11 In addition, pre-1952 additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design, and have not achieved significance in their own right. They have completely comprised the significance of the older portions of the property and Martin's design. Therefore, although portions of the U.S. Borax-Rio Tinto Processing Plant were designed by Martin, the refinery is not a good representation of the master architect's work.

GSNT-12 Moreover, since the property was first constructed, large-scale changes to the property have undermined the original design. As noted earlier and within the Memorandum, non-historic features and major alterations to the property include:

- Seismic retrofitting of many of the buildings and structures between 1988 and 2004, which also resulted in the removal of the original 150-foot stack near the power plant;
- Introduction of large industrial equipment such as tanks, silos, conveyor belts, and piping (in some areas, the piping connects buildings that were not historically connected, disrupting the historic spatial relationships and datum);
- Removal of railroad tracks from the northeast portion of the property;
- Infilling of many of the buildings' windows and entries (e.g., the majority of the windows along the north and south elevation of the power plant have been infilled)
- Replacement of the original board-formed wall texture with a stucco exterior wall treatment;
- Modification and removal of the stringcourse and rectangular capitals for the installation of industrial equipment;

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- Additions of conduit, other piping, utility equipment, security lights, cameras, and signage to the exterior walls of the buildings; GSNT-12
- A large non-historic addition along the south east portion of the property, completely obstructing and compromising the oldest portion of the property;
- Re-arrangement and removal of parking areas located within the northern portion of the property; and
- Non-original metal corrugated sheeting wall covering and non-historic period conduit, rigging, other industrial equipment components, safety barriers, metal corner braces, and post bollards along the warehouse building.

Given the lack of integrity and the numerous alterations to the U.S. Borax-Rio Tinto Processing Plant, U.S. Borax agrees with the HRER that the property no longer retains its character-defining features and does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values. Therefore, the property does not appear to be eligible for listing in the NRHP under Criterion C or CRHR under Criterion 3 or to be considered a historical resource for purposes of CEQA. It should be noted that these numerous alterations described above and in URS's *Memorandu*m affect the property's historic integrity as is discussed below. GSNT-13

Changes to the Property's Historic Integrity GSNT-14

Historic integrity is typically recognized through seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association. The HRER asserts that the U.S. Borax-Rio Tinto Processing Plant appears to have retained sufficient integrity of location, design, materials, workmanship, feeling and association based on a review of historic aerials and observation from the exterior of the facility. Additionally, the HRER states that although the setting surrounding the facility has changed as businesses have come and gone, the general layout is the same as it has been since at least 1927. However, the HRER provided no rigorous analysis of integrity that would have noted that substantial changes have occurred to the property's integrity over time. In order to properly assess the property's historic integrity, a more developed and thorough integrity analysis would be needed to justify conclusions.

In comparison, according to URS's *Memorandum* in Attachment A, the facility does not meet the criterion for eligibility to any registry, and does not retain its historic integrity. The following summarizes URS's rigorous historic integrity analysis of the facility: GSNT-15

<u>Location</u> is defined as the place where the historic-period property was constructed or the place where the historic event took place. The subject property has not been moved; therefore, it retains its integrity of location.

<u>Design</u> is defined as the composition of elements that constitute the form, plan, space, structure, and style of a property. The form, plan, and space of the property have been altered by several additions and different periods of development. While some of the property's design features remain (such as some stepped parapets, cornices, and several rectangular capitals), the form, plan, space, and structure have been significantly compromised as a result of upgrading and adapting the facility to new refining technologies. GSNT-16

<u>Setting</u> is defined as the physical environment of a historic-period property that illustrates the character of the place. The refinery was built in an industrial port area of Los Angeles. Currently, the property retains its setting in respect to its location in proximity to the Port of Los Angeles. However, due to several episodes of development and re-development, it does not retain the setting associated with the exponential growth of the Port in the early 1900s following the opening of the Panama Canal. GSNT-17

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GSNT-18 Materials are defined as the physical elements combined in a particular pattern or configuration to form the historical resource during a period in the past. Many of the original materials have been altered or removed, such as a decorative wall features, original window systems, and board-formed concrete textured walls. Also, the addition of new industrial equipment and structures, such as the Bulk Storage Silos, has introduced materials not historically associated with the U.S. Borax-Rio Tinto Processing Plant.

GSNT-19 Workmanship is defined as the physical evidence of the crafts of a particular culture or people during any given period of history. The property does not represent physical evidence of the crafts of a given period of history. There have been major alterations and the removal of characteristics that are reflective of it's earliest period of development. Similar processing plants were located throughout the U.S., and the existing structure is not a particularly important example of a craft as it relates to a certain culture or people.

GSNT-20 Feeling is defined as the quality that a historic-period property has in evoking the aesthetic or historic sense of a past period of time. The property in its present form does not evoke a historic sense of feeling, but rather that of a relatively recently constructed refining facility. The substantial additions and changes, coupled with changes in the setting, have destroyed the "feeling" associated with the aesthetic or historic sense of the processing plant.

GSNT-21 Association is defined as the direct link between a property and the event or person for which the property is significant. While the property is associated with U.S Borax and Albert C. Martin, the property in its present form does not convey a direct link with the prominent architect. Further, a number of existing structures in the Los Angeles area remain that better illustrate the architectural skills and designs as they relate to Albert C. Martin.

GSNT-22 Given the numerous alterations to the U.S. Borax-Rio Tinto Processing Plant, Rio Tinto affirms that the property no longer retains most aspects of its historic integrity, divergent to the HRER findings, and would not be eligible under any type of criterion.

GSNT-23 **Comparative Properties and Historic Contexts**

Rio Tinto would like to respectfully suggest several other buildings that may be better examples of the historic context. The U.S. Borax-Rio Tinto Processing Plant was built years after several other more important buildings and structures were already constructed, shipping such commodities as lumber, petroleum, and citrus products. In addition, the process of transporting ore extracted from Death Valley to a coastal plant for refining and shipping was not an innovation facilitated by the subject property. In fact, this method was popularized in the late 1800s when twenty mule teams traversed the desert to carry the minerals to rail lines that would ultimately deliver the ore to the original Pacific Coast Borax Company Refinery on Alameda Point.

GSNT-24 In 1889, to expand the processing of raw minerals that formed the borax product, Francis "Twenty Mule Team" Smith worked with renowned engineer and reinforced concrete innovator Ernest L. Ransome, to design two new refineries for him -- one in West Alameda, California, and the other in Bayonne, New Jersey. The California refinery was recognized for being the first structure of its kind to be built with reinforced concrete (Legends of America, http://www.legendsofamerica.com/ca-francissmith.html).

According to the City of Alameda, *Alameda Historic Preservation Element* and Page & Turnbull's 2005 *NAS Alameda Historic District, Historic District Assessment and Historic Preservation Strategy*, one of the most illustrious industries to relocate to Alameda Point was Pacific Coast Borax Company, constructed in 1893 by Smith, the famous Death Valley borax miner. Although far from his Death Valley mines, Smith chose Alameda Point for its convenient rail connections and access to San Francisco Bay. Smith constructed a huge wood-frame and concrete refinery complex on what is presently the site of the Engine Overhaul Shop (Building 360) and a wharf and coal storage warehouse on what is now the location of the Engine Test Cell complex (Building 14).

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When it was completed, Pacific Coast Borax Company was the largest borax refinery in the world and reportedly one of the first to make use of reinforced concrete in the United States. The refinery was closed in 1930 after the exhaustion of the borax mines in Death Valley and the main four-story refinery building was subsequently dynamited. The Navy spared at least one building from the borax plant when they began grading and filling NAS Alameda in 1938. This building, Building 163, still exists as a small brick maintenance shed in the southeastern corner of the base. GSNT-24

According to Betsy Hunter Bradley (Bayonne Retro Magazine, http://bayonneretro.blogspot.com/2012/06/pacific-coast-borax-company.html), Ernest L. Ransome undertook groundbreaking work in the design and construction of reinforced concrete in the United States. After experimenting with twisted reinforcing rods during the 1880s and constructing several buildings of reinforced concrete in the San Francisco area, Ransome moved his business to the East Coast. As he erected buildings of the new material, Ransome 'Americanized' the construction process by developing a system of reinforcement that was simpler (and therefore cheaper) than the French Hennebique method. He seems also to have introduced American builders to the use of reinforced concrete in a skeletal form.

A demand for fireproof construction and the strength to support excessive loads led Ransome's first major building project in reinforced concrete. At the edge of New York City harbor in Bayonne, New Jersey, Ransome oversaw the construction of the Pacific Coast Borax Refinery. A loft building erected in 1897-1898 had originally been planned as a structure of mill construction with brick walls, but heavy tanks and large machinery required very strong floors. After deciding to use fireproof construction and evaluating the bids it received for the project, Pacific Coast Borax awarded a contract to Ransome. The first portion of the four-story structure utilized beam-and-girder floor construction, which was to become standard practice. The exterior walls of the structure, however, were conceived as self-supporting masonry walls and were pierced only by small window openings. Many of the engineers, architects and industrialists who visited the construction site were especially interested in how the heavy machinery was supported by the floors of the concrete structure. The Pacific Coast Borax facility also demonstrated the fireproof qualities of reinforced concrete construction when it withstood a fire in 1902 that destroyed its contents and wooden elements.

When comparing the property to other properties associated with U.S. Borax in the Los Angeles area or southern California, the U.S. Borax-Rio Tinto Processing Plant does not illustrate the economic development or historical importance of the company. Rather, since U.S. Borax's history is aligned with its historic activities of mineral extraction and not coastal shipping, properties associated with the property in Boron and within Death Valley better illustrate these historic themes. By 1883, following the discovery of borates in Death Valley, the refined product was being hauled great distances across the desert by twenty mule teams. Since 1896, the Twenty Mule Team symbol used by Pacific Coast Borax brought notoriety to Death Valley as a place. Twenty Mule teams toured the country as a promotional and advertising effort. This advertising had (combined with the uniqueness of the brand symbol) the added effect of attracting tourists to Death Valley. In 1927 Pacific Coast Borax moved mining operations out of the Ryan area (located in Death Valley). The bunkhouses associated with the mining operations in Ryan were adapted into guest houses at the Death Valley View Hotel (a place for tourists to stay). Pacific Coast Borax also built accommodations at Furnace Creek Ranch and Death Valley Junction. Furnace Creek Ranch was the most luxurious of the accommodations. Also, in 1927, a group of men, including Stephen Mather (who 37 years earlier had originated the Twenty Mule Team promotion with Pacific Coast Borax), visited Death Valley to consider its inclusion as a National Park. Death Valley was nominated as a National Monument in 1933. Mather withheld a formal recommendation at the time for fear that his previous employment with the company might cause negative reaction toward the nomination as a National Park. When Death Valley finally became a National Park in 1995, the land on which the National Park Service Visitor's Center sits was donated by U.S. Borax, which reflects the company's commitment to that area, and represents their extensive association with the development and growth of these areas. Also, soon after the U.S. Borax-Rio Tinto Processing Plant was GSNT-25

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GSNT-25 finished, the company opened an underground borate mine in Boron, California in the Mojave Desert. In 1956, the company became U.S. Borax when it merged with United State Potash Corporation. In 1957, the company built the Boron refinery and borax production was moved to Boron. Therefore, the company's presence in areas outside of the Los Angeles Port, particularly to represent its objective as a mineral extraction leader and its commitment to preserve its legacy in the Death Valley area, are more important to the history of U.S. Borax than it's shipping operations in the Port which are, in effect, ancillary to the true history as it relates to U.S. Borax.

GSNT-26 **Conclusions**

In conclusion, Rio Tinto would like to state for the record that the period of significance presented in the HRER for this property is inappropriate because justification for the finite dates for beginning and end of the period of significance is inadequate. The integrity analysis in the HRER lacks rigor and, based on the detailed identification of alterations to the property, it no longer retains most meaningful aspects of its historic integrity. Given the lack of integrity and numerous alterations, the property is ineligible for any criteria for listing in the NRHP or CRHR. The Pacific Coast Borax Refineries in Alameda, California and Bayonne, New Jersey are recommended as better examples of the property type's historic context, and properties within Boron and Death Valley better convey the importance of U.S. Borax and the company's place in history. Further, it is not the oldest or the most distinctive property within the Port, does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values, and is not representative of a major or unique industry in the Port. As a result, URS's *Memorandum* (Attachment A) is considered by Rio Tinto the most accurate, rigorous, and authoritative study in terms of its identification and evaluation of the U.S. Borax-Rio Tinto Processing Plant, and thus should be relied upon most heavily for CEQA compliance.

Sincerely,

Jeremy Hollins, Project Manager, URS

Attachments
Attachment A – *Memorandum*

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Comment Letter GSNT: Gresham Savage Nolan & Tilden

Response to Comment GSNT-1:

The commenter states their opposition to the PEIR analysis of the U.S. Borax-Rio Tinto Processing Plant and submits an alternative comprehensive analysis for review. The URS memorandum was received and thoroughly reviewed.

Response to Comment GSNT-2:

The commenter respectfully disagrees with the PMPU PEIR findings regarding the U.S. Borax-Rio Tinto Processing Plant eligibility for listing in the NRHP, CRHR, and as a Los Angeles Historic-Cultural Monument (LAHCM) and provides this comment letter to detail the differences in professional opinion between the reports.

While the LAHD does not disagree with the findings provided in the URS report, the LAHD still believes that the U.S. Borax Wilmington Processing Plant (Wilmington Plant) is potentially eligible for listing to the NRHP, CRHR, and as a LAHCM as a significant cultural resource for the Port. As noted below in the responses to Comments GSNT-4 and GSNT-5, the general area of disagreement focuses on the following: URS evaluated the property for its eligibility as an individual property in the development of the industry of borax production and the history of U.S. Borax. This is not the same context as that of the Historic Resources Evaluation Report (HRER). The historic context in the HRER is the history of the Port and the Port's historic trends. The HRER considers the Wilmington Plant's contributions to the historic trends of the Port.

Response to Comment GSNT-3:

The URS memorandum lists the regulatory context for its evaluation under the NRHP, CRHR, and LAHCM. This is the same regulatory context as in the PMPU PEIR HRER.

Response to Comment GSNT-4:

The URS memorandum identifies the two previous studies and research methods. The memorandum states "Overall, this is a tremendous effort to research one property; however, the efforts were needed to fully evaluate and document the historic context and theme of the U.S. Borax-Rio Tinto Processing Plant and U.S. Borax" (URS 2013).

URS evaluated the property for its eligibility as an individual property in the development of the industry of borax production and the history of U.S. Borax. This is not the same context as that of the HRER. The historic context in the HRER is the history of the Port and the Port's historic trends. The HRER considers the Wilmington Plant's contributions to the historic trends of the Port.

Response to Comment GSNT-5:

The URS memorandum comments that the Wilmington Plant is not representative of a significant event associated with the trends or events that have made a significant contribution to the broad patterns of history. Furthermore, it states that no justification of a finite event or association with this facility dating to 1957 was provided in the HRER that defines the period of significance. The memorandum further comments on the motivation for U.S. Borax relocating to the Port, the presence of other buildings at the Port, and the process of transporting ore.

The period of significance for the Wilmington Plant at the Port has an end date of 1957. This date was selected since it corresponds with the opening of the new U.S. Borax refining plant at Boron, which changed the use of the Wilmington Plant. After the opening of the new refinery, the Wilmington Plant no longer processed raw minerals, but instead underwent alterations to process new refined products as well as continuing to serve as the West Coast shipping center.

Although U.S. Borax may have decided to build on Mormon Island due to its relative proximity to the Panama Canal, international shipping through the canal had no effect on the significance evaluation of the Wilmington Plant. The fact that other important buildings and structures were already constructed at the Port at the time the Wilmington Plant was constructed is irrelevant. Many important businesses for the Port were constructed before and after development of the Wilmington Plant. The statement that the transportation of ore from Death Valley to the coastal plant was not an innovation facilitated by the subject property is also not relevant. The process by which the plant receives its product does not affect the Wilmington Plant's significance for the Port.

Response to Comment GSNT-6:

The URS memorandum comments that the Wilmington Plant is not associated with events that have made a significant contribution to the broad patterns of California's history, and is therefore not eligible for listing in the NRHP under Criterion A, or in the CRHR under Criterion 1 or as a LAHCM contrary to the findings in the HRER.

The LAHD respectfully disagrees. Following WWI, the Port experienced a significant period of growth. From 1920 to 1924, tonnage shipped from the Port increased from 3 million to 26 million tons per year. While lumber and oil accounted for most of the increase, businesses new to the Port, such as Borax, Los Angeles Sea Food Packing, and A.J. Busefink Furniture, contributed to exports as well. Appendix D of the URS report provides two letters and accompanying information on the Wilmington Plant, as prepared by the plant's first manager, Thomas M. Cramer. Cramer states "The Borax Co. was a pioneer, industrially, in the harbor. I do not recall that there were any other manufacturers, up to that time, who had recognized the benefits of the location except the Union Oil, who had a refinery near San Pedro…" (Cramer 1949). In the 1923-24 Port of Los Angeles Annual Report, the Board of Harbor Commissioners agreed, noting that the Pacific Coast Borax Company brings a new industry to the Port. Cramer further remarks that the "towering concrete stack of 150 feet high became a harbor landmark" (Cramer 1949). The construction and continued operation of the Wilmington Plant was a significant event for the Port and did contribute to the rise of the Port's importance in trade and commerce. While the Wilmington Plant may not be the single catalyst to the expansion of the Port between WWI and WWII, the Wilmington Plant did contribute to the Port's shipping status and was a visible landmark during the historic period of growth, thereby contributing to a historic trend that made a significant contribution to the Port.

Response to Comment GSNT-7:

The contention that other industrial ventures followed Borax's lead to establish plants at the Port is not purely speculative, but is instead based on available historical data. It is not possible to know all of the factors which lead to a business's decision to build at a specific location such as the Port. However, a review of building trends within a particular timeframe can contribute to understanding the dynamics of expansion within a particular area or particular city. According to economists Glenn Ellison, Edward Glaeser, and William Kerr in *The American Economic Review* "What causes industry agglomeration" (Ellison et al. 2010), they suggest that a business might choose a location for natural advantage reasons, such as shipping access, ease of receiving raw materials, and access to a potential labor pool, although those attributes make up only 20 percent of the decision making process. A review of other economic trends can contribute to better understanding of the dynamics of expansion and the reasons for selecting one location over another. For instance, small retail businesses may locate next to large, established "anchor" businesses to benefit from the customer traffic generated by the anchor. In the manufacturing industry, agglomeration is not related to customer draw such as in the retail business, but the other 80 percent of the decision making process can be attributed in part to brand image, perceived success, and expanding industry that will benefit a corporation's location. Therefore, it is reasonable to conclude that other businesses were drawn by Borax's decision to locate at the Port, recognizing that a national manufacturer would attract services that could be advantageous to all the firms locating to an industrial complex. For example, two chemical plants, the Agricultural Potassium-Phosphate Company of California and a vacuum fumigating plant, were constructed at the Port between 1928 and 1930, just a few years after Borax relocated to the Port. All these businesses contributed to the Port's shipping status during the historic period of growth, thereby creating an environment for success, a historic trend that made a significant contribution to the Port.

Response to Comment GSNT-8:

The URS memorandum comments that no evidence is provided of industrial ventures that relocated or established operations at the Port because of U.S. Borax's presence. The LAHD agrees that no evidence is available to indicate any business moved to the Port because of U.S. Borax, but industry began to vary. In order to remain successful, the Port needed to attract new industry and Borax was among the first to arrive.

Response to Comment GSNT-9:

The URS memorandum comments on alterations to the Wilmington Plant buildings. A bulleted list of alterations is provided in Comment GSNT-12.

The alterations to the Wilmington Plant buildings are known and where relevant, noted in the HRER. A total of 215 building permits on file at the Los Angeles

Department of Building and Safety were reviewed for the HRER, but it was not practical to include a complete list of all alterations, additions, and new construction completed over the last 88 years of the plant's operation. Instead, only significant visual changes were included in the HRER. As a correction to the URS memorandum, based on the building permit the original 150-foot boiler stack was replaced with a stack of identical size and overall height and was not removed as noted in the memorandum.

Response to Comment GSNT-10:

The URS memorandum comments on the commonality of the reinforced concrete construction method, earlier reinforced concrete U.S. Borax refineries, and that the Wilmington Plant Refinery Building is a late example.

According to *The Story of Borax* "The [Wilmington refinery] building was the first reinforced concrete industrial structure in Southern California" (Kern 1979:31). The HRER does not contend that the property is significant for its type, period, or method of construction under Criterion C of the NRHP or under Criterion 3 of the CRHR.

Response to Comment GSNT-11:

The URS memorandum comments on the architect for the Wilmington Plant. The LAHD agrees that the Wilmington Plant is not a good representation of the master architect's work, nor does the HRER contend that the property is significant for the work performed by a master architect under Criterion C of the NRHP or under Criterion 3 of the CRHR.

Response to Comment GSNT-12:

Please see Response to Comment GSNT-9.

Response to Comment GSNT-13:

Comment noted. The URS memorandum comments that U.S. Borax agrees with the HRER that the property is not eligible for listing in the NRHP under Criterion C or the CRHR under Criterion 3.

Response to Comment GSNT-14:

The URS memorandum comments on the lack of a rigorous analysis of integrity in the HRER. A detailed integrity analysis was not included for each of the properties evaluated in the HRER, although all aspects of integrity were considered in making eligibility recommendations.

Response to Comment GSNT-15:

Comment noted. The property is in the place it was constructed and retains integrity of location.

Response to Comment GSNT-16:

The URS memorandum comments that the integrity of design has been significantly compromised as a result of upgrading and adapting the facility.

The design of the Wilmington Plant has changed over time, although it is unlikely that any industrial business develops a site plan without anticipating change. Industrial properties must change over time to keep up with changing technology and stay profitable. While the core buildings remain, several alterations have changed the layout of the northeast section of the property. The original railroad lines no longer pass between the refinery building and the steam plant, but now pass to the north of the bulk storage bins reflecting the change in use for the refinery building. The dissolving plant and three thickener tanks were removed to make room for the bulk storage bins. The portion of the property subjected to these changes accounts for approximately a quarter of the site. With the original buildings taking up the majority of the property, it appears that much of the original design is still intact. As such, the property retains sufficient integrity of design.

Response to Comment GSNT-17:

The URS memorandum states that the plant "does not retain the setting associated with the exponential growth of the Port in the early 1900s following the opening of the Panama Canal" (URS 2013).

In fact, the history of the Port reflects a period of little or no growth in shipping following the opening of the canal, due to the U.S. entrance into WWI. More cargo was shipped in the 1912-13 fiscal year than in the subsequent 6 years. This trend does not begin to change until 1923 and was not substantially changed until 1924.

The Borax plant is currently surrounded by large metal tanks used for the storage of oil, a use that has been active since at least 1927. Several municipal transit sheds have occupied the area known as Pier A, located across Slip One from the Wilmington Plant since 1915. New sheds were constructed following a fire that destroyed the sheds in 1947 when the tanker *U.S.S. Markay* exploded at Berth 168. The replacement of the Pier A sheds with new sheds does not diminish the setting.

Regarding the plant itself, the refinery building, steam plant, wharf office, long warehouse along the berth, and the connecting shed are all in their original location. The location of several holding bins and the railroad tracks has changed over time, but the relationship between the core buildings has not. The property retains integrity of setting.

Response to Comment GSNT-18:

The URS memorandum comments that many of the original materials of the plant have been removed or altered and that the addition of new industrial equipment introduced materials not historically associated with the Wilmington Plant.

There have been changes to the buildings that reduce the integrity of materials. The removal and filling of windows is the most significant, as it changes the patterned appearance of the refinery building and steam plant. The newer plaster over the board-formed concrete textured walls of the refinery building and steam plant does not appear to be a significant change for a property eligible under Criterion A. The new cladding does not look different until viewed up close. The wharf office, shed, and connecting shed are clad in corrugated metal sheets and appear to retain most of their original materials or, if replaced, were done in-kind. The northern gable end of the shed appears to be the only location that has new metal sheeting material in a different design. The addition of industrial equipment, such as the bulk storage bins, conveyor belt over the shed, and various water and electrical lines installed on the exterior of all the buildings, distracts from the aesthetics of the property. Therefore, it is agreed that the property has suffered a loss of materials, but the buildings are not completely without integrity of materials.

Response to Comment GSNT-19:

The URS memorandum comments that the property does not represent physical evidence of the crafts of a given period of history, nor does it reflect its earliest period of development.

The Wilmington Plant was not created to exhibit high style workmanship. For example, there are no elaborate front porches, cornice lines, or wall decorations. The workmanship of the refinery building was in the design of the frame or method of construction. It is understood that the first reinforced concrete building in the U.S. was constructed at the Borax refinery plant in West Alameda and that the Wilmington refinery was just a copy of earlier refineries used by Borax. However, the Wilmington refinery building was designed to improve on those earlier examples and, according to *The Story of Borax,* "The [Wilmington refinery] building was the first reinforced concrete industrial structure in Southern California" (Kern 1979:31). The Wilmington Plant's first Plant Manager, Cramer, explained that the refinery building's design was to "provide ample space for enlargement or expansion. The monolithic concrete construction was decided upon as best suited to carry the weight of machinery required….the roof was simply a third upper floor with full strength for future upward building if desired" (Cramer 1949). While upward expansion was never undertaken, its design was forward looking and the refinery building has continued to serve its purpose for over 80 years. The wharf office and sheds exhibit Neo-classical inspired parapets that surround the roofline and conceal the gable roofs. These parapets give the buildings a grander appearance rather than a purely industrial exterior. The property appears to exhibit evidence of style, design, and skill in construction and retains and exhibits integrity of workmanship.

Response to Comment GSNT-20:

The URS memorandum comments that substantial additions and changes, coupled with changes in the setting, have destroyed the 'feeling" associated with the aesthetic or historic sense of the Wilmington Plant.

Although the bulk storage bins and conveyor belt over the shed are very visible alterations to the property, it is not hard to recognize the Wilmington Plant from its historical photographs. URS states that the feeling of the plant has been destroyed, that is to say a contemporary of Borax would not recognize the property as a period example. In contrast, the Port contends that the presence of the original buildings, especially when viewed from sea or along Slip One, does have the ability to convey the property's historic character. It is agreed that the property has suffered some loss of feeling with the new additions and removal of highly visible signage on the shed, but the property retains a reasonable integrity of feeling.

Response to Comment GSNT-21:

The URS memorandum comments that the property does not convey a direct link with the prominent architect.

The lack of association with the property's architect is unimportant, as the property is not considered significant under Criterion C. Integrity is generally assessed under the criterion for which it is significant. The Wilmington Plant did contribute to the Port's shipping status and was a visible landmark during the historic period of growth, thereby contributing to a historic trend that made a significant contribution to the Port. As the property is still located within the Port, the property retains integrity of association.

Response to Comment GSNT-22:

The URS memorandum comments that the property no longer retains most aspects of its historic integrity.

"Integrity is the ability of a property to convey its significance" (National Park Service 2002:44). "All properties change over time. It is not necessary for a property to retain all of its historic physical features or characteristics. A property that is significant for its historic association [Criterion A] is eligible if it retains the essential physical features that made up its character or appearance during the period of its association with the important event or historical pattern…" (National Park Service 2002:46). Since the U.S. Borax Processing Plant retains the essential physical features that made up its character or appearance during the period of its association with the important event or historical pattern, and retains sufficient integrity of location, design, setting, materials, workmanship, feeling, and association, the property appears to be eligible under Criterion A for the NRHP and Criterion 1 for the CRHR. These conclusions are based on property's contributions to the Port's shipping status during the historic period of growth, thereby contributing to a historic trend that made a significant contribution to the Port.

Response to Comment GSNT-23:

The URS memorandum comments that it would like to suggest several other buildings that may be better examples of the historic context.

The context in which URS evaluated the property is not the same as that of the HRER. The historic context in the HRER is the history of the Port; therefore, any other buildings that may be suggested as better examples of the historic context prepared by URS would not be significant for the Port.

Response to Comment GSNT-24:

The URS memorandum comments on the design of two reinforced concrete refineries for U.S. Borax.

The URS memorandum does not identify any comparable properties at the Port. Both the Bayonne, New Jersey and the West Alameda, California refineries are not significant for the Port, and hence do not replace the importance of the Borax property to the Port as a historic property retaining much of its historic appearance and setting.

Response to Comment GSNT-25:

The URS memorandum states “When comparing the property to other properties associated with U.S. Borax in the Los Angeles area or southern California, the U.S. Borax-Rio Tinto Processing Plant does not illustrate the economic development or historical importance of the company” (URS 2013).

The HRER considers properties that may be significant to the Port. The entire history of Borax and its activities in the Death Valley area are not significant to the development of the Port, nor can it be argued that any Borax property outside of the Port can convey the significance of the Port.

Response to Comment GSNT-26:

The URS memorandum summarizes that the HRER lacks appropriate justification for the period of significance and that the integrity analysis lacks rigor. Since the Wilmington Plant no longer retains its most meaningful aspects of its historic integrity, the property is ineligible for any criteria for listing in the NRHP or the CRHR. The URS memorandum adds that the “refineries in West Alameda, California and Bayonne, New Jersey are recommended as better examples of the property type’s historic context, and properties within Boron and Death Valley better convey the importance of U.S. Borax and the company’s place in history. Further, it is not the oldest or the most distinctive property within the port, does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values, and is not representative of a major or unique industry in the port” (URS 2013).

Both the period of significance and the analysis of integrity are addressed in responses provided above (see responses to Comments GSNT-5, 16-22). The fact that the Wilmington Plant is not the oldest or most distinctive property within the Port is not a criterion for eligibility. The LAHD agrees with the findings of the URS memorandum that the Wilmington Plant is not eligible for listing on the NRHP or the CRHR as an individual property in the development of the industry of borax production and the history of U.S. Borax.

However, the LAHD contends that the U.S. Borax Wilmington Processing Plant is a significant cultural resource potentially eligible for listing to the NRHP under Criterion A, the CRHR under Criterion 1, and as a LAHCM for its contributions to the Port’s shipping status during the historic period of growth, thereby contributing to a historic trend that made a significant contribution to the Port.

Attachment A

URS

Memorandum

Date: January 30, 2013

To: Mr. Robert Ritter
Gresham Savage Nolan & Tilden, PC
550 East Hospitality Lane, Suite 300
San Bernardino, CA 92408

From: Mr. Jeremy Hollins
URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037

Subject: **Memorandum of Record for the Historical Evaluation of the U.S. Borax Wilmington Facility**

Dear Mr. Ritter:

The following memorandum of record summarizes the historical evaluation of the U.S. Borax Wilmington Facility, located at 300 Falcon Street, Wilmington, California, in the Port of Los Angeles. At the request of Rio Tinto, the property owner, the property was evaluated for eligibility for inclusion in the California Register of Historical Resources (CRHR), as a Los Angles Historic Cultural Monument (LAHCM), and as a historical resource for purposes of the California Environmental Quality Act (CEQA), as defined in CEQA Guidelines Section 15064.5. In conclusion, the facility does not appear to be eligible for listing on the CRHR, LAHCM, or considered a historical resource for purposes of CEQA.

Introduction

The subject property, the U.S. Borax Wilmington Facility, built originally in 1923 and 1924, encompasses approximately 7.6 acres within the industrial Port of Los Angeles, California. The property is bordered to the north by Berth 164, occupied by Valero; to the east by Berths 174 to 181, occupied by Pasha; to the south by Berths 167 to 169, occupied by Shell; and to the west by Slip No. 1. The project is located within the Torrance (1981) 7.5-Minute United States Geological Survey (USGS) Quadrangle Map, with the approximate center point of the project located at UTM Zone 11 382667mE, 3735965mN. The subject property contains a grouping of buildings and structures used primarily in the refining and shipping of Borax. The facility is owned and operated by Rio Tinto. Maps of the subject property are included in Attachment A, and photographs of the subject property are included in Attachment B.

Methods

To assess the subject property for above-ground significance, URS performed a record search through the California Historical Resources Information System (CHRIS) for the subject property and one-mile search radius, property-specific historic research, and an architectural survey of the subject property.

Record Search

On January 7, 2013, URS performed a record search at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton. The search was performed through the CHRIS cultural resources

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database for all relevant previously-recorded cultural resources and previous investigations completed within the site and within a one-mile radius of the site. Information reviewed by URS included location maps for previously-recorded trinomial and primary prehistoric and historic sites and isolates, site record forms and updates for cultural resources previously identified. It also included review previous investigation boundaries, and National Archaeological Database citations for associated reports, historic maps, and historic addresses. Also reviewed were the properties listed on the California Points of Historical Interest, California Historical Landmarks (CHL), California Historical Resources Inventory, local registries of historic properties, CRHR, and the National Register of Historic Places (NRHP). A copy of the record search is included in Attachment C of this report and the results of this search are summarized below.

Previously-Conducted Investigations

The SCCIC record search identified 31 previously-conducted investigations within the one-mile search radius, which are listed in Table 1 below and mapped in Attachment C. Of these 31 previously-conducted investigations, two included the subject property. Additionally, the SCCIC identified 35 previously-conducted investigations located in the Long Beach, San Pedro and Torrance, CA 7.5-Minute USGS Quadrangles that are potentially within the one-mile radius of the subject property. However, the SCCIC did not have specific locational data for these surveys. Therefore, these additional investigations are not mapped in Attachment C or included in Table 1.

Table 1 – Previously-Conducted Cultural Resources Investigations within a One-Mile Search Radius

Survey Report Number	Author	Company	Date	Report Title	Quadrangle	Within Subject Property
LA-953	Dillon, Brian	NA	1981	An Archaeological Resource Survey and Impact Assessment of the Proposed Container Terminal Berths 121-126 in the Port of Los Angeles, California	Torrance	No
LA-1431	Langenwalter, Paul	Port of Los Angeles	1977	Environmental Impact Report – Knoll Hill Development, Los Angeles Harbor	San Pedro, Torrance	No
LA-2399*	Winman, Lois J. and E. Gary Stickel	NA	1978	Los Angeles- Long Beach Harbor Areas Cultural Resource Survey	San Pedro, Torrance	Yes

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Survey Report Number	Author	Company	Date	Report Title	Quadrangle	Within Subject Property
LA-2789	Govena, Fran and Beth Padon	LSA Associates, Inc.	1992	Cultural/Scientific Resource Assessment: B Street Realignment Project, Port of Los Angeles, Los Angeles County, California	Torrance	No
LA-3341	Komporlides, Dena S.	Tetra Tech, Inc.	1994	Cultural Resources Evaluation for Site 6-a, Long Beach Naval Station, California	Long Beach, Torrance	No
LA-3403	Gilliland, Donald B.	Angeles National Forest	1994	Josephine Peak Microwave Site, Los Angeles County	Condor Peak	No
LA-3583	Bucknam, Bonnie M.	Archaeological Research, Inc.	1974	The Los Angeles Basin and Vicinity: A Gazetteer and Compilation of Archaeological Site Information	Anaheim, Baldwin Park, Beverly Hills, El Monte, Hollywood, Inglewood, La Habra, Los Alamitos, Los Angeles, Malibu Beach, Newport Beach, Point Dume, Redondo Beach, San Pedro, Seal Beach, South Gate, Topanga, Triunfo Pass, Venice, Whittier	No

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Survey Report Number	Author	Company	Date	Report Title	Quadrangle	Within Subject Property
LA-3707	Clewlow, C. William Jr.	University of California, Los Angeles Archaeological Survey	1974	Preliminary Report of the Potential Impact on Archaeological Resources of the Proposed Gas Transmission Pipeline from Los Angeles Harbor to Yorba Linda – Southern California Gas Co.: Environmental Analysis	Anaheim, Long Beach, Los Alamitos, Orange, San Pedro, Yorba Linda	No
LA-4130*	Unknown	Los Angeles – Long Beach Harbors Landfill Development and Channel	1984	Los Angeles – Long Beach Harbors Landfill Development and Channel Improvement Studied Cultural Resources Appendix	Long Beach, San Pedro, Torrance	Yes
LA-4228	McKenna, Jeanette A.	McKenna et al.	1995	Cultural Resources Investigations for the Proposed Banning's Landing Waterfront Access and Office Development Project Area, Port of Los Angeles, Wilmington, Los Angeles County, California	Torrance	No
LA-4455	Pierson, Larry J.	U.S. Army, Los Angeles District Corps	1980	A Cultural Resource Study for the Los Angeles Harbor Deepening Project	Long Beach, San Pedro, Torrance	No

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Survey Report Number	Author	Company	Date	Report Title	Quadrangle	Within Subject Property
LA-4879	Lander, E. Bruce	Paleo Environmental Associates, Inc., Greenwood and Associates	1997	Report of Findings, Class I and III Historic Architectural Archaeological, Paleontological Surveys, Terminal Island Treatment Plant Advanced Wastewater Treatment Facility Phase I Distribution Pipeline, Los Angeles Harbor Area, Los Angeles, California	San Pedro, Torrance	No
LA-4907	Maki, Mary K.	NA	2000	Phase I Archaeological Investigation of Limited Areas within the Los Angeles Department of Water & Power's Harbor, Scattergood & Valley Generating Stations Los Angeles County, California	Torrance, Van Nuys, Venice	No
LA-4970	Smith, C. Philomene	Caltrans District 7	2000	Reconstruction Along Route 47 from the Vincent Thomas Toll Plaza to Navy Way	Long Beach, San Pedro, Torrance	No
LA-5331	Romani, John F.	Caltrans District 7	1982	Archaeological Survey Report for the 07-la-110 Freeway Transitway Corridor Project	Inglewood, San Pedro, Torrance	No
LA-6061	Lanz, Madeline	LSA Associates, Inc.	2001	Architectural Survey and Evaluation of the Historic Union Oil Terminal (Berths 148-151) of the Port of Los Angeles	Torrance	No

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Survey Report Number	Author	Company	Date	Report Title	Quadrangle	Within Subject Property
LA-7031	Unknown	Jones & Stokes	2003	A Cultural Resources Assessment for the Port of Los Angeles Waterfront Gateway Development Project, City of San Pedro, Los Angeles County, California	San Pedro	No
LA-7032	Slawson, Dana N. and Alice Hale	Greenwood and Associates	2003	Cultural Resources Summary: Port of Los Angeles Berths 97-109 China Shipping Yard	San Pedro	No
LA-9329	Lassell, Susan E.	Jones & Stokes	2000	Final Evaluation Report for the Historic Fruit Company Terminal and the Port Café, Berth 147, Port of Los Angeles, Los Angeles County, California	Torrance	No
LA-9330	Lassell, Susan E.	Jones & Stokes	2000	Final Evaluation Report for Berths 104, 108-109, 115, and 118-120, Port of Los Angeles, Los Angeles County, California	Torrance	No
LA-9359	Bonner, Wayne H.	Michael Brandman Associates	2004	Cultural Resources Survey and Historic Architectural Assessment for Sprint Telecommunications Facility Candidate LA54XC7761 (DWP Facility), 161 North Island Avenue, Wilmington Los Angeles County, California	Torrance	No

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Survey Report Number	Author	Company	Date	Report Title	Quadrangle	Within Subject Property
LA-10477	Snaver, Noelle	ICF Jones & Stokes	2009	An Analysis of Historic Period Artifacts Recovered from the Avalon Triangle Park Project, Port of Los Angeles, San Pedro, California	Torrance	No
LA-10528	Snaver, Noelle	Jones & Stokes	2004	Final Archaeological Monitoring and Treatment Plan for the Los Angeles Harbor Department, Waterfront Gateway Project, San Pedro, CA	San Pedro	No
LA-11232	Lee, Portia	ICF Jones & Stokes	2008	San Pedro Waterfront Redevelopment Project, Cultural Resources Technical Report, Historical Built Environment (Architectural Resources)	San Pedro, Torrance	No
LA-11348	Akyuz, Linda, Ciarus Backes, and John Dietler	SWCA Environmental Consultants	2010	Archaeological Excavation at Avalon Triangle Park, Port of Los Angeles, City of Los Angeles, Los Angeles County, California	Torrance	No
LA-11410	Unknown	ICF Jones & Stokes	2008	Cultural Resources Survey Report for the San Pedro Waterfront Project located in the City of Los Angeles, Los Angeles County, California	San Pedro, Torrance	No

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Survey Report Number	Author	Company	Date	Report Title	Quadrangle	Within Subject Property
LA-11411	Unknown	U.S. Army Corps of Engineers	2009	San Pedro Waterfront Project Final EIS/EIR	San Pedro, Torrance	No
LA-11482	Racer, F.H.	NA	Unknown	Camp Sites in Harbor District	Beverly Hills, Inglewood, Redondo Beach, San Pedro, Torrance, Venice	No
LA-11539	Fernandez, Trish and Barrett, Thomas	ICF International	2010	San Pedro Waterfront Development Project Historic Property Treatment Plan: Mexican Hollywood, San Pedro California	San Pedro	No
LA-11756	Amaglio, Allessandro	FEMA	2012	S.S. Lane Victory: Install Six Security Cameras on the S.S. Lane Victory berthed at Berth 64, San Pedro, Los Angeles, CA	San Pedro	No
LA-11811	Dietler, Sara and Gibson, Heather	AECOM	2012	Draft Phase I Archaeological Investigation: WWL Vehicle Cargo Terminal at Berths 195-200A Los Angeles County, California	Long Beach, Torrance	No

NA = Not Applicable

Previously-Recorded Cultural Resources

A review of the records at SCCIC indicates that there have been 31 previously-recorded cultural resources within the one-mile search radius of the subject property. No sites are listed on the Archaeological Determination of Eligibility list. One site is listed on the Historic Properties Data File list, Property # 175908 – Port of Los Angeles: Shell Oil Terminal. No previously-recorded cultural resources are located within the subject property.

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All previously-recorded cultural resources within a one-mile radius of the subject property are listed in Table 2 and mapped in Attachment C.

Table 2 – Previously-Recorded Cultural Resources within a One-Mile Search Radius

Primary #	Other Identifier	Cultural Resource Type	Cultural Resource Description	Within Subject Property	Latest Update	Eligibility Status
NA	Property # 175908	Historic-Period Built Environment	Port of Los Angeles: Shell Oil Terminal	No	2009	Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing (6Y)
19-000146	LAN-146	Archaeological Site (Destroyed)	Refuse Heap	No	1977	NA
19-000149	LAN-149	Archaeological Site (Destroyed)	Refuse Heap	No	1981	NA
19-000285	LAN-285	Archaeological Site (Destroyed)	Shell Midden	No	1981	NA
19-002135	CA-LAN-2135 H	Historic-Period Built Environment	Los Angeles Union Oil Refinery	No	1993	No Determination Available
19-003801	CA-LAN-3801	Historic-Period Built Environment (Destroyed)	Mexican Hollywood – Historic Latino Neighborhood	No	2008	NA
19-004279	CA-LAN-4279H	Archaeological Site (Destroyed)	POLA-Avalon Triangle-S-01 – Historic Trash Pit	No	2010	NA
19-167267	Property # 021220	Historic-Period Built Environment (Destroyed)	S.S. Catalina – Great White Steamer	No	1988	Removed from NRHP by the Keeper (6W)
19-167314	NA	Historic-Period Built Environment (Destroyed)	Terminal Island – Historic Japanese Fishing Community	No	1979	NA

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Primary #	Other Identifier	Cultural Resource Type	Cultural Resource Description	Within Subject Property	Latest Update	Eligibility Status
19-173042	Property # 027064	Historic-Period Built Environment (Further research indicates property is no longer extant)	Steam Propulsion System of the Ferry Boat Sierra Nevada	No	2006	Individual Property Determined Eligible for NRHP through Section 106 Process. Listed in the CRHR. (2S2)
19-180720	Property # 089064	Historic-Period Built Environment	Lane Victory – Large Maritime Vessel	No	1990	Individual property listed in NRHP by the Keeper. Listed in the CRHR. (1S)
19-186623	NA	Historic-Period Built Environment	Berth 148-1 49 Wharf	No	2000	Not Eligible for Listing or Designation (6)
19-186624	NA	Historic-Period Built Environment	Berth 148-149 Tank Farm	No	2000	Not Eligible for Listing or Designation (6)
19-186625	NA	Historic-Period Built Environment	Berth 148-149 Dock House	No	2000	Not Eligible for Listing or Designation (6)
19-186626	NA	Historic-Period Built Environment	Berth 148-149 Gatehouse	No	2000	Not Eligible for Listing or Designation (6)
19-186627	NA	Historic-Period Built Environment	Berth 148-149 Firewall	No	2000	Not Eligible for Listing or Designation (6)
19-186628	NA	Historic-Period Built Environment	Berth 148-149 Substation	No	2000	Not Eligible for Listing or Designation (6)

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Primary #	Other Identifier	Cultural Resource Type	Cultural Resource Description	Within Subject Property	Latest Update	Eligibility Status
19-186629	NA	Historic-Period Built Environment	Union Oil Terminal Berths 150-151	No	2000	Appears Eligible for NRHP as an Individual Property through Survey Evaluation (3S)
19-186630	NA	Historic-Period Built Environment	Berths 150-l5l Truck Rack	No	2000	Not Eligible for Listing or Designation (6)
19-186631	NA	Historic-Period Built Environment	Berths 150-l5l Warehouse	No	2000	Not Eligible for Listing or Designation (6)
19-186687	NA	Historic-Period Built Environment	Berths 150-l5l Main Office	No	2000	Not Eligible for Listing or Designation (6)
19-187017	NA	Historic-Period Built Environment	Wheelhouse Cafe	No	1997	Found Ineligible for NR, CR or Local Designation through Survey Evaluation (6Z)
19-187020	NA	Historic-Period Built Environment	Cottages at 419 West Harry Bridges Avenue	No	1997	Found Ineligible for NRHP, CRHR, or Local Designation through Survey Evaluation (6Z)
19-187021	NA	Historic-Period Built Environment	Harbor Steam Plant	No	1997	Appears Eligible for NRHP as an Individual Property through Survey Evaluation (3S)

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Primary #	Other Identifier	Cultural Resource Type	Cultural Resource Description	Within Subject Property	Latest Update	Eligibility Status
19-187022	NA	Historic-Period Built Environment	Commercial Building at 801 Neptune Avenue	No	1997	Appears Eligible for NRHP as a Contributor to an NRHP Eligible District through Survey Evaluation (3D)
19-188178	NA	Historic-Period Built Environment	Harbor Steam Plant	No	2003	Appears Eligible for NRHP as an Individual Property through Survey Evaluation (3S)
19-188197	NA	Historic-Period Built Environment	Port Cafe	No	2000	Found Ineligible for NRHP, CRHR, or Local Designation through Survey Evaluation (6Z)
19-188198	NA	Historic-Period Built Environment	United Fruit Company Terminal	No	2000	Appears Eligible for NRHP as an Individual Property through Survey Evaluation (3S)
19-188199	NA	Historic-Period Built Environment	Berths 118-120	No	2000	Found Ineligible for NRHP, CRHR, or Local Designation through Survey Evaluation (6Z)
19-188200	NA	Historic-Period Built Environment	Berths 104, 108-109, and 115	No	2000	Found Ineligible for NRHP, CRHR, or Local Designation through Survey Evaluation (6Z)

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Primary #	Other Identifier	Cultural Resource Type	Cultural Resource Description	Within Subject Property	Latest Update	Eligibility Status
19-188201	NA	Historic-Period Built Environment	California Petroleum Company Terminal	No	2000	Appears Eligible for NRHP as an Individual Property through Survey Evaluation (3S)
19-189468	NA	Historic-Period Built Environment	Vincent Thomas Bridge	No	2007	Appears Eligible for NRHP as an Individual Property through Survey Evaluation (3S)

CHL = California Historic Landmark
CRHR = California Register of Historical Resources
LAHCM = Los Angeles Historic-Cultural Monument
NA= Not Applicable
NRHP = National Register of Historic Places

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Historic Research

In addition to the CHRIS records search, URS conducted site-specific research on the subject property and the immediate vicinity. This information was utilized to develop a historic context in order to properly evaluate the subject property. Sources of information reviewed include Certified Local Government annual reports and data, Historic American Building Survey and Historic American Engineering Record records, the National Register Information System, the online database for National Register sites, Calisphere Digital Resources, Online Archives of California, Government Land Office Plat Maps, Sanborn Fire Insurance Maps, local historical societies and libraries, private collections, and inventory files and data on-file with other agencies that control property near the subject property(Refer to Attachment D).

Documentation regarding the history of the company was uncovered within the corporate headquarters. These materials included the following:

- architectural drawings of the Wilmington Facility
- historic-period photographs of several Borax facilities throughout California
- corporate literature and memoranda
- legal property documentation
- site plans and survey information
- previous environmental reports
- building permits

In-person research was also completed by URS. This research was conducted on January 9, 2013 at the California State University of Long Beach Special Collections, the San Pedro Bay Historical Society, and the Long Beach Historical Society. In-person research continued on January 10, 2013 at the Los Angeles Department of Building and Safety and the City of Los Angeles Bureau of Engineering. Additional research efforts were conducted remotely. Investigative correspondence was initiated with the Los Angeles Harbor Department Historical Archives, Wilmington Historical Society, and the 20 Mule Team Museum in Boron, California. The research provided insight into the historic contexts and themes of the area and specific information concerning the potential cultural resources within the property boundaries (e.g., date of construction, historic land ownership).

In addition, on January 14, 2013 information requests were sent to groups and organizations that may be interested in historical resources. The letters afforded local governments, historical societies, and other groups the opportunity to provide information regarding historical resources within or near the subject property. Recipients of the request included the following:

- Alameda Naval Air Museum
- Wilmington Chamber of Commerce
- California State University of Long Beach Special Collections
- San Pedro Bay Historical Society
- Long Beach Historical Society
- Boron Chamber of Commerce
- Port of Los Angeles

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On January 14, 2013, Dan Hoffman, Executive Director of the Wilmington Chamber of Commerce, responded that the Chamber of Commerce is not aware of any significant cultural resources within a half-mile radius of the site.

On January 14, 2013, Anne Hansford, Archivist of the San Pedro Bay Historical Society, responded to URS' request for information. Ms. Hansford replied that URS can review the San Pedro Historical Society's collection of historic maps and photographs.

Field Survey

An architectural survey was performed within the subject property on January 10, 2013. The survey was completed by Jeremy Hollins and Joel Levanetz; individuals who meet the Secretary of the Interior's Professional Qualification Standards in Architectural History and History. A DPR 523 series form was completed for the property (refer to Attachment E).

Historic Context

The historic themes researched for purposes of establishing an evaluative historic context for the subject property include the early history of San Pedro Bay, establishment of the Port of Los Angeles and Long Beach, development of U.S. Borax and the U.S. Borax Wilmington facility. References used as part of this historic context are included in Attachment F.

Early History of San Pedro Bay

Portuguese explorer Juan Rodriguez Cabrillo recorded sighting San Pedro Bay in 1542. He described it as an "excellent harbor" and named it Bahia de los Fumos (Bay of Smokes) after seeing the smoke from hunting fires lit by the native Tongva-Gabrieliño people who occupied the area prior to European arrival. Sixty years later, Sebastian Vizcaino dropped anchor off the site and reported the bay as a cove "with shelter from the northwest, west and southwest winds with a small island in it." The small island, about a half-mile east of a promontory on the western shore, was later named Deadman's Island. To the north, a set of sand dunes called Rattlesnake Island were present; these sand dunes protected the small channels and sloughs of the inland harbor from ocean waves. Between the islands lay an 18-foot bar of sand and rock. Vizcaino renamed the bay "San Andres". In 1734, Spaniard Cabrera Bueno renamed the bay "San Pedro," the name that has persisted.[1]

The first permanent European settlement of the region occurred in 1769, when Spanish soldiers and priests arrived to colonize California. Mission San Gabriel, about 40 miles inland from the bay, was established in 1771. The Spanish set up a system of large land grants, and the Nieto and Dominguez families controlled the waterfront lands at San Pedro.[2]

Trade during the Spanish Period was forbidden except with Spanish ships. Driven by the need for more regular supplies and trade, residents developed a thriving cargo-smuggling industry, which was supported by the small

[1] Charles F. Queenan, The Port of Los Angeles: From Wilderness to World Port (Los Angeles: Los Angeles Harbor Department, 1983), 1-2, 4.
[2] Ibid., 2.

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town established at San Pedro. After Mexico declared independence from Spain in 1822, the new Mexican government lifted the trade restrictions and San Pedro became a robust commercial center. Lands along the bay remained in the possession of the Spanish land grantees.[3]

California came under the control of the United States in 1848, during the Mexican-American War. Two years later, California became a state in the Union. A young American, Phineas Banning, who arrived in the region in 1851, saw the potential for improving the harbor and its facilities to accommodate the increasing cargo shipments arriving in the rapidly-developing region. Banning eventually became known as the “Father of the Los Angeles Harbor” for his many ventures, which included the establishment of a freight and passenger transportation business that served five states, the founding of the small town of Wilmington, and the introduction of the first railroad bill to the California Legislature. Banning solicited Congress successfully for the first improvements to the harbor. This included the dredging of the main channel in 1871 to a depth of 10 feet and the construction of a breakwater between Rattlesnake Island (now Terminal Island) and Deadman’s Island (no longer present). The railroad industry became the dominant transportation agent for the thousands of tons of cargo that moved through the port.[4]

During the 1880s, the population of the City of Los Angeles increased from less than 15,000 to over 50,000, placing increasing strain on the small San Pedro harbor to handle the cargoes of lumber for construction and coal for the railroads and building. Beginning in the early 1880s, the Southern Pacific Railroad Company (Southern Pacific) attempted to monopolize trade in the region by promoting a deep water harbor in Santa Monica. The Southern Pacific tried to capture the entire Senate Commerce Committee appropriation of $250,000 planned for improvements to San Pedro harbor. However, in 1896, Congress granted the appropriation to San Pedro as originally planned, thereby laying the foundation for the modern ports of Los Angeles and Long Beach.[5]

Establishment of the Ports of Los Angeles and Long Beach

By the turn of the century, the population of Los Angeles had doubled to more than 100,000, resulting in increasing demands for building supplies and other cargo to support the growing metropolis. With that in mind, the city annexed a 16-mile strip of land on the outskirts of the Communities of San Pedro and Wilmington in 1906 for a port (both towns became part of the City of Los Angeles three years later). A permanent Los Angeles Board of Harbor Commissioners was created in 1907 to oversee the port.[6] By 1911, the first 8,500-foot section of the harbor breakwater was completed and the main channel was widened to 80 feet and dredged to 30 feet.[7]

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[3] Ibid., 3-4; Board of Harbor Commissioners of the City of Los Angeles, “Virtual History Tour,” 2001, http://www.laporthistory.org/ (accessed January 7, 2010).
[4] Board and City, “Virtual History Tour.”
[5] Queenan, Port of Los Angeles, 27, 31, 39.

[6] Lois J. Weinman and E. Gary Stickel, Los Angeles-Long Beach Harbor Areas Cultural Resource Study, Prepared for U. S. Army Engineer District (Los Angeles, California: April 1978).; Corps of Engineers and the Ports of Los Angeles and Long Beach, “Appendix,” Los Angeles-Long Beach Harbors Landfill Development and Channel Improvement Studies Cultural Resources (July 1984).
[7] Queenan, Port of Los Angeles, 48.

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Meanwhile, in 1909, the Los Angeles Dock and Terminal Company purchased 800 acres of sloughs and salt marshes at the mouth of the Los Angeles River adjacent and to the south of the Port of Los Angeles, to develop a port off of the City of Long Beach. The State of California officially granted the tideland areas to the City of Long Beach for port operations in 1910. The City of Long Beach continued the dredging project commenced by the Los Angeles Dock and Terminal Company after the company declared bankruptcy in 1916.[8]

The opening of the Panama Canal in 1914 sparked a boom in shipping to the Los Angeles and Long Beach ports. The need for deeper channels as well as extended breakwaters led to considerable dredging and land reclamation efforts in the ports during the twentieth century. Just 15 years after its first development, Long Beach attained "deep water" port status, handling more than one million tons of cargo and 821 vessel calls in 1926.[9]

In 1936, oil was discovered in Long Beach's harbor (the oil field is known as Wilmington Field), which led to the construction of the first oil well there in 1938. By 1943, the oil drilling program was producing 17,000 barrels a day and generating $10 million a year in oil revenues. Unfortunately, as early as 1939, the oil extraction appeared to be causing subsidence.[10] Although dikes were built in 1945 for flood control at high tide, by 1957 a 16-square-mile area of the north harbor had sunk between two feet and 24 feet. The solution was a water injection program termed Operation "Big Squirt," that was undertaken in 1960 and seemed to halt the subsidence.[11]

U.S. Borax

In 1962, Thomas Cramer, the first superintendent of the U.S. Borax Wilmington Facility, noted "[t]he story of the Wilmington Refinery is a forty year part of the hundred year history of the borax business in America."[12] In fact, U.S. Borax traces its origins to 1872 when founder Francis Marion Smith discovered the presence of borate deposits in Nevada. During those initial operations, the raw borate material was refined near the site of its extraction. According to Cramer, refining facilities were built beside marshes in Nevada. By 1883, following the discovery of borates in Death Valley, the refined product was being hauled great distances across the desert by 20-mule teams.[13] Smith founded the Pacific Coast Borax Company (predecessor to Borax Consolidated, which then became U.S. Borax) in 1890.[14] The 20 Mule Team symbol became the trademark of the Pacific Coast Borax Company in 1896.[15]

While exploiting a new source of borate deposits in the Calico Mountains, Smith decided to move away from the traditional onsite refining process to a large-scale refining operation in Alameda, California. The Alameda refinery was purchased about 1883 and expanded by Smith in 1890. The new Pacific Coast Borax Company

[8] Port of Long Beach, "History," http://www.polb.com/about/history/ (accessed January 13, 2010).
[9] Ibid.
[10] Bob Gettemy, "Sea Snarls at Man as Land Subsides," Los Angeles Times, December 6, 1953: H1, 5.
[11] Port of Long Beach, "History."
[12] Thomas Cramer, "Wilmington Refinery: Pacific Coast Borax Company" (Memorandum, U.S. Borax Company, June 26, 1962).
[13] Thomas Cramer, "The Mormon Island Story," *Pioneer,* (September 1962), 12.
[14] "View of the Borax Industry, ca. 1898-ca. 1915," Online Archive of California, http://www.oac.cdlib.org/findaid/ark:/13030/tf0n39n8j3/entire_text/ (accessed January 24, 2013).
[15] U.S. Borax, "A Famous Symbol Became One of the World's Best Known and Most Recognizable Trademarks," The Courageous and Fascinating "Century-Old" Saga of the Famous 20 Mule Team of Death Valley (advertisement, U.S. Borax, date not specified).

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refinery was sited on Alameda Point in order to take advantage of inland rail connections and convenient access to shipping in the San Francisco Bay. The siting of the Alameda plant marked a key innovation point for the company. From then on, processing no longer occurred on site at the mines but ore was instead transported to a coastal plant for refining and shipping.[16] Additionally, the Alameda facility pioneered the use of reinforced concrete construction, a method that was subsequently used at the Bayonne, New Jersey facility in 1897. Smith resigned from the company in 1914.[17]

After World War I, the company chose to construct a new facility that would have ready access to the ships traveling through the new Panama Canal and would have proximity to raw materials being extracted in Death Valley. The company purchased property on Mormon Island in the Port of Los Angeles. In 1923, construction began on the Wilmington Facility and in 1924 the Alameda refinery was closed. The Bayonne refinery in New Jersey was also phased out.[18]

In 1927, soon after the Wilmington Facility was finished, the company opened an underground borate mine in Boron, California in the Mojave Desert. In 1956, the company became U.S. Borax when it merged with United State Potash Corporation. In 1957, the company built the Boron refinery and borax production was moved to Boron. The Boron Mine was converted to a surface mine in the late 1950s. In 1967, the company was acquired by Rio Tinto.[19] In 1980, U.S. Borax built its borax acid plant. Today, U.S. Borax continues to operate the Boron Mine, which is California's largest open pit mine.[20]

U.S. Borax Wilmington Facility

The U.S. Borax Wilmington Facility was constructed on Mormon Island on land previously used as the Chandler Shipyard, a World War I shipyard. Architect Albert C. Martin was retained to prepare the plans for the new facility, which was to include a refinery building, power plant, warehouse, office building, and a 150-foot stack. Norman B. Patten served as Martin's building superintendent and G.H. Schulte was the structural engineer. Davidson Construction was retained as the general contractor.[21] Martin was a master architect; however, the design of the U.S. Borax Wilmington Facility does not embody notable architectural designs attributed to Martin's significant works. Along with the 1927 Inn at Furnace Creek which he crafted for the Pacific Coast Borax Company in Death Valley, Martin is known for his contributions to the Los Angeles skyline with his designs of the Los Angeles City Hall (1926), St. Vincent's Church (1923), and the Department of Water and Power Building (1963).

The facility was constructed using the same reinforced concrete construction method that the company had employed first at Alameda 32 years previously and subsequently at Bayonne, New Jersey. Because the soil at Mormon Island could not sustain the load of the concrete buildings, piles were first driven below the groundwater line before concrete pads and pedestals were poured. The final design for the refinery called for a 207-by-252-foot

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[16] U.S. Borax, 100 Years of U.S. Borax, 1872-1972 (Los Angeles, CA: U.S. Borax, 1972), 32-34.; U.S. Borax, "Bit of History," Pioneer (July-August 1968), 17.
[17] George Herbert Hildebrand, Borax Pioneer: Francis Marion Smith (La Jolla, CA: Howell-North Books, 1982), 56.
[18] U.S. Borax, "Borax Timeline," About Borax, http://www.borax.com/about-borax/timeline (accessed January 23, 2013).
[19] Ibid.
[20] Ibid.
[21] U.S. Borax, *100 Years*, 32-34.

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building with three stories and a rooftop water tower. Martin's drawings also planned for a future expansion of the facility, including two additional refinery floors (never built), a lateral expansion on either side of the refinery (later partially constructed as the Connecting Shed and additions to the original Warehouse), and two additional buildings (never constructed). The stack was finished by November 1923. The main components of the buildings were completed on the last day of that same year, six months after the foundations had been finished.[22]

Meanwhile, the previously-installed boilers in the power plant and the plans for piping and equipment were drawn by Fred Beik by late fall 1923. By February 1924, the first of the equipment, the Sweetland press and Raymond power-mill, were installed in the refinery. Concurrently, the last of the building windows, roofing, and painting were being finished. The bulkhead had been put in and the channel in front of the property dredged during 1923, so construction of the wharf, warehouse, and wharf office building began in 1924. Separately, the Alameda facility was dismantled, and the bulk borax production goods were transferred to Wilmington. On November 1, 1924, the first cargo was loaded onto a ship from the Wilmington Facility.[23] On January 28, 1925, a survey map of the Borax Consolidated Wilmington facility was completed, which illustrated the site as containing a Factory (Refinery), Power Plant, Stack, Oil Tank, Office (now Wharf Office), Warehouse, Wharf, and Mud Scow Dock.[24] The Wilmington facility produced borax, Borax Soap Chips, BORAXO, bar soap, and borax "glass".[25] The U.S. Borax Wilmington Facility was an early occupant of the port, but it nevertheless was established years after the port had attained success through the shipping of such commodities as lumber, petroleum, and citrus products.[26]

Robert Shaw, Wilmington facility manager beginning in 1983, recollected that Borax Consolidated was challenged by the City of Los Angeles in 1935 in regard to ownership of the property. [27] The U.S. Supreme Court decided in the company's favor on November 11, 1935. The company was able to successfully prove that the property was part of the original Mormon Island and was never tideland; therefore, Los Angeles could not claim that the property was "public land" and take ownership. The property is now the only privately-owned property in the Port of Los Angeles.[28]

Since Martin drafted his designs for the refinery in 1923, large-scale changes to the property have undermined the architect's original design intent. Large additions to the south and north ends of the warehouse building and a Connecting Shed between the Refinery and the expanded Warehouse (generally based on Martin's 1923 designs for expansions) were constructed by 1952.[29] Following a feasibility study conducted in the early 1960s, U.S. Borax began plans for major terminal facilities at the Wilmington facility.[30] Construction began on the terminal (Bulk Storage Silos) in 1962 and the first railcar of product was loaded into the 12-silo structure in 1963. The 100-foot-tall by 30-foot-diameter concrete silos introduced a massive and substantial change to the property. A large conveying system was constructed at the same time to move the bulk borates from the silos to the holds of

[22] Cramer, "Wilmington Refinery."; U.S. Borax, *100 Years*, 32-34.
[23] Cramer, "Wilmington Refinery."
[24] U.S. Borax. Map of the Property of Borax Consolidated, Ltd. at Los Angeles Harbor, Slip No. 1 (Mormon Island), Wilmington California (map on file, U.S. Borax, 1925).
[25] U.S. Borax, *100 Years*, 34.
[26] U.S. Borax, *100 Years*, 32-34.
[27] Robert Shaw, "Wilmington Recollections" (Memorandum, U.S. Borax Company, 1988).
[28] Borax Consolidated, Ltd. v. Los Angeles, 296 U.S. 10 (1935).
[29] NETR Online, Historic Aerials, www.historicaerials.com (accessed January 24, 2013).
[30] U.S. Borax, *Annual Report 1962* (Los Angeles, CA: U.S. Borax, 1962), 16.

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ships at the dock.[31] In 1979, an additional four-silo structure was constructed to the south of the original 12-silo structure.[32] Over time, additional alterations have occurred to the subject property and its buildings, including seismic retrofitting of many of the buildings and structures between 1988 and 2004, which also resulted in the removal of the original 150-foot stack near the power plant;[33] introduction of large industrial equipment such as tanks, silos, conveyor belts, and piping; infilling of many of the buildings' windows and entries; and attachment of conduit, other piping, utility equipment, security lights, cameras, and signage to the exterior walls of the buildings.

Currently, the Wilmington Facility serves as Rio Tinto's primary North American shipping facility. The refinery produces 16 specialty products, including wood preservatives and flame retardants, which can be stored in the facility's 35,000 tons of storage capacity before being transferred to docked ships for export.[34]

Architectural Description of the Property

The subject property is a part of an irregular-shaped lot that contains six main buildings and structures. From (generally) south to north, they are: Refinery Building, with the Power Plant adjacent to the east, the Connecting Shed, the Warehouse, with the Bulk Storage Silos to the east, and the Wharf Office. In addition, the subject property contains a dock along the west boundary that is adjacent to Slip No. 1. Miscellaneous industrial equipment such as tanks, piping, sheds, and a railroad spur are also located within the boundaries of the subject property, which is surrounded by a chain-link fence.

Refinery Building

The Refinery Building, designed by Albert C. Martin, was built in 1923 and 1924 and is a Utilitarian Industrial-style refinery (refer to Attachment B for photographs of the subject property). It occupies the south end of the subject property and has an east-facing orientation. It is three stories with a rectangular plan. Due to changes in refining technologies since 1924, the resource has undergone extensive alterations and upgrades. The building features a flat roof covered with composite sheet. Distributed across the rooftop are large tanks, pieces of electrical equipment, and conduit visible from the pedestrian right-of-way. At either corner of each elevation, there are groupings of three simple rectangular pilasters extending from the ground level to the roofline. In many cases, the stylized rectangular capital of the pilasters has been removed and the surface of the column has been altered or removed to accommodate industrial equipment.

Fenestration on all elevations includes original, large, multi-pane metal industrial windows with hopper panels near the center of most. A number of the locations where windows once existed have been in-filled, and many of the remaining windows have been altered or retrofitted for equipment installation. The walls of the refinery building no longer retain their original board-formed concrete texturing. Instead, a modern stucco texture covers

[31] U.S. Borax, *100 Years*, 36.
[32] Shaw, "Wilmington Recollections."
[33] Oren Brown, "Seismic Work at the US Borax Facility at Wilmington" (Memorandum to Randy Luckman, U.S. Borax Company, February 11, 2004).
[34] Rio Tinto Minerals, "Our Operations," http://www.riotintominerals.com/ENG/ourbusiness/25_our_operations.asp (accessed January 24, 2013).; Rio Tinto Borax, "About Borax: Worldwide Locations, U.S. Borax Inc. – Wilmington Operations," *Deed and Legal Description, File Name 314* (website screenshot on file, U.S. Borax, date not specified).

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the wall surface. The retexturing is most apparent over the locations of in-filled windows. None of the wall surfaces indicate evidence of historic-period signage visible in historic photographs (refer to Attachment D).

The main entry, which is off-centered on the primary (east) façade, is filled with a non-original metal commercial door. The stoop for the main entry extends south passed a large non-original roll top door that is off-centered on the primary façade. This area serves as the East Dock for the Refinery Building. Both the loading dock and main entry are located beneath a corrugated metal awning. A smaller loading station with a non-original metal roll top door is located off-centered on the southern half of the primary façade. At the far south corner of the primary façade is a set of non-original industrial metal double doors beneath a similar corrugated metal awning. At the center and north corner of the primary elevation are two additional non-original single panel metal doors. Large non-historic period conduit, rigging, and other industrial equipment components are attached to the walls.

Although broader, the north elevation has similar characteristics and alterations to the primary façade. These similarities included a substantial amount of window in-fill, non-original stucco texturing on wall surfaces, and a significant level of alteration due to the installation of modern industrial equipment. Along with these changes, a non-original concrete exterior walkway has been installed along the north elevation. This addition extends across the entire elevation and includes a metal handrail separating the platform from an asphalt roadway. The rectangular stringcourse that historically spanned the entire center of the north wall has been largely removed to allow for industrial equipment mounting. Additional non-original equipment includes a concentration of conduit and metal framing near the center of the north elevation that connects the Refinery Building with the adjacent Power Plant.

Along with the alterations to the texture and form of the elevations mentioned above, the south and west elevations have both received significant non-original structural additions. With regard to the south elevation, in order to adapt the Refinery Building to new technologies, a two-story processing structure was attached to the wall. The large-scale alteration appears to be two separate tanks supported by a base constructed of steel beams. Access ladders, conduit, and vents extend from the structure to the south elevation. Directly adjacent on the west elevation of the Refinery Building is the Connecting Shed.

Connecting Shed

The Connecting Shed was built by 1952, generally following Martin's 1923 original design for an addition at that location. It is a Utilitarian Industrial-style building (Attachment B). It occupies the southeast portion of the subject property and has a south-facing orientation. It is one story with an L-shaped plan. The building features four consecutive and similar width front-gable roofs covered with composite sheet. Located on the southernmost portion of the roof are electronic equipment and piping. The roof features a plain parapet that is stepped on the south and north elevations and topped with a simple cornice. Mounted on the parapet are non-original spotlights. A simple cornice wraps around the building below the parapet. A sign with a historic photo of the Borax 20-Mule Team and the words "Rio Tinto" are painted on the parapet of the primary (south) façade.

Fenestration on the primary (south) façade includes a number of paired multi-pane, metal-framed industrial windows, two bays with non-original metal roll top and swing up doors, and an industrial door. The north elevation features four evenly-spaced bays and a number of paired multi-pane, metal-framed industrial windows. The east elevation is directly adjacent to the Refinery Building and the west elevation is directly adjacent to the

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Warehouse. The walls of the north and south elevations are covered with non-original corrugated metal sheeting. Large non-historic period conduit, rigging, and other industrial equipment components protrude from the wall. Non-original safety barriers, metal corner braces, and post bollards have been added near bay corners. The north elevation features a single, long awning of corrugated metal sheeting that is supported by steel truss bracing. The awning runs the length of the building, connecting with the Warehouse awning and providing cover for a concrete loading dock that also continues from the Warehouse.

Warehouse

The original portion of the Warehouse was built in 1924, with major additions to the north and south by 1952 that generally followed Martin's 1923 original design for the expansion of the Warehouse. It is a Utilitarian Industrial-style warehouse (refer to Attachment B for photographs). It occupies the east side of the subject property, beside Slip No. 1, and has an east-facing orientation. It is one story with a narrow rectangular plan. Due to changes in refining technologies since 1924, the Warehouse has undergone extensive alterations and upgrades, including the large additions by 1952 on the north and south elevations that quadrupled the size of the building. The Warehouse features a side-gabled roof covered with composite sheet. A non-original rooftop structure is located on the northern end of the rooftop. The structure is supported on a steel platform and features a covered conveyor belt that extends from the Bulk Storage Silos structure, a boom that can drop down for ship loading, corrugated-metal sheeted shed-like buildings, and numerous pipes and other industrial features. Like the adjacent Connecting Shed to the southeast and the Wharf Office to the north, the Warehouse roof features a plain parapet that is stepped on the north elevation and topped with a simple cornice. Mounted on the parapet are non-original spotlights. A simple cornice wraps around the building below the parapet.

Fenestration on the east, north, and west elevations includes a number of multi-pane metal industrial windows and evenly-spaced bays with non-original metal roll top doors. The primary (east) façade and the west elevation each feature approximately 29 bays. The north elevation has one bay. The south elevation is directly adjacent to the Connecting Shed. The walls of the east elevation are covered with non-original corrugated and flat metal sheeting. Large non-historic period conduit, rigging, and other industrial equipment components are attached to the walls. Non-original safety barriers, metal corner braces, and post bollards have been added near bay corners. None of the wall surfaces indicate evidence of historic-period signage notable in historic photographs (refer to Attachment D).

The north and west elevations have similar characteristics and alterations as the east elevation. These similarities include non-original metal corrugated sheeting wall covering and non-historic period conduit, rigging, other industrial equipment components, safety barriers, metal corner braces, and post bollards, which have been added near openings and corners. The west elevation features a single long awning of corrugated metal sheeting that is supported by steel truss bracing. The awning runs the length of the building, providing cover for a raised concrete loading dock.

Wharf Office

The Wharf Office, designed by Albert C. Martin, was built in 1924 and is a Utilitarian Industrial-style wharf office (refer to Attachment B for photographs). It occupies the northwest corner of the subject property and has an east-facing orientation. It is two stories with a rectangular plan. The resource has undergone some alterations to

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accommodate the changing needs of the facility. The building features a side-gabled roof covered with composite sheet. Distributed across the roof ridge are approximately seven vents and a hatch or sunroof, all visible in historic photographs (refer to Attachment D). The roof features a plain parapet that is stepped on the south and north elevations and topped with a simple cornice. Mounted on the parapet are non-original cameras and spotlights. A simple cornice wraps around the building below the parapet.

Fenestration on all elevations includes large original multi-pane industrial metal-framed windows with hopper panels near the center of most. They are generally arranged in groupings of three. Many of the windows contain non-original air conditioning units that are supported on metal platforms with metal braces. Two fixed, wood-framed windows are located on either side of the northernmost entrance of the east elevation. One of the panes has been in-filled with wood. The walls of the Wharf Office no longer retain their original board-formed concrete texturing. Instead, a modern stucco texture covers the parapet and corrugated metal sheeting covers the walls below the parapet. Numerous tracks of non-original conduit, piping, and other industrial equipment are attached to the walls.

The primary (east) façade has three entries, of which only the northern entry is original. The two southern entries are additions to the building and are filled with single industrial metal doors with one pane. The southernmost entry is covered by a non-original metal security door. The original entry (the northernmost entry) is filled with a wood-framed door with a single light. An original awning protrudes from the wall above the entry. A non-original awning extends over one of the first-story windows.

The south elevation has two original entries: one centered on the first story and one centered on the second story, the latter of which is reached by a metal staircase that replaced an original staircase. The entries are filled with non-original single industrial metal doors with one pane. The north and west elevations have similar characteristics to the other façades but they have no entries.

Power Plant

The Power Plant, designed by Albert C. Martin, was built in 1923 and 1924. It is a Utilitarian Industrial-style steam power plant (refer to Attachment B for photographs). It occupies the center-north portion of the subject property. It is approximately two stories in height with an L-shaped plan. Due to changes in power generating technologies since 1924, the resource has undergone extensive alterations and upgrades. The building features a slightly barreled roof covered with composite sheet. Distributed across the rooftop are pieces of non-original electrical equipment, vents, piping, and two tall, narrow, metal steam stacks. The roof has a simple parapet on which numerous non-original conduit pipes, other pipes, security cameras, and lights are mounted on or behind.

Fenestration on all elevations includes large rounded, arched, metal-framed windows with two hopper panels near the center. A number of the locations where windows once existed have been in-filled and many of the remaining windows have been altered to accommodate pipes and other industrial equipment. The walls of the power plant building no longer retain their original board-formed concrete texturing. Instead, a modern stucco texture covers the walls, which are beveled at the base. The retexturing is most apparent over the locations of in-filled windows. Seismic bracing bolts are visible on all the walls below the parapet. Evidence of disintegration of the plaster and concrete is visible on some walls.

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The power plant has a number of entries on the east elevation, including a non-original metal roll top door, a non-original single industrial metal door with a single pane, and a non-original double metal industrial door with two panes. Four windows have been in-filled on the east elevation. In addition, the original concrete stack adjacent to the east elevation is no longer present. A non-original sign is attached to the east wall and reads "Rio Tinto/Wilmington Operations." Non-original access ladders, conduit, other piping, lights, vents, and other utility equipment have been attached to the walls.

The north, west, and south elevations have similar characteristics and alterations as the east elevation. These similarities included a substantial amount of window in-fill (three windows in-filled on the north elevation and two windows in-filled on the south elevation), non-historic period stucco texturing on wall surfaces, and a significant level of alteration due to the installation of modern industrial equipment such as non-original access ladders, conduit, other piping, lights, vents, and utility equipment. A non-original metal structure connects the west elevation of the Power Plant to the adjacent Refinery Building to the west.

An electrical substation is located directly to the north of the Power Plant.

Bulk Storage Silos

The original portion of the Bulk Storage Silos structure was built in 1962 and 1963, with a later addition in 1979. It is a grouping of 16 tower silos, topped with an industrial building and featuring associated industrial equipment, such as pipes, tanks, railroad car loading bays, and conveyor belts (refer to Attachment B for photographs). The structure occupies the northeast portion of the subject property, adjacent to a railroad spur to the east.

The silos are arranged in two groupings: 12 silos on the north, which were first used in 1963 and which are arranged two-by-six; and four silos, which were a 1979 addition, are arranged in a T-shape, and are separated from the other grouping by a gap. The silos are constructed of reinforced concrete and feature cylindrical forms with flat roofs. The silos are approximately 100 feet in height and have approximately 30-foot diameters. The silos have ground-story entries that are filled with double metal industrial doors with single panes. Metal staircases are attached to the sides of each of the silos; the staircases lead to secondary entrances located approximately one-third up the side of the silos. Some of the silos also feature metal access ladders that extend from the ground level to the roof.

The two groupings of silos are attached via a rooftop industrial building, which has a narrow and long rectangular footprint. The building is centered on the roof of the Bulk Storage Silos structure, extending from one end to the other, bridging the gap between the two silo groupings. The industrial building is primarily one-story with some two-story attached small additions. The building has a gabled roof covered with composite sheeting, corrugated metal wall surface, and numerous windows and entries that connect to metal catwalks, stairwells, and other appurtenances such as industrial equipment, small sheds, and structures that are located on the rooftop of the larger silo structure. Conduit, large piping, and security lights are mounted on the walls of building.

A railroad car loading bay, constructed of metal and covered with corrugated metal sheeting, is attached to the structure at the ground-level on the east elevation. Vertical gravity silos and associated piping and equipment are mounted on the flat roof of the loading bay. The west elevation of the structure features numerous ground-level tanks, vertical gravity silos, and other related industrial structures, some mounted on steel frames. A covered

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conveyor belt clad in corrugated metal sheeting connects the structure with the rooftop of the Warehouse to the west.

Findings and Recommendations

The property was evaluated for its eligibility for listing in the LAHCM and CRHR. Currently, the property is not listed on either register. A DPR 523 series form was completed for the property (refer to Attachment E). The following evaluation was completed by Jeremy Hollins and Joel Levanetz; individuals who meet the Secretary of the Interior's Professional Qualification Standards in Architectural History and History (refer to Attachment F for professional qualifications).

LAHCM Criteria for Significance

LAHCM designation is reserved for those resources that have a special aesthetic, architectural, or engineering interest or value of a historic nature. The Cultural Heritage Ordinance establishes criteria for designation; these criteria are contained in the definition of a Monument in the Ordinance. A historical or cultural monument is any site (including significant trees or other plant life located thereon), building, or structure of particular historical or cultural significance to the City of Los Angeles, such as historic structures or sites:

1. in which the broad cultural, political, economic, or social history of the nation, state, or community is reflected or exemplified;
2. which are identified with historic personages or with important events in the main currents of national, state, or local history;
3. which embody the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period, style, or method of construction;
4. which are a notable work of a master builder, designer, or architect whose individual genius influenced his or her age.

A proposed resource may be eligible for designation as a LAHCM if it meets at least one of the criteria above.

LACHM Evaluation

<u>LAHCM Criterion 1:</u> The property was assessed under LAHCM Criterion 1 for its potential significance as a property in which the broad cultural, political, economic, or social history of the nation, state, or community is reflected or exemplified.

Though the U.S. Borax Wilmington Facility has been located at the property since 1924, the industrial complex is not representative of broad trends of the nation, state, or community. As indicated previously, the U.S. Borax Wilmington Facility was constructed on Mormon Island to take advantage of ready access to the Panama Canal and the proximity to raw materials being extracted in Death Valley. At the time of the refinery's completion, international shipping to and from the Port of Los Angeles through the Panama Canal had been common practice for about a decade. The U.S. Borax Wilmington Facility was built years after several other more important buildings and structures were already constructed, shipping such commodities as lumber, petroleum, and citrus products. In addition, the process of transporting ore extracted from Death Valley to a coastal plant for refining and shipping was not an innovation facilitated by the subject property. In fact, this method was popularized in the late 1800s when 20-mule teams traversed the desert to carry the minerals to rail lines that would ultimately deliver the ore to the original Pacific Coast Borax Company Refinery on Alameda Point.

According to historical research, the property is not representative of any type of achievement or development associated with industrial refining or commerce. Therefore, the U.S. Borax Wilmington Facility does not reflect or exemplify broad cultural, political, economic, or social history of the nation, state, or community. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 1.

<u>LAHCM Criterion 2:</u> The property was assessed under LAHCM Criterion 2 as a property which is identified with historic personages or with important events in the main currents of national, state, or local history.

Historical research revealed that the property does not appear to be directly associated with the significant contributions from the life and career of an individual, such as Francis Marion Smith, who may have made important contributions to the history of the United States, California, or Los Angeles County. In fact, Smith resigned from Borax Consolidated in 1914, ten years before completion of the facility. Other individuals associated with the property, such as facility supervisors, were not revealed to have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 2 for association with historic personages.

Though the U.S. Borax Wilmington Facility has been located at the property since 1924, the industrial complex is not representative of a significant event. As indicated previously, the U.S. Borax Wilmington Facility was constructed on Mormon Island to take advantage of ready access to the Panama Canal and the proximity to raw materials being extracted in Death Valley. At the time of the refinery's completion, international shipping to and from the Port of Los Angeles through the Panama Canal had been common practice for about a decade. The U.S. Borax Wilmington Facility was built years after several other more important buildings and structures were already constructed, shipping such commodities as lumber, petroleum, and citrus products. In addition, the process of transporting ore extracted from Death Valley to a coastal plant for refining and shipping was not an innovation facilitated by the subject property. In fact, this method was popularized in the late 1800s when 20-mule teams traversed the desert to carry the minerals to rail lines that would ultimately deliver the ore to the original Pacific Coast Borax Company Refinery on Alameda Point. According to historical research, no important events occurred at its location. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 2 for association with important events in the main currents of national, state, or local history.

<u>LAHCM Criterion 3:</u> The property was assessed under LAHCM Criterion 3 as a property which embodies the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period, style, or method of construction.

To determine its architectural significance, the U.S. Borax Wilmington Facility requires evaluation as individual buildings designed in the Utilitarian Industrial-style, as well as individual components to a potential historic district. Based on historic research and field survey, the U.S. Borax Wilmington Facility does not appear to

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possess distinctive characteristics of a significant Utilitarian Industrial design. While the plans for the U.S. Borax Wilmington Facility depict several characteristics typical of the Utilitarian Industrial-style typical in California in the 1920s, the property, in its current form, lacks the majority of these distinctive architectural characteristics and its architectural integrity has been significantly compromised. Presently, many of its large multi-pane windows have been in-filled. The non-historic period conduit, ventilation, and industrial equipment added to the facility have obstructed and significantly altered historic-period materials. These alterations include the replacement of the original board-formed wall texture with a stucco exterior wall treatment as well as the modification and removal of the stringcourse and rectangular capitals for the installation of industrial equipment. The absence of these original designed features undermines the distinctive architectural characteristics of the U.S. Borax Wilmington Facility. Additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design. Also, the simple rectangular chimney was not depicted in the 1924 drawings and does not match the original design of the building. The modern alterations and upgrades to the refinery complex detract from its intended architectural character.

Further, while the facility was constructed using reinforced concrete construction method, the facility is a late example of this method of construction. In fact, the company had pioneered the method at the Alameda facility 32 years previously and at Bayonne, New Jersey 27 years before, and by 1924, the construction method was relatively common.

Given the lack of integrity and the numerous alterations to the U.S. Borax Wilmington Facility, the property no longer retains its character-defining features and does not embody the distinctive characteristics of a type, period, or method of construction. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 3.

LAHCM Criterion 4: The property was assessed under LAHCM Criterion 4 as a property which is a notable work of a master builder, designer, or architect whose individual genius influenced his or her age.

While the design of the U.S. Borax Wilmington Facility was undertaken by Albert C. Martin, a master architect, the property does not embody notable architectural designs attributed to Martin's significant works. Along with the 1927 Inn at Furnace Creek which he crafted for the Pacific Coast Borax Company in Death Valley, Martin is known for his major contributions to the Los Angeles skyline with his designs of the Los Angeles City Hall (1926), St. Vincent's Church (1923), and the Department of Water and Power Building (1963). Moreover, since Martin drafted his plan for the refinery in 1923, large-scale changes to the property have undermined the architect's original design intent. Currently, non-historic features such as 100-foot-tall Bulk Storage Silos structure, major alterations to the buildings, and industrial equipment obscure Martin's contribution. Pre-1952 additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design. Therefore, although portions of the U.S. Borax Wilmington Facility were designed by Martin, the refinery is not a good representation of the master architect's work that influenced his age. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 4.

CEQA Criteria for Significance

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Generally under CEQA, a historical resource (these include built-environment and historic and prehistoric archaeological resources) is considered significant if it meets the criteria for listing on the CRHR. These criteria are set forth in PRC Section 15064.5 and are defined as any resource that:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

Aside from meeting a CRHR criterion, a potential historical resource must also retain its historic integrity. Historic integrity is the ability of a property to convey its significance, and is comprised of seven aspects: location, design, setting, materials, workmanship, feeling, and association. The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance.

CRHR Evaluation

<u>CRHR Criterion 1:</u> The property was assessed under CRHR Criterion 1 for its potential significance as a part of a historic trend that may have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

Though the U.S. Borax Wilmington Facility has been located at the property since 1924, the industrial complex is not representative of a significant event associated with the trends or events that have made a significant contribution to the broad patterns of history. As indicated previously, the U.S. Borax Wilmington Facility was constructed on Mormon Island to take advantage of ready access to the Panama Canal and the proximity to raw materials being extracted in Death Valley. At the time of the refinery's completion, international shipping to and from the Port of Los Angeles through the Panama Canal had been common practice for about a decade. The U.S. Borax Wilmington Facility was built years after several other more important buildings and structures were already constructed, shipping such commodities as lumber, petroleum, and citrus products. In fact, this method was popularized in the late 1800s when 20-mule teams traversed the desert to carry the minerals to rail lines that would ultimately deliver the ore to the original Pacific Coast Borax Company Refinery on Alameda Point.

According to historical research, no significant events occurred at its location and the property is not representative of any type of achievement or development associated with industrial refining or commerce. Therefore, the U.S. Borax Wilmington Facility is not associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing in the CRHR under Criterion 1 or to be considered a historical resource for purposes of CEQA.

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CRHR Criterion 2: The property was assessed under CRHR Criterion 2 for its association with the lives of persons important to local, California, or national history. Historical research revealed that the property does not appear to be directly associated with the significant contributions from the life and career of an individual, such as Francis Marion Smith, who may have made important contributions to the history of the United States, California, or Los Angeles County. In fact, Smith resigned from Borax Consolidated in 1914, ten years before completion of the facility. Other individuals associated with the property, such as facility supervisors, were not revealed to have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing in CRHR under Criterion 2 or to be considered a historical resource for purposes of CEQA.

CRHR Criterion 3: The property was assessed under CRHR Criterion 3 for embodying the distinctive characteristics of a type, period, or method of construction, or representing the work of a master or possessing high artistic values.

To determine its architectural significance, the U.S. Borax Wilmington Facility requires evaluation as individual buildings designed in the Utilitarian Industrial-style, as well as individual components to a potential historic district. Based on historic research and field survey, the U.S. Borax Wilmington Facility does not appear to possess distinctive characteristics of a significant Utilitarian Industrial design. While the plans for the U.S. Borax Wilmington Facility depict several characteristics typical of the Utilitarian Industrial-style typical in California in the 1920s, the property, in its current form, lacks the majority of these distinctive architectural characteristics and its architectural integrity has been significantly compromised. Presently, many of its large multi-pane windows have been in-filled. The non-historic period conduit, ventilation, and industrial equipment added to the facility have obstructed and significantly altered historic-period materials. These alterations include the replacement of original board-formed wall texture with a smooth stucco exterior wall treatment as well as the modification and removal of the stringcourse and rectangular capitals for the installation of industrial equipment. The absence of these original designed features undermines the distinctive architectural characteristics of the U.S. Borax Wilmington Facility. Additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design. Also, the simple, rectangular chimney was not depicted in the 1924 drawings and does not match the original design of the building. The modern alterations and upgrades to the refinery complex detract from its intended architectural character.

Further, while the facility was constructed using reinforced concrete construction method, the facility is a late example of this method of construction. In fact, the company had pioneered the method at the Alameda facility 32 years previously and at Bayonne, New Jersey 27 years before, and by 1924, the construction method was relatively common.

While the design of the U.S. Borax Wilmington Facility was undertaken by Albert C. Martin, a master architect, the property does not embody notable architectural designs attributed to Martin's significant works. Along with the 1927 Inn at Furnace Creek which he crafted for the Pacific Coast Borax Company in Death Valley, Martin is known for his major contributions to the Los Angeles skyline with his designs of the Los Angeles City Hall (1926), St. Vincent's Church (1923), and the Department of Water and Power Building (1963). Moreover, since Martin drafted his plan for the refinery in 1923, large-scale changes to the property have undermined the architect's original design intent. Currently, non-historic features such as 100-foot tall Bulk Storage Silos

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structure, major alterations to the buildings, and industrial equipment obscure Martin's contribution. Pre-1952 additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design. Therefore, although portions of the U.S. Borax Wilmington Facility were designed by Martin, the refinery is not a good representation of the master architect's work.

Given the lack of integrity and the numerous alterations to the U.S. Borax Wilmington Facility, the property no longer retains its character-defining features and does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values. Therefore, the property does not appear to be eligible for listing in the CRHR under Criterion 3 or to be considered a historical resource for purposes of CEQA.

<u>CRHR Criterion 4:</u> The property was assessed under CRHR Criterion 4 for the potential to yield or likelihood to yield information important to prehistory or history of the local area, California, or the nation.

The U.S. Borax Wilmington Facility does not appear to have the potential to yield important information about the development of borate refining or the Port of Los Angeles that is not readily available and presented above. Therefore, the property does not appear to be eligible for listing in the CRHR under Criterion 4 or considered a historical resource for purposes of CEQA.

For a property to be eligible for listing in the CRHR, it must also retain its historic integrity in addition to meeting one of the CRHR criteria. The CRHR traditionally recognizes a property's integrity through seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association. Though the facility does not meet the criterion for eligibility to the CRHR, the following summarizes its historic integrity analysis:

<u>Location</u> is defined as the place where the historic-period property was constructed or the place where the historic event took place. The subject property has not been moved; therefore, it retains its integrity of location.

<u>Design</u> is defined as the composition of elements that constitute the form, plan, space, structure, and style of a property. The form, plan, and space of the property have been altered by several additions and different periods of development. While some of the property's design features remain (such as some stepped parapets, cornices, and several rectangular capitals) the form, plan, space, and structure have been significantly compromised as a result of upgrading and adapting the facility to new refining technologies.

<u>Setting</u> is defined as the physical environment of a historic-period property that illustrates the character of the place. The refinery was built in an industrial port area of Los Angeles. Currently, the property retains its setting. Due to several episodes of development and re-development, it does not retain the setting associated with the exponential growth of the port in the early 1900s following the opening of the Panama Canal.

<u>Materials</u> are defined as the physical elements combined in a particular pattern or configuration to form the historical resource during a period in the past. Many of the original materials have been altered or removed, such as a decorative wall features and board-formed concrete textured walls. Also, the addition of new industrial equipment and structures such as the Bulk Storage Silos has introduced materials not historically associated with the U.S. Borax Wilmington Facility.

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Workmanship is defined as the physical evidence of the crafts of a particular culture or people during any given period of history. The property does not represent physical evidence of the crafts of a given period of history.

Feeling is defined as the quality that a historic-period property has in evoking the aesthetic or historic sense of a past period of time. The property in its present form does not evoke a historic sense of feeling, but rather that of a relatively recently constructed refining facility.

Association is defined as the direct link between a property and the event or person for which the property is significant. While the property is associated with Albert C. Martin, the property in its present form does not convey a direct link with the prominent architect.

Overall, while the facility has retained some aspects of historic integrity, the property does not appear to meet any of the CRHR or LAHCM criteria, and therefore is not considered a historical resource for purposes of CEQA.

Please feel free to contact us at (858) 812-9292 if you have any questions regarding this memorandum.

Sincerely,

Jeremy Hollins, Project Manager, URS Joel Levanetz, Architectural Historian, URS

Attachments

Attachment A – Property Area Maps
Attachment B – Property Photographs
Attachment C – Records Search Results
Attachment D – Historic Research
Attachment E – DPR 523 Series Form
Attachment F – References Consulted and Professional Qualifications

Attachment A

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LEGEND

Project Site

1 mile Record Search Buffer

SOURCES:
Project Site, Record Search Buffer (URS 2012).
Counties (Esri, 2010).
Following Layers from USGS 7.5 min Quadrangle Maps series:
(Torrance 1981, San Pedro 1981, Long Beach 1978).
Background Imagery (USGS, National Geographic Society 2011).

1000 0 1000 2000 Feet

SCALE: 1" = 2000' (1:24,000)
SCALE CORRECT WHEN PRINTED AT 11X17

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RECORD SEARCH MAP
US BORAX WILMINGTON FACILITY
LOS ANGELES COUNTY

CREATED BY: DA	DATE: 12/21/12	FIG. NO:
PM: JH	PROJ. NO: 27652074.00000	1

Path: G:\gis\projects\1577\27652074\map_docs\mxd\record_search.mxd, daniel_arellano, 12/21/2012, 5:01:15 PM

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Attachment B

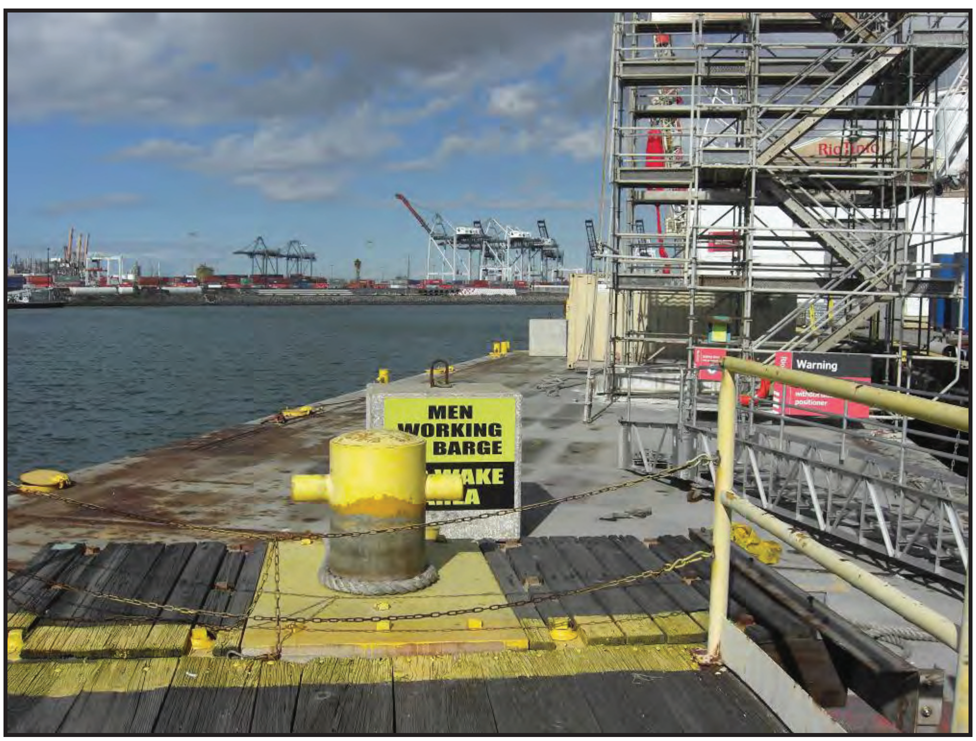
Looking northwest at a non-historic period storage silo.

Looking northeast at a grouping of non-historic period storage silos.

Looking southwest at the Connecting Building addition.

Looking south at the Connecting Building addition.

Looking north at the south elevation of the Connecting Building.



Looking north along the wharf area towards the south elevation of the Connecting Building.

Looking southeast from loading dock area of Warehouse Building.

Historic-period photograph looking southeast from loading dock area of Warehouse Building.

Looking southeast at detail of non-historic period addition to Warehouse Building.

Looking southeast at Warehouse Building.

Looking southwest at Warehouse Building.

Looking northwest at Warehouse Building.

Looking northwest at Wharf Office Building.

Detail of south east wall of Warehouse Office Building.

Looking west at the Power Plant.

Detail of in-filled window and non-historic period utilities added to Power Plant.

Looking east at alterations and non-historic period equipment added to Power Plant.

Detail of non-historic period metal roll-top door and window infill on north elevation of Power Plant.

Looking south at the north elevation of the Refinery Building with Power Plant in foreground.

Historic-period photograph of Refinery Building under construction (Courtesy of Chute, 1923).

Detail of in-filled windows and non-historic equipment on north elevation of Refinery Building.

Detail of in-filled windows and non-historic equipment on east elevation of Refinery Building.

Detail of in-filled windows and non-historic equipment on south elevation of Refinery Building.

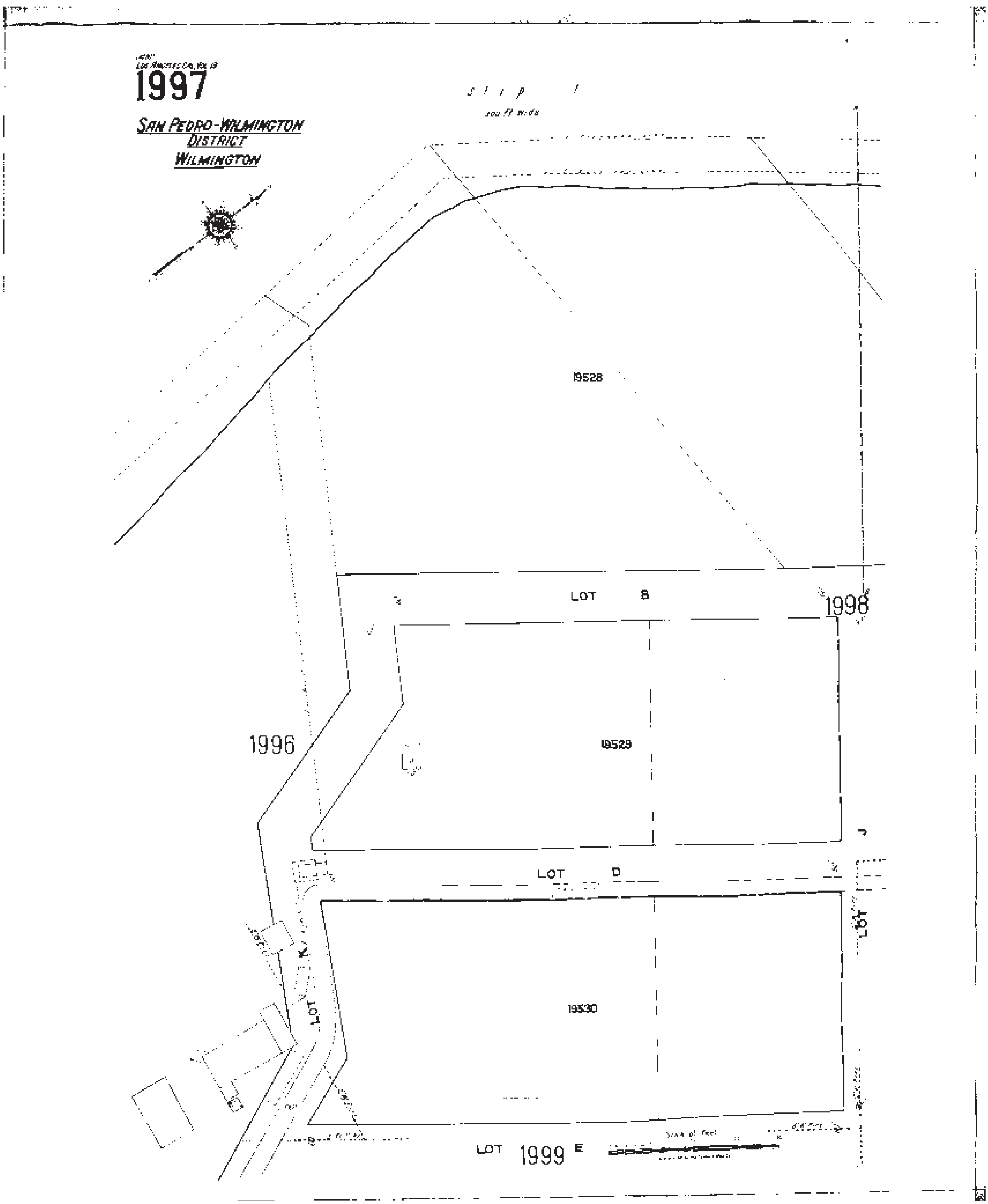
Detail of in-filled windows, non-historic equipment and addition on west elevation of Refinery Building.

Attachment C

CONFIDENTIAL INFORMATION WITHHELD

The content of Attachment C contains confidential cultural resources location information and is available for review upon request with URS Corporation. The distribution of this material should be restricted to those with a need to know. Cultural resources are nonrenewable, and their scientific, cultural, and aesthetic values can be significantly impaired by disturbance. To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of cultural resources should be kept confidential. The legal authority to restrict cultural resource information is in California Government Code 6254.1 (and the National Historic Preservation Act of 1966, as amended, Section 304).

Attachment D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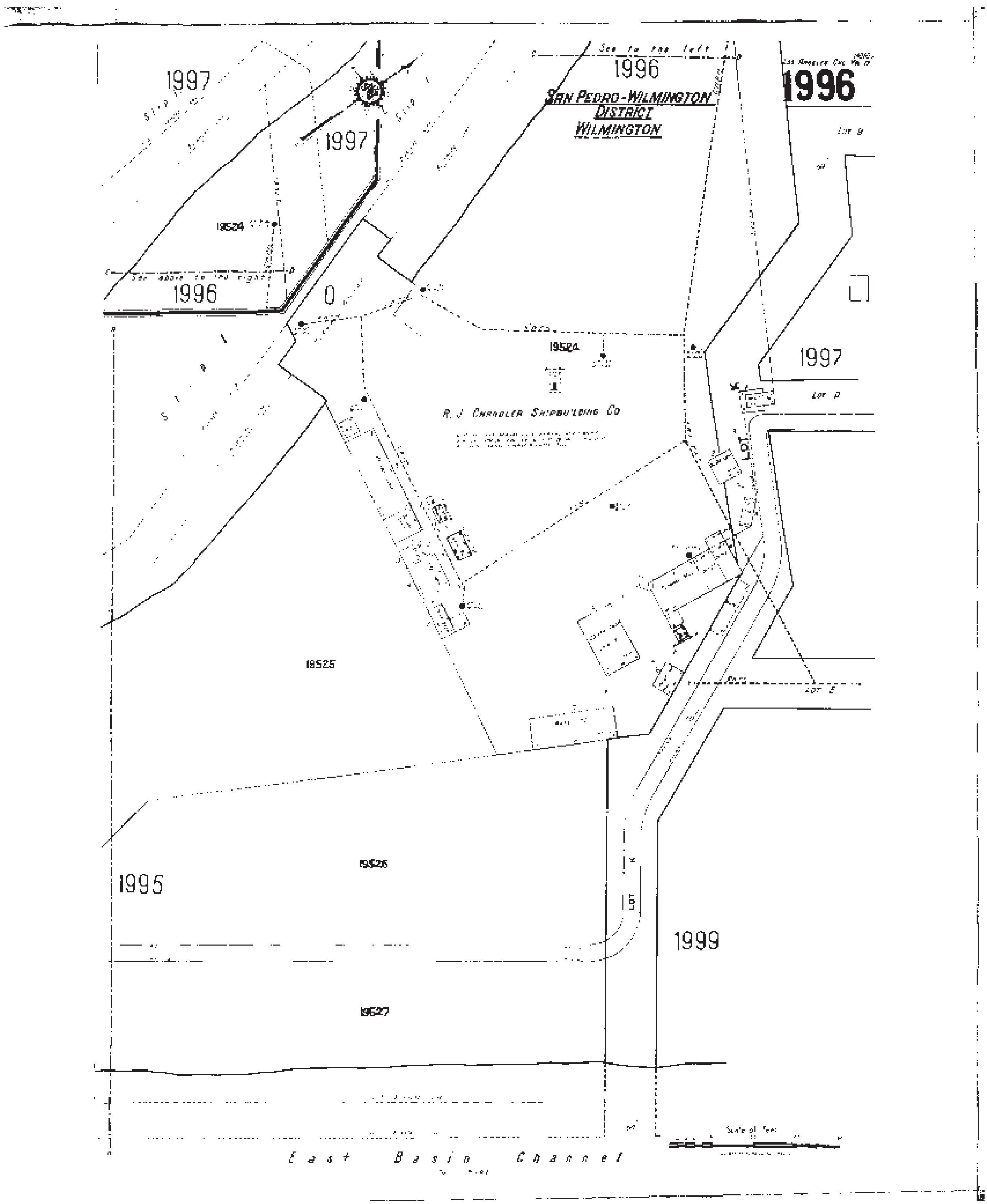
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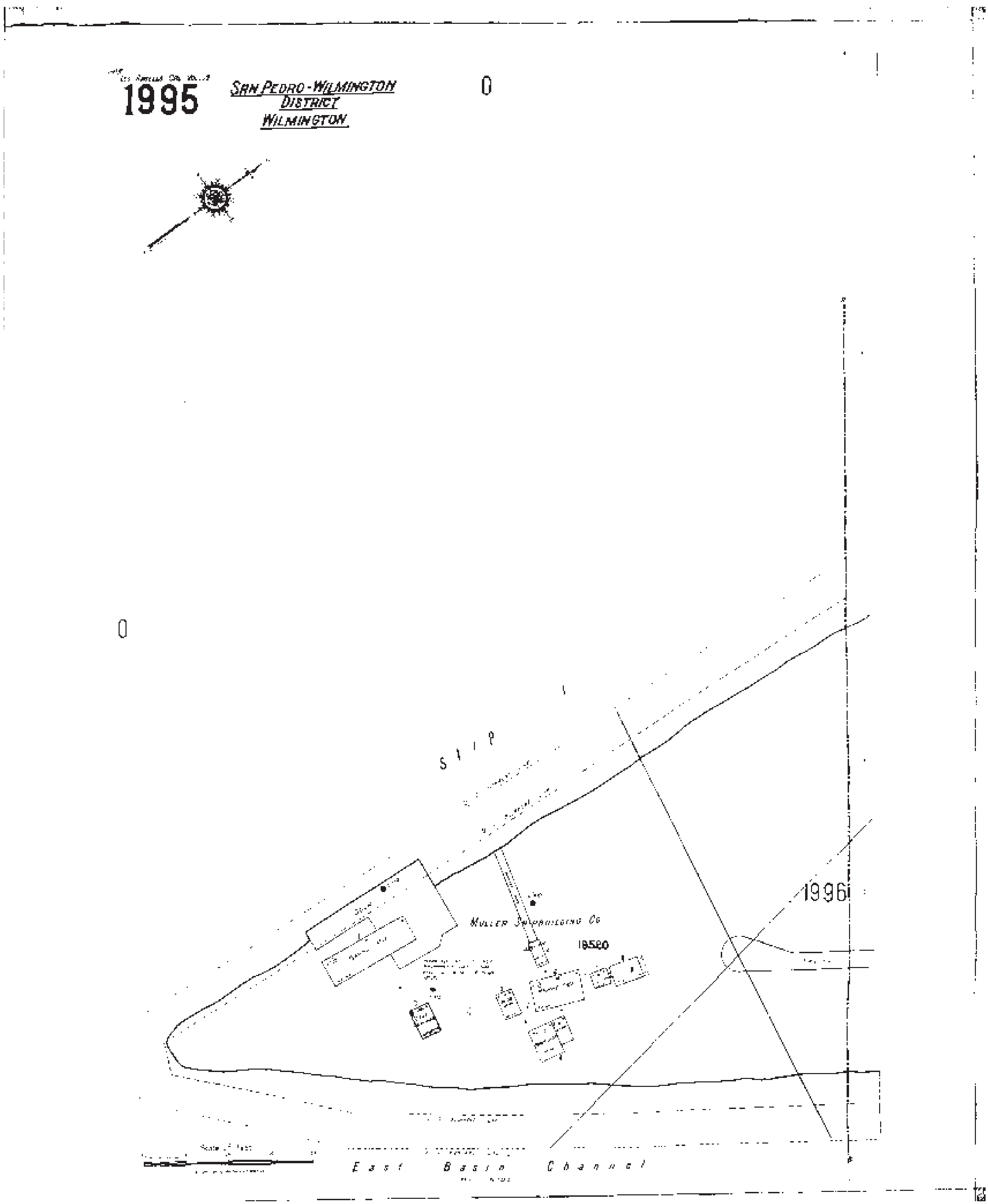
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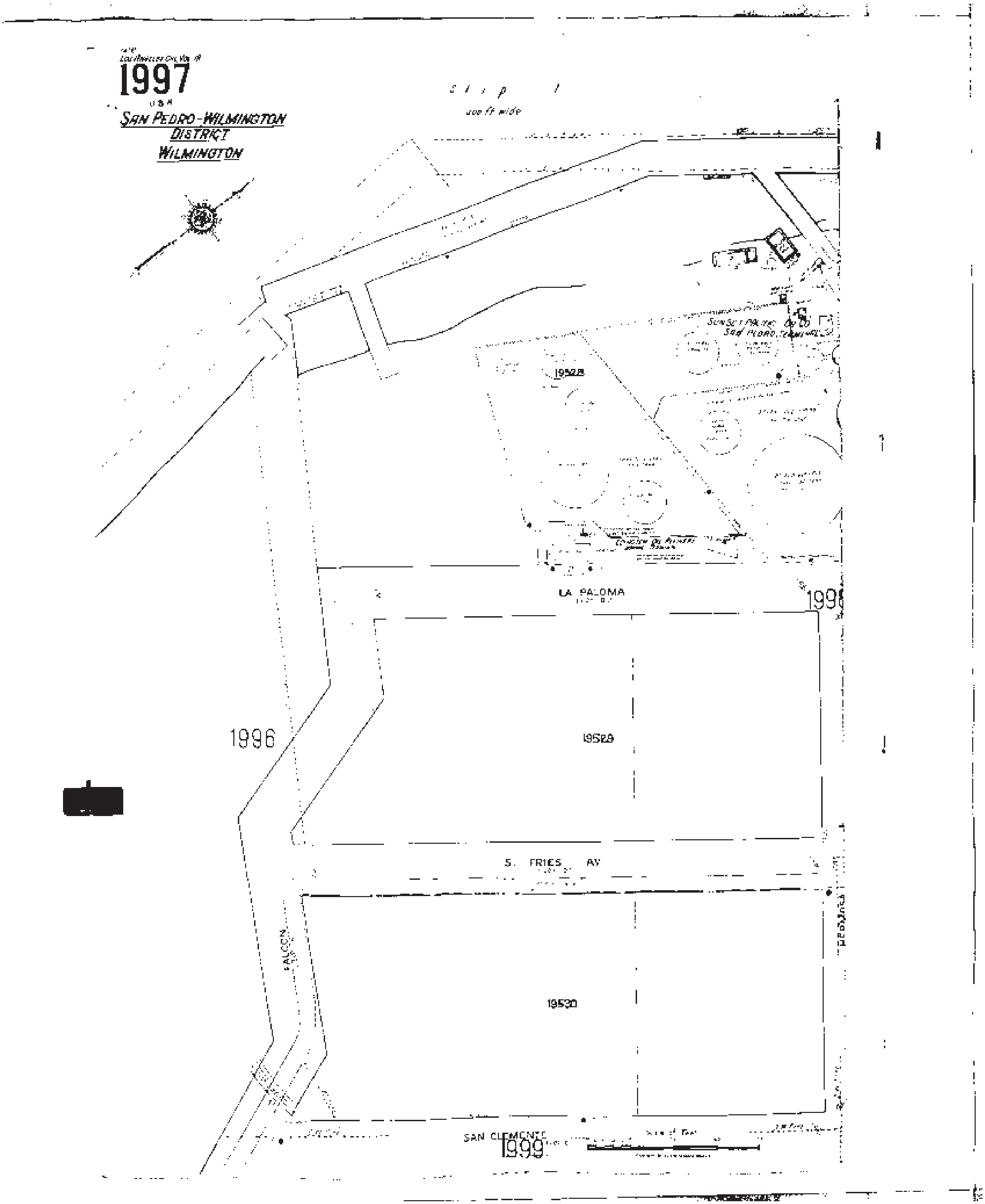
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FALCON
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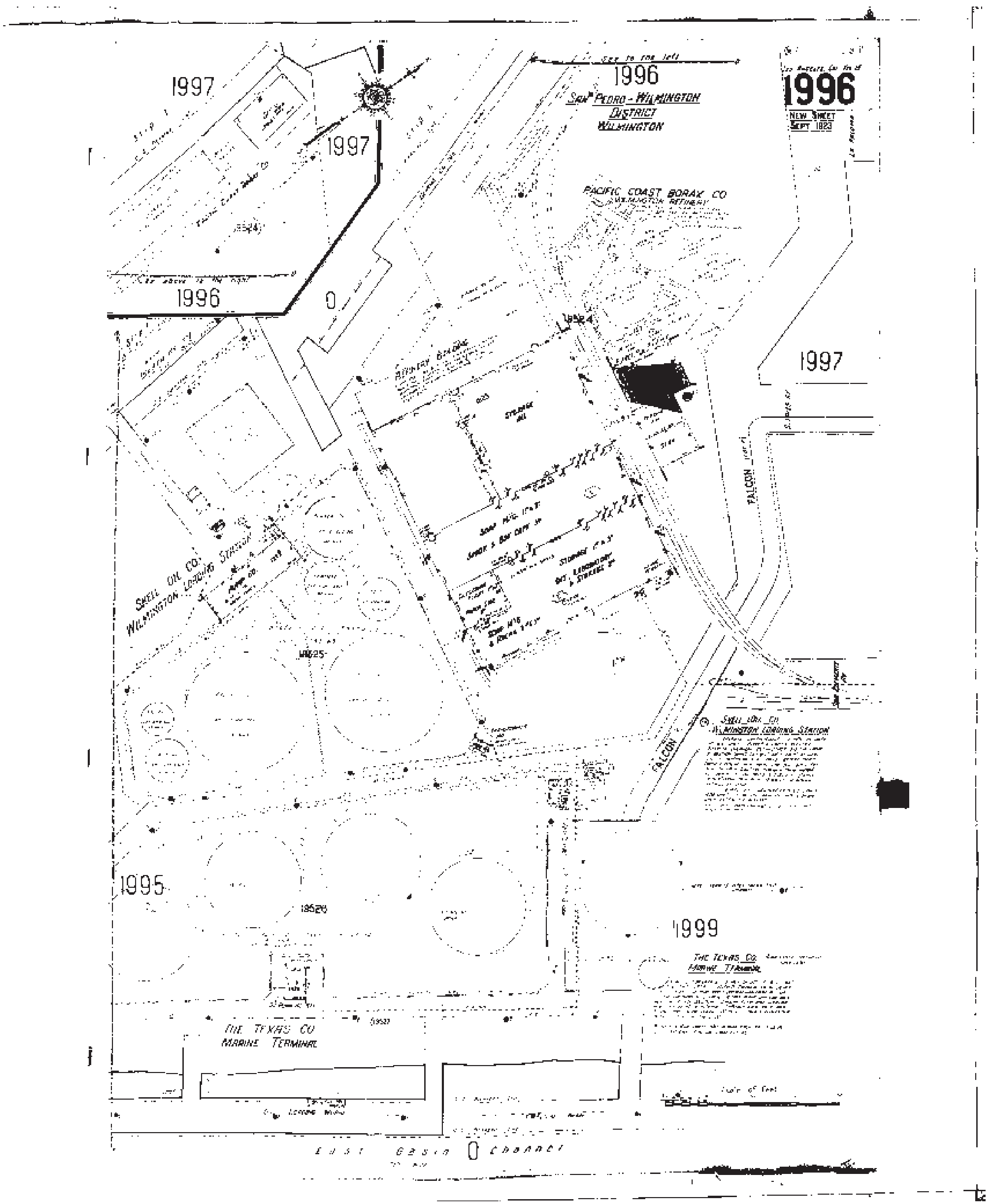
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NEW SHEET
SEPT 1923
PACIFIC COAST BORAX CO
1996
1997
SHELL OIL CO.
WILMINGTON LOADING STATION
FALCON
FALCON
1995
1999
THE TEXAS CO
MARINE TERMINAL
EAST BASIN CHANNEL

Wilm
CODE # 0030
PUBLIC RELATIONS DEPARTMENT

October 29, 1949

Dear Ruth:

Here are a few answers to your questions as I recall them.

Mormon Island was, in the early days, an island in the Wilmington Lagoon. San Pedro was a village at the entrance to the lagoon and faced the sea. Point Firmin gave some shelter as did also the Palo Verdi Hills. Across from San Pedro lay the long sand island called Terminal Island and also a sharp rocky point called Deadmans Island. This is mentioned in Dana's "Two Years Before the Mast", which was written, as I recall it - about 1835. A shallow channel and sand-bar formed the entrance to the lagoon and before dredging took place a depth of 2½ feet at low tide over the bar was recorded. Early dredging had created a ten foot channel into the lagoon and this was probably the situation when San Pedro and Wilmington started their fight for recognition as the deep water port of Los Angeles as against the proponents of Santa Monica for a site on the open sea to be protected by a break-water. That is an epic story all by itself as the railroads took sides and the Southern Pacific went all out for Santa Monica while the Salt Lake (later Union Pacfic) chose San Pedro and built their railroad out onto Terminal Island. Dredging and improvement started shortly after the turn of the century and Capt. A. A. Fries, of the Army Engineers, later Major General, Chief Chemical Warfare Bureau, did much of the detail designing. Channels and slips were dredged to 33 feet and over at low water, and the dredgings were pumped behind walls and dikes on the mud flats and islands of the Lagoon to make very high land for wharf and terminal facilities. A Harbor Belt Line, operated by the city - served all railroads.

In this process Mormon Island was connected with the mainland and lost its identity as a separate land feature. As originally surveyed at the time, it was patented to Wm. Banning in 1880 it comprised 18 acres, and lay roughly north and south being several times longer than it was wide. The Banning subsequently divided the island property into three parcels - the north of 8 acres, the middle of 5 acres and the south of 5 acres.

The Borax Co. subsequently purchased the north parcel, the city purchased the middle parcel and leased to the Shell Oil Co. for a Marine Oil Terminal and I do not know the ultimate history of the South parcel. I believe it was still in Bannings ownership when I left in '32.

2.

The name of Banning is closely associated with all harbor development and this family laid claim to considerable tideland areas which claim was contested by the City. A compromise resulted in Bannings getting a 30 year lease to considerable filled in tide lands, which became useful as harbor property but their title to Mormon Island was not contested at that time so far as I know. The 30 year lease has since expired. The Bannings were linked with early freighting and stage lines in Southern California - and Wm. Banning wrote a book on the subject. I believe their interest extended from Yuma to Los Angeles and Wilmington and perhaps north as well.

When I first became acquainted with the north tract of Mormon Island, shortly after World War I, there was an abandoned shipyard on the site. This had been known as the "Chandler Shipyard", and they had constructed wooden vessels there of considerable size during the war to help meet the emergency. Mr. Harry Chandler was the owner of the Los Angeles Times and a famous figure in Southern California history.

The yard had been in charge of Mr. Muller - an experienced ship builder of the old school. When I arrived in the area Mr. Muller was operating a small yard on the tract at the south end of the island, building yachts and other small boats. I believe much of the machinery had been moved from the Chandler yard to the new site.

The Borax site has several low wooden buildings on it and a ship's way. A long sloping area had been scooped out to provide the proper position for large timbers which were still in position. On these timbers or ways, the boats were constructed and then were allowed to slide into the channel at launching time.

Across the channel was a wharf at which the Yale or Harvard docked each morning after a run from San Francisco. These fast sleek boats were a popular means of overnight travel coastwise at that time, but long since have given way to the Limiteds and the airplane.

The Borax Co. was a pioneer, industrially, in the harbor. I do not recall that there were any other manufacturers, up to that time, who had recognized the benefits of the location except the Union Oil, who had a refinery near San Pedro, and two or three large lumber companies who had yards for handling the coast wise movement of lumber. A few large oil companies had established terminals for the movement of oil both import and export. There were two or three canneries in the area.

I do not know the date upon which the Borax Co. acquired the site, but when I first went to the scene it had already been decided to move the Alameda refinery there and instructions were given to provide ample space for enlargement or expansion.

3.

A monolithic concrete construction was decided upon as best suited to carry the weight of machinery required. The ground floor was constructed at freight car floor height to facilitate shipping. Two upper floors were provided and the roof was simply a third upper floor with full strength for future upward building if desired. Much equipment has since been placed on the roof. The building site was so selected that expansion at both ends was also possible, though I do not believe such expansion has yet been made.

Ground strength or bearing tests were made and we were convinced that a floating foundation would be inadequate for the great weights to be carried so clusters of piles were driven under the location of each building column and these piles were capped with concrete below permanent ground water level. Deterioration of piles does not take place where there is complete submersion in ground water.

The plant building has not been enlarged since the original construction although other structures have been placed on the premises. A wharf was built, soon after the main building was constructed and on this wharf a storage shed was built for the protection of goods to be shipped by water. A separate office building was placed on a small separate wharf at the north end. A casual observer would not notice that the small wharf is separate. The purpose was to avoid vibration and bumps when a large vessel, alongside the main wharf would pound the fender piles as waves caused it to move. [I do not know what the present office arrangement is. Orginally we placed the plant office in the main concrete structure for the superintendent and his staff. The office on the wharf was originally occupied by the western Sales Department of the company and the Western Manager (Charles Dudley) and his staff together with the office of the auditor of the Tonopah & Tidewater R.R.

Buildings connecting the refinery with the wharf have since been built, so there is a considerable area under cover.

I should mention that the original construction also included a separate power plant, boiler plant and machine shop building and a towering concrete stack of 150 feet high which became a harbor landmark.

As a first step in starting the plant, the borax and soap making machinery was moved from Alameda. Operations and capacity were gradually increased. Rasorite was developed at the Baker Mine and processes were modified to take care of this new material. A boric acid plant was installed. In the latter part of the twenties the Bayonne Plant of the PCB Co. was closed down and much of the equipment moved to Wilmington, and thereafter, all soap products were made there, and until some manufacturer started at Boron, all borax and boric acid products of the company as well.

4.

The city brought suit against the company claiming the original patent to Banning in 1880, to much of Mormon Island was faulty. They claim that the original lines of Mormon Island embraced too large an area. The suit was carried through the courts from the Federal District Court to the Supreme Court twice, and resulted in a complete affirmation of title in the Borax Co. I do not have dates in mind, but the suit was started in the late twenties and ended in the middle thirties.

Sincerely,

Tom

Tom Cramer

WILMINGTON REFINERY

Pacific Coast Borax Company.

The story of the Wilmington Refinery is a forty year part of the hundred year history of the borax business in America. The discoveries of crude borax or borax ores have been in areas that were remote. The distances from the sources to consuming markets were great. The crude material was either sodium borate, which was put through a purification process, or calcium borate, which underwent a chemical conversion.

Operations have alternated between those in which the refinery was installed at the source of raw materials and those in which the refinery was located two hundred to three thousand miles away. Refined borax was originally produced on the Nevada marshes, in Death Valley and on the margin of Searles Lake. These were the days of the long desert hauls by twenty mule teams. Colemanite, which is a calcium borate, was discovered in the Calico Mountains, near Daggett, and in the early nineties became the source of boron for the refinery at Alameda, on San Francisco Bay. One section of the Alameda refinery was the first large concrete structure erected in America. The Pacific Coast Borax Co, built another concrete building at Bayonne, New Jersey in 1897 to be used as a borax refinery and for the production of boric acid and various soap products.

The source of borate supply was later shifted to the Death Valley region and the company constructed a railroad from Ludlow to the Colemanite mine at "old Ryan" and on to Rhyolite and Goldfield.

Wilmington Refinery -2-

The rails have been long since taken up, but the names of several stations on the Tonopah and Tidewater R. R. are still on the maps of California. Baker, Rasor, Gerstley and Ryan were named after borax men of those days. By 1914 the mines were opened at "new" Ryan, overlooking Death Valley, and the Death Valley narrow-gauge was built. One of the original steam locomotives on this branch line is now on exhibition at Death Valley and the other is at the beach park in Carlsbad, New Mexico.

This was the situation right after the First World War: the mine was at Death Valley, the concentrator at Death Valley Junction, refineries at Bayonne and Alameda, and a packing plant and warehouse at Chicago. A powerful new economic force had recently come into being, - the Panama Canal. Cargos were moving through the Canal between the West and East Coast and European freighters were calling at Los Angeles Harbor. Low cost water transportation was available. It became obvious that a change was impending in the methods of getting borax products to market. Frank Jenifer, who was an official of the Tonopah and Tidewater, and later the president of Pacific Coast Borax Co., was charged with the responsibility of selecting the site for a new refinery, to be located on deep water and on a rail-water route from the mine to eastern and world markets. His choice was Mormon Island, at Wilmington, California.

Mormon Island , as its name implies, was once a very real island in the Wilmington Lagoon. This body of water was cut off from the ocean by Terminul Island. Phineas Banning was a pioneer of the Wilmington area. He owned boats and landings and freight

Wilmington Refinery -3-

wagons. Goods destined to or from all of Southern California were handled by him through the small ports of San Pedro and Wilmington. Banning applied for and obtained a patent to Mormon Island in 1880 There were about eighteen acres within the lines of his patent. About thirty years later the Federal government started the survey and development of the San Pedro-Wilmington deep water harbor, under the direction of Corps of Engineers, U.S.A. The name of the officer in charge has been perpetuated as Fries Avenue, which ends at the refinery gate.

When deep-water channels were dredged and the mud and sand deposited to a thickness of five to fifteen feet over the remainder of the Wilmington Lagoon, Mormon Island became a part of the mainland, its west boundary facing the new Mormon Channel. Harry Chandler, the publisher, bought the north eight acres of the island from the Banning interests and during World War One had constructed ocean-going wooden ships there as a part of the war effort. It was this Chandler Shipyard site which the Borax Company purchased, together with the shop buildings and large timber ways.

Since the Alameda refinery was much closer to Wilmington than was the Bayonne plant, it was decided to first move the Alameda operations to the new location. The Alameda Engineering Staff, consisting of George Connell and Fred Beik went to work on designs which would incorporate the latest advances in borax production. H.P.Knight, who was in charge of the properties at Dorosolvay and Alfred Newman, the Refinery Superintendent at Bayonne furnished valuable suggestions.

Wilmington Refinery -4-

After the general outline of process space and storage requirements had been determined, architect A.C.Martin was retained to prepare drawings and specifications for a monolithic concrete structure. The building was to have great floor strength together with symmetrical interior dimensions and column spacing. The new refinery was to have three floors and a flat roof with a load capacity equal to that of the floors. Column strength to carry two additional floors was specified. The Company was following the concrete construction which it had pioneered thirty two years before at Alameda and which had proven itself at Bayonne. A power plant and stack were to complete the original Wilmington refinery structures.

Soil tests had demonstrated that the surface of the filled ground would not sustain a substantial concentrated weight. The engineers turned to piling as the answer. A large raft of logs was towed from the forests of the North and was moored in the channel. The Ledbetter Company moved in and drove the large logs, in clusters, under the locations of the future columns and other concentrated loads. The piles were cut off below the permanent ground-water line and concrete pads and pedestals were poured over them.

By the middle of June 1923 the general contractor, Davidson Construction, had started to put up construction towers to a height which would allow the distribution of fresh concrete by gravity to the rising refinery structure. The power plant and the hundred and fifty foot stack were also soon under way. The stack was topped out by the middle of November and had become a navigational landmark for the harbor.

Wilmington Refinery -5-

The water tower platform on the roof was finished by the last day of 1923 and this ended the heavy construction. The building, exclusive of foundations, was completed in six months, which was considered a good record for that time. Norman B. (Pat) Patten was A. C. Martin's building superintendent and was on the job during the entire construction period. G. H. Schulte of the same office was the structural engineer.

Fred Beik had his detail plans pretty well drawn for the piping and equipment by the late fall of 1923. As early as October the boilers in the power plant were already in place. By February 1924 the Sweetland press and Raymond powder-mill were ready. Equipment was being installed while the finishing touches on the building, such as windows, roofing and painting were still in progress. And now came a rather critical business, the transfer of operations from Alameda to Wilmington. This not only included bulk borax production but also soap products, Boraxo, glycerine and package goods. This had to be accomplished without inconvenience or delay in deliveries to customers. George Connell looked after the Alameda end of this project, which included dismantl~~ing~~ement and ship~~ping~~ment of all usable tanks, kettles and machinery. By late 1924 the transfer was complete.

The development of the Wilmington site included plans for a wharf and structures which would give the Company facilities for delivering cargos to freight vessels. During 1923 the bulkhead had been put in and the channel in front of the property dredged to a thirty five foot depth. A heavy rock rip-rap had been placed to protect the under-water slope of the land. With the completion of the refinery, the wharf construction got under way. Another large raft of piling was floated in and the driving started in April. A Company headquarters office and a storaga shed wera built on the wharf. The office was placed on a small separate wharf so that freighters, bumping against the fender piles would not shake the building too much.

On November 1 1924 the Santa Paula took on the first cargo of Colemanite to move to the East over the Wilmington site.

Miscellany.

When it was time to move headquarters from San Francisco a number of the younger staff members came down by over-night boat. This was a popular means of travel and the Los Angeles dailies were in the habit of having reporters and photographers at the dock to interview and take pictures of the arriving celebrities. The coming of the Borax group was news-worthy. Articles about the large new plant in sight across the channel had frequently been in the papers. The party was photographed and notes were taken down. When they came to the dapper young office boy, he told the reporters that he was the General Representative and he received a top billing when the story appeared.

Conversation on top of the refinery during construction:

C. B. Zabriskie: "How tall is that stack, Tom ? "

"One hundred and fifty feet "

C. B. Z. " If you had remembered that the Bayonne stack is one hundred and fifty five feet you probably would have made this one a hundred and sixty "

R. C. Baker " We lowered the brick stack at our British works by over one hundred and fifty feet. "

I later consulted an engineer's hand-book and found the stack in question was about four hundred and fifty feet tall. I never found out whether this was before or after the lowering operation.

Wilmington Refinery -8-

Miscellany continued:

A number of operating men at the Alameda Refinery came to Wilmington. Most of them stayed on. George Connell and Lou Boyer can probably recall the full list, as they were both at the Alameda plant. Charlie Born, Jimmie Campion, Maurice Hallinan, Martin Campion, Filipelli, Bart Keville and his son were among them but there were others. It would be hopeless for me to try and recall the names of those who came to work in 1924 but a list would be most interesting, especially if they are still on the payroll. The office force from San Francisco could also be a part of the Refinery story, since they came directly to the office site on Mormon Island. George Connell can furnish the name of the filter press man at Alameda who ground borax-glass at Wilmington. Also, perhaps the glycerine operator. Johnny Seipp came down from Death Valley at an early date. I believe Sanda was a little later. I do not recall just when Bradley, Maynard and Boyd signed on. Jimmie Holtum and Bill Mayer can tell a lot. George will also remember whether some power plant help came along.

T. M. Cramer

June 26 1962

Thomas M. Cramer
Carlsbad, New Mexico

June 26 1962

Dear Nick:

I enclose some remarks regarding the start of the Wilmington refinery. There are several ways to handle this subject, and I have tried one of them. There is not much one can say about a concrete structure except to give its dimensions. But there is some sentiment in the fact that the story of concrete industrial buildings in America starts with the Alameda Refinery and I do not recall reading the reading about many large chemical plants of this type started after 1930 . A waterfront property cannot be utilized to its maximum potential without adequate warehouse space and, in the case of multi-storied buildings, this requires great floor strength. About thirty years ago engineers started to design self-supporting chemical equipment and then putting a roof over it.

At Carlsbad we went to a much lighter construction. No interior warehouse space was provided, but we still stayed with floors since we looked forward to possible changes in the process. The dissolver building erected in the early forties went all the way to the "cover only" design. A leap forward was made when power plants were designed with all of the equipment placed outdoors except the operating stations. Chemical plants have gone a long ways in this same direction.

It seems to me that there is some interest attached to the reasons why the refinery came to Wilmington and I have recited

Hick Koehler -2-

some of the facts. It will be recalled that the law does not permit vessels under a foreign flag to carry merchandise in inter-coastal trade. Lack of competition in the Canal route ~~permitted~~ gave the railroads the opportunity to recapture the coast to coast traffic.

Young Dana in Two Years Before the Mast, describes conditions at Los Angeles Harbor in 1835. Deadmans Island was a feature of the shore-line when we moved to Wilmington - a point of high ground at the entrance to the Inner Harbor.

" This, they told me, was a worse harbor than Santa Barbara, for southeasters; the bearings of the headland being a point and a half more to windward, and it being so shallow that the sea broke often as far out as we lay at anchor. The gale from which we slipped at Santa Barbara, had been so bad a one here, that the whole bay, for a league out, was filled with the foam of the breakers, and seas actually broke over the Dead Man's Island."

The Southern Pacific had used every political and commerciel pressure to have Santa Monica chosen for development by the Federal government. That fight, which went on for years, was finally resolved in favor of San Pedro.

I have prepared an album of about 180 pictures of early Wilmington development, and havo most of the negatives. However I want to enlist your aid in rounding up some moro. I loaned you a set of negatives which, whon fitted together, provided a panorama of the Chandler Shipyard soon after Borax purchased it. On another day I used up a roll of six negatives taking pictures of Baker, Nick Kocklor -3-

Zabriskie, Chichester, Knight, Rasor and myself. I have two of these, taken at a pile-driver on the site. You may have borrowed two of theso recently but of this I am not suro. The other two may have been in the Los Angeles for a long time. Three or four years ago I was asked to identify Chichester in an enlargement there. Another film shows a group in the shadow of a shed at the site: Corkill, Newman, Jenifor, Baker, Zabriskie, Knight and Rasor. All of these negatives are post-card size. Perhaps you could send me contact prints of any of these that can be conveniently located so that I con add them to the album. I expect to mail this album to you shortly for inspection and comment. I am also short one negative showing the sales department and others in front of the borax wagons and which was taken in December 1924.

Please tear this writing apart and ask George Connell and Harry Gower to correct, augment and delete. Some of the facts related may seem dreary to the reader but can serve a purpose in recording matters that might otherwise be overlooked or forgotten.

Sincerely

J.M. Cramer

Mr. Nick Kockler

Los Angeles

WILMINGTON REFINERY DATA

Plant Managers	Previous titles for this position were: Superintendent, Plant Superintendent, General Superintendent - the Plant Manager.)	
Thomas M. Cramer		The first Superintendent. He came from the Alameda Plant, served: 1924 - 1930.
George A. Connell		The first Assistant Superintendent. Came from (1924) Alameda Plant, was promoted to Superintendent and served: 1930 - 1936.
Alfred Newman		Superintendent: 1936 - 1941
Maurice H. Pickard		Superintendent: 1941 - 1943
Patrick J. O'Brien		Superintendent: 1943 - 1948
Ronald V. Chettle		Superintendent through all titles listed above: 1948 - 1963. Then spent 14 months in Los Angeles, returned and served: 1964 - 1967
E. Dean Lemon		Plant Manager: 1963 - 1964
Ronald V. Chettle		As shown above.
W. G. Anderson		Plant Manager: 1968 - 1969
Locke B. Parish		Plant Manager: 1969 - 1974
James G. Hardy		Plant Manager: 1974 - 1981
David R. Wheeler		Plant Manager: 1981 - 1982
Robert F. Shaw		Plant Manager: 1983 -

Miscellaneous Information:

The transfer from the Alameda Refinery was completed in late 1924. The first shipment from the new Wilmington Refinery was made on November 1, 1924 ... this was a shipment of Colemanite to New York via the S.S. Santa Paula, Pacific Mail Steamship Company.

- 1 -

WILMINGTON REFINERY DATA - continued

This property is the only privately owned property in the Los Angeles Harbor. The size of the plant is: 8.6567 acres. This is a little less than half of the "true" Mormon Island which measured a little less than 18 acres.* Our fence line (waterside/Edgington/Falcon Street) shows the shape of the original island -- from the fence up to the fish cannery on Fries Avenue is filled-in land, but now shown as "Mormon Island." The property line between our plant and Shell Oil is about in the middle of the original island.

The Pacific Coast Borax Company was challenged by the Los Angeles Harbor Department in regard to their ownership of the property. They claimed it was part of the tidelands and sought possession as such. The Company protected itself by going to court and proving the property was a part of a "true" island, not tideland, and that the bill of sale was legal (from Phineas Banning ownership). One of the interesting ways the Company proved this point was by submitting results of core samples taken from our property -- they consisted of proof of flora and fauna, plus old nails, pieces of wood, etc. from an old boat yard that used to be located on the island; it is believed that the core samples were taken to a depth of about 30 feet. Pacific Coast Borax Company won the suit and a Consent Decree was entered which precludes further claim to the property.

Many improvements have been made to the process since 1924. The various departments within the building have been expanded, new products have been added, etc. A portion of the Plant was moved to Boron in 1957 when we switched to open pit mining. The largest expansion since building the Plant was the 30,000 tons Bulk Loading Terminal:

09/24/62	Ground broken for Bulk Terminal
05/13/63	First car of product from Boron loaded into silo.
11/28/63	First shipment from the Bulk Terminal to Rotterdam -- M.V. Johann Schulte (Volkswagen transport).
09/14/79	Ground broken for an additional 4 silos (73-7055).

Plant Manager's Secretaries
F. Brooks - 11/02/71 thru 07/02/80
E. Hall - 07/27/83 thru 12/05/86
D. Campbell - 12/08/86 thru 05/24/88
T. Long - 06/16/88 thru

* Maybe it would be better to say "about 18 acres" as my records not available at this time -- or check the Land Department for exact total acreage -- the Wilmington portion is exact.

Records for this property are kept at the South District Office
("How frequently is the information updated on this site?" and other FAQs)

Property Information

Assessor's ID No.	7440-019-001
Site Address	300 FALCON ST LOS ANGELES CA 90744
Property Type	Commercial / Industrial
Region / Cluster	26 / 26818
Tax Rate Area (TRA)	00014

Click Here to View Assessor's Map

(Click Here to View Index Map)

Recent Sale Information

Latest Sale Date

Indicated Sale Price

Search for Recent Sales

2012 Roll Values

Recording Date	02/24/1993
Land	$1,951,895
Improvements	$1,912,695
Personal Property	$8,453,198
Fixtures	$10,149,377
Homeowners' Exemption	$0
Real Estate Exemption	$0
Personal Property Exemption	$0
Fixture Exemption	$0

Click Here for 2012 Annual Taxes

(I have a question regarding my property tax payment)

Estimate Supplemental Taxes

Property Boundary Description

FOR DESC SEE ASSESSOR'S MAPS*POR OF LOT 1 SEC 8 T 5S R 11W

Building Description(s)

	Improvement 1
Square Footage	99,000
Year Built / Effective Year Built	1945 / 1945
Bedrooms / Bathrooms	0 / 0
Units	0

	Improvement 2
Square Footage	235,358
Year Built / Effective Year Built	1923 / 1930
Bedrooms / Bathrooms	0 / 0
Units	0

	Improvement 3
Square Footage	1,026
Year Built / Effective Year Built	1963 / 1963
Bedrooms / Bathrooms	0 / 0
Units	0

	Improvement 4
Square Footage	41,285
Year Built / Effective Year Built	1924 / 1956

Bedrooms / Bathrooms	0 / 0
Units	0
Improvement 5	
Square Footage	10,360
Year Built / Effective Year Built	1923 / 1954
Bedrooms / Bathrooms	0 / 0
Units	0

Click Here for Another Search

I. INTRODUCTION

This report was prepared by Page & Turnbull at the request of the Alameda Reuse and Redevelopment Authority (ARRA). The purpose of this report is to describe the existing conditions present at the Alameda Naval Air Station (NAS Alameda) prior to its redevelopment as a mixed-use project area consisting of new market rate and affordable housing, commercial and light industrial facilities and public open space. This report will primarily concentrate on the relative significance of resources on the former naval air station, as well as provide a baseline level of information about NAS Alameda. Following the Introduction, Section II includes a brief description of NAS Alameda and discusses the proposed project. Section III summarizes the current historic status of NAS Alameda and Section IV discusses the history of the former base. Section V describes the historic district and character-defining features of its contributing buildings and structures. Section VI includes the historic preservation strategy. The report concludes with a Bibliography and Appendix including relevant bibliographic sources and support documents.

II. SETTING

NAS Alameda was constructed in the late 1930s and early 1940s on filled tidal lands and marshes on the western end of the City of Alameda, an urban island community of 72,259 people located near the geographical center of the San Francisco Bay Area. The former naval air station is bounded by Oakland Inner Harbor to the north, San Francisco Bay to the south and west and residential neighborhoods of Alameda to the east. The former base occupies 1,734 acres of dry land and 1,108 acres of submerged lands laying largely within the City of Alameda. There is also a small section of filled land and submerged lands lying within the City and County of San Francisco. Occupying a total of 2,842 acres, NAS Alameda is currently the fourth largest naval property in the San Francisco Bay Area **(Figure 1)**.

NAS Alameda was commissioned in 1940; two years of active dredging, filling and construction operations were required to convert a former Army airfield, civilian airport and municipal marina into the most important naval air station on the West Coast during the Second World War. The Japanese attacks on Pearl Harbor and other American bases and possessions on December 7, 1941 unleashed a major expansion at NAS Alameda. Serving as a logistical supply base, aircraft repair facility, seaplane base and homeport for dozens of aircraft carriers and other naval vessels during the Second World War and the Korean and Vietnam Wars, the base continued in operation until 1993 when it was included on a list of bases to be decommissioned by the Base Realignment and Closure Commission (BRAC). Following BRAC's decision to close NAS Alameda, the Navy began preparations to decommission the base and turn it over to the City of Alameda. Although the Navy withdrew in 1997, the former base has not yet been transferred to the City. Today, the former base consists of an airfield with two runways, a seaplane lagoon, nine massive hangars and millions of square feet of industrial, warehousing, administrative, residential and recreational space, much of it presently vacant.

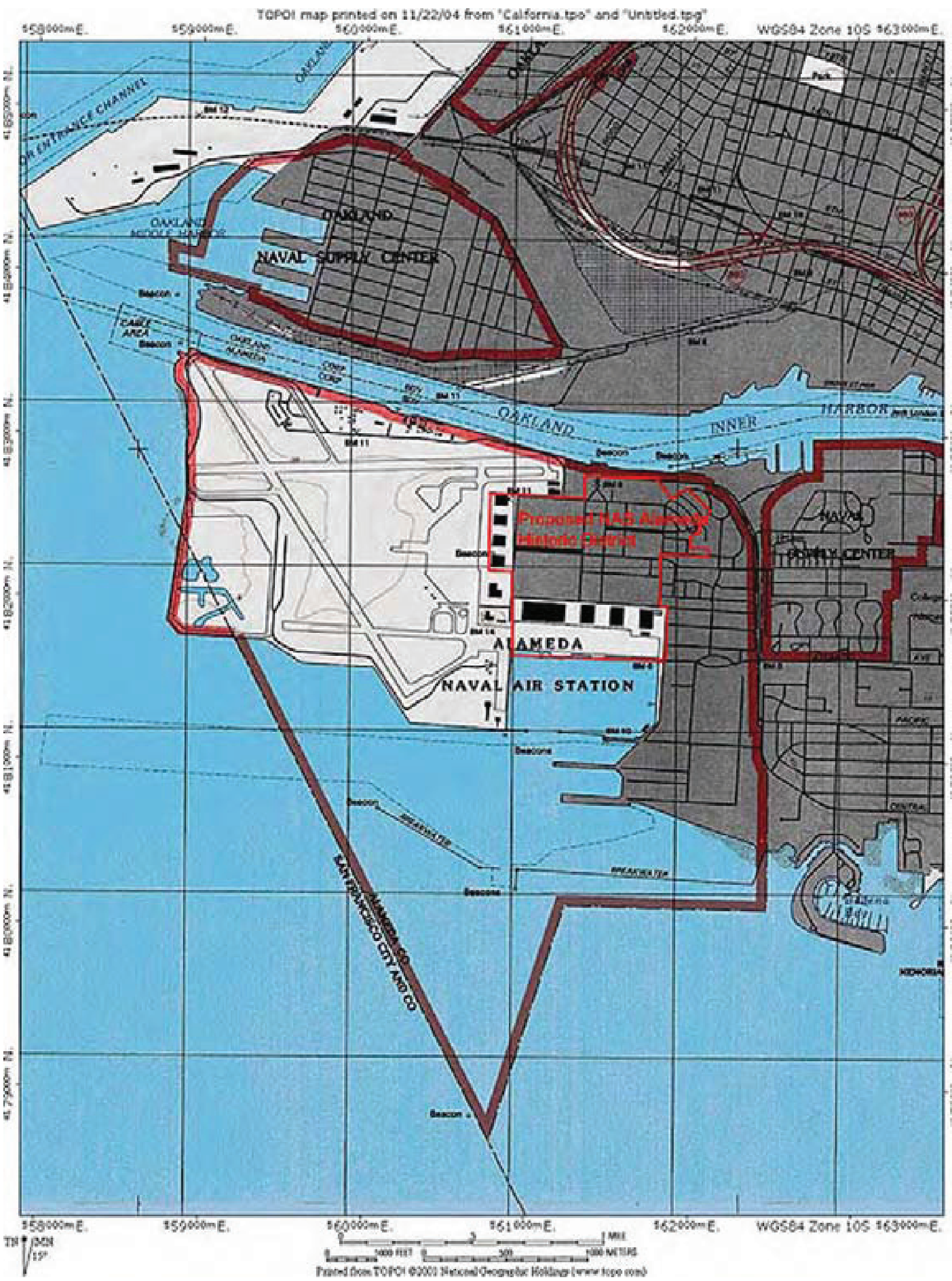

Figure 1. USGS Map showing location of NAS Alameda

III. CURRENT HISTORIC STATUS

Woodbridge Inventory
In 1992, prior to the closure of NAS Alameda, the Navy retained architectural historian Sally Woodbridge to survey all buildings on the base constructed prior to 1946 and assess their potential significance. Woodbridge determined that while no buildings appeared to be individually eligible for listing in the National Register, a potential historic district comprised of buildings, structures and landscapes dating to the pre-war and World War II periods existed at the core of the base. Consisting of eighty-five contributing buildings built between 1939 and 1945, the NAS Alameda Historic District (Historic District) was found to qualify for listing in the National Register under Criteria A (Events) and C (Architecture) **(Figure 2)**. The Navy and the California Office of Historic Preservation (OHP) concurred with the findings and OHP formally listed the district as being eligible for listing in the National Register.[1] The number of contributing buildings was revised to eighty-seven in a memorandum to OHP from the Navy, dated October 3, 1997 and acknowledged by OHP in a letter to the Navy dated November 5, 1997. In 2003, one contributor, Building 101, was lost in a fire, reducing the total number of contributors to eighty-six.

NAS Alameda Community Reuse Plan
In 1996, prior to the decommissioning of NAS Alameda, the City and ARRA adopted the *NAS Alameda Community Reuse Plan* (CRP), a "visioning" document designed to guide the City's incorporation of base into the city and its conversion to civilian use. Although this document covers a variety of topics, it devotes relatively little space to cultural resources, including historic structures or landscapes. The only reference to the Historic District occurs in the Open Space and Conservation Element sections, where a brief discussion concludes with seven policies for the treatment of buildings within the Historic District boundaries.[2]

1996 Advisory Council for Historic Preservation Memorandum of Agreement
In 1996, a Memorandum of Agreement (MOA) was signed by the City, the Navy, OHP and the Advisory Council for Historic Preservation (ACHP). This document authorized the Navy's proposal to demolish six contributing buildings within the Historic District.[3] Although all six were deemed to be contributors to the Historic District, Buildings 75A (Officers' Bathhouse), 115 (Ambulance Garage), 116 (Rehabilitation Center), 130 (Medical Laboratory), 135 (Community Facilities) and 137 (Recreation Storage Facility) were determined to be of lesser significance. All were constructed after 1942 and were not part of the original base design drawn up by the Navy Bureau of Yards & Docks. Furthermore, all but one (Building 75A) were classified by the Navy as "temporary" or "semi-permanent" buildings when they were constructed during the Second World War. As such, these temporary buildings were utilitarian structures built with lower quality materials and less substantial construction techniques. Constructed in a hurry to meet the immediate needs of wartime exigencies, temporary and semi-permanent buildings were not intended to be retained indefinitely once the War had ended. Nevertheless, as contributors, mitigation measures were required to lessen the effect of their demolition. Accordingly, the MOA required the recordation of each building according to Historic American Buildings Survey (HABS) standards. The completed documentation was submitted to OHP, the City and the Alameda Historical Society. To date, none of the vacant buildings have been demolished, although all have been recorded.

Guide to Preserving the Character of the NAS Alameda Historic District
In 1997, prior to decommissioning NAS Alameda, the Navy retained JRP Historical Consulting Services to develop Design Guidelines to facilitate the preservation and maintenance of contributing buildings and

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[1] Sally Woodbridge, *Historic Architectural Inventory for Naval Air Station* (Alameda, 1992).
[2] EDAW, Inc., *NAS Alameda Community Reuse Plan* (San Francisco, 1996), pp. 5-14-5-16.
[3] "Memorandum of Agreement Submitted to the Advisory Council on Historic Preservation Pursuant to 36 CFR, Section 800.6," on file with the City of Alameda.

landscapes within the Historic District. Prepared as a guide to assist the Alameda Planning & Building Department and the Historic Advisory Board (HAB) in evaluating proposed redevelopment projects, the Design Guidelines identified important character-defining features and established five sub-areas within the Historic District: (1) Administrative Core, (2) Land plane Hangars Area, (3) Seaplane Hangars Area, (4) Shops Area and (4) Residential Area.[4]

1999 Advisory Council for Historic Preservation Memorandum of Agreement
In September 1999, a second MOA was signed by the City, the Navy, OHP and ACHP. This document required the Navy to complete the following tasks related to historic preservation prior to transferring the base to Alameda: (1) prepare and submit a National Register nomination for the Historic District, (2) donate or permanently loan the inventory of historic artifacts from NAS Alameda to museums in Alameda or the Bay Area and (3) follow the *Maintenance and Repair Guidelines for the Naval Air Station Alameda Historic District* extracted from the JRP Consulting Services technical report of April 1997.[5] To date, the Navy has not completed the National Register nomination, although recent conversations indicate that they have identified funds and personnel who will begin the process.

NAS Alameda Listed as a Historic Monument
In September 1999, the City passed Resolution No. 13139, listing the NAS Alameda Historic District in the City's Historical and Cultural Monument List.

Environmental Compliance
In 1999, the Navy completed a Final Environmental Impact Statement (FEIS) titled: *Disposal and Reuse of Naval Air Station Alameda and the Alameda Annex,* which was required before the base could be transferred to Alameda. Meanwhile, the City completed a Draft Environmental Impact Report (DEIR), titled: *Reuse of Naval Air Station Alameda and the Fleet and Industrial Supply Center, Alameda Annex and Facility*. Both documents identified the *NAS Community Reuse Plan*, adopted in 1996 and amended in 1997, as the preferred alternative for the reuse of NAS Alameda. Although the FEIS and DEIR concluded that the preferred alternative would have a significant effect on the Historic District, both documents stated that appropriate mitigation measures would reduce the impacts to a less-than-significant level.

On June 6, 2000, the Navy and ARRA signed a Lease in Furtherance of Conveyance (LIFOC) for NAS Alameda. By the terms of this agreement, ARRA leased the base from the Navy and took charge of maintenance and subleasing buildings to tenants. From this point on, all leases were to be granted under the terms of the City's Interim Leasing Program, in anticipation of a future master-planned redevelopment.

In November 2001, the City of Alameda issued a DEIR for a proposed amendment to the City's *General Plan*, which would result in the creation of the new *Alameda Point Element*. In March 2002, the City issued a new Notice of Preparation (NOP) for a second DEIR for the revised *General Plan Amendment* (GPA). The second GPA DEIR was finalized in March 2003 and published. On April 28, 2003, the GPA was considered for adoption by the City of Alameda Planning Commission and adopted by the Alameda City Council on May 20, 2003.

[4] Steven D. Mikesell, JRP Historical Consulting Services, *Guide to Preserving the Character of Naval Air Station Alameda Historical District* (Davis, CA: April 1997), p. 2.
[5] "Memorandum of Agreement Among the United States Navy, the Advisory Council on Historic Preservation and the California State Historic Preservation Officer Regarding the Layaway, Caretaker Maintenance, Leasing, and Disposal of the Historic Properties on the Former Naval Air Station, Alameda, California," on file with the City of Alameda, p. 2.

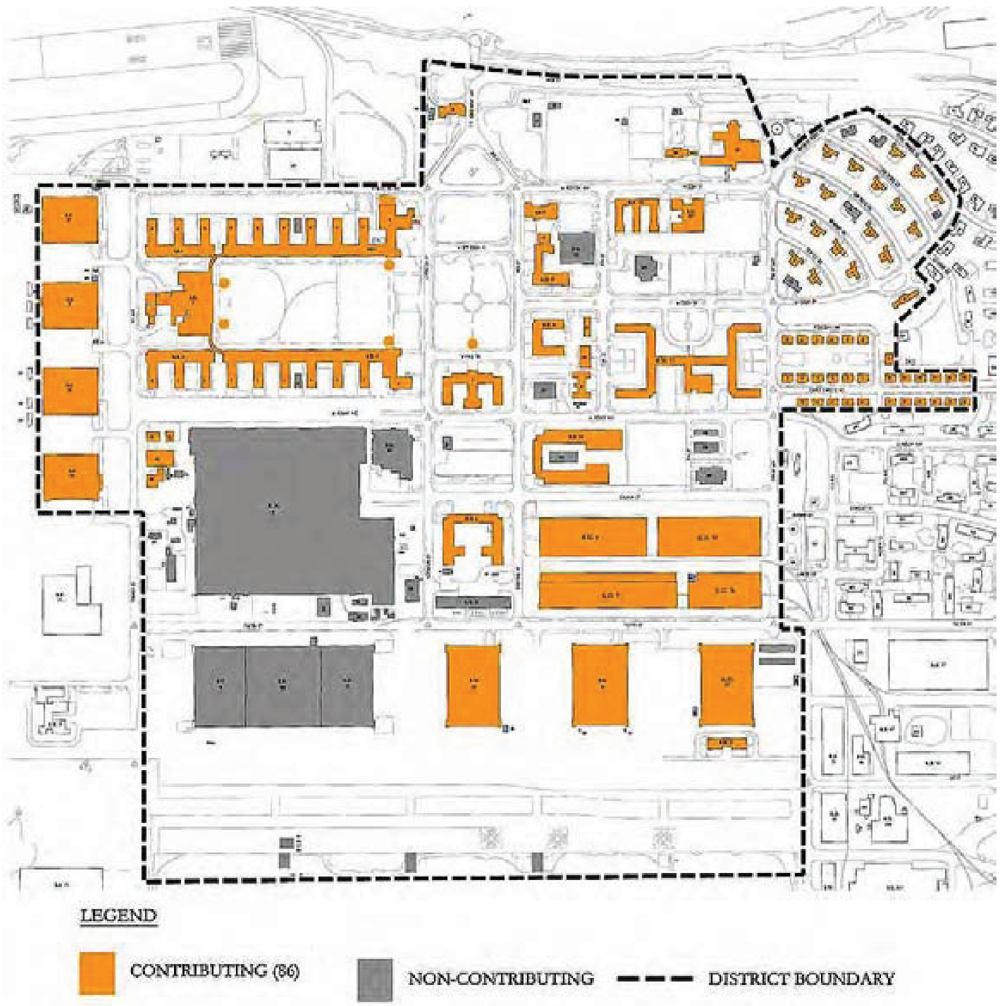

Figure 2. NAS Alameda Historic District Boundaries

IV. HISTORIC CONTEXT

Native American Period

Prior to European contact, the former marshlands on the western end of Alameda Island were occupied by a Penutian-speaking tribelet belonging to the larger Ohlone civilization. Although called the *Costeños* or "coast dwellers" by the Spanish, today their Native American descendents prefer the term Ohlone. Similar to many coastal California aboriginal groups, the Ohlone survived by fishing, hunting and gathering. Favored foods included fish, shellfish, waterfowl, acorns, roots, nuts, berries and other foods readily available in the marshlands, streams and foothills of the pre-contact San Francisco Bay Area. Based on the oral traditions of the tribe and data gathered by archaeologists from several large shellmounds on the margins of San Francisco Bay, it is likely that the ancestors of the Ohlone first inhabited the land surrounding San Francisco Bay between 5000 and 2000 BC. Ohlone occupation of the Bay Area appears to have been continuous until the beginning of the historic era, circa 1700 AD. After the arrival of Spanish missionaries and soldiers during the last quarter of the eighteenth century, the traditional lifestyle of the Ohlone gradually gave way to the influence of the Mission System and accompanying demographic changes brought on by disease and declining birthrates.[6]

Historically marshland and tidal flats, the site of NAS Alameda was utilized by the Ohlone as a rich larder where men would catch fish, hunt waterfowl and gather shellfish. Due to the fact that most of the land was at least partially submerged, it is unlikely that any permanent settlements were located within the boundaries of the former air station. However, permanent Ohlone settlements were not far away. Until it was quarried to provide surfacing for runways at the San Francisco Bay Airdrome, a prehistoric midden or refuse heap called Sather Mound was located approximately two miles southeast of NAS Alameda. Consisting of huge mounds of discarded shells, the middens were excavated in 1900 by an amateur archaeologist known as Captain Clark, who found them to contain flaked stone tools and burials. In addition to Sather Mound, five other known Ohlone sites have been identified in what is now the City of Alameda.[7]

European Contact: Spanish and Mexican Periods

The first permanent European settlements in the San Francisco Bay Area were established during the last quarter of the eighteenth century with the founding of Misión San Francisco de Asís and the Presidio of San Francisco in 1776. Two decades later, Misión San José was established by the Franciscans in what is now Fremont. During the ensuing decades, the Ohlone were rapidly dispossessed of their livelihoods, lands and freedom after being moved to the missions, where they were converted to Catholicism and taught European ways. Many died from exogenous diseases and others were killed when they attempted to escape and to return to their former way of life. Meanwhile, the Spanish and later Mexican governors of Alta California were granting vast tracts of land to retired Spanish soldiers and Mexican settlers. In 1820, Governor Don Pablo Vicente de Sola, the last Royal Spanish governor of Alta California, granted Rancho San Antonio to Sergeant Luís María Peralta. The 44,800-acre ranch included all of what is now Alameda and much of Oakland. In 1842, Peralta divided Rancho San Antonio among his sons. Antonio María Peralta, his third son, received 15,206 acres comprising the entire Alameda Peninsula, known then as Bolsa de Encinal.[8]

Early American Period

On February 2, 1848, the United States and Mexico signed the Treaty of Guadalupé-Hidalgo. Drawn up at the conclusion of the Mexican-American War, the treaty ceded much of northern Mexico to the United States. In exchange, the United States paid Mexico fifteen million dollars, assumed responsibility for three million dollars in claims against Mexico by American citizens and relieved Mexico of its monetary debt to the United States. Long before the ink dried on this document, American and European immigrants had been streaming into

[6] Busby et al., *Archaeological Survey and Site Evaluation: Disposal and Reuse, Department of Defense Family Housing, Novato, Marin County, California* (1995).
[7] Information on file at the Northwest Information Center, Sonoma State University, Rohnert Park, California.
[8] City of Alameda, *Alameda Historic Preservation Element* (Alameda: 1980), p. 5.

California. In 1850, the year California became a state, William W. Chipman and Gideon Aughinbaugh purchased the section of Rancho San Antonio called Bolsa de Encinal from Antonio María Peralta. Bolsa de Encinal, which roughly translated means "pocket of oaks," was a tract of 1,960 acres comprising the majority of what is now the City of Alameda. The future site of NAS Alameda was part of this tract, although as partially submerged tidal flats and marshland, the land had little value.[9]

In 1853, the State Legislature created Alameda County out of parts of Contra Costa and Santa Clara Counties. Responding to a huge influx of American and foreign immigrants into the San Francisco Bay Area during the Gold Rush, Chipman and Aughinbaugh sold off sections of Bolsa de Encinal to speculators and real estate developers, who in turn subdivided the lands into farmsteads and residential lots. In 1854, the communities of Alameda and Encinal were incorporated, although neither was ultimately ratified by local election. However, due to poor access and lack of infrastructure, people did not flock to either settlement. Consequently, the peninsula remained sparsely populated throughout the 1850s and 1860s. On the other hand, the level terrain, rich soils and benevolent climate made Alameda ideal for pasture and horticulture. In addition, the presence of vast stands of native oaks made Alameda a popular location for commercial wood-cutting and charcoal manufacturing operations.[10]

Railroads Arrive at Alameda Point

In 1864, Alameda became infinitely more accessible to the wider world with the completion of the first leg of Alfred. A. Cohen's San Francisco & Oakland Railroad. The original alignment extended from what is now Versailles Avenue in eastern Alameda to Alameda Point, at the southwestern tip of the peninsula. The railroad was soon extended into Oakland via a bridge across San Leandro Bay and eventually on to Hayward. As the closest dry ground to San Francisco in Alameda, Alameda Point was selected by Cohen as the ideal location for railroad shops and a ferry wharf. From Alameda Point, ferries would connect rail passengers to San Francisco. Called "Cohen's Wharf," Alameda Point attracted a hotel, housing and several industries. Hoping to profit from land sales around his wharf, Cohen laid out a town in February 1868 and named it Woodstock.[11] Bounded by present-day Lincoln Avenue, Third Street, San Francisco Bay and Atlantic Avenue, Woodstock occupied a small section of what is now the southeastern corner of NAS Alameda.

Between 1868 and 1869, the community of Woodstock enjoyed a major building boom. In 1868, Pacific Coast Oil Works opened for business. Operated by Samuel Orr, the company was a predecessor to the Standard Oil Company.[12] For a brief time, Woodstock became the western terminus of the Transcontinental Railroad with the arrival of the first train from New York at Cohen's Wharf on September 6, 1869. Two months later, the Central Pacific Railroad, which had purchased the San Francisco & Oakland Railroad from Alfred Cohen in 1868, constructed a terminal at Prescott Street in West Oakland and removed the Transcontinental Railroad terminal from Cohen's Wharf.[13] Woodstock sustained another blow in 1873 when the Central Pacific re-routed the San Francisco & Oakland tracks from Alameda Point to Oakland via a new bridge spanning the Oakland Estuary just west of Webster Street. Cohen's Wharf was quickly abandoned and much of Woodstock reverted to agrarian uses.[14] The wharf and shops slowly deteriorated and collapsed but the remains of the facilities were encountered during excavations performed in 1938 during the construction of NAS Alameda.

In 1872, the City of Alameda incorporated, encompassing the entire peninsula historically known as Bolsa de Encincal, encompassing the communities of Encinal, Alameda and Woodstock **(Figure 3)**. According to the 1870 U.S. Census, the population of the new city remained very small, with only 1,557 residents. Nevertheless, major transportation projects undertaken during the 1870s set the stage for Alameda to eventually assume a

[9] *Ibid.*
[10] *Ibid.*, p. 6.
[11] *Ibid.*, p. 78.
[12] LSA Associates, *Alameda Point General Plan Amendment EIR* (Berkeley: 2002), p. 143.
[13] City of Alameda, *Alameda Historic Preservation Element* (Alameda: 1980), p. 7.
[14] *Ibid.*, p. 71.

leading role in industrial, commercial and residential development in the decades to come. In 1874, the U.S. Army Corps of Engineers began dredging San Antonio Creek in anticipation of a proposed canal linking the Oakland Estuary with San Leandro Bay. As part of this work, the Corps built a "training wall" to guide the flow of San Antonio Creek.[15] This structure still exists north of NAS Alameda and is listed on the Alameda List of Monuments.

The completion of James G. Fair's South Pacific Coast Railroad from Santa Cruz to Alameda in 1878 restored railroad uses to Alameda Point. The right-of-way traversed the city from San Leandro Bay in the east, ran along Encinal and Central Avenues and terminated at a new pier near the decaying remains of Cohen's Wharf.[16] The new railroad began to attract industry back to Alameda Point. In 1879, Pacific Coast Oil Works built a kerosene refinery at Alameda Point near the southwest corner of what is now the intersection of Pacific Avenue and Main Street, within the present-day eastern boundary of NAS Alameda.

In search of improved access to San Francisco Bay, the South Pacific Coast Railroad eventually constructed a raised track bed along Main Street to the company's new Alameda Pier and Ferry Terminal at the northwestern corner of what is presently NAS Alameda. The construction of the causeway and ferry terminal in 1883 was the first major documented filling operation in the tidal marshland that would eventually become NAS Alameda. The causeway structure consisted of a double rock wall filled with mud and rubble, stretching over two miles into the Bay **(Figure 4)**. Constructed on top of the causeway were two tracks, a wagon road and a pedestrian walkway. Standing at the western end of the causeway was an 800'-long, 280'-wide pile trestle upon which was located a small railroad yard and massive terminal building. The terminal building measured 310' by 100' with two wings, each measuring 30' by 510' in plan. The Eastlake-style terminal featured electric lighting and was reported to have been "much handsomer an architectural sense than that of the Central Pacific (later Southern Pacific terminal in Oakland)."[17] The new South Pacific Coast pier (later called the Alameda Mole) was parallel to the Southern Pacific's Long Wharf on the other side of the Estuary in Oakland (later called the Oakland Mole). Both were much closer to San Francisco, cutting the length of the ferry trips between San Francisco and the East Bay by fifteen to twenty minutes. The new location also provided better access to deep water, solving the perennial silting problems that occured in the shallower waters off Alameda Point.

The old South Pacific Coast Railroad terminal in Alameda was destroyed by fire in 1902 and subsequently rebuilt by the Southern Pacific in 1903-04. After the 1906 Earthquake destroyed the San Leandro Bay trestle, the Southern Pacific bypassed the Alameda Pier and Ferry Terminal, reserving it exclusively for local service. In 1934, the terminal was retired following the completion of the San Francisco-Oakland Bay Bridge. No longer dependent on ferries, rail service on the bridge was provided by the Interurban Electric Railway (more popularly known as the Key System) on the lower deck until the 1960s. The Alameda Pier and Ferry Terminal were demolished when the Navy began constructing NAS Alameda in 1938.[18]

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[15] *Ibid.*
[16] *Ibid.*
[17] Andy Fahrenwald, "A Short History of the Alameda Moles," *Newsletter of the Samuel Knight Chapter of the Society for Industrial Archaeology* (October 7, 1997), p. 7.
[18] Henry E. Bender and Thornton Waite, "Additional Depots Designed by D.J. Patterson," undated manuscript in the California State Railroad Museum.

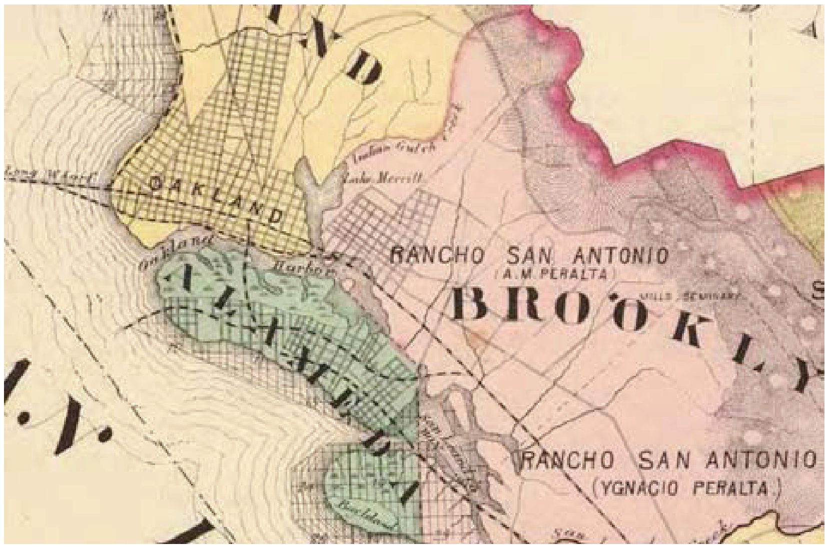

Figure 3. Map showing northern Alameda County in 1878.
Courtesy Bancroft Library, UC Berkeley

Figure 4. Detail of Oakland Tribune Map showing Alameda Point, ca. 1885.
Courtesy Online Archive of California

Industrial Development at Alameda Point

Reflecting its growing importance as an industrial and residential community, Alameda re-incorporated as a Charter City in 1884. Between 1870 and 1880, the population grew from a little over 1,500 to 5,708. By 1890 the population had nearly doubled to 11,165. Residential development in the form of rows of speculator-built cottages and larger residences on the "Gold Coast" replaced the farmsteads along the principal rail corridors. Meanwhile, Woodstock, at the western end of the city, attracted increasing amounts of heavy industry, including refineries, potteries and shipyards. In 1885, the Standard Oil Company of California purchased the Alameda Oil Works and Pacific Coast Oil Company and consolidated these operations in a sprawling complex located immediately west of South Gate in what is now NAS Alameda **(Figure 5)**. The refinery remained in business at Alameda Point until Standard Oil moved its operations to Point Richmond in 1903.[19] In 1886, Standard Oil Company was joined at Alameda Point by N. Clark & Sons, a large commercial pottery at the corner of Fourth Street and Pacific Avenue in Woodstock.[20]

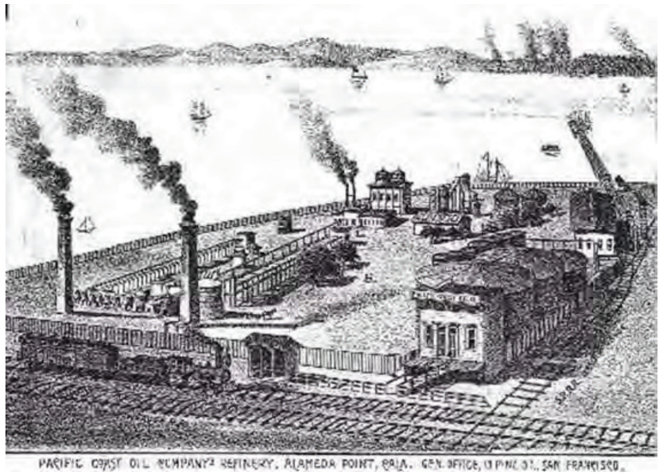

Figure 5. Pacific Coast Oil Refinery, Alameda Point, ca. 1890
Courtesy of Toxicspot.com

One of the most illustrious industries to relocate to Alameda Point was Pacific Coast Borax Company, constructed in 1893 by Francis "Twenty Mule Team" Smith, the famous Death Valley borax miner. Although far from his Death Valley mines, Smith chose Alameda Point for its convenient rail connections and access to San Francisco Bay. Smith constructed a huge wood-frame and concrete refinery complex on what is presently the site of the Engine Overhaul Shop (Building 360) and a wharf and coal storage warehouse on what is now the location of the Engine Test Cell complex (Building 14). When it was completed, Pacific Coast Borax Company was the largest borax refinery in the world and reportedly one of the first to make use of reinforced-concrete in the United States **(Figure 6)**.[21] The refinery was closed in 1930 after the exhaustion of the borax mines in Death Valley and the main four-story refinery building was subsequently dynamited. The Navy spared at least one building from the borax plant when they began grading and filling NAS Alameda in 1938. This building, Building 163, still exists as a small brick maintenance shed in the southeastern corner of the base.

[19] City of Alameda, *Alameda Historic Preservation Element* (Alameda: 1980), p. 143.
[20] *Ibid.*, p. 72.
[21] *Ibid.*, p. 73.

Figure 6. Pacific Coast Borax Refinery, n.d.
Courtesy of the Bancroft Library, UC Berkeley

Despite the industrial boom at Alameda Point, most of what is now NAS Alameda remained undeveloped throughout the nineteenth and early twentieth centuries. First, ongoing title disputes over the submerged tidal flats and marshes between the Central Pacific Railroad (the successor to the South Pacific Coast Railroad) and the heirs of Antonio Peralta made investment in these lands risky. Even more daunting was the high cost of dredging and filling several thousand acres of submerged tidal flats. The 1897 Sanborn Fire Insurance Map, the earliest detailed insurance map to cover the area, shows almost no development in the area within what are now the boundaries of NAS Alameda. Meanwhile, the section of Alameda formerly known as Woodstock consisted of the Standard Oil Company Refinery, the acific Coast Borax Company complexes and a handful of wood-frame workers' dwellings along Pacific Avenue **(See Sanborn Maps in Appendix A)**.

The dawning of the twentieth century witnessed many developments that contributed toward the evolution of Alameda into an important Bay Area community. By 1900, Alameda had a population of 16,464, making it the fourth largest city in the Bay Area and the eighth largest city in California. The completion of the Tidal Canal in 1902, which linked the Oakland Estuary with San Leandro Bay, provided additional Bay frontage for shipyards and other water-dependent industries in Alameda and Oakland. Incidentally, the Tidal Canal severed most of Alameda from the mainland, transforming the bulk of the community into an island in San Francisco Bay. Now known as the "Island City," the citizens and business leaders of Alameda anticipated continued industrial and residential growth in the upcoming decades. The 1906 Earthquake and Fire was a boon to Alameda. Fleeing the devastation in San Francisco, an influx of earthquake refugees boosted Alameda's population to 23,383 by 1910. Rows of neat Craftsman bungalows infilled much of the remaining vacant land in the city, converting the still quasi-rural community into a dense streetcar suburb of San Francisco.[22]

U.S. Naval Air Power

The history of naval aviation begins well over three decades before the founding of NAS Alameda. The Wright Brothers' successful flight at Kitty Hawk, North Carolina on December 17, 1903, launched the aviation revolution. Within a decade of this event, the value of the airplane as a military tool had become increasingly apparent to the United States military. The Navy was the first to create an aviation wing when it established the Naval Aviation Department in 1911. The Army followed suit in 1912 when it set up the Aviation Section within the U.S. Signal Corps. In 1914, the Navy opened its first naval air station at Pensacola, Florida.[23]

For most of the nineteenth century, the Navy focused its attention on threats coming from Europe and as a result, most Naval installations were located on the Atlantic and Gulf Coasts. The Spanish-American War of 1898 and growing American concerns over Japanese power in Asia following the Japanese victory in the Russo-

[22] United States Census, 1910.
[23] Department of the Navy, Naval Historical Center, *Chronology of Significant Events in Naval Aviation, Part I* http://www.history.navy.mil/avh-1910/PART01.PDF.

Japanese War of 1904-05, caused the Navy to shift its focus from Europe to the Pacific. Before 1900, the only naval installation of any consequence in California was Mare Island Naval Shipyard in Vallejo. In 1907, the Navy established the first Pacific Fleet and in 1922, the United States Fleet was again reorganized, with a Battle Fleet in the Pacific and a Scouting Fleet in the Atlantic. Most of the Navy's large battleships were moved to the Pacific to counter the growing threat from Imperial Japan. In the early 1920s, the Navy began looking for ports to house the growing Pacific Fleet; eventually San Diego, California; Bremerton, Washington and Pearl Harbor, Hawaii were selected. In 1921, the new headquarters of the Eleventh Naval District were established in San Diego, where they remained until they were moved to Pearl Harbor in 1940.[24]

Despite having established the first military aviation wing in 1911, Navy brass initially downplayed the significance of aircraft in combat. It was only after Billy Mitchell demonstrated the ability of an airplane to sink a battleship off Hampton Roads, Virginia in 1922 that the Navy began to seriously investigate the use of aircraft in future naval engagements. Not long after Mitchell's feat, the Navy began constructing its first aircraft carriers from converted colliers and battle cruisers. The first purpose-built aircraft carrier constructed, the *USS Ranger*, was commissioned in 1934. New land bases were established for naval aircraft as well. The earliest naval air station at Pensacola was joined in the 1930s by installations at Anacostia (Washington, D.C.); Norfolk, Virginia; San Diego; Pearl Harbor and the Panama Canal Zone.[25]

Alameda Point Becomes Center of Aviation in the Bay Area

Pioneering Bay Area aviators often dealt with significant challenges including frequent fog and the scarcity of level vacant land for take off and landing. The western portion of Alameda, on the other hand, was soon identified as being an ideal location for civil aviation, mostly due to its central location, abundant level land and infrequent fog-filled days. The first recorded flight at Alameda Point took place on Columbus Day, 1911, when aviator Weldon Cooke took off from Alameda Point to entertain President William Taft and other spectators gathered on the north side of the Estuary in Oakland.[26]

With its deepwater access and protected location, Alameda Point's potential strategic value attracted the attention of top military brass during the early twentieth century. Alameda Point's first defense-related industry materialized in 1916 when Bethlehem Steel Shipbuilding Company built a shipyard on the Estuary immediately northeast of what is now NAS Alameda. Several drydocks and manufacturing buildings still survive on the site, presently the location of the Alameda Ferry Terminal. A year later, during the height of the First World War, local Alameda business leader John J. Mulvany convinced the Navy that Alameda Point would be an ideal location for a destroyer base.[27] Mulvany's lobbying efforts resulted in a fact-finding investigation by a committee headed by Admiral James Helm. The Helm Report recommended that a supply station be built at Alameda. The Helm Report went on to argue that Alameda's sheltered location on a major bay, coupled with the presence of local industry and infrastructure, made the site compare most favorably with the Navy base at Hampton Roads, Virginia. With only one other major West Coast naval installation at San Diego, the Helm Report concluded that a new base at Alameda would fit in well with the Navy's plans to establish a chain of facilities stretching along the Pacific Coast from San Diego to Seattle.[28]

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[24] U.S. Army Corps of Engineers Baltimore District, *National Historic Context for Department of Defense Installations, 1790-1940, Vol. 1* (Baltimore: 1995), pp. 81-82.
[25] *Ibid.*
[26] *History of U.S. Naval Air Station Alameda, California,* manuscript at the Pacific Branch of the National Archives, San Bruno (January 9, 1945), p. 2.
[27] *Ibid.*, p. 1.
[28] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 3.

Charles Lindbergh's famous transatlantic flight in 1927 unleashed a second and more sustained interest in commercial aviation in the United States, with hundreds of small private and municipal airfields opening in the

Figure 7. View of Alameda Municipal Airport, 1934.
Courtesy National Archives Pacific Region, San Bruno

wake of his flight. Opening in 1927, Mills Field in South San Francisco was the first major airfield constructed in the Bay Area. This airfield was eventually purchased by San Francisco and evolved into San Francisco International Airport. Oakland followed suit with the Oakland Municipal Airport. Alameda did not lag far behind and in 1928 Alameda Municipal Airport opened for business on filled land near the Alameda Pier and Ferry Terminal on the northwestern corner of the future NAS Alameda **(Figure 7)**. In addition to a short runway, the facility consisted of an administration building and three hangars. Curtis Wright Aviation was the principal tenant until Pan American Airways leased the facility to house the company's famous China Clippers.[29]

San Francisco Bay Airdrome
After witnessing the success of Alameda Municipal Airport, the Board of Regents of the University of California began making plans to construct their own airport on 458 acres of marshland that the university had acquired in western Alameda. The rectangular tract was bounded by Atlantic Avenue to the south, Main Street to the west, the Bethlehem Steel Shipbuilding Company yard to the north and Webster Street to the east. The San Francisco Bay Airdrome was intended to serve as a major regional airport and construction began in 1930. After draining the site, two runways—one 3,400' in length and the other 1,700'—were graded and paved with crushed oyster shells looted from prehistoric Ohlone shell middens on Bay Farm Island. The airport offices and the terminal were at first housed in a single 53,000-square-foot hanger constructed at a cost of $150,000. The San Francisco Bay Airdrome was initially very successful and in the early 1930s, a 160' addition was added to the original hangar and construction began on a second hangar. By the mid-1930s, however, the facility began to lose most of its major airline tenants to Oakland Municipal Airport and Mills Field. For the rest of the 1930s the San Francisco Bay Airdrome was primarily used by private aircraft. In 1941, the Navy condemned seventy acres of the airdrome bordering Atlantic Avenue for a housing project and later ordered the

[29] *History of U.S. Naval Air Station Alameda, California* (San Bruno, California: Manuscript at the Pacific Branch of the National Archives, January 9, 1945), p. 3.

abandonment of the rest of "America's first downtown Airport" to eliminate possible interference with operations at NAS Alameda.[30] Today, the site of the former airdrome is occupied by Alameda College and the new "Alameda Pointe" subdivision.

Benton Field
The third major airfield built at Alameda Point got its start in 1930 when the Army acquired a 128-acre tract of partially submerged land located between Alameda Municipal Airport and the San Francisco Bay Airdrome

Figure 8. 1938 map showing location of airfields at Alameda Point.
Courtesy of Richard Rutter

(Figure 8). On April 3, 1931, Captain Leander Larson arrived at the newly named Benton Army Air Corps Field to take charge of building the first military airfield at Alameda Point. On May 8, 1931, Captain Larson received authority to spend $500,000 to undertake the following work: drilling a well, driving piles prior to filling, constructing a levee, dredging and building a 200,000-gallon water tower and railroad spur.[31] Although it does not seem to have reached completion, Benton Army Airfield was substantially underway on the northern portion of what is now NAS Alameda when the Navy began to show renewed interest in the site. In fact, the water tower was reused during the construction of NAS Alameda and only demolished within the past decade.

Navy Acquires Alameda Point
Perhaps spurred on by interagency rivalry, in 1935, the Navy met with Alameda officials to inquire about the possibility of acquiring 1,000 acres of land near Alameda Point for a naval installation. In June 1936, Congress passed Public Resolution Number 19 authorizing President Franklin D. Roosevelt to accept the 929.34-acre Alameda Municipal Airport from the City of Alameda. A year later, on October 7, 1936, the Navy officially acquired the 1,075-acre Benton Airfield (including submerged lands) from the Army, bringing the total area of the proposed naval base to a little more than 2,000 acres.[32]

[30] K.O. Eckland, "San Francisco Bay Airdrome" http://www.aerofiles.com/SFBA/SFBA.html.
[31] *History of U.S. Naval Air Station Alameda, California* (San Bruno, California: Manuscript at the Pacific Branch of the National Archives, January 9, 1945), p. 4.
[32] *Ibid.*, p. 4.

Plans Drawn
The original peacetime plans for NAS Alameda called for a 1,000-man, 200-aircraft facility costing $13,500,000. In 1937, Congress appropriated $15,000,000 to build the base, although the project was delayed for some time due to the need to allow Pan Am to vacate Alameda Municipal Airport and the Army to decommission Benton Airfield.[33] The new naval air station was designed by the Navy's Bureau of Yards & Docks, Department of Planning and Design. The Bureau was under the leadership of Navy Captain Ben Morell, who was in charge of developing naval installations throughout the nation during the prewar buildup of the late 1930s. The officers of the Department of Planning and Design were usually drawn from the Civil Engineers Corps, although the majority of the staff were civilian architects, engineers and planners under the direction of Capt. Thomas Trexel, Chief Architect in the Bureau's Washington, D.C. office.[34]

Dredging and Filling Commences
On February 10, 1938, Commander E.C. Seibert arrived in Alameda to assume his duties as Officer-in-Charge of Construction, administering the work from a small shack in the center of the base. Seibert awarded lump-sum contracts to twenty-five companies totaling $12,200,000, including contracts for demolition, dredging and construction. The first task was to demolish the majority of the extant structures within the base boundaries. Former occupants and owners were given an opportunity to remove existing improvements before contractors moved in to demolish the remaining buildings and remove submerged pilings and foundations. Next, the land was scarified in anticipation of it being filled and graded. The removal of submerged construction debris was especially critical, in order to ensure the even distribution of fill and eliminate obstructions to future construction.[35] A stone rip-rap seawall was built to exclude bay water from submerged and partially submerged areas. Dredging then commenced, with silt removed from the future sites of the ship channel, turning basin and seaplane lagoon. The dredged materials were then deposited on top of the marshlands and tidal flats within the seawall by means of large pressurized tubes. Millions of cubic yards of silt were spread on top of the mud, gradually creating "dry" land **(Figure 9)**.[36] Filling was held up briefly in 1938 when the dredging crew encountered an old trestle pier and ferry slip, remains of Cohen's Wharf. The debris, including pilings, iron railings, locomotive wheels, coupling links and a pile of sandstone cobbles, were all located on the site of what is now Pier 2.[37]

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33 LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 3.
34 John S. Garner, *World War II Temporary Military Buildings: A Brief History of the Architecture and Planning of Cantonments and Training Stations in the United States* (Washington , D.C.: U.S. Army Corps of Engineers, 1993), p. 17; LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 3.
35 LSA Associates, *Alameda Point General Plan Amendment EIR* (Berkeley: 2002), p. 143.
36 LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 3.
37 *History of U.S. Naval Air Station Alameda, California* (San Bruno, California: Manuscript at the Pacific Branch of the National Archives, January 9, 1945), p. 6.

Figure 9. Filling underway at NAS Alameda, 1940.
Courtesy of National Archives Pacific Region, San Bruno

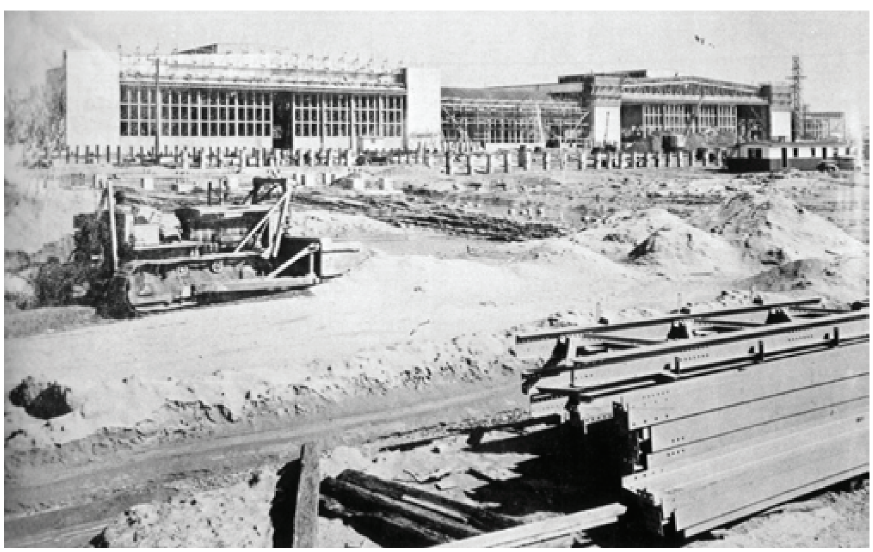

Figure 10. Building 5 under construction, April 1940.
Courtesy of the National Archives Pacific Region, San Bruno

Construction Begins
After dredging and filling were completed, contractors installed underground utilities and constructed the following buildings in order: Building 90 (Garage), Building 1 (Administration Building), Building 2 (Bachelor Enlisted Men's Quarters), Building 3 (Mess Hall), Building 18 (Post Office/Theater), Building 6 (Public Works Garage and Firehouse), Building 5 (Assembly and Repair Shop), Building 10 (Power Plant), Building 8 (General Storehouse), Building 9 (Aircraft Storehouse), Building 13 (Paint and Oil Storage), Building 14 (Engine Test Stands), Buildings 11 and 12 (Seaplane Hangars), Buildings 20, 21, 22 and 23 (Land Plane Hangars), Building 19 (Operations Building), Building 15 (Boathouse), Building 17 (Bachelor Officers' Quarters) and ten Married Officers' Quarters. The first building completed, Building 90, was built in 1938 as a garage. This building has been moved several times and is currently located near the East Gate, where it was most recently used as the Civilian Employment Office. In November 1938, Building 1, the Administration Building, had been completed and was ready for occupation. By 1940 the main base buildings were well underway, including the massive hangars on the north side of Seaplane Lagoon **(Figure 10)**.[38]

War in Europe
By the end of 1939, construction of NAS Alameda was progressing steadily under the supervision of Commander Harold J. Brow, USN, the first commander of NAS Alameda. Meanwhile, anxiety was steadily growing over the aggression of Nazi Germany in Eastern and Central Europe and Imperial Japan in Asia. By the end of 1938, Germany had annexed the Sudetenland region of Czechoslovakia and all of Austria and Adolf Hitler was showing few signs of being satisfied. Meanwhile, Japan was embroiled in a bitter war to conquer China. On September 1, 1939, German forces invaded Poland and two days later Britain and France declared war on Germany. The Second World War had begun. Although there were many in the United States who advocated remaining neutral, most Americans realized the likelihood of American participation in the War was high.

Rearmament
Realizing that American involvement in the War was ultimately inevitable, President Franklin D. Roosevelt signed the Hepburn Base Program Act on April 4, 1939. The act authorized the construction of additional naval bases throughout the United States and its possessions. At this time, Navy enlistment stood at 110,000 personnel with an additional 18,000 men in the Marines. Despite having won a medal from the Association of Federal Architects at the Seventh Annual Architectural Exhibition as an "outstanding example of functional planning," NAS Alameda was clearly inadequate to accommodate additional personnel and equipment necessitated by pre-war buildup.[39] In 1940, Captain Frank R. McCrary, USN, was appointed Commanding Officer of NAS Alameda and in July of that year, the Navy decided to dramatically enlarge the base from 1,000 to 4,000 men. Congress approved an emergency appropriation of $17,000,000 and Drake & Piper Construction Company was contracted to carry out the work.[40]

[38] *Ibid.*, pp. 5-6.
[39] *Ibid.*, p. 5.
[40] *Ibid.*, p. 8.

Landscaping
In addition to expanding the physical plant of NAS Alameda, Navy architects and engineers were faced with problems involving chronic soil slippage and blowing sand. In 1939, the Navy entered into an agreement with the organizers of the then-underway Golden Gate International Exposition (GGIE) to transplant grass and shrubs from the fair site on nearby Treasure Island to NAS Alameda after the fair closed in September. The State Forestry Division also stepped in, contributing shrubs and trees to the landscaped mall between the Main Gate and the Administration Building. When the mall was complete, it was promptly nicknamed the "The Magic Carpet" due to the effect created by the tapestry of flower beds and other decorative plantings **(Figure 11)**.[41] To reduce the impacts of storm-induced erosion, the Navy also scuttled and sank several World War I-era destroyers south of Seaplane Lagoon to serve as a breakwater.

Figure 11. View from north of the central Mall at NAS Alameda, 1950.
Courtesy of the National Archives Pacific Region, San Bruno

[41] *Ibid*, p. 12.

NAS Alameda Opens
On November 1, 1940, NAS Alameda was formally commissioned. The brief ceremony was attended by Rear Admiral A.J. Hepburn, USN, Commandant of the Twelfth Naval District and members of his staff; officers attached to NAS Alameda; officials representing the cities of Alameda, Oakland and San Francisco; newspaper reporters; and approximately 390 sailors and marines. The flag-raising ceremony took place at the flagpole installed three days earlier in front of the Administration Building. The United States flag required for the ceremony had to be procured at the last minute from Mare Island Naval Shipyard in Vallejo.[42]

The opening of NAS Alameda was a boon for the nearby communities of Alameda, Oakland and San Francisco, which were all still suffering from the residual effects of the Depression. The February 27, 1941 special edition of the *Alameda Times-Star* projected that NAS Alameda would eventually employ close to 800 Alamedans. This figure ended up being much larger; by the end of the War, the Assembly & Repair Department alone would employ close to 9,000 civilians. The *Oakland Tribune* heralded the arrival of the first seven of the projected 200 planes that would be based at the station and described how they would be housed in the "largest hangars in the world." One of the articles discussed the trade schools built to train civilians and enlisted men in airplane mechanics, instrumentation, metal fabrication and drafting. In July 1941, demand for trained personnel led to the opening of several "Class A" trade schools at Alameda Point, including the Aviation Metalsmiths' School, the Aviation Machinists Mates' School and the Aviation Radiomen's School.[43]

Prior to the Japanese attacks on Pearl Harbor, most of the 400-odd civilian employees of NAS Alameda arrived at work in their own private automobiles, most of which were parked in a lot by the Main Gate. After Pearl Harbor, gasoline rationing and rubber shortages compelled employees to take public transportation to work, mostly on Key System buses running between downtown Alameda and the Main Gate. Workers from San Francisco and Oakland could also take water taxis from Jack London Square in Oakland to NAS Alameda.[44]

Pearl Harbor
Despite the hectic construction activity, NAS Alameda was nowhere near completion when carrier-based Japanese bombers and fighters attacked Pearl Harbor and other U.S. possessions on December 7, 1941. The attacks panicked West Coast residents and put the military on alert. Bombers were expected over San Francisco and other West Coast cities in the months that followed Pearl Harbor. The shelling of an oil refinery outside of Santa Barbara by a Japanese submarine in February 1942 only elevated fears. After Pearl Harbor, all personnel stationed at NAS Alameda were commanded to immediately report for duty. Hasty preparations were undertaken to protect the base, including the installation of anti-aircraft guns, fire watch stations, fire hydrants and earthworks around important buildings. All access roads were closed off and protected by security checkpoints with orders issued to shoot to kill any intruders.[45] Meanwhile, construction continued into 1942 and the base was completed as originally designed by the end of the year **(Figure 12)**.

NAS Alameda During Wartime
The primary mission of NAS Alameda during the Second World War was to supply the ships and stations of the Pacific Fleet and to "Keep 'em flying"; in other words, repair damaged aircraft. Most of this work was carried out by the Assembly & Repair Department in Building 5. By 1945, this department employed 9,000 people, many of them women. Building 5 underwent continual expansion to accommodate more aircraft, growing from 204,000 square feet in 1941 to over one million square feet by 1945. Eventually, Building 5 and its neighbors accommodated nine divisions: Aircraft Overhaul, Engine Overhaul, Accessories, Metal and

[42] *Ibid*., p. 9.
[43] *Ibid*., p. 10.
[44] *Ibid*., p. 12.
[45] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 4.

Machines, Radio-Radar, Engineering, Planning, Maintenance and Personnel. At its peak year in 1945, Assembly & Repair overhauled 842 aircraft and 2,027 engines.[46]

NAS Alameda also served as the primary supply base for Naval installations throughout the Pacific Theater. After the bombing of Pearl Harbor, Pacific Island bases were activated at Midway, Wake, Johnston and Palmyra Islands. Located on remote islands, these bases had to be supplied with nearly everything, including food, water, weapons, materiel and men. NAS Alameda also served several outlying installations in California, including Navy airfields at Crows Landing, Santa Rosa, Hollister, Monterey, Watsonville and Eureka, as well as a Coast Guard station in San Francisco. NAS Alameda was also the home port for several aircraft carriers.[47]

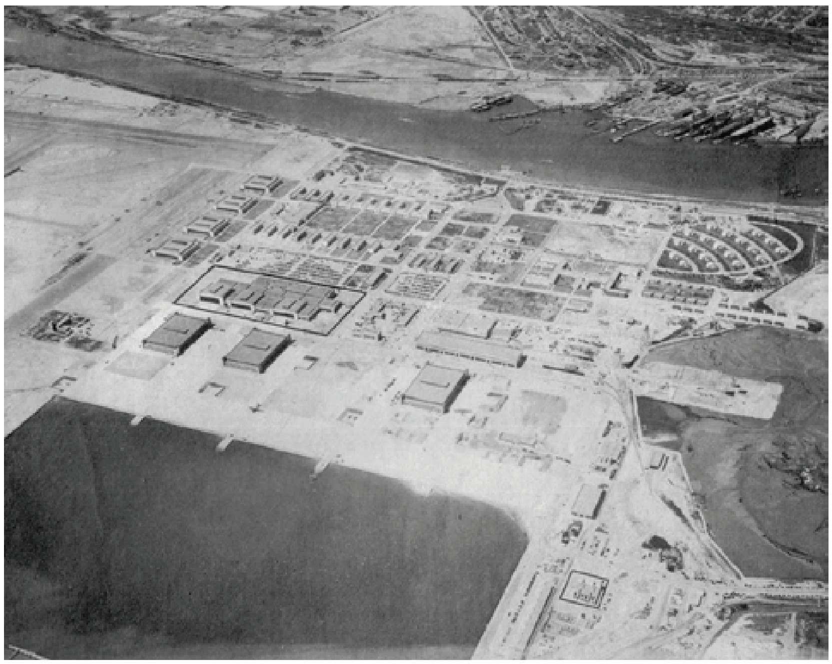

Figure 12. Aerial view of NAS Alameda, June 1942.
Courtesy of the National Archives Pacific Region, San Bruno

Labor Shortages
With all of the work going on at NAS Alameda, the demand for skilled labor grew to an insatiable level. During the Second World War, the city of Alameda became an unofficial Navy company town, more than doubling in population from 30,000 people in 1941 to over 85,000 people by 1945. Workers came from all over the United States to work at NAS Alameda and in other war industries ringing San Francisco Bay, especially shipyards and military installations. After the institution of the mandatory draft sent working-age men off to war, women became a critical part of the workforce at NAS Alameda. These women civilian workers, immortalized by the famous image of "Rosie the Riveter," joined forces with enlisted female military personnel called "WAVES"(Women Accepted for Voluntary Emergency Service).[48]

[46] *Ibid*, p. 5.
[47] *Ibid.*
[48] *Ibid.*, p. 5.

Wartime Events at NAS Alameda

One of the most important events to take place at NAS Alameda during the Second World War was the departure of the *USS Hornet* with Alameda native Lieutenant Colonel James Doolittle's force of eighteen B-25 bombers in April 1942. "Doolittle's Raiders," as they were called, bombed Tokyo and three other Japanese cities on April 18, 1942. American morale was at its lowest ebb, and the raids, although of little tactical benefit, proved to the American (and Japanese) public that the Japanese homeland was not invulnerable. Another noteworthy event took place in January 1944 when Army pilot 2nd Lieutenant Harry Pape of Sacramento bailed out of his P-39 seconds before it crashed within feet of Building 5. The pilot was uninjured, but several workers in Building 5 were wounded by flying debris.[49]

World War II Ends

By VJ Day in 1945, NAS Alameda barely resembled the small 500-man base that had existed before Pearl Harbor. Under the capable leadership of Captain Walter F. Boone, NAS Alameda had expanded over the course of the War to accommodate twenty-two squadrons of aircraft, twenty-three ships, 1,500 aircraft and 158 buildings. In order to accommodate all of this growth, in 1944, the Navy Bureau of Yards & Docks began to construct hundreds of temporary wood-frame and corrugated metal barracks, office buildings and machine shops throughout the base. Building 5, the home of the Assembly & Repair Department, was vastly enlarged to accommodate the large numbers of aircraft damaged in battle or those merely in need of overhaul. Large temporary wood-frame warehouses, such as Buildings 91 and 92, were erected in the Shops Area to house supplies awaiting shipment to the Pacific Theater. To accommodate the increasing size of aircraft carriers, the Navy awarded a million-dollar contract to Basalt Rock Company of Napa to build a mile-and-a-quarter-long breakwater south of the three carrier piers.[50]

Postwar Years: 1946-1950

The cessation of hostilities with Japan occurred on August 14, 1945 and demobilization took place with astounding speed. Charged with shipping men and materiel out to the Pacific Theater throughout the War, NAS Alameda was now responsible for bringing them home safely. Wartime personnel levels were cut in half by April 1946 and to one-third by June. By August 1946, NAS Alameda only had 187 officers and 1,792 enlisted personnel. Ships were decommissioned, planes mothballed and machinery and scrap melted down into ingots. Nevertheless, NAS Alameda would continue to play a role in the postwar Navy. Having invested over seven hundred million dollars in the construction and expansion of NAS Alameda, the Navy intended that the station would become one of three permanent stations of the Twelfth Naval District. In the immediate postwar period, NAS Alameda served as a supply depot for food, equipment and personnel sent to Occupied Japan. NAS Alameda was also home port to the Pacific Reserve Fleet and the aircraft carriers *Hancock*, *Ranger* and *Enterprise*. The giant Mars seaplanes used to ferry equipment and supplies to Pacific bases during the War were either mothballed or converted for use on rescue missions. By 1948, NAS Alameda was said to be "resting on its oars."[51]

Despite its reduced mission following the Second World War, aircraft overhaul work did not cease at NAS Alameda. After the War, a major amount of work went into converting the station from a facility catering to propeller-driven aircraft to one focused on jet propulsion. The Assembly & Repair Department (renamed Overhaul & Repair in 1948) continued to operate out of Building 5, which was radically altered and enlarged to accommodate jet aircraft and the 5,400 civilian workers who worked on them.[52] New engine test cells and other

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[49] *Ibid.*
[50] *History of U.S. Naval Air Station Alameda, California* (San Bruno, California: manuscript at the Pacific Branch of the National Archives, January 9, 1945), p. 5.
[51] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 7.
[52] *Ibid.,* p. 8.

new structures were built in the southeastern part of the station and many World War II-era temporary buildings were demolished.

Korean War to Vietnam

On June 25, 1950, Chinese and Soviet-backed North Korean troops invaded South Korea, launching the Korean War. On June 27, President Harry Truman ordered U.S. air and sea forces to give the Korean government troops cover, and on June 30, he authorized American ground troops to take part in the fighting. On July 3, 1950, NAS Alameda-based Carrier Division 3 became the first to launch air strikes against North Korean troops. Marines stationed at NAS Alameda were also some of the first American troops to see combat on the Korean Peninsula. Given its new mission in Asia, the Navy embarked on a major expansion of NAS Alameda. An additional 1,000 civilian workers were hired; reservists were called up; ships re-commissioned; aircraft de-mothballed; and the two runways were lengthened from 5,200' to 7,200'. In total, forty-six million dollars were expended on improvements to NAS Alameda. After the Korean War ended on July 27, 1953, NAS Alameda experienced a slight slowdown in operations, although nothing equivalent to what happened after the conclusion of the Second World War. The Cold War kept the U.S. military on its toes and NAS Alameda remained active.[53]

By 1958, NAS Alameda had a station population of 13,200, of which 4,800 were military personnel and 8,400 civilian workers. The base itself was comprised of 2,679 acres of land: 1,607 acres of dry land and 1,072 acres of submerged land. There were approximately 283 buildings and over thirty miles of roads. During this period, NAS Alameda was home port to the largest aircraft carrier in the world, the *USS Ranger*, one of the newest generation of Forrestal-class carriers, which were 1,000' long and weighed 76,000 tons.[54] By 1962, NAS Alameda had three 8,000' runways, four large aircraft carriers—*USS Hancock*, *Ranger*, *Coral Sea* and *Midway*—three seaplane ramps, 1,920,000 square feet of shop area, 2,858,000 square feet of storage area and 280 buildings. The total size of the base in 1962 was 2,720 acres, including 1,612 acres of dry land and 1,108 acres of submerged land.[55]

In 1960, the last seaplane squadron was transferred from NAS Alameda to NAS Whidbey Island, marking the end of an era. In July 1961, NAS Lemoore opened in the San Joaquin Valley and most of the carrier-based jet squadrons moved to the new station or to NAS Miramar, near San Diego. This was done to reduce the congestion and noise of jet training in the increasingly urban Bay Area.[56]

In September 1960, a mission of another kind came to NAS Alameda when the Oakland Raiders, a newly formed American Football League team, made the station their practice grounds. Coached by former Naval Academy head coach Eddie Erdalatz, the scrappy Raiders attracted the attention of naval personnel and civilian workers on their lunch breaks.[57]

Vietnam

In 1966, NAS Alameda again became homeport to the world's largest aircraft carrier, this time the *USS Enterprise*, which was the first nuclear-powered aircraft carrier. Events in Southeast Asia kept the ship and its personnel away from NAS Alameda for months at a time during the 1960s. As with the World War II and the Korean War, Alameda was significantly involved with the Vietnam War. After Viet Cong troops attacked American and South Vietnamese troops in South Vietnam on February 7, 1965, aircraft from the Alameda-based carriers *USS Ranger*, *Hancock* and *Coral Sea* launched strikes against North Vietnamese positions in Dong Hoi. During the rest of the 1960s, half of the attack carriers involved in Vietnam were

[53] *Ibid.*, p. 9.
[54] *NAS Alameda Base Directory* (Alameda: 1958), p. 12.
[55] v, p. 8.
[56] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 14.
[57] *Ibid.*, p. 17.

home-ported at NAS Alameda. In 1967, the airfield at NAS Alameda was renamed "Nimitz Field" in honor of Admiral Chester W. Nimitz, the man credited with winning America's sea war with Japan. Also in 1967, the Overhaul & Repair Department of NAS Alameda ceased to exist, replaced with another similarly charged organization called the Naval Air Rework Facility, or "NARF" **(Figure 13)**. The Vietnam War continued for another six years until a cease-fire was signed on February 5, 1973, ushering in a period of peace, budget cuts and personnel reductions at NAS Alameda. By 1980, only two carriers were home-ported at NAS Alameda, *USS Coral Sea* and *Enterprise.*[58]

Post-Vietnam to BRAC

Faced with changing priorities and political sensibilities in the 1970s, the Navy introduced new programs emphasizing psychological and physical well-being and improved race relations, as well as several new recreational buildings. The demographic character of the workforce began to change as World War II-era workers retired, many to be replaced by ethnic minorities and women. Leaders of the environmental movement also began to place expectations on the Navy to improve its record of environmental responsibility at NAS Alameda. During the 1970s and 1980s, the Navy spent substantially more resources to mitigate hazards caused by spilled jet fuel and oil.

Figure 13. Interior of Hangar 20, 1960s. Courtesy of Richard Rutter

Despite the Reagan-era military buildup of the 1980s, Secretary of Defense Caspar Weinberger suggested in 1985 that NAS Alameda be added to a list of twenty-two bases proposed for closure, partially due to declining productivity and morale in the NARF department (later renamed Naval Aviation Depot, Alameda, or NADEP). Nevertheless, productivity dramatically improved after the base made improvements to the station and gave pep talks to the employees, and as a result, NAS Alameda was taken off the list for closure.[59] On October 17, 1989, the San Francisco Bay Area was hit by the 7.1 Loma Prieta Earthquake. The earthquake heavily damaged runways, partially destroyed the control tower and disrupted utilities. Nevertheless, within days, NAS Alameda was back in service and providing assistance to earthquake victims throughout the Bay Area.

Base Realignment and Closure

The "Peace Dividend" resulting from the end of the Cold War put pressure on the branches of the military to cut costs and close redundant installations. In 1990, Defense Secretary Dick Cheney suggested closing all Navy facilities in the San Francisco area. After a brief respite during the First Persian Gulf War, the Base Realignment and Closure Commission (BRAC) began the work of determining which bases should be closed. NAS Alameda narrowly escaped the first cut in 1991. Many believed that Alameda's high level of productivity would cause the station to be spared, but on March 12, 1993, to the shock of base personnel and thousands of Alamedans who worked at the base, NAS Alameda was included in the next list of thirty-one bases designated for decommissioning.

[58] *Ibid.*, pp. 17-19.
[59] *Ibid.*, p. 21.

At the time that NAS Alameda was designated for closure, the station was comprised of 2,842 acres of land, including 1,527 acres of dry land and 1,315 acres of submerged land; 251 buildings; 195 structures; and two runways measuring 8,000' and 7,200' long. Total employment consisted of 2,861 military personnel and 4,025 civilians. Home-ported ships included two carriers, the *USS Abraham Lincoln* and *Carl Vinson*; one missile cruiser, the *USS Arkansas*; and one destroyer tender, the *USS Samuel Gompers*. In addition, NAS Alameda was home to four Naval Air Reserve squadrons and one Marine Air Group.[60] In 1997, NAS Alameda finally closed its gates, fifty-seven years after opening.

[60] *NAS Alameda Fact Sheet,* October 20, 1993.

V. DESCRIPTION OF NAS ALAMEDA HISTORIC DISTRICT

Boundaries

NAS Alameda Historic District encompasses an area of approximately 350 acres at the center of the former military base. The historic district is bounded by Main Street and Oakland Inner Harbor to the north, 1960s-era multi-family housing to the east, mixed-use industrial buildings and warehouses to the southeast, Seaplane Lagoon to the south, and Nimitz Field to the west **(Figure 2)**.

Figure 14. Main Gatehouse and Sentry House (Buildings 30 and 31), NAS Alameda, 2004.

Significance

Architectural Historian Sally Woodbridge, author of the 1992 *Historic Architectural Resources Inventory for the Naval Air Station, Alameda*, identified a potential historic district at the center of NAS Alameda that appeared to be eligible for National Register listing under Criteria A (Events) and C (Architecture), with a period of significance of 1938-1945. Under Criterion A, the district appears to be significant as an important component in the evolution of the Bay Area as America's "Arsenal of Democracy" during the Second World War. The district also appears to be eligible for listing under Criterion C as a military installation embodying the characteristics of "Total Base Design," as well as a rare example of a military installation designed in the Streamline Moderne style **(Figure 14)**. Military bases built during the Interwar Period (1919-38) and during the early years of the Second World War (1939-42), typically embody the characteristics of Total Base Design, defined as the careful integration of site planning, architectural program and landscape architecture. Influenced by municipal zoning ordinances adopted during the 1910s and 1920s, bases designed during this era usually display a pronounced segregation of uses for functional, aesthetic and safety reasons. Bases constructed according to the precepts of Total Base Design also often embody City Beautiful planning and design principles, particularly cross-axial patterns of circulation, large landscaped malls terminating at important visual monuments or vistas, and symmetrical disposition of buildings. Sally Woodbridge's *Historic Architectural Resources Inventory* identified eighty-five contributing resources and thirty-one non-contributing resources in the Historic District.[61]

Character-Defining Features

Site Plan

The original site plan for NAS Alameda is a logical arrangement composed around two primary cross axes centrally placed in a roughly square framework of roadways (**Figure 15**). Sprawling across over 350 acres of mostly level, filled land, the Historic District is bounded by streets and open water to the north and south, later multi-family construction to the east, industrial uses to the southeast and Nimitz Field to the west. The original

[61] Page & Turnbull has identified eighty-six contributors and fifty-five non-contributors within the boundaries of the NAS Alameda Historic District (Refer to Appendix E). Since Woodbridge's inventory, the number of contributors was revised to 87 (acknowledged in a letter from the Offfice of Historic Preservation dated Nov. 5, 1997) and one building (Building 101) was destroyed by fire, reducing the number of contributors to eighty-six.

award-winning design of NAS Alameda was executed by the Bureau of Yards & Docks, Department of Planning and Design, an agency that employed talented civilian planners, architects and engineers who were well-versed in the important planning trends of the time. One of the most obvious influences in the base's design is the City Beautiful Movement. Inspired by Daniel H. Burnham and Frederick Law Olmsted's design for the World's Columbian Exposition in Chicago in 1893, City Beautiful urban planning was characterized by symmetrical arrangements of buildings along landscaped axes terminated by important monuments or vistas, Beaux-Arts architectural vocabulary and unified landscape treatments. The City Beautiful Movement was reinterpreted in cities across the United States and its colonies, including Washington, D.C. (1901), Manila (1904), San Francisco (1905), Chicago (1909), Denver (1910) and others. Obsessed with resolving the chaotic conditions so characteristic of young and rapidly growing American cities, the City Beautiful Movement sought to appropriate the best elements of European Renaissance and Baroque planning traditions to imprint a uniquely American identity to our civic centers, educational campuses and federal institutions.

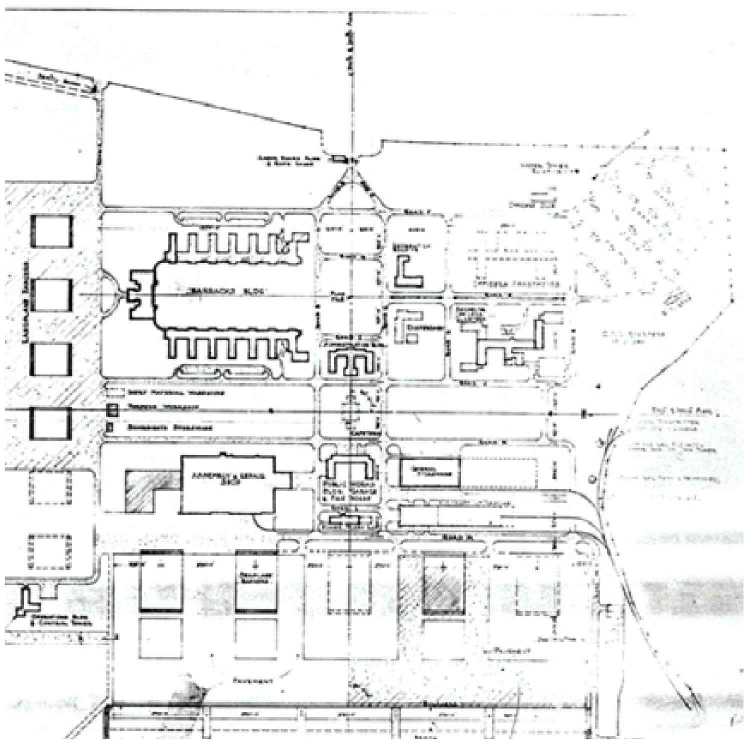

Figure 15. 1940 plan of NAS Alameda.
Courtesy of Department of the Navy, NAS Alameda Plan Room

Figure 16. Moffett Field, ca. 1940
Source: Moffett Field Historical Society

Between the First and Second World Wars, U.S. military leaders became increasingly committed to the orderly aesthetic of the City Beautiful Movement for base design. Mere aesthetics aside, the military's interest in City Beautiful planning principles was a culmination of a long history of logical and efficient base planning going back as far as the Roman *castrum*. U.S. military installations designed between the wars typically employed a strong axial plan (often centered around a landscaped mall), and a cohesive architectural vocabulary (usually referencing the local regional architectural tradition), which were set within a unified landscape. These bases follow what has been termed as "Total Base Design," meaning that architecture, site planning and landscape architecture are integrated, informing a whole, highly organized design.[62] Good examples of this system include March Airforce Base in Riverside; Hamilton Field in Novato; the Naval Training Center in San Diego; and NAS Sunnyvale (renamed Moffett Field) **(Figure 16)**. Unlike NAS Alameda, these four bases adhere to the popular Mission Revival or Spanish Colonial Revival architectural styles.[63] However, these bases share in common with NAS Alameda an expansive central mall. At Moffet Field, the mall serves as the heart of the base, connecting the main entry with the central administration buildings, ultimately terminating at the signature icon and *raison d'être* of the base: the dirigible hangar. In the case of NAS Alameda, the landscaped north-south axis terminates at the Seaplane Hangars and the Seaplane Lagoon, while the east-west axis terminates at the Landplane Hangars, and beyond that, the San Francisco skyline. This progression along the central axis gives hierarchy to the plan, leading from the entry point to the impressive buildings that most directly serve the base mission.

The Woodbridge inventory specifically identifies the central open spaces and the street system as character-defining features of the Historic District, and comments on its overall "continuity of style and a high degree of architectural integrity enhanced by the retention of landscaping and parklike open spaces."[64] The reference to the installation's manifestation of Total Base Design is also recognized in the JRP *Guidelines* as being analogous to Gunther Barth's "instant city" model, used by the author to describe the near instantaneous development of San Francisco and Denver during their respective Gold Rushes.[65] The overarching continuity of the Historic District is emphasized in the *Guidelines* as embodying the following characteristic:

> If there is one overriding character-defining element of the NAS Alameda Historic District, it is this uniformity of design features, elements, and materials. These buildings were designed as a group, an ensemble, and should, to the extent possible, be managed in the same manner.[66]

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[62] U.S. Army Corp of Engineers, Sacramento District, *California Historic Military Buildings and Structures Inventory, Vol. III* (Sacramento: 2000), p. 6-21.
[63] These four bases are listed on the National Register of Historic Places as historic districts.
[64] Sally Woodbridge, *Historic Architectural Inventory for Naval Air Station* (Alameda, 1992), p.3.
[65] Steven Mikesell, *Guide to Preserving the Character of the Naval Air Station Alameda Historic District* (Prepared for Naval Facilities Engineering Command, San Bruno, CA, 1997), p. 1.
[66] *Ibid.*

Axes

As described above, the principal cross axes that help to define the character of NAS Alameda are clearly indicated in the original plans prepared by the Bureau of Yards & Docks. The main north-south axis is a large landscaped mall historically known as the "Magic Carpet," beginning at the Main Gatehouse (Building 30) and continuing south to the Administration Building (Building 1). Landscaped areas originally carried the main axis south to Building 6 and the Seaplane Lagoon beyond. As originally designed, the east-west axis separated the Administrative and Residential sub-areas from the Shops and Hangars sub-areas. However, after the bombing of Pearl Harbor, the formerly open east-west axis was sacrificed to wartime contingencies and filled with additions to the Assembly & Repair Shop (Building 5), and new training, maintenance and storage structures (including Buildings 114, 101, 73A and 73B). The primary north-south axis was retained along with a secondary east-west mall framed by the Bachelor's Enlisted Quarters Buildings and the General Service Building (Buildings 2, 3 and 4). This secondary mall and the landscaped boulevard along Road H (currently W. Essex Road), which connects to the Residential Area of Officer's Quarters, became the predominant east-west axis by the end of World War II **(Figures 17-19)**.

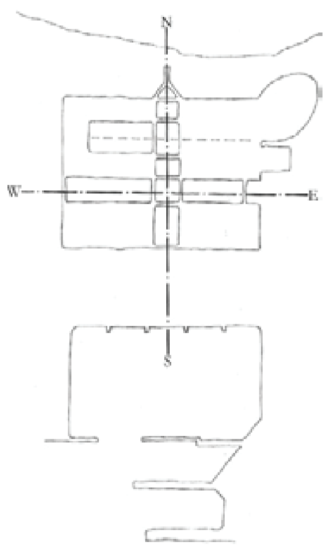

Figure 17. Original plan axes

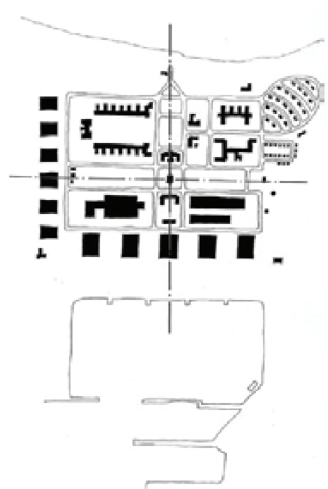

Figure 18. Master plan, ca. 1940

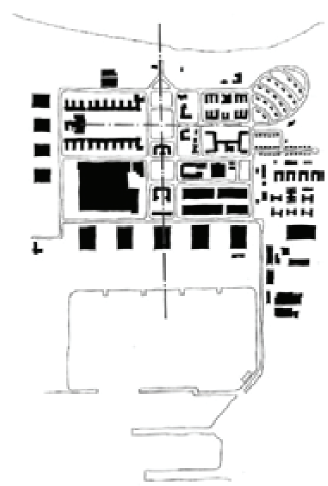

Figure 19. Built plan, ca. 1945

In addition to providing important vistas of significant monuments and landscapes beyond the base, the principal axes also serve as the primary circulation routes. Individual circulation elements, such as prominent entrance pavilions, arcaded passageways, paths and stairs, tend to relate to the principal axes. Some circulation elements, such as the covered pedestrian passageways connecting Buildings 2, 3, and 4, frame views of the Bay and downtown San Francisco in the distance. The axes are defined by rows of low-slung buildings, which serve not so much as continuous edges but as punctuation within a park-like setting. The most significant landscape treatments are encountered along the north-south and east-west malls, with some extending into other sub-areas like tendrils of green open space, especially a landscaped boulevard that originally existed along W. Essex Street. The malls are punctuated periodically by important structures and monuments, such as the main flagpole at the southern end of the north-south mall, directly across from the main entrance to the Administration Building.

View Corridors
As discussed above, the two principal malls serve as important view corridors, providing vistas or glimpses of primary features of the base plan **(Figure 20)**. The corridors focus attention on symbolically and architecturally significant structures. The main north-south mall begins north at the Gatehouse (Building 30) and terminates at the Administration Building (Building 1) at the south. Visitors standing at any point along the mall enjoy dramatic views of both buildings at either end of the mall. The buildings lining the mall defer to the Administration Building, although their design is compatible. Landscaping, in particular mature Monterey Cypress trees, also direct the attention of the visitor to the Administration Building with the flagpole in front of it. In this way, planning, architecture and landscape architecture work in concert to direct strangers to the central nerve center of the base, as well as promote public interaction with the elements that embody the highest degree of architectural interest.

Although not a landscape in the traditional sense, significant view corridors are afforded along and in-between the rows of massive Seaplane Hangars at the southern edge, and the somewhat smaller Landplane Hangars along the western edge of the district. The repetition of identical, 60-foot-tall volumes creates strong streetscapes when viewed along Monarch Street and West Tower Avenue. These two vistas, as well as the views between the hangar buildings, are mentioned in the JRP *Guidelines* as some of the most important character-defining elements of NAS Alameda. Taken in conjunction with glimpses of downtown San Francisco in the distance, these views are some of the most impressive on the base.

Sub-Areas
Five sub-areas within NAS Alameda were identified in the JRP *Guidelines* as possessing distinctive characteristics. Reflecting the segregation of usage that is so characteristic of the base, these sub-areas are coterminous with function: the Administrative Core, the Shops Area, the Residential Area, and the Seaplane and Landplane Hangars Areas. (**Figure 21**). The purposeful arrangement of functions, or zoning as it came to be known in the early 20th century, is indicative of the Total Base Design practice and the City Beautiful Movement, from which it derived in part. The functional segregation of different, mutually incompatible

Figure 20. View corridors

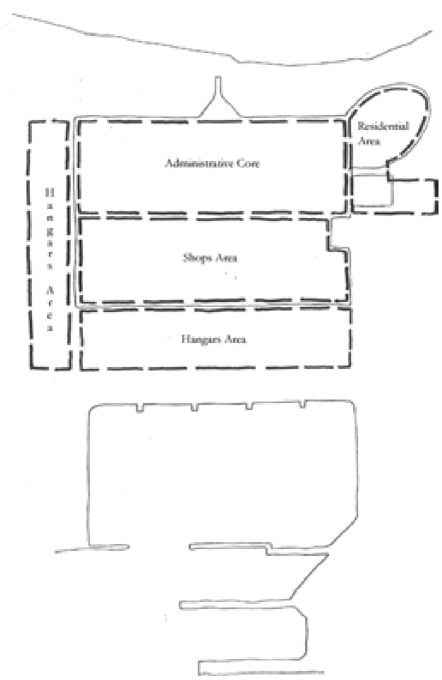

Figure 21. District Sub-Areas

uses fulfills the practical purpose of grouping similar activities together in one area, making work more efficient. It was also safer, in important consideration in an area containing large stores of explosive materials. Finally, the practice of zoning allowed for a better opportunity to shape the aesthetic character of the base as a coherent entity.

To that end, each sub-area of NAS Alameda is unique and distinguished from other sub-areas by different building massing, architectural treatment and landscaping. As the center of command and ceremonial nucleus of the base, the Administrative Core is located at the heart of the base. The most architecturally significant buildings are located here, including Buildings 1, 2, 3, 4, 16, 17 and 18. These buildings are symmetrically arranged on either side of broad, intersecting landscaped malls. The buildings are consistently two to three stories in height and have stepped massing, often consisting of a central pavilion flanked by two one-story wings **(Figure 22)**.

The Residential Area is located just east of the Administrative Core. Nestled into a landscaped area of lawns and mature street trees in the northeast corner of the base, the Residential Area is segregated from through-traffic by a network of curvilinear streets that do not connect to major through-streets. The Residential Area is comprised of two separate clusters of family housing: relatively large, hip-roofed, single-family houses intended for officers; and a secondary cluster of less-elaborate, small, flat-roofed bungalows intended for non-commissioned officers. Although quite different, reflecting discrepancies in rank, the scale and detailing of the architecture in the Residential Area is decidedly smaller and more "domestic" in nature than any of the other four sub-areas **(Figure 23)**.

Figure 22. Building 16, Administrative Core

The Shops Area is sandwiched between the Administrative Core to the north, the Seaplane Hangars Area to the south, and the Landplane Hangars to the west. The Shops Area contains the largest and the most utilitarian buildings of any of the five sub-areas. Although quite large, the buildings of the Shops Area are effectively screened from view from the Administrative and Residential Areas by landscaping and relatively horizontal massing, the notable exception being Building 5, which looms over much of the central portion of the Historic District. The Shops Area is also the most heterogeneous of the five sub-areas, running the gamut from utilitarian wood-frame, "semi-permanent" warehouses like Buildings 91, 92 and 114, to more elaborate Streamline Moderne structures, such as Building 6.

Figure 23. "Big White," Officers' Housing in the Residential Area

Similar to the structures of the Shops Area, the buildings of the two Hangars Areas are designed in a utilitarian mode. However, the hangars are substantially different from the Shops Area by virtue of their cohesive design (apparently by Detroit architect Albert Kahn) and repetitive arrangement in rows along the south and west sides of the Historic District. Visible from much of the inner Bay Area, the massive hangars visually summarize in an iconic fashion the mission of NAS Alameda. Built in proximity to the Seaplane Lagoon and Nimitz Airfield, the hangars define the edges of the runways and taxiways that dominate much of the base. The only building in the Hangars Areas that departs from the overall utilitarian character of the sub-area is Building 77, the Passenger Terminal. Built somewhat later than the hangars, Building 77 conforms to the Streamline Moderne aesthetic of the Administrative Core. Although not landscape features in the traditional sense, the tarmac taxiways alongside the bay side of both rows of hangars create important open spaces that serve as transitional zones between the Historic District, Nimitz Field and the Seaplane Lagoon **(Figure 24)**.

Architecture: Streamline Moderne

NAS Alameda is a rare example of a military base with significant portions designed in the Streamline Moderne style. Derived in part from European High Modernism and the contemporary work of American industrial designers, the Streamline Moderne style began to develop in the United States during the late 1920s and early 1930s, with the now-famous PSFS Building in Philadelphia (1929) and the McGraw-Hill Building in New York (1931). The basis of the style can be traced in large part back to American transportation designers like Raymond Loewy, who tested their designs in wind-tunnels and fluid tanks to produce aerodynamically advanced designs for train engines, automobiles, airplanes and ships that enhanced forward motion by reducing wind or water resistance. Industrial designers discovered that refrigerators, toasters, and pencil boxes with the same curves and wind lines appealed to consumers over earlier boxy models. Shoppers were even willing to pay more, maybe because these “modernistic” gadgets seemed futuristic in the same way the era’s science-fiction films and comic books painted a future technologically freed of all problems. Buildings designed in the Streamline Moderne style referenced this fascination with speed and efficiency by exhibiting curved corners, ship rails, and porthole windows. The buildings also featured modern-age materials such as chrome-plated steel interior trim, magnesite flooring and ribbon windows

Figure 24. Seaplane Hangars north of Seaplane Lagoon, 2004

Figure 25. Building 18 (Theater), 2004

featuring aluminum sash or glass-block. More accessible to the public than the rarefied European Modernism of the 1920s, the Streamline Moderne style conveyed notions of speed, efficiency, cleanliness and a progressive vision of the future.

In the years leading up to the Second World War, the Navy began to build new bases under the provisions of the Hepburn Act. A handful of these new bases departed from the historicist and regional vocabularies typically used by the Navy and embraced a more modern design aesthetic influenced by the contemporary Art Deco and Streamline Moderne movements. Alternately called "Stripped" or "Starved Classicism," or "Works Progress Administration Moderne," the modern styling developed by the Navy's Bureau of Yards & Docks was generally more conservative than civilian works of the same era. Due in part to the fact that the military relied on standardized plans, Navy buildings constructed during the late 1930s continued to retain strict axial plans and symmetrical facades dominated by colonnades or porticos. However, instead of using traditional Neoclassical architectural detailing, the "new" modern buildings incorporated simple, stylized decorative details and massing typical of the Streamline Moderne style. Characteristics of the style evident at NAS Alameda include: smooth stucco walls, curved parapets, incised "speed lines," stacked window elements, glass-block or horizontal ribbon windows, and stylized sculpture depicting traditional military motifs such as eagles, or in the case of the Navy, anchors or figures of Pegasus **(Figures 25 & 26)**.

Figure 26. "Pegasus," Building 4, 2004

In California, the largest base designed wholly in the Streamline Moderne style is NAS Alameda. While other bases feature concentrated areas designed in the style, such as McClellan Air Force Base near Sacramento, or feature individual buildings, such as the Naval and Marine Corps Reserve Center in Los Angeles and the Naval Reserve Center in Santa Barbara, none retain such a large concentration of buildings designed in the Streamline Moderne style.[67] While NAS Alameda features World War II-era temporary and semi-permanent buildings that are not compatible with the original base design, the majority of the Historic District contains buildings constructed between 1938 and 1941 in the Streamline Moderne style.

Landscape
The most important landscaped areas at NAS Alameda are the two intersecting malls at the center of the Administrative Core **(Figure 27)**. Landscape materials consist of broad grassy areas segmented into smaller sections by paved paths. Decorative borders of box hedges, Monterey pine, Monterey cypress, red

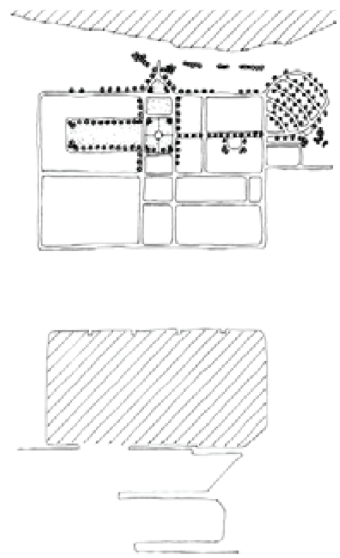

Figure 27. Landscape features

[67] U.S Army Corp of Engineers, Sacramento District, *California Historic Military Buildings and Structures Inventory., Vol. III* (Sacramento: 2000), pp. 7-44-7-45.

gum eucalyptus, bottle brush and other trees and shrubs typical of California, line important paths, borders or significant spaces, such as the area surrounding the flagpole in front of Building 1. Other significant areas of landscaping include the lawns and trees in the Residential Area, a large expanse of grass and athletic fields east of the Main Gate, three landscaped courtyards on three sides of Building 17 and a now-paved median in the center of Essex Drive. Some of the mature landscaping appears to have been either salvaged from the 1939 Golden Gate International Exposition or donated by the California Division of Forestry around the same time. Historic photographs taken of the base in the 1940s and 1950s indicate that the original landscaping in the Administrative Core was more formal, with ornamental parterres and shrub borders giving the north-south mall its historic nickname the "Magic Carpet." These areas are now either paved or covered in grass.

Contributing Buildings

As the nerve center of the former base, and the area most often encountered by visitors, the Administrative Core is home to the most architecturally significant buildings at NAS Alameda. Many of the most important contributors to the Historic District are located here and most are designed in the Streamline Moderne style. The Administrative Core also contains a handful of World War II-era "semi-permanent" buildings constructed during wartime, such as Buildings 94 (Chapel), 130 (Medical Lab), 135 (Community Facilities) and 137 (Recreation Storage Facility). Contributors in the Administrative Core include Buildings 1 (Administration Building), 2 (Bachelor Enlisted Men's Quarters), 3 (General Services/Commissary), 4 (Bachelor Enlisted Men's Quarters), 16 (Medical Clinic), 17 (Bachelor Officers' Quarters), 18 (Post Office and Theater), 30 (Main Gatehouse), 31 (Sentry House) and 94 (Chapel). Most are low-slung buildings with smooth stucco walls, curved corners and parapets, pronounced entry blocks, aluminum ribbon windows, glass block accent windows, "speed lines," colonnades with curved canopies, and occasional sculptural elements, including Pegasus figures on Buildings 2 and 4 and eagles on Building 3. Interior detailing is often quite fine, featuring terrazzo flooring, glass block and nickel-plated stair balustrades **(Figure 28)**

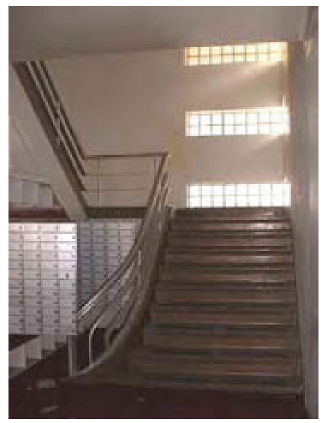

Figure 28. Interior stair, Building 17, 2004

Comprised of eighteen two-story Officers' Quarters and thirty one-story Non-commissioned Officers' Quarters, the Residential Area has a greater number of buildings than the other four sub-areas. However, unlike the other sub-areas, there are only two variants of contributing buildings in the Residential Area: the Married Officers' Quarters, also known as the "Big Whites," and the Non-Commissioned Officers' Quarters (NCO Quarters). The Big Whites are located in the distinctive beehive shaped network of curvilinear streets in the northeastern corner of the Historic District. Set down in a landscaped park-like setting, the Big Whites are large, two-story, hip-roofed structures with projecting sun room and

Figure 29. Officers' Quarters, "Big White," 2004

garage wings. Based largely on standardized military plans, the Big Whites closely resemble the classic American "foursquare" house. Typically rendered in the Neoclassical style on military installations in other parts of the country, the design of the Officers' Quarters at NAS Alameda was modified to blend in with the Streamline Moderne character of the base. Coated in smooth, white-painted stucco, the Big Whites feature distinctive Moderne elements, such as vertical bands of small rectangular windows and the absence of applied ornament. Instead, ornamental detailing is provided by geometric features, such as the circular openings punched into the portico canopy supports. The NCO Quarters, also based on standardized Navy plans, are much smaller and more utilitarian than the Officers' Quarters. Located on both sides of Corpus Christi Road and along the south side of Pensacola Lane, the NCO Quarters feature shallow-pitched hipped roofs (which appear flat), recessed porches and broad roof overhangs. All buildings have double-hung wood windows and wood doors. Few alterations have taken place over time to either the buildings or to the landscaping, resulting in a high level of integrity in the Residential Area.

Sandwiched between the Hangars Areas and the Administrative Core, the Shops Area is a support zone for the the Hangars. As utilitarian buildings used primarily for machining aircraft parts or storing goods intended for shipment overseas, the buildings of the Shops Area received comparatively little attention in regard to their appearance. The Shops Area has also undergone more ad hoc alterations than any other sub-area. During the Second World War, the area was subjected to massive new construction projects that infilled the formerly open east-west axis and added large additions to Building 5 (Repair and Assembly Shop). Contributing buildings in the Shops Area includes Buildings 6 (Public Works Garage and Firehouse), 8 (General Storehouse), 9 (Aircraft Storehouse), 42 (Fuel Chemical Lab and Office), 43 (Weapons Building), 44 (unknown), 91 (Shipping Storehouse), 92 (Packing/Shipping), 102 (Ordnance Building) and 114 (Machine Shop). Six of these structures (Buildings 6, 8, 9, 42, 43, and 44) are concrete or steel-framed permanent buildings that were part of the original 1938 plan. The rest are semi-permanent wood-frame structures that were not part of the original plan but were built to serve for the duration of the Second World War. On axis with the north-south mall, Building 6 shares architectural design elements in common with the buildings of the Administrative Core. Unique in the Shops Area, Building 9 is a steel-frame warehouse that resembles the nearby hangars in its construction and appearance. Buildings 8 and 9 are massive concrete structures with sparse ornamentation **(Figure 30)**. Buildings 91, 92, 102 and 114 are semi-permanent wood-frame buildings with flat or gable roofs, rustic channel siding and no ornamentation. Steel or wood industrial sash and sliding or hinged doors are nearly

Figure 30. Building 9, 2004

Figure 31. Building 40 (Seaplane Hangar), 2004

universal in the Shops Area.

Despite their functional purpose, the two rows of massive identical hangars along the southern and western boundaries of the Historic District comprise an indispensable character-defining feature of NAS Alameda. Although otherwise purely functional buildings, the hangars incorporate elements of the Streamline Moderne style, in particular in the stepped massing of their stucco exteriors. Contributors within the Hangars Area include Hangars 20, 21, 22, 23, 39, 40, 41 and Building 77 (Passenger Terminal). All of the hangars are large, steel-framed buildings with massive concrete bulkhead foundations; the hangars are based on standardized plans developed by Detroit architect Albert Kahn **(Figure 31)**. Additional character-defining features include large telescoping doors, the stepped massing of the corner pylons (which serve as door pockets), monitor roofs, open central workspaces bridged over by rows of steel trusses and steel industrial windows. The only building that departs from this function and aesthetic is Building 77. Constructed to serve as a passenger terminal, Building 77 is designed in a mode similar to the buildings of the Administrative Core.

VI. HISTORIC PRESERVATION STRATEGY

Purpose
The Naval Air Station Alameda Historic District is facing a critical transformation as ownership is transferred from the Navy to the City of Alameda. Over the past year, from 2004 to 2005, the City has created the Preliminary Development Concept (PDC) outlining a plan to integrate NAS Alameda with the remainder of the island city, by adding residential and commercial uses in existing structures and newly constructed buildings. The PDC has undertaken a study of a host of constraints affecting property development, including economic feasibility, environmental contamination, the 100-year flood plain, young bay mud, a wildlife refuge buffer, Tidelands Trust, Alameda housing policies, traffic impacts, timing and phasing of transfer from the Navy, and historic preservation. In this context, it is important that a historic preservation plan be put in place to outline the goals, standards, process and policies required to ensure the appropriate level of protection and enhancement of the historic resource. This section is intended to provide a historic preservation strategy to initiate that process. It begins with a summary of the significance of resources and their proposed treatment under the PDC, and ends with recommendations for the redevelopment and reuse of the Historic District.

Summary of Significance and Preliminary Development Concept (PDC) Policy by Sub-Area

The Administrative Core
The Administrative Core is the heart of the NAS Alameda Historic District. Most of the extant buildings and landscape elements were part of the original plans drawn up by the Bureau of Yards & Docks and were built during the earliest construction campaign between 1938 and 1940. Few of these contributors have undergone substantial alterations, resulting in the Historic District's high level of integrity. The Administrative Core contains several wood-frame semi-permanent buildings that do not share the same level of design significance as the original buildings. Although they are contributors to the Historic District, the Navy proposed to demolish six of these semi-permanent buildings in 1996. A Memorandum of Agreement signed by the City, the Navy, State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) in April 1996 acknowledges that while demolishing Buildings 75A, 115, 116, 130, 135 and 137 would have an effect on the Historic District, HABS recordation would be an appropriate mitigation measure.[68]

The Administrative Core is retained in large part in the PDC and given a prominent place as the civic center of the new community (**Figure 32**). Of the nineteen contributing buildings in the sub-area, twelve are to be

[68] Memorandum of Agreement Submitted to the Advisory Council on Historic Preservation Pursuant to 36 CFR, Section 800.6(a), April 12, 1996.

Figure 32. Preliminary Development Concept
Courtesy of ROMA Design Group

rehabilitated according to the Secretary of Interior's Standards and used for civic, office, community, and possibly work-live purposes. Alameda City Hall West will continue to serve as a civic center in Building 1, which is the original Main Administration Building and the primary structure on the site. The two main intersecting malls will be maintained in their present configuration, street framework and surroundings, thereby preserving the important symbolic core and the two primary axes of the site plan. The original entrance to the former base along the north-south axis is also preserved as an important gateway to Alameda Point. One contributing building, the Bachelor Officer's Quarters (Building 17), and the six contributors that were the subject of the 1996 MOA (Buildings 75A, 115, 116, 130, 135 and 137), will be demolished. In their place, as well as north of Redline Avenue, new single family residential units will be constructed. Seventy new units will be constructed on the current site of the Bachelor Officer's Quarters.

The Residential Area
Devoted entirely to housing, the Residential Area is the smallest and most homogeneous of the four sub-areas identified at NAS Alameda. Of the two contributing building types found there, the Officers' Quarters and the NCO Quarters, the former are more architecturally significant, although both contribute to the historical understanding of the former base. The Admiral's House, a larger version of the Officers' Quarters, is placed at the hinge between the two housing types and within a green park at the terminus of West Essex Drive. The Residential Area is also the only part of the base to feature smaller, domestic-scaled buildings exclusively. After the Administrative Core, the Residential Area features the most extensive and intact landscaping of any of the five sub-areas. Finally, as the only sub-area of NAS Alameda that has undergone few programmatic changes over time, the Residential Area retains a higher overall degree of integrity than the other sub-areas.

The thirty identical NCO Quarters will be reused for housing in the PDC. The Admiral's House will be rehabilitated for residential or community use, and will retain its setting within a park environment. The park will continue to serve as the eastern terminus of the east-west axis, enhanced with new landscaping and reshaped into a rectilinear configuration. The 18 Officer Quarters, known as the Big Whites, and the associated curvilinear road pattern will be demolished and replaced with approximately 120 new housing units following a linear street layout. New compacted fill, which will result in a new higher grade, is planned to address young bay mud and the 100-year flood plane that falls within the zone of the Big Whites. Adjacent to the Residential Area, outside of the Historic District boundaries, more residential development is planned, which will consist of mostly single family units and reuse of existing 1960's-era residential buildings.

The Shops Area
Designed to serve as a staging area for the Hangars and the supply ships, the Shops Area was planned with flexibility in mind, and originally included unidentified vacant space. During the Second World War, several wood-frame semi-permanent buildings went up around the more substantial permanent warehouses and shops. As a result, the Shops Area remains the most heterogeneous of the five sub-areas and the one that retains the lowest degree of integrity. According to Steven Mikesell's 1997 *Guide to Preserving the Character of the Naval Air Station Alameda Historic District:*

> The Shops Area was given the least attention of all areas of the original NAS Alameda, at least with respect to its architectural detail. The Shops Area buildings were tucked away from view, behind the Administrative Core, and had little public use or visibility. The shops, in short, were designed strictly for function rather than appearance. Nonetheless, the shops buildings do share some architectural features and elements with other parts of the base, including the hangars and the Administrative Core...[69]

[69] Steven Mikesell, *Guide to Preserving the Character of the Naval Air Station Alameda Historic District* (Prepared for Naval Facilities Engineering Command, San Bruno, CA, 1997), p. 57.

Other studies have reached similar conclusions about the Shops Area. Although historically significant, the several semi-permanent buildings contribute less to the area architecturally and even detract from the overall Streamline Moderne style of the original buildings. Steven Mikesell's *Guide to Preserving the Character of the Naval Air Station Alameda Historic District* states:

> It would be appropriate to consider policies that treat the wood-frame buildings (Buildings 91, 92, 101, 102 and 114) with a wider degree of latitude than with the concrete buildings and Building 9. The World War II-era temporary buildings were built to a much lower standard and are generally not consistent with the overall design of the base. Measured in terms of the uniform design of the original base, the World War II-era wood frame buildings make the least contribution to the overall quality of the historic district.[70]

Although it has been confirmed that Buildings 91, 92, 101, 102, and 114 are designated "semi-permanent" rather than "temporary" on Navy property record cards, it is widely accepted that these buildings do not exhibit the architectural integrity of the permanent buildings on the base.[71]

The PDC does acknowledge the Shops Area as the least historically significant of the sub-areas and most difficult collection of buildings to reuse, given their obsolete purpose and tremendous scale. The PDC proposes the most dramatic alteration to this zone of the Historic District, removing 9 of the 10 contributing structures and replacing the buildings with residential units and commercial buildings. The most strategic and architecturally consistent of the 10 contributing buildings, the Fire Station (Building 6), is retained and will continue to operate as a fire station.

The Hangars Area
The Seaplane and Landplane Hangars Areas are both relatively homogenous, consisting of two rows of identical hangars and the former Air Terminal (Building 77). The only non-contributors in the area are Buildings 11 and 12 and their linking wing, Building 400. Although the Streamline Moderne architectural treatment of the Administrative Core buildings is not found at the hangars, the sheer scale, the stacking track doors, as well as the structural engineering involved with the hangars, deserve recognition. Furthermore, as it appears that the hangars were based on the standardized plans drawn up by Detroit architect Albert Kahn, they are the only buildings on the base that can be attributed to an individual architect. Visible from much of the Bay, the hangars embody the purpose and historical significance of NAS Alameda for many people.

The PDC retains the Air Terminal Building (Building 77) and all seaplane and landplane hangars identified as contributing structures, a total of 8 hangars. Commercial and retail uses are proposed for the reuse of the large structures, with rehabilitation according to the Secretary of Interior's Standards. A few current uses, including the Alameda Naval Air Museum in Building 77, are to remain. Additional commercial infill development is planned for the Seaplane Hangar Area, along with a revitalized waterfront and a new public space consisting of green and hard space areas fronting the Seaplane Lagoon. The area adjoining the northeastern corner of the Seaplane Lagoon is identified as the Alameda Point's commercial and transportation hub, the Town Center, which includes contributing structures, Building 41 and 77. The Town Center and the waterfront are served by an extension of West Atlantic Avenue in-between the Seaplane Hangars and the Lagoon. The PDC recognizes

[70] Ibid., p. 67.
[71] Temporary World War II-era buildings are covered by a 1986 nationwide programmatic agreement, prepared and signed by the Department of Defense (DoD), Advisory Council on Historic Preservation (ACHP) and National Conference of State Historic Preservation Officers (NCSHPO) permitting any (DoD) branch to demolish any buildings classified as "temporary" that date from the World War II era (1939-1945) without review under standard provisions of Section 106 of the National Historic Preservation Act. Refer to U.S. Army Corps of Engineers, *California Historic Military Buildings and Structures Inventory* (Washington, D.C.: March 2000), p. 7-2.

the importance of the north-south axis extending through the District to the Oakland Estuary and the Seaplane Lagoon, and protects key view corridors looking south along Lexington and Saratoga Streets, and looking west towards San Francisco along Redline and Midway Avenues.

For a complete list of all buildings currently at NAS Alameda, summary information, and ratings of significance and integrity, see the Property Database in **Appendix F**.

Recommendations for the Redevelopment and Re-Use of the NAS Alameda Historic District

Goal
The goal for historic preservation planning is to ensure the protection and future preservation of historic and cultural resources. NAS Alameda Historic District, as a City of Alameda monument and a National Register eligible Historic District, is a property of historic significance with ties to important local and national historic trends. The protection of the resource will enable continued observation, interpretation, and understanding of its contribution to, as well as its unique place within, our society.

All projects within the eligible Historic District boundary should comply with *The Secretary of Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (The Standards) (**Appendix G**). The Standards outline the Department of the Interior's advice on responsible preservation practice and are to be used when property owners seek certification for Federal tax benefits. They provide a consistent philosophical basis for the treatment of historic properties, be they buildings, structures, sites, objects, districts, or landscapes – all components found within the NAS Alameda Historic District. The Standards describe the following approach to rehabilitation:

1. Identify, retain and preserve character-defining features
2. Protect and maintain important materials and features
3. Repair materials and features
4. Replace deteriorated materials and features and design for replacement of missing features
5. Design alterations and additions in such a way so as not to change, obscure, damage or destroy character-defining features
6. Provide for life-safety and accessibility code requirements in a manner that does not radically change, obscure, damage or destroy character-defining elements

The Standards are referenced in the City of Alameda's Historical Preservation Ordinance as the guiding rule in determining whether to issue a Certificate of Approval for repairs and alterations to historical monuments.[72] The designation of a historic monument, according to the City's Ordinance, is discussed as follows:

> The purpose of this section is to promote the educational, cultural, and economic welfare of the City by preserving and protecting historic structures, sites, monuments, streets, squares, and neighborhoods which serve as visible reminders of the history and cultural heritage of the City, State or Nation. Furthermore, it is the purpose of this chapter to strengthen the economy of the City by stabilizing and improving property values in historic areas, and to encourage new buildings and developments that will be harmonious with the existing buildings and squares.[73]

[72] City of Alameda Historical Preservation Ordinance, 13-21.4.b.1.
[73] City of Alameda Historical Preservation Ordinance, 13-21.1.

The Alameda Point Element, Chapter 9 of the General Plan, currently outlines the following policies with respect to preservation of the historic resources within the NAS Alameda Historic District:

> *Guiding Policy: Historic Resources*
> 9.5.g Preserve Alameda Point's Historic District, buildings, development patterns, and open spaces.
>
> *Implementing Policies: Historic Resources*
> 9.5.h Preserve to the greatest extent possible buildings within the Alameda Point Historic District to maintain the neighborhood and historic character.
> 9.5.i Provide a mechanism for timely and expedient reviews to ensure that contributing buildings in the Historic District are not left vacant and are managed in compliance with all applicable regulations.
> 9.5.j Preserve the historic sense of place of the Historic District by preserving the historic pattern of streets and open spaces in the area.
> 9.5.k Minimize impacts on the architectural integrity of individual contributing buildings and structures.
> 9.5.l Make every reasonable effort to incorporate compatible adaptive uses or uses for which the buildings were originally designed…
> 9.5.m Prepare design guidelines and specifications for new construction within and adjacent to the Historic District that ensures compatibility of new construction with the character of the Historic District.[74]

Building upon this past work, the PDC recommends the following historic preservation strategies be used to guide future City actions and proposed development projects in the NAS Alameda Historic District. These strategies aim to protect and reinforce significant character-defining features while encouraging re-use and providing opportunities for new development. Care for the District's unique historic identity is stipulated while maintaining Alameda Point's future viability.

Strategy 1:
Prioritize Buildings for Stabilization
Since the Navy closed NAS Alameda in 1997, and base facilities have become available for public lease, many buildings have become filled with new tenants and have received architectural upgrades. Those structures that have not had the benefit of occupants and have remained vacant tend to be the very large structures with inflexible spaces. Examples of contributing buildings in this category include the Mess Hall (Building 3), and one of the Bachelor Enlisted Men's Quarters (Building 4). These buildings do not receive regular maintenance and have witnessed deterioration. Not only will the deferral of maintenance continue to compound the problem and add to the cost of rehabilitation in the future, but it places the condition of the historic property into question. It is recommended that further analysis be performed to determine how best to re-establish a stabilization and maintenance program, and which buildings according to the PDC will require this work. Immediate stabilization and sustained maintenance of these unoccupied buildings is the first and foremost items in need of action. Included in **Appendix H** is *NPS Preservation Brief 31: Mothballing Historic Buildings*, a primary reference on this topic.

Strategy 2:
Distinguish the NAS Alameda Historic District as a Unique Place within the Fabric of the City
The western end of Alameda island has, from the City's earliest documented history, been the site of notable industrial, rail, and aviation activity. The area has always been a zone primarily comprised of industry and transportation, while the remainder of the island supported the growth of residential, civic and commercial

[74] City of Alameda, 1991 General Plan as amended 2003, Chapter 9: Alameda Point, p. 15-16.

areas. It has a unique history and footprint, evident today in the site plan and building fabric that is an important and rare example of a Naval base designed in the Steamline Moderne style. This differentiation from the tree-lined neighborhood streets and Victorian-styled homes of adjacent areas is inherent in what is character-defining about the Historic District.

One of the stated goals of the NAS Community Reuse Plan is to preserve "the character of NAS whenever possible and appropriate while integrating the base into the culture and tradition of the city".[75] Continuing, the Community Reuse Plan looks to "achieve complete integration of the former NAS site with the rest of the island of Alameda, this is to be a seamless integration of the many neighborhoods, open space, and the best qualities of the existing city".[76] Redevelopment of the Historic District should maintain the character, integrity and singular quality of the historic resource while knitting the land into the fabric of the city. It is appropriate to consider thresholds and gateways that allow connection and porosity but acknowledge and allow for a unique historic environment to coexist and thrive. The objective is to remove barriers and fences, provide connections, support the continuation of neighborhood qualities, and make accessible Alameda Point's revitalized public amenities while fostering a recognition and protection of its valued historic character.

Strategy 3:
Restore and Reinforce the Site Planning Concepts Reflected in the Original 1940 Plan
The original master plan for NAS Alameda served as the organizational framework for the early development of the base and is a prime example of the Total Base Design concept, wherein architecture, site planning and landscape are integrated into a complete ensemble. The influence of City Beautiful planning is apparent, resulting in the most significant aspects of the plan: the landscaped cross axes, progression and hierarchy along the axes, symmetrical buildings or groupings, cohesive architectural vocabulary, and unified landscape treatment. This organization can equally be effective in serving as a framework and guide for future development. Specific concepts to address or reinforce consistent with the PDC include:

- North – South Axis and East – West Axis
- View Corridors
- Street Pattern and Circulation
- Central Landscaped Malls
- Landscape treatments including boulevard landscaping on W. Essex Road
- Relationship of Buildings and Open Spaces to Axes
- Relationship of the plan to the Seaplane Lagoon

Strategy 4:
Retain Significant Use Relationships Reflected in the Original Five Sub-Areas
The purposeful arrangement of functions, indicative of the Total Base Design practice, is found in the five sub-areas: the Administrative Core, the Shops Area, the Residential Area, the Landplane Hangar Area and the Seaplane Hangar Area. These distinctive zones, with the associated building and landscape treatments, should be understood, even as change and modification occurs. Beyond their historic association, they provide logical arrangement of building types, scale, edges, and massing variation to the historic area.

Where significant alteration of a sub-area is required, it is recommended to focus the alteration on areas that have historically experienced modification. Following this approach, the PDC proposes the highest percentage of demolition and new development in the Shops Area of the District, where buildings departed from the original master plan configuration and the architectural treatment was greatly simplified. The new PDC

[75] EDAW, *NAS Community Reuse Plan*, prepared for the Alameda Reuse and Redevelopment Authority, adopted January 31, 1996, p. 1-10.
[76] Ibid.

buildings in this area include the tallest new buildings and most densely developed program, including shop houses and commercial buildings, to re-establish compatible scale and volume characteristics.

With respect to functional uses, a compatible use to the building's historic use is to be employed with rehabilitation wherever feasible with the PDC. This is best illustrated in the re-use of the Administration Building (Building 1), a highly significant building at the center of the Historic District. The PDC proposes to maintain the City Hall West offices in this location and define the zone as a civic center in keeping with the nature and significance of the original historic use. The facing landscaped mall will be made available for large public gatherings and community events, a compatible use for a former parade ground.

Strategy 5:
Restore and Revitalize Historic District Landscapes and Open Spaces
Within the Historic District, the landscape serves to define the ceremonial entry and central open space. Two large rectangular intersecting green lawns orient along the main axes, originally comprised of more formal plantings. Decorative edges are formed with shrubs and trees, extending along streets into connecting areas and smaller entry courts. In the residential sub-area the green again becomes predominant, providing a park-like setting for residential quarters. Throughout, the planting material reflects the scale and function of the spaces.

It is recommended that a study of the Historic District landscape be completed to provide assessment and suggested guidelines for appropriate landscape rehabilitation. With this information, all new landscape plans should be formulated to reinforce the concepts of the original plan, provide for the restoration of the significant landscape features, and incorporate compatible new plant material in keeping with the historic plan. Monuments, flagpoles, and signage should be addressed and carefully integrated. The open space provided by the Seaplane Lagoon is equally important to consider. The open flat nature of the area in front of the grand row of seaplane hangars creates an impressive view corridor which must be considered in the design for improved public access and utilization of the waterfront on this important edge.

Strategy 6:
Encourage and Support Re-Use and Rehabilitation of Contributing Structures
Re-use of buildings is the first goal of any preservation plan. Occupancy brings not only life and purpose to the structure, but necessary care and maintenance. The most ideal use is the same as the original use of the building. However, a change in use is often required, in which case rehabilitation is to be followed. Rehabilitation is defined by the Standards as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.[77]

Currently the Mikesell document, *Guide to Preserving the Character of the Naval Air Station Alameda Historic District*, serves as guidelines for the NAS Alameda Historic District, providing a description of character-defining features and examples of suitable and non-suitable treatments to selected buildings in the District. Although the document has been an invaluable tool for the City, and has been recognized by the State Office of Historic Preservation as a guiding document, an updated, comprehensive set of re-use guidelines is suggested to accompany the PDC. Re-use guidelines outline information and conditions found in specific buildings to facilitate and assist owners and tenants with the re-use process. Data should be tailored to the needs of the building, but generally should include:

[77] National Park Service, *The Secretary of Interior's Standards for the Treatment of Historic Properties*, Standards for Rehabilitation, 1995, http://www.cr.nps.gov/hps/tps/secstan5.htm.

- Building summary information
- Identification of intact historic fabric
- Conditions assessment and recommendations
- Parameters for rehabilitation, repair, and maintenance work
- Pertinent code issues such as life-safety, accessibility and energy requirements
- State Historic Building Code
- Mechanical, electrical, and plumbing systems
- Preservation incentives, including tax-credits and grants

Strategy 7:
Guide New Development within the Historic District
When new buildings are introduced into a historic context the overarching aim is to have the new work exhibit differentiated, yet compatible design with the historic. The Standards address new construction with Rehabilitation Standard number 9, calling for compatibility with historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.[78]

Design guidelines for new development are necessary to establish a clear policy on appropriate design within the Historic District. Guidelines are used as a design aid in determining acceptable new construction that preserves the character of the District. They should allow for creative design to occur, and not prescribe a certain architectural style but rather encourage an understanding of and compatibility with the Streamline Moderne architectural vocabulary in the District. In the process of formulating Guidelines, interested parties can analyze the issue of compatibility and reach consensus on acceptable architectural review processes. In addition to architectural design issues, Guidelines for NAS Alameda can specify planning, zoning, and landscape criteria for new development that are equally important in preserving the character of the Historic District (**Strategies 3, 4 and 5**).

Strategy 8:
Manage the Historic Resource
The responsible management of historic resources will provide innumerable benefits to our community. Proper knowledge, planning, tools, and communication are key elements for the task, resulting in clear policies, roles, responsibilities, and anticipated funding mechanisms to manage development. Acceptable management practices of historic resources should be analyzed and stipulated; financial sources available for rehabilitation, low-income housing, and other uses which may involve historic resources studied and identified; marketing strategies crafted; and a roadmap for implementing sound management of the historic resource adopted. With these efforts, future development and growth as outlined in the PDC can be achieved in collaboration with historic preservation.

VII. Conclusion

The NAS Alameda Historic District is a rare asset that is facing an unprecedented period of change. In this period of planning and review there is an opportunity to truly recognize the historic significance of the resource and to plan for preservation. The aim is to protect and reinforce significant character-defining features while encouraging re-use and providing opportunity for new development. In preserving the historic resource we broaden our knowledge, we retain the opportunity for future understanding, and we enhance appreciation of our cultural heritage.

[78] Ibid.

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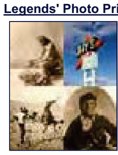

CALIFORNIA LEGENDS

Francis "Borax" Marion Smith - The Borax King of Death Valley

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Francis Marion "Borax" Smith (1846-1931) - Known as the "Borax King," and "Frank," Smith was a Death Valley mining magnate and businessman who headed the Pacific Coast Borax Company. Born in Richmond, Wisconsin on February 2, 1846 to Henry G. and Charlotte Paul Smith, Francis attended public schools as a child before graduating from Milton College in Wisconsin.

Francis "Borax" Smith about 1875.

At the age of 21 he left his father's ranch and, answering to the irresistible call of the west, he made his way toward the Pacific, visiting Idaho, California and Nevada, spending considerable time in mining and other work in those states, before settling in Nevada for five years.

In the late 1860's, Smith was working under a contract with several ore mills near Columbus, Nevada, locating and getting out timber for the various mining camps. While working at Teel's Marsh, he discovered a rich supply of borax. Collecting samples, he had them assayed, which proved the ore to be higher than any known sources for borax. He soon staked several claims and began his career as a borax miner.

With the help of his older brother, Julius, and two brothers by the name of Storey, the men established a borax works at the edge of the marsh to concentrate the borax crystals and separate them from dirt and other impurities. Operations began in 1873 under the name, Smith and Storey Brothers Borax Co. Later, the Smiths acquired the Storey brothers' interest and the company name was changed to Smith Brothers Borax Co. and later to the Teel's Marsh Borax Co. The Teel's Marsh deposits soon became the world's principal source of supply and remained so for years, bringing borax to a wide commercial use around the world.

In 1875, during a national depression, Smith opened a retail store and office at 185 Wall Street in New York City to expand the borax market. His advertising claims that borax would "clean black cashmere, cameos and coral, keep milk and cream sweet" and "prevent diphtheria, lung fever and kidney trouble" may have been exaggerated, but they helped to popularize the cleaning additive in a prime market and in a period when sales were slumping. That same year, Francis married Mary "Mollie" Rebecca Thompson Wright, a divorcee from Brooklyn, New York.

In 1877, Smith founded the settlement of Marietta, Nevada, now a semi-ghost town, from which the borax was shipped in a 30-ton load using two large wagons with a third wagon for food and water drawn by a 24-mule team for 160 miles across the Great Basin Desert from Marietta to Wadsworth, Nevada where the nearest Central Pacific Railroad siding was.

In 1881, Smith and his wife, Mollie, moved to Oakland, California, where Frank began to invest in real estate, while continuing his operations at Teel's Marsh, Nevada. In 1884, Smith bought out his brother's interest in their partnership and Frank began to turn his eye to potential development in Death Valley. When William T. Coleman , who owned the Harmony and Amargosa Borax Works, the Lila C Mine, the Furnace Creek Ranch, and other properties in Death Valley, California, began to have financial troubles in the late 1880's, Smith provided Coleman with capital in exchange for mortgages on the property.

In 1889, to expand the processing of raw minerals that formed the borax product, Smith worked with renowned engineer and reinforced concrete innovator Ernest L. Ransome, to design two new refineries for him -- one in West Alameda, California, and the other in Bayonne, New Jersey. The California refinery was was recognized for being the first structure of its kind to be built with reinforced concrete.

Unfortunately for William T. Coleman, his empire collapsed and Smith gained all his properties in 1890. The name of Smith's properties then became the Pacific Coast Borax Company. Smith ceased operations at the Harmony and Amargosa Borax Works in order to focus on mining operations at Borate, California in the Calico Mountains. Initially the ore was hand sorted at the mine, and hauled to Daggett, California using the 20 mule teams and wagons that William T. Coleman had first used in Death Valley.

In 1891, Stephen Mather, the administrator of the company's New York office, persuaded Smith to add the name 20 Mule Team Borax to go with the famous sketch of the mule team already on the box. The trademark would be registered three years later. Mather would go on to own the Thorkildsen-Mather Borax Company, and in 1916, was appointed the first Director of the new National Park Service.

While Frank was busy with his borax interests, his wife was busy with charity work -- especially working hard for aid and assistance for orphaned girls. Mollie, after a tragic miscarriage, could never have children of her own, but she yearned for them. Raising money for their assistance, the couple also took in a number of young girls as wards over the years. In 1883, they had adopted an infant girl, who they named Marion Francis Smith. Ten years later, they would take in two young teenagers named Anna Mae and Sarah Winifred Burdge. While there were many others they looked after, these three would become part of the "Solid Six," as Frank affectionately called them. Over the years, Mollie's contributions and assistance to these many girls would continue.

The Smith's Presdeleau estate on Shelter Island in New York. Unfortunately the mansion was razed in 1938.

In 1892, Frank and Mollie went east to Shelter Island, New York, to find a place to build a summer home. This was probably for two reasons, the first of which was that New York was Mollie's original home; and the second, Shelter Island was also the place where his friend, and soon-to-be partner, Frank Havens, already had a summer home. Before they left New York, they had purchased a 42 acre homestead, which already included a colonial style home. Frank then hired an architect to add to the original home, which would eventually feature 35 rooms. He also added significant acreage over the years until the estate sat in the midst of some 435 acres. They called their new summer retreat “Presdeleau.” Over the next several years, Frank would continue to buy more property in the area, adding to the estate.

Convinced there was a more efficient and profitable way to haul the ore from the mines to the railhead at Daggett, Frank began to experiment with a steam tractor called "Old Dinah" in 1894. Unfortunately, due to the roads from the mines, the experiment failed and he would continue to utilize the 20-mule teams for the next several years.

In the meantime, Smith had also been investing heavily in real estate and public transit in Oakland. He, along with partner, Frank Havens formed the Realty Syndicate in 1895 buying area real estate, as well as acquiring and consolidating a number of small, independent transit companies to create an integrated system of streetcar lines and rail extensions to a number of subdivisions the company was developing.

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3. Historical Setting – Port of Los Angeles

The following historical setting has been adapted, in part, from the intensive-level surveys of the Port of Los Angeles prepared by Jones & Stokes in 2008, as well the reconnaissance-level surveys by San Buenaventura Research Associates from 1992 to 1996. Additional historical information developed by ESA has been inserted into the historic setting where appropriate.

3.1 Early History

The Port of Los Angeles is located approximately 20 miles from downtown Los Angeles, at the southernmost point in Los Angeles County. Due to its location on the Pacific Ocean, the surrounding area historically served as a port facility to varying degrees. Commonly referred to as San Pedro, the port is located within the boundaries of three historic ranchos: Rancho San Pedro, Rancho Los Palos Verdes, and Rancho Los Cerrios. These ranchos, conferred by Governor Pedro Fages to three veterans of the 1769 Portola expedition, possessed combined acreage equaling almost 84,000 acres (Beck and Haase 1974). Owners of the rancho lands earned a living through the raising of cattle and participation in the hide and tallow trade, and by 1830, San Pedro was considered a leading hide center on the west coast (Rawls and Bean 1993; Queenan 1986).

Following the annexation of California by the United States and the subsequent Gold Rush, an influx of new settlers descended upon the San Pedro area. While some residents realized the area's potential as a port area, the region was underused as a port during this period. Cattle and sheep ranching continued to dominate the economy, with one of the largest sheep operations in California, Flint, Bixby & Company, establishing the largest portion of its operation in San Pedro (Queenan 1986; Beck and Hasse 1974).

3.2 Commercial Shipping, 1857–1897

One of the earliest residents of the area, Phineas Banning, realized the potential of the area as a commercial shipping port, and in 1857, he constructed new docks to take advantage of the increasing trade coming in and out of Los Angeles. Two primary routes to the southwest gold fields, the Gila River Trail and the Old Spanish Trail, ended in Los Angeles. Banning shuttled materials on smaller boats from his base in Wilmington to and from a second location on the Rancho San Pedro waterfront.

Banning also realized the importance of rail transportation between his operation on the bay and the growing city of Los Angeles. In 1869, Banning and his investors organized the Los Angeles & San Pedro Railroad (LA&SP), marking the beginning of a period of fierce rail competition in the San Pedro and Los Angeles area. Banning's LA&SP was the first route to establish a reliable means of moving cargo from the ships coming into San Pedro Harbor to the City of Los Angeles.

Although the LA&SP was the first short line in southern California, by 1872 it had been purchased by the Southern Pacific Railroad (SPRR). In an attempt to break the stranglehold that the SPRR had on shipping in the area, Senator John P. Jones from Nevada established the Los Angeles and

SOURCE: POLA

Figure 3
Library of Congress Map of Wilmington,
Los Angeles County, CA, 1877

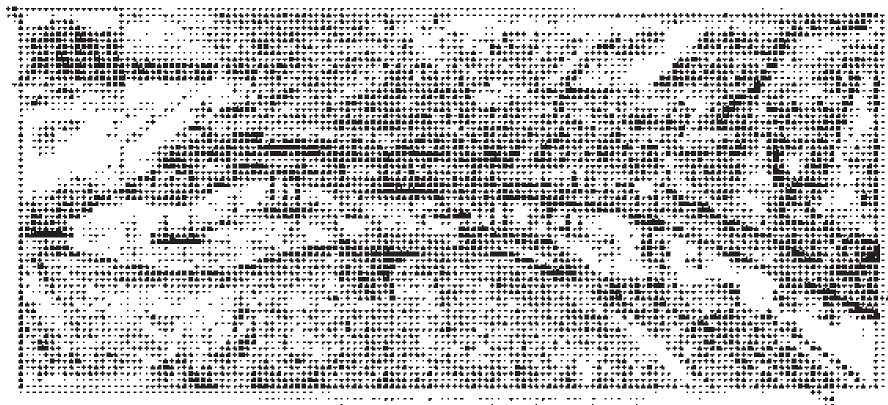
Independence Railroad (LA&I) a year before the SPRR's acquisition of the LA&SP. However, like the LA&SP, the LA&I soon was part of the SPRR system (Queenan, 1986).

Due in part to the improved transportation to and from the harbor, Los Angeles experienced rapid growth during the late nineteenth century. From a population in 1880 of 11,000, the city grew to 50,000 by 1890 and to 102,000 by the turn of the century (Matson, 1920). The increased population brought with it the need for more construction and living supplies, much of which came from ships destined for San Pedro shores.

3.3 San Pedro Bay and the Founding of Port of Los Angeles, 1897–1913

Growing commerce in Los Angeles eventually required the formal establishment of a shipping port. The federal government agreed to assist the City of Los Angeles by establishing its official harbor in San Pedro after several studies recommended it over other sites, including a Santa Monica site pursued by Collis Huntington, an influential member of the "Big Four" railroad barons. Following an extensive battle with Huntington, the San Pedro Harbor site won authorization from Congress in March 1897.

In 1906, in preparation for the opening of the Panama Canal, the City of Los Angeles extended its boundaries to coastal tidewaters when it annexed San Pedro. The Port of Los Angeles and the Los Angeles Harbor Commission were officially created in December 1907, and numerous



SOURCE: POLA

Figure 4
Library of Congress Map of San Pedro, CA, circa 1905

harbor improvements followed, including the completion of the 2.11-mile breakwater, the broadening and dredging of the main channel, the completion of the first major wharf by the SPRR, construction of the Angel's Gate lighthouse, and the construction of the first municipal pier and wholesale fish market. The construction of the breakwater was a "monumental engineering feat" requiring crane operators to place large boulders in precise locations 40 to 50 feet below the surface of the water. Both Wilmington and San Pedro were part of the City of Los Angeles by 1909, and because of this citywide growth, the Port of Los Angeles became the world's largest lumber importer by 1913 (Marquez and de Turenne, 2007; Matson 1920).

A 9-mile outer breakwater was completed in 1913, splitting the harbor into Inner and Outer Harbors. The Inner Harbor was known as Wilmington Harbor and the Outer Harbor was known as San Pedro Bay. The same year, dredging and filling of Mormon Island (Inner Harbor) allowed for its conversion from swamp land to land suitable for wharves and sheds (Marquez and de Turenne, 2007.) The first industries to use these new facilities were boatbuilding companies.

The opening of the Panama Canal in August 1914 decreased the amount of time spent by ships traveling between eastern and western U.S. ports, and promised to open up new trade opportunities worldwide. In preparation for this new trade, the City of Los Angeles completed one of many large municipal terminals in the harbor. However, the outbreak of World War I that same year temporarily stalled the movement toward expanded worldwide trade (Queenan, 1986).

3.4 Wartime Changes, 1914 – 1950

The principal use of the port changed again when England declared war on Germany. At the onset of World War I, the U.S. Navy took possession of a portion of the harbor for a training and submarine base in order to establish a significant presence on the Pacific coast. During the war, the Port was one of the chief sources of employment for residents of the area, with shipbuilding enterprises turning out vessels by the dozens for the war effort. The Port of Long Beach, established only two years before the onset of the war, offered the only southern California competition to the Port of Los Angeles in terms of shipping or shipbuilding.

Despite the previous use of the Port for the shipment of goods, it was not until 1915 that the Port of Los Angeles began constructing its first warehouse. Warehouse No. 1, located on 60 acres, was six stories in height, with a total storage capacity of 500,000 square feet. Warehouse No. 1 opened on March 6, 1917 to great fanfare, with over 10,000 people in attendance. The completion of this building symbolized the Port's transition to a significant seaport able to handle deep sea ships of varied cargo (Marquez and de Turenne, 2007; Queenan, 1986).

In 1917, Terminal Island was dredged and filled. Boatbuilding companies moved their facilities from Mormon Island to Terminal Island. Oil terminals and petroleum facilities took their place on Mormon Island (Marquez and de Turenne, 2007).

Between 1917 and 1930, distributors constructed a large number of new wharves, warehouses and sheds, indicating a significant increase in trade at the Port. In the 1920s, over 25 million tons of cargo passed through the port (Marquez and de Turenne, 2007).

Transportation systems improvements also encouraged the growth of the import and export trade in the harbor area. By 1917, a vast railroad network existed around the harbor and Los Angeles, which facilitated the efficient movement of goods throughout the country. Los Angeles had an advantage over the Port of San Francisco in that it did not have the Sierra Nevada posing an impediment to cargo shipments en route to the east coast (San Buenaventura Research Associates, 1992).

During the period following the end of World War I in 1918, the Port was increasingly used for importing lumber and other types of raw materials. Similar to the prewar period, the vast majority of inbound cargo to the Port consisted of lumber to satisfy the rapid growth of the Los Angeles area. Exceptional levels of new construction of houses and factories necessitated the importation of lumber on a large scale (Matson, 1920). Comparatively, the biggest export product passing through the Port during the postwar years was crude oil.

Following the end of the war, many trade restrictions were lifted, and the Port provided for the transportation of a wide variety of products. Although lumber and crude oil were the biggest commodities to pass through the Port at the time, Los Angeles featured almost all types of industry. Soon after the war's end, many different types of commerce and business activities developed in the area. Although existing harbor facilities continued to be used for products such as oil, lumber, ships, and fish, new facilities were developed to handle products such as cotton, borax, citrus crops, and steel. In 1923, the City of Los Angeles passed a harbor improvement bond measure, resulting in the construction of additional wharves to meet the demands of increased imports and exports. In order to streamline the railroad portion of shipping in the harbor, the various railroad companies serving the Port consolidated operations by 1929 under the title the Harbor Belt Line Railroad (Queenan, 1986; San Buenaventura Research Associates, 1992).

Harbor traffic slowed during the Depression years and the harbor witnessed a sharp decline in international trade. The Harbor Commission continued to make improvements, however, including a new breakwater extension, completed by 1937, and the construction of new cargo and passenger terminals. The federal government's Works Progress Administration (WPA) helped the Port finance improvements, including passenger and freight terminals and wharf (Queenan, 1986).

As one of the major American ports closest to the fighting in the Pacific Ocean, San Pedro experienced new life and distinction during World War II. Ship and aircraft production facilities in the harbor area worked day and night between 1941 and 1945 to manufacture more than 15 million tons of war equipment. In addition, hundreds of thousands of personnel passed through the Port when departing for and returning from combat.

The LAHD launched a broad restoration program following the war, as many facilities in the harbor required maintenance which had been delayed during the war years. During this time, the LAHD improved several of its buildings and removed many temporary wartime buildings (Queenan, 1986).

3.5 Containerization: 1950 to Present

With the rise of containerization following the end of World War II, methods of shipping changed dramatically. Prior to this new method, cargo loading was labor intensive, with individual pieces of cargo, drums, boxes, bags or crates, loaded into ships. Cargo was brought to the dock by truck or train and the individual pieces of cargo were unloaded into transit sheds, sorted and organized, and then moved to the wharf for loading as individual packages into the ship's cargo holds by either ship-based or shore-based cranes where it was then stowed. Alternatively, longshoremen would place the individual pieces of cargo in cargo nets that were hoisted into the ship where the individual pieces of cargo were unloaded and stowed. Some efficiency was achieved by placing several individual containers (e.g., drums, bags, or boxes) on a pallet and then loading the pallet into the cargo hold.

Containerization ships appropriate cargo in standard sized, sealable steel boxes, typically 20 or 40 feet long. Special trailers transport these boxes to and from the port by trucks or rail. An empty container is delivered by truck to a location (manufacture, warehouse, or other enterprise), is loaded with cargo and sealed, then transported by truck or train to the port, where shore-based cranes lift the container from the trailer and place it in the ship's cargo hold or on the ship's deck. After the container is delivered to the destination port, the process was repeated in reverse. This consolidation of cargo in standard-sized containers improves the overall efficiency of transport and allows greater integration of transport by truck, train, and ship.

The adaptation of the maritime industry to containerization involved not only the creation of new ships, truck trailers, rail cars, and cargo cranes designed and built specifically to handle the standard cargo containers, but also the construction of new port facilities. As the loading and unloading of ships and the associated handling was the most time consuming aspect of moving cargo through the Port, under the old loading methods, cargo terminals were designed to maximize the "surface area" of the terminal by providing as much berthing space as possible, with little backland (transit sheds) to service each wharf.

The containerization method required large-volume terminals, with extensive backlands, and internal roadways to service each wharf. The increased backlands reflected the need for storage of trailers and containers awaiting a ship's arrival, area needed for the loading and unloading of containers onto ships, and area needed to process the containers into and out of the terminal by truck or train. With the increased efficiency, the limiting factor of transferring of cargo became the organization and optimization of storage of containers awaiting shipment, movement to and from the wharf, and cargo flow into and out of the terminal via road or rail. This meant that ports had to either develop new terminals to meet the needs of the new geometry required by containerization or redevelop older terminals. In addition, with containerization, the weight of cargo "packages" (i.e., containers) increased dramatically, requiring much larger cranes and a corresponding move from timber to concrete wharves.

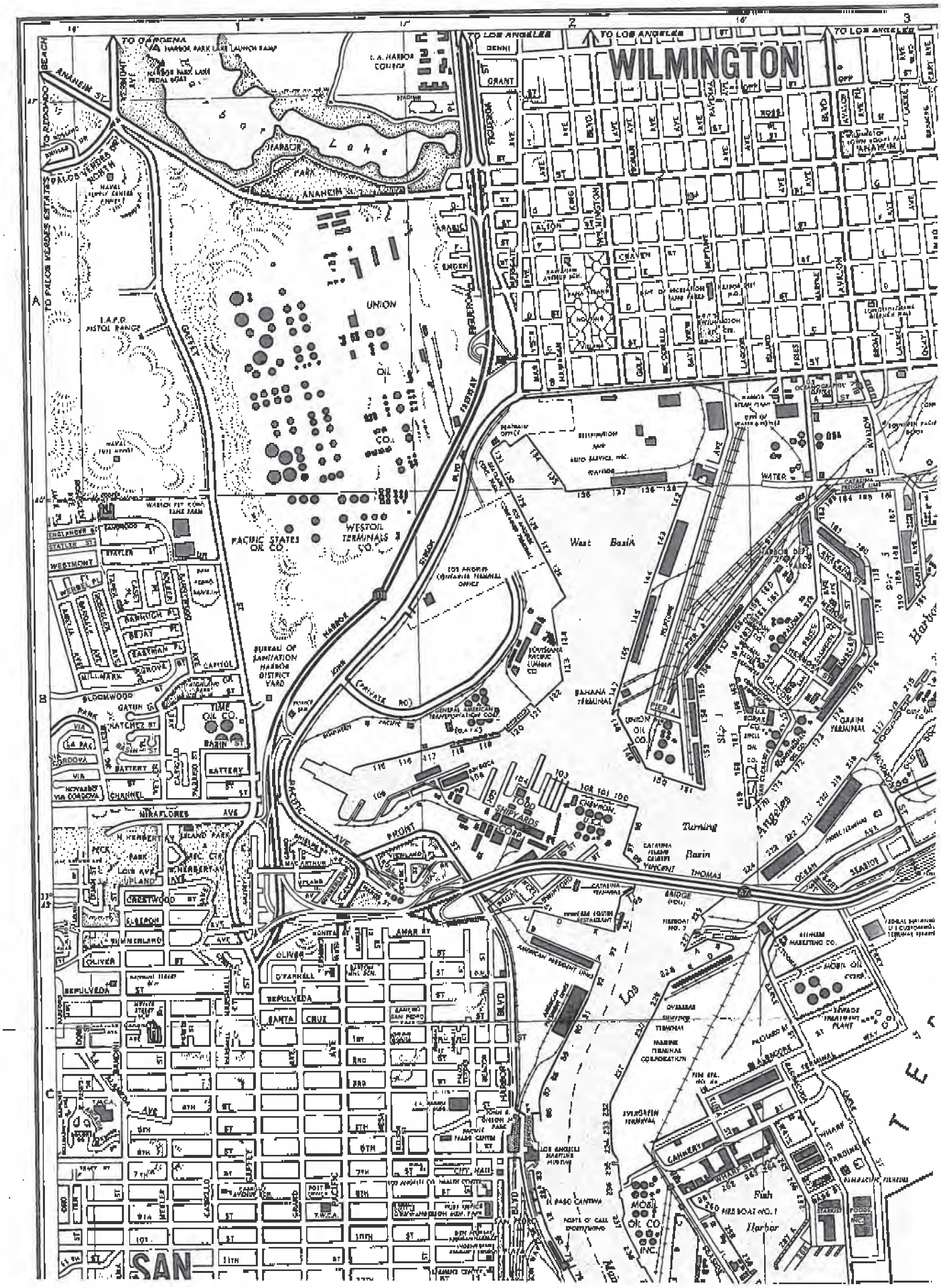
Major improvements to the Port in the 1970s included the deepening of the main channel to accommodate the larger container vessels entering the bay, the purchase of land to expand terminals, and the replacement of older wharves that could not bear the increased weight of newer containers.

Worldwide shipments through the Port increased during the latter half of the 20th century as ocean-going vessels grew to sizes no longer able to negotiate the Panama Canal. Using a "land-bridge" system, shippers wishing to pass materials from the Pacific Ocean to the Atlantic Ocean employed the more efficient practice of unloading at the Port of Los Angeles, moving materials cross country via truck or train, and loading materials onto ships on the east coast.

The following provides a historical context focused on Municipal Pier No. 1.

4. Historical Context – Municipal Pier No. 1

In anticipation of increased shipping due to the construction of the Panama Canal, to be completed in 1914, the Los Angeles Board of Harbor Commissioners initiated several improvements at the Port of Los Angeles in the early 1910s to capture a greater portion of the increased shipping traffic in the Pacific. Improvements to the Outer harbor included the construction of the massive Municipal Pier No. 1. Work on the Pier began with the filling of the Huntington Concession (also called the "Huntington Fill") during the spring of 1912. Over 60 acres were in-filled with materials taken from dredging the adjacent channel to a new depth of 35 feet (Marquez and De Turenne, 2007; Board of Harbor Commissioners, 1912-1913; LAT, February 6, 1912). According to the Los Angeles Times, this area provided the best opportunity for deep water wharfage at the Port (LAT, March 26, 1911). The Board of Harbor Commissioners Report for 1912-1913 called the construction of Municipal Pier No. 1 as, "one of the best pieces of wharf construction in the country," and also noted that, "This will be the finest wharf construction that can be built, and is designed for the deep sea commerce of the great ocean lines that will come through the Panama Canal from Europe, or engage in trans-Pacific trade. Figure 5 shows the dredging and fill operations circa 1913.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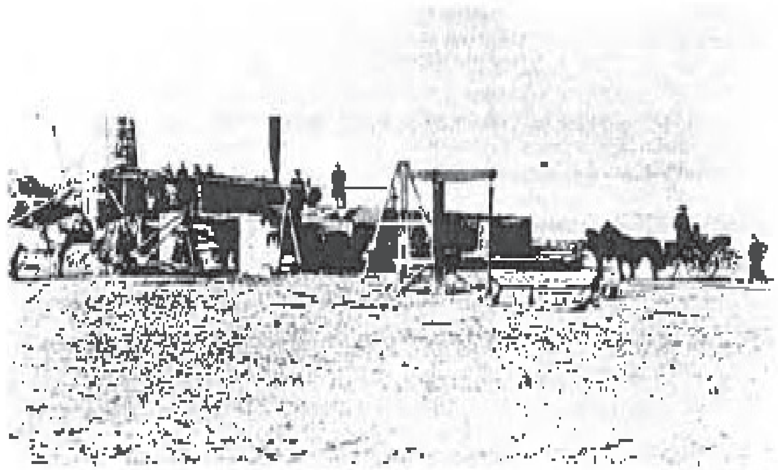
To Evelyn Ellis Smith, whose courage, intelligence and devotion made all the difference when these qualities meant the most to her husband and their children.



F. M. Smith's borax works on Columbus Marsh, Nevada, 1886. (Courtesy of Lorena Edwards Meadows.)

its assets. "In view of pressing engagements in New York" and "to prevent a dissipation of our property."[14] The firm's spokesman, Frank S. Johnson, a partner, reckoned its assets at between $4 and $4.5 million, and liabilities at $2 million. The borax properties alone were valued at $2 million, but their sale was blocked when Congress put borax on the free list in a new tariff bill. This was a fatal blow, for it threatened a fall in the domestic price of borax, and thus a corresponding decline in the capitalized values of all American borax deposits.

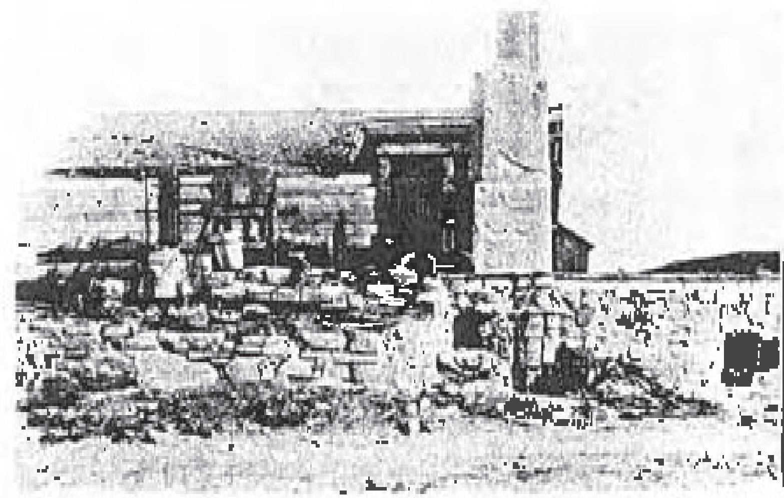
Initially, Coleman's failure was treated as a temporary matter, but it soon became apparent that the firm would not reopen its doors. Showing the characteristic integrity that made him one of the most highly regarded men in San Francisco, Coleman liquidated his personal holdings and devoted the few remaining years of his life to paying off his creditors in full.

In the assignment, the Coleman interests in Meridian Borax, Harmony Borax, and the West Alameda refinery were segregated for separate treatment under the custody of A. L. Tubbs.[15] In March 1890, Borax Smith acquired the borax properties and the Alameda refinery as well.[16] The reported price for the Death Valley properties

alone was put at $400,000. Smith undoubtedly borrowed heavily for this purpose, which may have been one reason why Joseph Mather began to sour on his employer. Mather disapproved of extensive debt, and also had the unhappy job of raising funds for Smith. Borax Smith, by contrast, had great ambition, and was only too glad to borrow money in the service of these larger ends.

Formation of the Pacific Coast Borax Company

Even before his financial collapse, Coleman had begun preparations for mining colemanite at Borate. Smith fully agreed with the wisdom of the move, so by 1890 Borate was in production. The time had now come for consolidation of his several borax companies. The Pacific Coast Borax Company was created on September 10, 1890, with Smith as president and majority stockholder. The age of colemanite had begun, while that of marsh extraction was virtually over. "PCB," as the new company soon came to be known, lost no time in winding up its marsh operations and in closing its mercantile stores in Columbus and Marietta.[17]



Borax works at Columbus Marsh, Nevada, in 1886. (Courtesy of Lorena Edwards Meadows.)

In taking this step, however, Smith made a deal with his old Candelaria banker friend, Ben F. Edwards, to continue operations on a smaller scale at Teel's, Fish Lake, and Columbus marshes, where profitable borax still remained. To carry out the deal, Edwards made an interesting arrangement with a Chinese labor contractor with the unlikely name of Billy Ford, under which Ben would pay Ford $65 per ton of sacked borax, providing the sacks and shovels, while Billy would feed, clothe, and house his crews. In turn PCB would pay Edwards $75 per ton.[19] Ford's Chinese laborers lived in little wooden shacks barely three feet high. Some of them are still intact today. In a speech to the PCB sales force in 1905, Borax Smith declared that production was still continuing at Teel's at that late date, with a total cumulative output of probably 17,000 tons.[20]

Before leaving this harsh, desolate, isolated and yet wildly beautiful region of the Nevada borax marshes, it is appropriate to take account of the many close friends and talented people whom F. M. Smith found there. Undoubtedly part of his business genius lay in his ability to select loyal and competent associates, to whom he readily delegated authority and responsibilities as rapidly as they could handle them. Some of these people came from Columbus or Teel's, but most of them lived in Candelaria. For convenience, they're referred to here as the "Nevada Circle."

Of the whole group, there were four men of outstanding ability, three of whom were to spend the rest of their careers "in the profitable service of Borax Smith."[21] In no particular order of preference, the first one was John Ryan, the Irish bachelor from County Clare, whose loyalty, natural intelligence, courage, and common sense made him Borax Smith's right-hand man for almost 40 years. He first went to work for Smith at Teel's Marsh in 1873, and stayed with him (save for three years in South Africa) until Smith quit PCB in 1914. Ryan was a rugged desert man and hard-rock miner with the natural leadership qualities of a top superintendent. Smith used him for everything from chasing claim jumpers in Death Valley to supervising a big camp at Borate and building and then operating the Tonopah and Tidewater Railroad. So far as John Ryan was concerned, Frank Smith was the boss. Anything he ever asked John Ryan to do he did, and did it the way "Mr. Smith" wanted it.

Next, there was Fred Corkill, superintendent of the Holmes Mine (a silver property) near Belleville, Nevada, in 1885. Later he be-

came Borax Smith's mine superintendent, first at his borax properties in Nevada, then at the great colemanite camp at Borate, and finally at Smith's West End Consolidated silver mine in Tonopah. Corkill was a mining engineer of rare ability, who had emigrated from the Isle of Man. He rose in the service of PCB, first at Borate, then at the Lila C (Old Ryan), and finally at "New" Ryan, on the east side of Death Valley. Both his son, Frederick W., and his grandson, J. Fred Corkill, became key men in PCB. However, the first Fred Corkill stuck with Borax Smith, leaving PCB for Smith's West End silver mine in 1914, when Smith himself severed all connections with the company he had founded.[23]

Then there was Benjamin Franklin Edwards, of Welsh descent, born in California in 1865 and 20 years later a young miner in Candelaria.[24] Edwards was a man of diverse talents, all of which attested to outstanding business ability. Undoubtedly he knew Borax Smith by the mid-1880s, through that tireless empire-builder's many trips to look over his three big properties in the

Bunkhouse built by F. M. Smith at Monte Blanco claim in Death Valley, 1882. The building now serves as the Furnace Creek Museum. (Fred Corkill collection.)

Abandoned Harmony Borax Works, Death Valley, about 1890. Harmony was operated by F. M. Smith and W. T. Coleman from 1883 to 1888. (Fred Corkill collection.)

western Nevada district. When PCB decided in 1891 to get out of "marsh farming" for borax mining, Smith picked Edwards as his agent and contractor to keep the properties going on a smaller scale. By this time Edwards was also a banker and merchant in Candelaria. Edwards and Smith would continue their business association until 1917, when they disagreed over management issues. Yet they remained friends until the death of Borax Smith in 1931.

Finally, there was Christian Brevoort Zabriskie, probably the most important of the whole group in terms of influence upon Smith. Chris, as he was universally known, was of Dutch and Polish descent. He was the son of an army officer, Captain Elias B. Zabriskie, and was born in 1864 in Fort Bridger, Wyoming.[15] Later the family moved to Carson City, where he grew up. Chris Zabriskie had good looks, charm, brains, plenty of ambition, and a measure of opportunism in his character. He worked in and around Candelaria in the early 1880s, and soon caught the sharp eye of Borax

Part of Greenland Ranch, now Furnace Creek Ranch, Death Valley, about 1890. (Fred Corkill collection.)

Smith, who was on the lookout for exceptional men. Toward the end of 1884 or early in 1885, Smith offered him the job of superintendent of his Pacific Borax Company works at Columbus Marsh. This connection seems not to have lasted very long, for the local papers carried reports of his doing various jobs in various places. In the fall of 1888, Chris Zabriskie married Margaret Louise Edwards, who was Ben Edwards' sister.[16] Toward the close of 1892, the Zabriskies and their year-old daughter moved to Oakland, where Chris entered the real estate business.[17]

Advertisements in the local paper disclosed that Chris was selling lots in the northwestern section of Oakland, near the Emeryville line. Of more importance was the claim that the lots would be conveniently close to the proposed "new ferry terminal" for San Francisco. This was the first public revelation of Borax Smith's great dream for a transbay electric railway and ferry system—a project that would not come to fruition for another 10 years.

From Ulexite to Colemanite

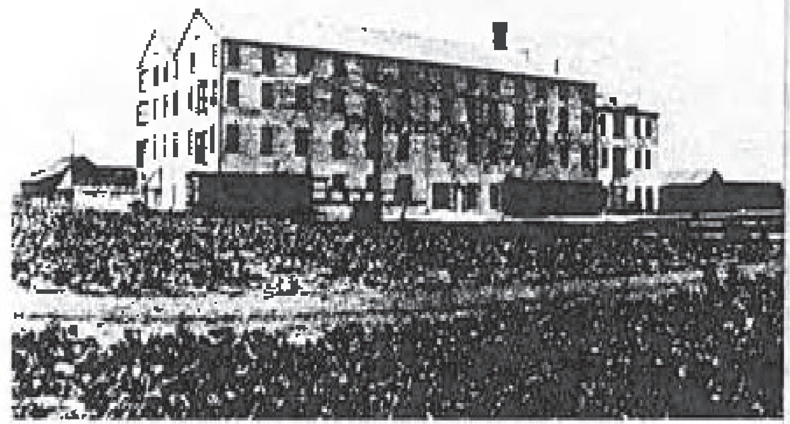
With the formation of PCB in 1890 and the stripping off of the marsh properties by the sub-contract with Ben Edwards, F. M. Smith was now a producer of colemanite borax with his mines at Borate. In picking up the remains of Coleman's fallen empire, Smith acquired two very important undeveloped colemanite deposits, one known as the Lila C. (for Coleman's daughter), at Old Ryan on the east side of the Greenwater Range; and the other a collection of colemanite claims, the so-called Hillside group, on the west side of this range, 3,800 feet above the floor of Death Valley. In time, these claims would become mines, to be known as the Widow, the Played Out, the Grand View, the Biddy McCarthy, the Monte Blanco, and the Lizzie V. Oakley.[8] But these properties were reserved for the future, for Smith as an outstanding mining man was always careful to keep his proved ore reserves well ahead of current production.

Colemanite is a very different type of mining proposition from the ulexite gathered from marsh beds. Ulexite, as noted in Chapter 1, is classified by chemists as a double salt, sodium-calcium borate. By contrast, colemanite is one of the calcium borates. It is found in granular masses or in white or gray crystals.[9] Ulexite and the other salt-bed borates are believed by geologists to have been derived from hot springs and leaching from older deposits. As for colemanite, it is generally thought today that it was derived from the elevation and folding of salt bed or playa deposits during the Tertiary period in geological history. Subsequent drainage over millions of years leached out the sodium borates, leaving behind zones of mineralization composed of calcium borate (colemanite), which is insoluble in water.[10]

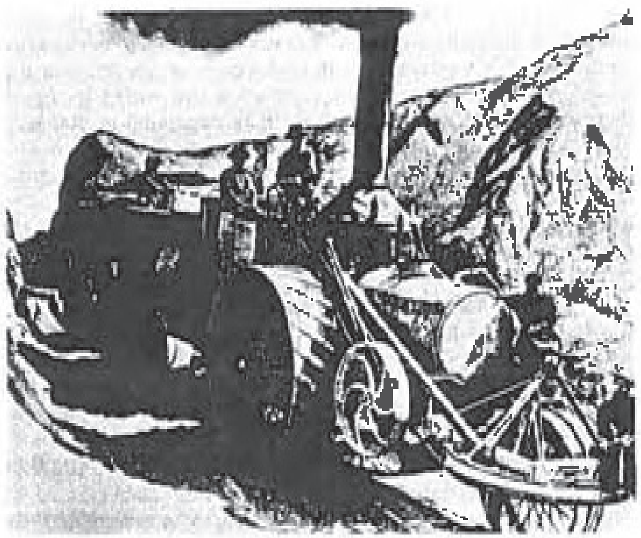
How, then, was borax to be extracted from colemanite? Smith's initial step was to build a new refinery at West Alameda in 1892. It was a crushing, reduction, and refining plant all in one. Its most unusual feature was its mode of construction. It was the first structure in the United States to be built with reinforced concrete. It was typical of Smith's daring spirit to bet his funds on a new material. For several years he had been financing an inventor by the name of Ernest L. Ransome. The building was constructed according to Ransome's own process, which was also used to build the Ferry Building in San Francisco in 1896. Ultimately, Ransome and Smith joined forces to form the Ransome Concrete Machinery Company of Dunellen, New Jersey, as well as two producing firms.

Operations at Borate were a case of genuine underground mining, with shafts, drifts, cross-cuts, and stopes. Mineralization was not continuous, but was scattered through zones or pockets that the miners called "kidneys."[11] The colemanite was sorted by hand, then sent to the surface through shafts of depths up to 600 feet. Twenty-mule teams then hauled the ore out of the deep and crooked canyon and across a dry lake to the railhead at Daggett, 12 miles distant. After arrival at West Alameda, the ore was crushed to a fine powder and treated with a hot sodium carbonate solution. By continuous agitation the precipitated calcium carbonate was removed and the remaining solution was placed in crystallizing tanks, where the borax was crystallized on suspended wires, then recrystallized to become a finished product.

But Smith was unhappy with the operation, first because it continued to require mule teams, and second because hand-sorting was the only means of eliminating waste material ("beneficiation") at the mine, which added to the shipping cost to Alameda. In 1894, to solve the transportation problem, Smith tried out a Daniel Best



The West Alameda borax refinery as it looked about 1890. This was the first concrete building in the United States. (Fred Corkill collection.)



Borax Smith's steam tractor, "Old Dinah," at work at Borate in 1894. (Courtesy of U.S. Borax & Chemical Corporation.)

steam tractor, known locally as "Old Dinah." The experiment was a failure, although many of these machines had proved successful in lumber camps and under other more favorable conditions.[33] In any case, Borax Smith was a stubborn as well as a determined man. This time he met the need for transportation by building the Borate and Daggett, a narrow-gauge line of about eight miles in length. It was opened in 1898, and hauling power was supplied by two geared engines of the Heisler design, known respectively as the "Francis" and the "Marion."[34] Four miles from the new road's junction with the Santa Fe Railway at Daggett, the company built a modern calcining plant. This location was named Marion.

The objective of the new plant was to solve Smith's second problem, that of better ore beneficiation. The plant was based on the principle that colemanite flies apart (decrepitates) when heated. By appropriate screening, the waste rock can be separated at 1200°F, leaving the fine particles as borax freed from the calcium carbonate. The plant was equipped with a roaster to effect the decrepitation, with screening to isolate the fines.[35]

The Executive Organization of the Pacific Coast Borax Company

At this point, it is appropriate to examine in further detail the operating organization of the Pacific Coast Borax Company in the 1890s. The head office was in San Francisco. Although it was an incorporated firm, it was a business completely dominated by a single man, F. M. Smith himself. The board of directors was composed of Borax Smith nominees because Smith held most of the voting stock. Mining and refining were entrusted to superintendents who were loyal Smith lieutenants, such as Fred Corkill, Billy Smitheram, and J. W. S. Perry. Sales were headed by Smith himself, with Joseph Mather in a similar capacity at the New York office.

In 1892 Joe Mather's son, Stephen Tyng Mather, a young man of twenty-five who worked for the *New York Sun*, had an idea that aroused Smith's interest. Stephen Mather was convinced that there was a great story in borax, and he could not understand why it had never been written. He persuaded his father with his proposal, and together they got Borax Smith to finance it. Through his newspaper connections, Steve Mather recommended a reporter named John R. Spears to do the writing. The result was Spears' *Illustrated Sketches of Death Valley and Other Borate Deserts of the Pacific Coast*, which had a major impact in its time.[36] More than that, it convinced Smith that Steve Mather would make an excellent advertising and sales-promotion manager for PCB. It was one of the best investments he ever made, for young Mather was a natural salesman, with an attractive personality, much energy, and a superb imagination. It was he who persuaded Smith to expand the package business, and to add the label "Mule Team Borax" to go with a sketch of the famous 20 already on the box.[37] Smith demurred initially, but eventually consented to adding the label "20 Mule Team Borax" to go with the famous trademark. In this way borax became a household word all over the country.

In the summer of 1894, Steve Mather and his wife traveled to California to see Borax Smith. Mather's goal was to persuade him to open a Chicago office. Smith agreed to think the proposal over, but sent him back with the question unresolved. Not long after, however, Smith wrote his approval, requesting that Mather meet him in Chicago "prepared to organize the distributing office you recommend," and enclosing $1,000 for the expenses of his California trip. Soon the new office was in business, with Mather putting on a series of successful promotions that created a large new market for borax.[17]

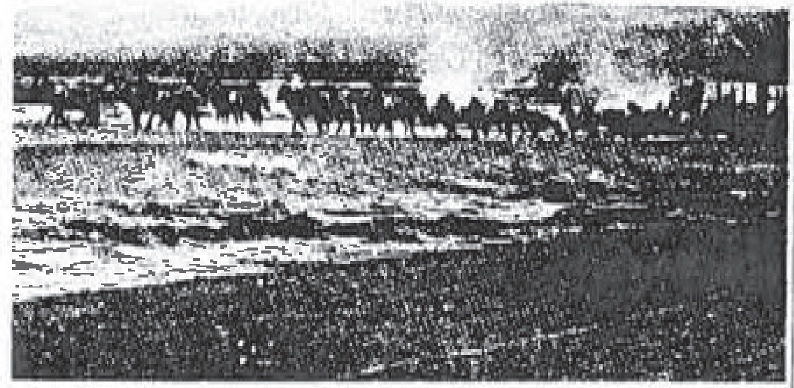
The future looked bright for Steve Mather, but his father took a different view. The year was 1896. Steve had sought his father's advice about buying some PCB shares, to which Joseph Mather's gloomy response was that he was "tired of Mr. Smith's style of business," that he had watched Smith invest impulsively, and that he was now "hampered for money to meet his pressing obligations." Joseph Mather then announced his retirement.[18]

Smith managed to get Steve Mather to take over the New York office long enough to train the new man, Chris Zabriskie, after which Mather would return to Chicago. Meanwhile, Thomas Thorkildsen, Stephen's Chicago assistant, would hold the fort there. The least noticed yet most important feature of the whole transaction was Joseph Mather's stern disapproval of F. M. Smith's ready reliance on short term borrowing, for up to a point it was an accurate observation with ominous portent for the future.

Frank Smith was to lose Thorkildsen almost immediately upon Mather's return because Smith had suspected Thorkildsen of back dating customers' bills to give them lower prices. This suspicion led to an acrimonious dispute and Thorkildsen's departure. Mather stayed on with PCB until the spring of 1903, when he suffered a nervous breakdown. In a rather thoughtless action, Smith immediately severed him from the payroll. In return, Mather wired him his resignation at the end of 1903,[19] at the same time getting off a telegram to Thorkildsen accepting a job in the latter's new borax company. This firm opened mines first at Frazer Mountain in Ventura County, California, and then at Soledad Canyon, near Lang, California. It also had a refinery in Chicago.

Relevant to this entire incident, it should be noted that even before Mather's illness, while he was still an employee of Smith's, he had arranged to borrow $10,000 from his father to invest in Thorkildsen's new borax enterprise.

Meanwhile, trade was dull during this period, and Smith decided to take a trip to Europe in 1896 in search of new markets. At its conclusion, he would be in control of a new multinational company



The Pacific Coast Borax Company's famous photograph of the 20-Mule Team in action in Death Valley, about 1887. (F. M. Smith collection.)

for each of the components of the blocks of assets that each partner contributed. This infuriated Smith, leading him to say that he now wanted "to do my financing on new lines" and to "drop the whole business outside of what we have committed ourselves to."[9] After expecting to have the new company functioning by October when he returned, Smith complained, he now was told that the consummation might not take place until January.

Evidently Baker managed to cool Smith down in some fashion, and after a futile search of Paris for a Thanksgiving turkey dinner, Smith and his party left for Vienna, planning to proceed from there to Venice and Rome. In a letter to Baker just before Christmas, Smith now referred to news from Baker that the financing would be completed early in January, expressing his desire to be in London at that time and "to get hold of some money before I return . . . ."[10] Perhaps deliberately, because of Baker's recognition of Smith's problem, Baker sold some of the old preference shares just before receiving Smith's letter from Rome.[11] Baker was an astute and perceptive man who depended upon the good will and cooperation of his highly individualistic and somewhat temperamental majority stockholder. Unless he could placate Smith, the whole enterprise would be in jeopardy. Also, Smith had been gone from Oakland, the seat of his business operations, for some seven months. Thus it was not unreasonable for him to be impatient with all these delays, all the more so because those operations required money and constant attention.

Borax Consolidated, Limited, came into being in January 1899. The company was capitalized at £2.4 million sterling, or just under $12 million, of which £2.2 million in securities was to be raised immediately after incorporation, and £200,000 was to be held in reserve. The capital structure consisted of £600,000 in voting common shares, £800,000 of 5.5 percent cumulative preferred; and £1 million in first mortgage debentures at 4.5 percent, of which £800,000 was issued upon formation of the company.

Control, obviously, lay with the common, or "ordinary," shares. These represented 25 percent of total capitalization and thus enjoyed considerable leverage. Smith, of course, was the majority holder. The partners also acquired portions of the preferred and the debentures, which gave them a source of future financial liquidity through their sale without impairing their voting control. Significantly, none of the common was offered for sale, while more than half of the preferred and of the debentures were placed on the market. The

remainder of these securities were used to pay for acquisitions of independent concerns and for assets turned in by the partners themselves.[12]

Thus began a multinational company that today has marked its 80th year of existence. Its founders had built well, but at the outset of 1899 many problems confronted them. They had to coordinate activities over what were then vast distances. Their principal source of supply, Borate, was beginning to show signs of playing out. A choice had to be made of the next deposit to develop, and this was most likely to call for a return to the Death Valley region, which had not been seriously exploited since Harmony closed down in 1888. But re-entry into the valley on a scale comparable to the great camp at Borate posed transportation problems not hitherto encountered.

Organizational Structure, 1899–1914

As BCL began its corporate life in 1899, the central fact of its existence was that Borax Smith owned a majority of the voting stock. This gave him the ultimate powers of the initiative and the veto on all major questions, although he usually deferred to Baker on financial matters, and also sought his advice on many other questions as well. Smith had entered BCL with a large going concern in the United States. Here was the company's biggest source of supply and largest contributor of income and profit. Moreover, Smith had long since built up a large group of executives, many of them old associates loyal to their chief.

On the production side at Borate and Marion, Smith had the services of the senior Fred Corkill, a member of the original Nevada Circle and the kind of exceptional mining engineer who could develop as well as exploit mines. The operating superintendent at Borate was Billy Smitheram, who had also come down from Nevada to join Smith, and who succeeded J.W.S. Perry, the original manager at Harmony. There was John Ryan, limited in professional education but highly intelligent, and capable of running the plant at Marion, of finding and evaluating new sources of ore, and of directing the construction of a major railroad. Associated with him on frequent assignments from Borax Smith was John Roach, superintendent of the roaster at Marion and a good friend of the Corkills. Less talented than Ryan, Roach was very capable around mines or in staking and testing claims. He, too, had originally joined Smith in Nevada. In addition, there was Clarence Rasor, who

John Ryan, F. M. Smith's right-hand man for over 40 years, quenches his thirst. The locale is probably Death Valley in the 1890s. (Fred Corbill collection.)

worked at Borate, would have much to do with laying out the company's 174-mile Tonopah and Tidewater Railroad, and eventually was to become chief engineer for American operations.

Besides the two refineries at Alameda and Bayonne, Smith maintained three sets of offices for marketing and financial purposes. The head office in 1899 was in San Francisco, at 101 Sansome Street, where it remained until the earthquake and fire in April 1906. After that catastrophe, Smith transferred it to the Albany Block in Oakland, and about 1912 to the new Syndicate Building in that East Bay city, which Smith had had built to house his now-extensive group of enterprises.

Buckboard on the way to Greenland, Death Valley, in the 1890s. John Ryan was probably the driver. (Courtesy of U.S. Borax & Chemical Corporation.)

In order of priority, the second office was in New York, under the charge of Chris Zabriskie. Third was the Chicago office, headed by Steve Mather, who did a remarkable job of developing the household package trade.

This is the major outline of the American organization at the time BCL was formed. At its head was F. M. Smith himself, who enjoyed certain advantages over Baker. He had voting control of the company. He possessed an outstanding group of associates, all of them with many years in his service. Sheer geographic distance both weakened the cohesiveness of BCL in London, because of the slowness of communications in that day, and necessarily enlarged

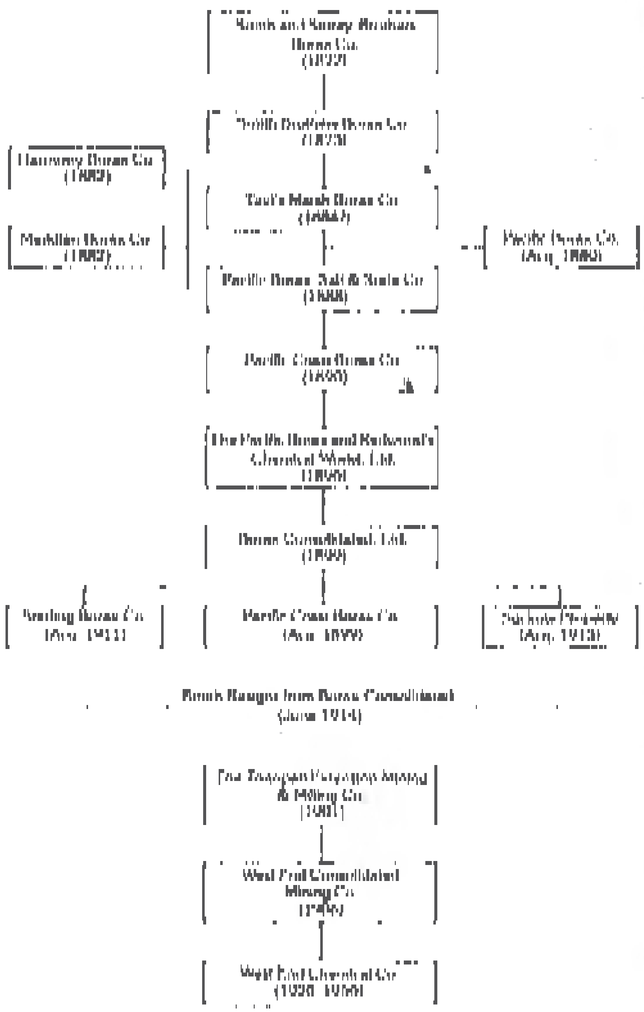


Fig. 1. Corporate History of Borax and Silver Mining Companies Controlled by F. M. Smith, 1872–1931.

the discretion available to the American group. In Borax Smith the American side had a leader who had enjoyed a free hand from the time he had entered the industry. Smith was very much the classical figure of the commanding, risk taking entrepreneur. He was not about to change the habits of a lifetime simply upon the emergence of BCL. Meanwhile, his British co-manager, R. C. Baker, who was the actual administrator of Borax Consolidated, was compelled to depend for his information upon the mails (letters took at least two weeks each way), coded cables for urgent matters, and an annual tour of the American properties.

Clearly, communications were a handicap for Baker in managing the central office of a multinational company. However, despite the nearly autonomous character of Smith's management of the American operations, it must be noted that in the ensuing 15 years before Smith resigned from BCL and its subsidiary, PCB, Baker compiled an impressive record of accomplishments.

From the opening stages of the relationship between Borax Smith and R. C. Baker, a theme in Smith's letters reflects his customary assumptions of complete autonomy, indeed, his desire to preserve and extend it. This theme manifested itself in diverse ways. One of them was Smith's proposal that he attempt to acquire control of Stauffer Chemical Company. In broaching the idea, he went on to speak of "gathering in" properties in the United States, doing so in his own name and on his own responsibility, with BCL to take them over afterward "if they choose."[13]

A little over a year later Smith brought up another idea: that a new American company be created to take over his interest in BCL and the PCB portion of BCL's assets. In Smith's view, this would not affect Borax Consolidated itself, but would provide him with collateral for borrowing purposes. Smith would then control the new holding company, which in turn would control BCL. In this way Smith could reduce his actual investment without loss of control.[14] What he seems to have had in mind was a form of "pyramiding" by means of holding companies. A year later, Smith raised the same proposal a second time, adding that he would go forward only if Baker were fully in accord and if it would involve no hardship for the English side.[15] In a somewhat fuller elaboration, Smith described what today would be called a holding company that would deal in stocks of other borax companies, in that way exerting control without full ownership.[16] By the end of 1901, he again modified his proposal: why not move BCL headquarters to New York City? This would put the company in the center of the world's money market, and it ought to make no difference to Baker whether he lived in New York City or in London—or so Smith thought.[illegible]

Baker seems not to have been enthusiastic about any of the various versions of Smith's idea, so his superior ceased to press the matter beyond suggesting that an American company could be useful in taking over "the large holdings" (presumably his own) of BCL common stock. This would enable Smith to raise additional fresh capital, which probably was his primary purpose all along.[illegible]

The theme of autonomy asserted itself for Smith in another form toward the end of 1899. He had disclosed rather abruptly to Baker that he had been lending PCB's surplus funds on the call loan market, making good returns in this way. As he described it, the loans went to himself, to certain Oakland associates, and to banks. Following the advice of Lafayette Hoyt DeFriese, BCL's able legal counsel, who happened to be in town, Smith proposed that the BCL board pass a resolution authorizing him to make short-term loans with company funds, because such loans would earn more returns. Given the possible conflict-of-interest problems implicit in these actions, particularly under English company law, DeFriese must have urged the directors' resolution as a means of protecting all concerned. However, Smith could see no problems in their granting him "as free a hand in this direction as possible."[illegible]

Baker seems to have rejected this proposal, for in his next letter Smith told him that he had not wished to embarrass the board, and had not known that his proposed discretionary resolution allowing short-term lending of surplus funds, including anticipated forthcoming dividends, would make the directors personally responsible for any losses incurred.[illegible]

The ultimate fate of F. M. Smith's proposed resolution is unknown. However, in a letter written in 1904, Smith refers to the requirements of the BCL board as regards his accounting procedures, adding that "I realize that I have drifted away from the exactness required by English auditors. However, all loans and advances have been and are abundantly secured, as the statement will show."[illegible] Apparently the board did not prohibit Smith's lending policy, but did insist upon adequate security and full disclosure. In any event, the statement shows loans totalling $600,000 in 1904, involving a 60 day demand note of $250,000 to Oakland Transit Consolidated; a 60-day demand note of $150,000 to San Francisco, Oakland and San Jose Railway (Key Route); $50,000 to Henry Wadsworth (another Nevada associate now involved in Smith's Oakland ventures), secured by 1,000 shares of Realty Syndicate stock (par value $100); $50,000 to Ernest A. Heron against a 60-day demand note for $50,000; and $100,000 to Frank C. Havens against a 60-day demand note for $100,000.[illegible] Wadsworth was a director of Smith's traction properties in Oakland, while Heron was president of the traction companies, and Havens was both a director and Smith's closest associate in the Realty Syndicate. Heron's and Havens' notes, Smith stated, were fully secured at over double their value.

Borax Smith's endless pursuit of autonomy within the otherwise rather conservative precincts of BCL was due to his remarkable abundance of energy, his lively imagination, and his unappeasable hunger to expand and diversify his business interests. His more cautious British colleagues simply had never encountered a man like this and doubtless had plenty of trouble trying to understand him. His predominant traits imposed upon him an insatiable need for more liquid capital. Put a little differently, his personal net working capital was usually perilously thin. He never seemed to have found a substantial alternative to massive and increasing short term borrowing as a means, albeit temporary, of protecting his solvency in the pursuit of further expansion, despite the large and continuing increases in his total wealth and net worth, year after year. The basic problem from which he suffered throughout his career in business was lack of liquidity, brought on by the method of financing upon which he chose to rely. More than this, Smith was an individualist in the classic mold. His activities were wholly inner-directed.

As his brother-in-law, Norman P. Ellis (who was very close to F. M. Smith in his last years and who understood him unusually well), once described him, he was "a borrowing capitalist," a man who built great ventures largely upon short-term finance and who regularly "sweated blood" at the end of each year as his notes fell due.[illegible] His failure to develop adequate permanent financing for his many different enterprises was ultimately to prove his undoing. But if finance was Borax Smith's Achilles Heel, his qualities of farsighted vision, his abilities as a builder, and his capacity for imaginative synthesis through which he could assemble the parts into the whole—these were the factors that made him great.

Oakland Junior Chamber of Commerce set aside October 24, 1933, as Founders' Day. The choice of Francis Marion Smith as the first resident to be so honored and of the date were not accidental. No other man had ever equalled him as a civic leader, while October 26 was the anniversary of the beginning of operations by the Key Route 30 years earlier. At the commemorative luncheon, Mayor McCracken declared that Smith "was one of the first to envision the possibilities of the great East-bay region, planning how the city could be served by a local transportation system and by vessels plying from its docks to the four corners of the world." The former postmaster, William Nat Friend, credited Smith with having given thousands of dollars to Oakland churches, to the construction of the YMCA building and to other benefactions. The publisher of the *Oakland Tribune*, Joseph R. Knowland, acknowledged that Smith's "crowning achievement was his vision of a transportation system for the East side of the bay. He sowed the seed for the development of Oakland's great harbor." Knowland also said, on another occasion, "He was perhaps one of the first to envision a bridge to aid in crossing the bay. Out of his earlier dreams came the present reality—the huge San Francisco–Oakland Bay bridge." Finally, Alfred J. Lundberg, who had rehabilitated the Key Route and then headed it as a prosperous concern, proceeded to introduce the crew of the first Key train from Berkeley to San Francisco, and the captain and chief engineer of the ferry *Yerba Buena*.

Lundberg then presented a plaque bearing a profile in bas-relief of Borax Smith and the 20-mule team, followed by a brief description which read:

FRANCIS MARION SMITH

"BORAX SMITH"

Founder of the "Key Route"

Commemorating operation of the first train from Berkeley Station one o'clock p.m. on October 26, 1903—connecting with SS. Yerba Buena for San Francisco. Edward M. Boggs engineer of construction. James P. Potter superintendent

PRESENTED TO KEY SYSTEM LTD ON THE THIRTIETH ANNIVERSARY BY

ALFRED J. LUNDBERG
PRESIDENT

The plaque was designed by Andrew T. Hass and executed by William Gordon Huff. It was placed in the entrance of the Key System building on Broadway in Oakland, where it remained until the company was taken over by Alameda County Transit Lines.[31]

So ended the long and creative life of this remarkably interesting and very complex man. Ultimately, he had received a measure of the recognition and appreciation that lesser men and ill fortune had so long denied him. Even in finance he was restored posthumously to his rightful place. For through the leadership of Evelyn Smith, her brother George Ellis, and Henry D. Helmers, the West End Chemical Company that Smith had founded survived to become a money-maker. On September 25, 1956, 25 years after Borax Smith's death, the company was merged into the Stauffer Chemical Company. The aggregate price paid for the outstanding West End common and preferred shares was slightly over $27 million.[32]

One likes to think that somehow, somewhere, Francis Marion Smith is aware that in the end his family was cared for, and that by his courage and foresight he had finally gotten back his own.

What Survives of the Physical Legacy of F. M. Smith?

As a builder, F. M. Smith had made a substantial impact upon his times. What remains a half-century later?

Within weeks of his death in August 1931, the long-abandoned borax refinery at West Alameda was torn down. Because it had been built of reinforced concrete, dynamite had to be used to accomplish the job. Next came Oak Hall and the remnants of Arbor Villa. In January 1932, the wrecking crew arrived with hammers, mauls, and axes. Within days, the magnificent house with all of the splendor of its interiors of rare woods was reduced to wreckage, with nothing saved in its original form. Today all that remains to remind one of the past is the great line of desert palms along 9th Avenue, and some of the former cottages of the Mary R. Smith Trusts. Where the beautiful gardens once surrounded the big house, there now exist countless shabby apartment buildings and small stores.

Presdeleau suffered a similar fate. The splendid barn and lookout tower burned in 1930. The house itself gradually became run down, and then was badly damaged by the hurricane of 1938. At that point, Evelyn Smith decided to have it torn down. After World War II the lands were sold and subdivided. All that now remains is the long sea wall that F. M. Smith had had built at the edge of Smith

Cove, the little Japanese bridge, and the tiny summer house at Cedar Island. Strangely, his boyhood home in Richmond, Wisconsin, still survives in excellent condition, while the "old red house" that once stood where Oak Hall was located can still be found on East 24th Street, near 8th Avenue.

Also within the Oakland area, the beautiful-little Key Route Inn was torn down in August 1932. Its companion piece, the Hotel Claremont, still stands. On the grounds of Mills College, one can still see the handsome campanile designed by Julia Morgan, and given to the college by Mr. and Mrs. F. M. Smith in 1904. In the center of town, the sturdy old Syndicate Building still stands, newly renovated and in excellent condition.

The fate of the Key Route was a bit more complicated. Paving, road building, and 20-cent gasoline in the 1920s doomed the financial future of Smith's old company. By 1930, when it underwent drastic recapitalization after sale at foreclosure, any equity held by the Smith Advisory Committee had been wiped out. In 1939, Key trains at last were operating through to San Francisco over the new bridge, just as F. M. Smith had intended when he started the project in 1902. The changeover made the old pier terminal and ferries useless, but because the original terminal had burned in March 1933, and the original rolling stock had been replaced by 1937, what remained to carry Smith's imprint was only the surviving rail system itself. Indeed, in 1941 the Key took over parts of the Southern Pacific electric lines when the major part of them was abandoned. Thus the Key Route finally won out in the long struggle that began back in 1910, in Borax Smith's time.

But the company could not withstand the floodtide of the continuing automobile revolution, which came surging in after World War II, inspired by continuing cheap fuel and the new freeway movement. The Key's local owners sold out in 1946 to National City Lines, a firm committed exclusively to motor buses. Within two years, F. M. Smith's well planned and well-built street railway system was ripped up. The transbay lines were retained for a time, but they were allowed to deteriorate. On April 18, 1958, the last Key Route train departed for San Francisco, ending 55 years of safe and convenient service for countless millions of passengers. Borax Smith's vision proved to be right after all, for within four years the three major counties around the Bay joined to build a new and more extensive transbay interurban system.

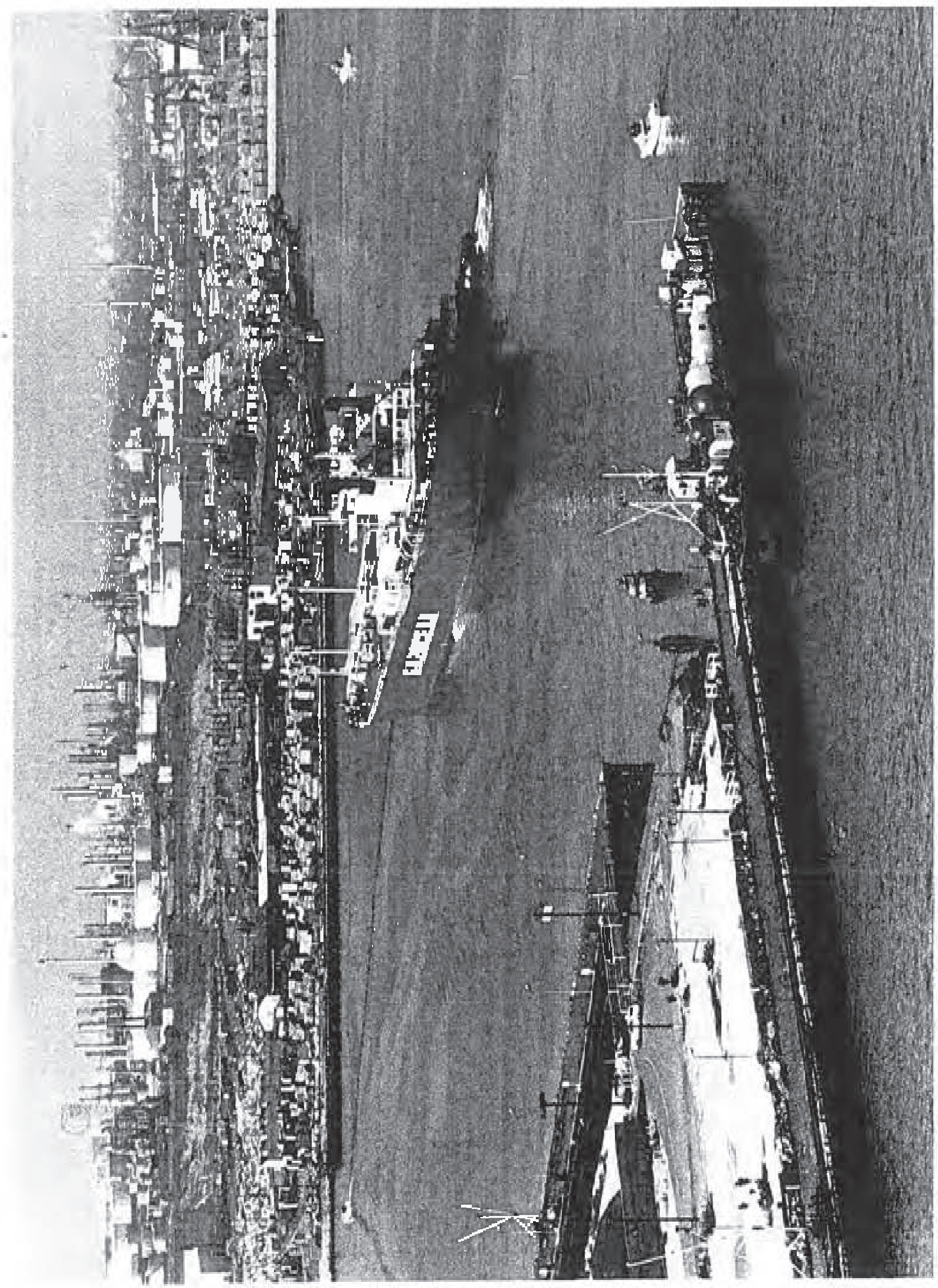
As for borax, where it all began, one can still visit Teel's and

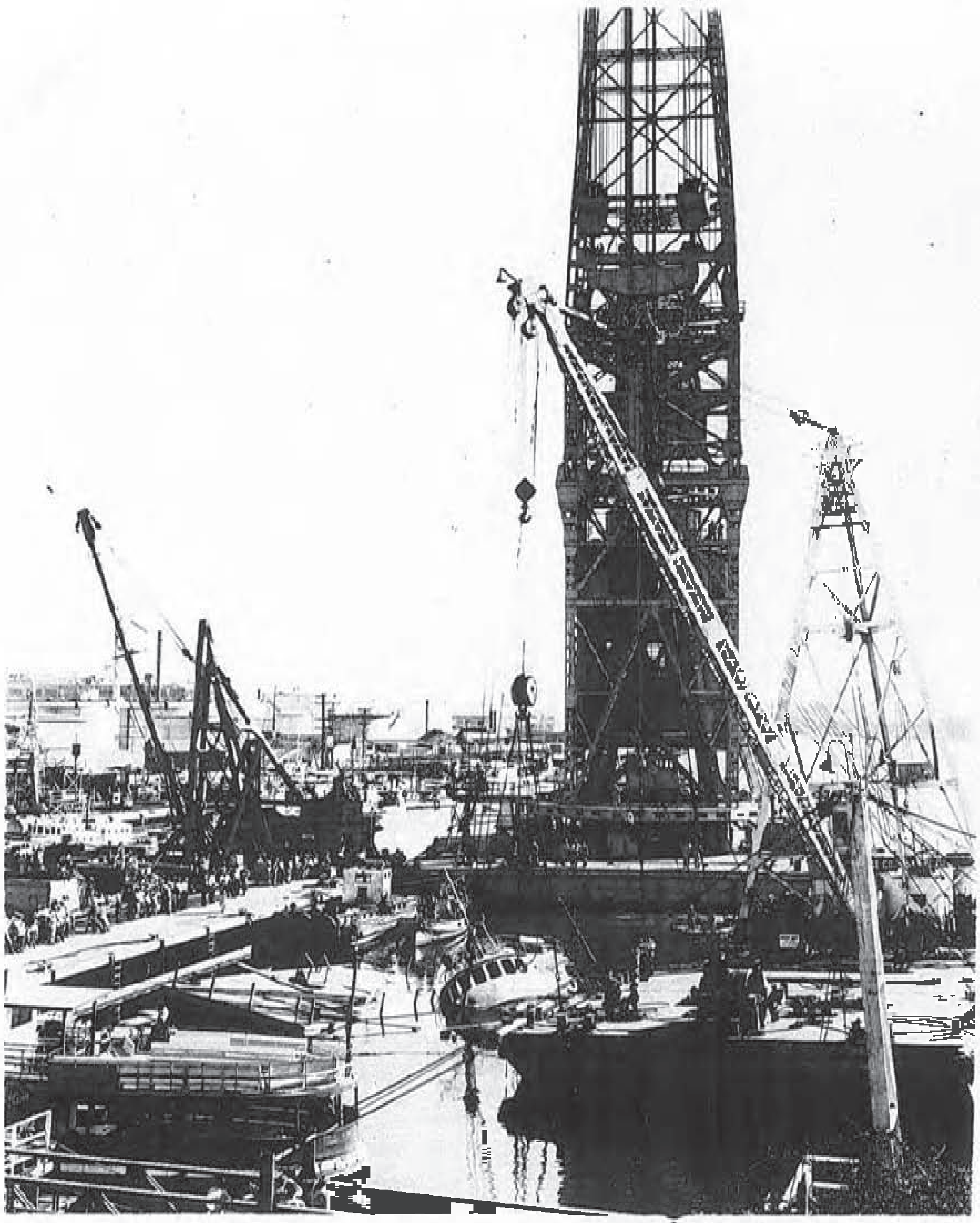
Columbus marshes, where he will find a few rock walls as the surviving artifacts. Within Death Valley itself, the ruins of the old Harmony Borax Works are protected as part of the National Monument, while the museum at Furnace Creek is the old bunkhouse from Monte Blanco, built by F. M. Smith in 1882. The steam tractor, Old Dinah; the great borax wagons designed by J. W. S. Perry; the little Baldwin narrow gauge consolidation locomotive that served the Death Valley Railroad; and the buckboard that Borax Smith used in his travels around the valley are all to be seen at Furnace Creek. One can drive up to Ryan, on the west side of the Funeral Mountains, and still see many of the buildings of the last camp Smith developed for PCB. Further east there are the ruins of the Lila C, while near Daggett, many miles south, one can take a rough ride up Mule and Eagle Canyons where Smith developed the first underground colemanite mines and the great camp of Borate. The Anniversary Mine is still held in reserve, while the plant on Searles Lake continues to be fully active.

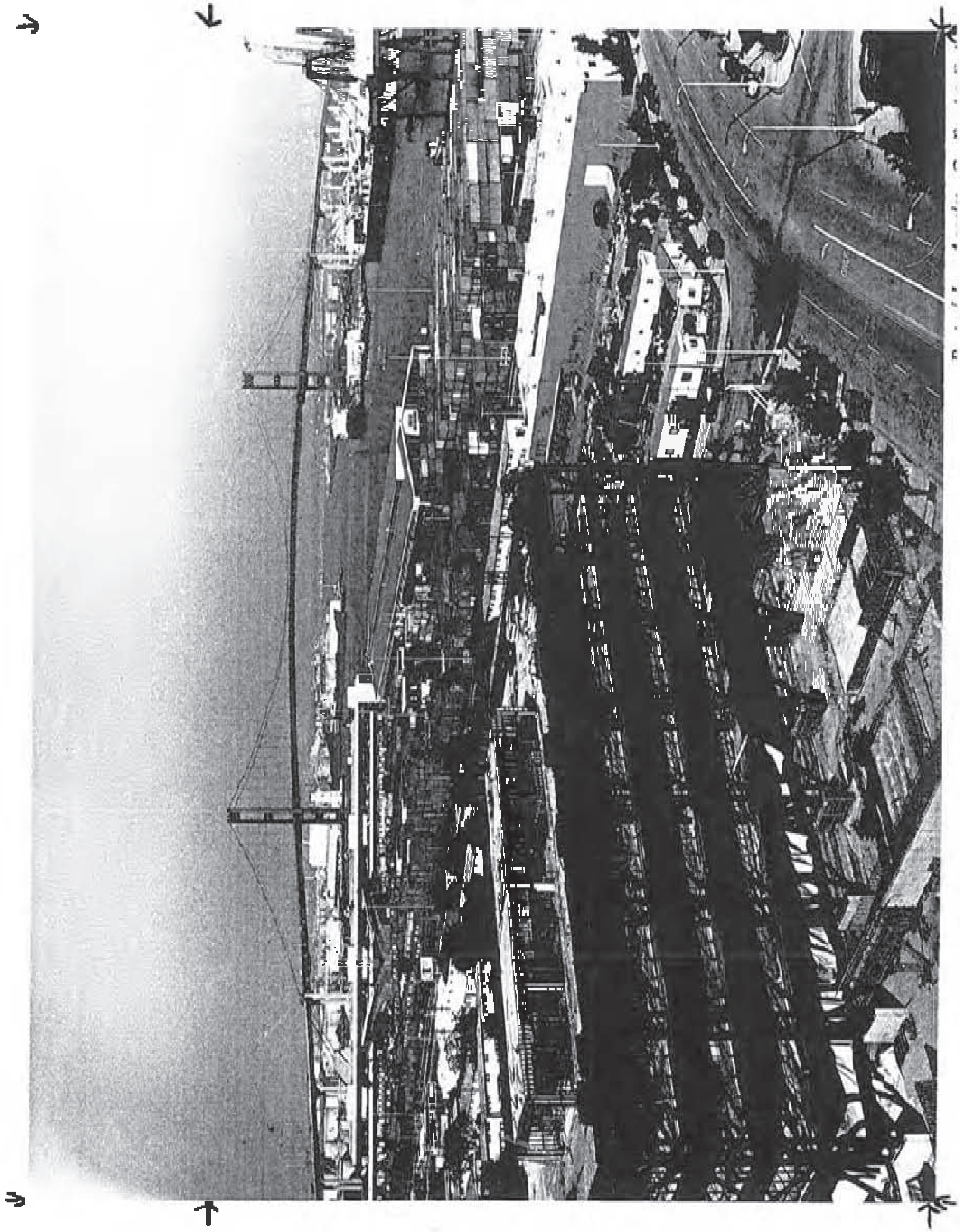
Two other accomplishments of Smith's long career were less visible to the public and, unfortunately, are now forgotten. One was that by creating a first class metropolitan transportation company, he made it possible for millions of passengers to travel within the Bay Region cheaply and in safety and comfort for many years, without a cent of subsidy from any public body. Here then was an intangible public benefit of large importance, stemming from the vision and initiative of a single exceptional man.

F. M. Smith's other great accomplishment was to make borax and its family of boron compounds a cheap commodity, highly useful to mankind. Before he had made his original discovery and had exploited it fully to create a new mining industry, borax was a rarely used chemical, of interest to goldsmiths and makers of art glass, and selling at five times the price prevailing 20 years after Smith began operations. The highly imaginative Smith made a very useful product readily available for the benefit of millions of people, simply by mastering the art of producing it in volume and thereby making it cheap.

And so, after all, many things associated with Borax Smith do survive, although the most interesting ones are long gone. More than that, the rare kind of businessman that F. M. Smith was—part prospector, part miner, part magnate and industrialist, part sportsman, and part civic benefactor—is a species that today has become virtually extinct.



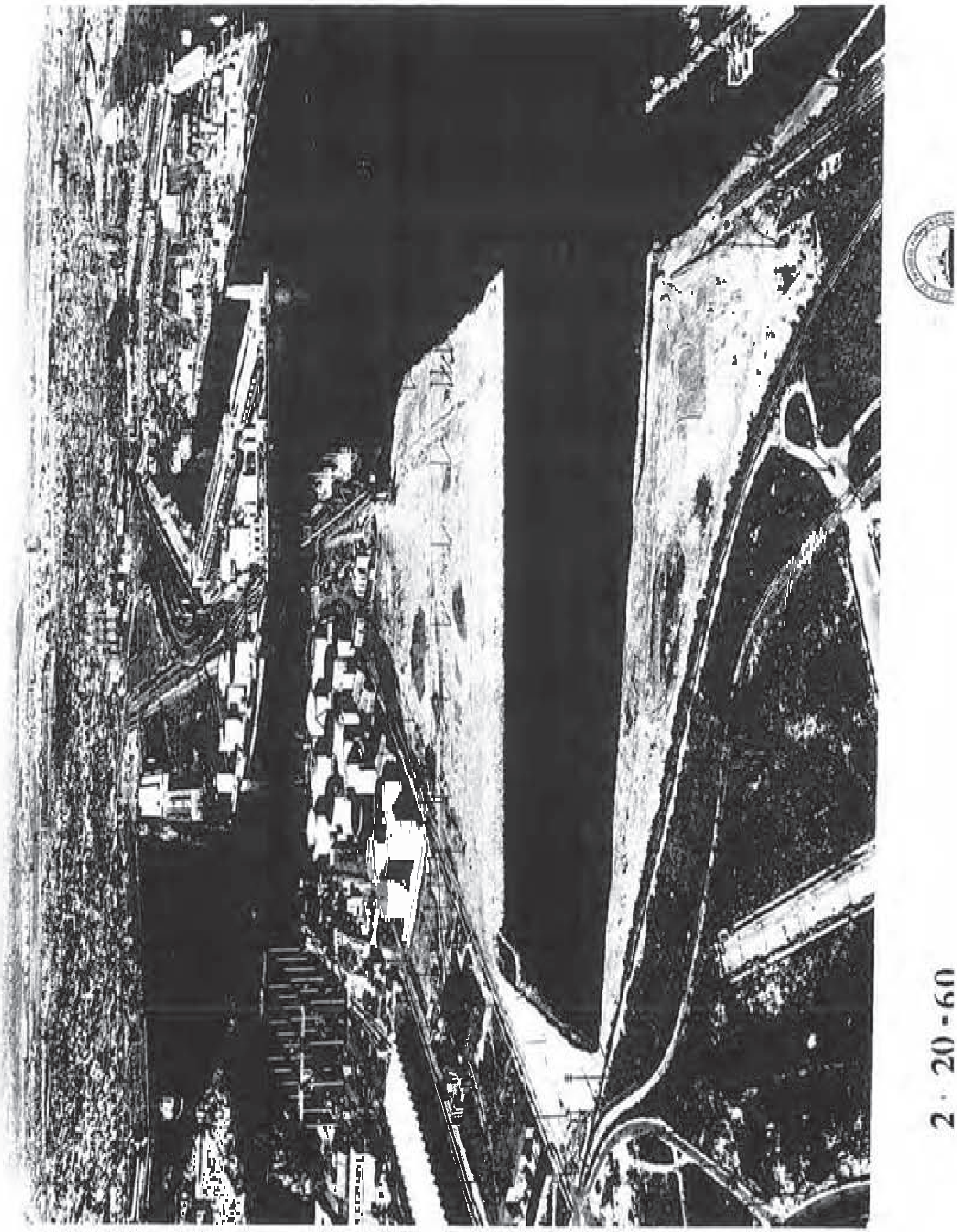




PORT OF LOS ANGELES
First Port Of The Pacific


Port of Los Angeles


Port of Los Angeles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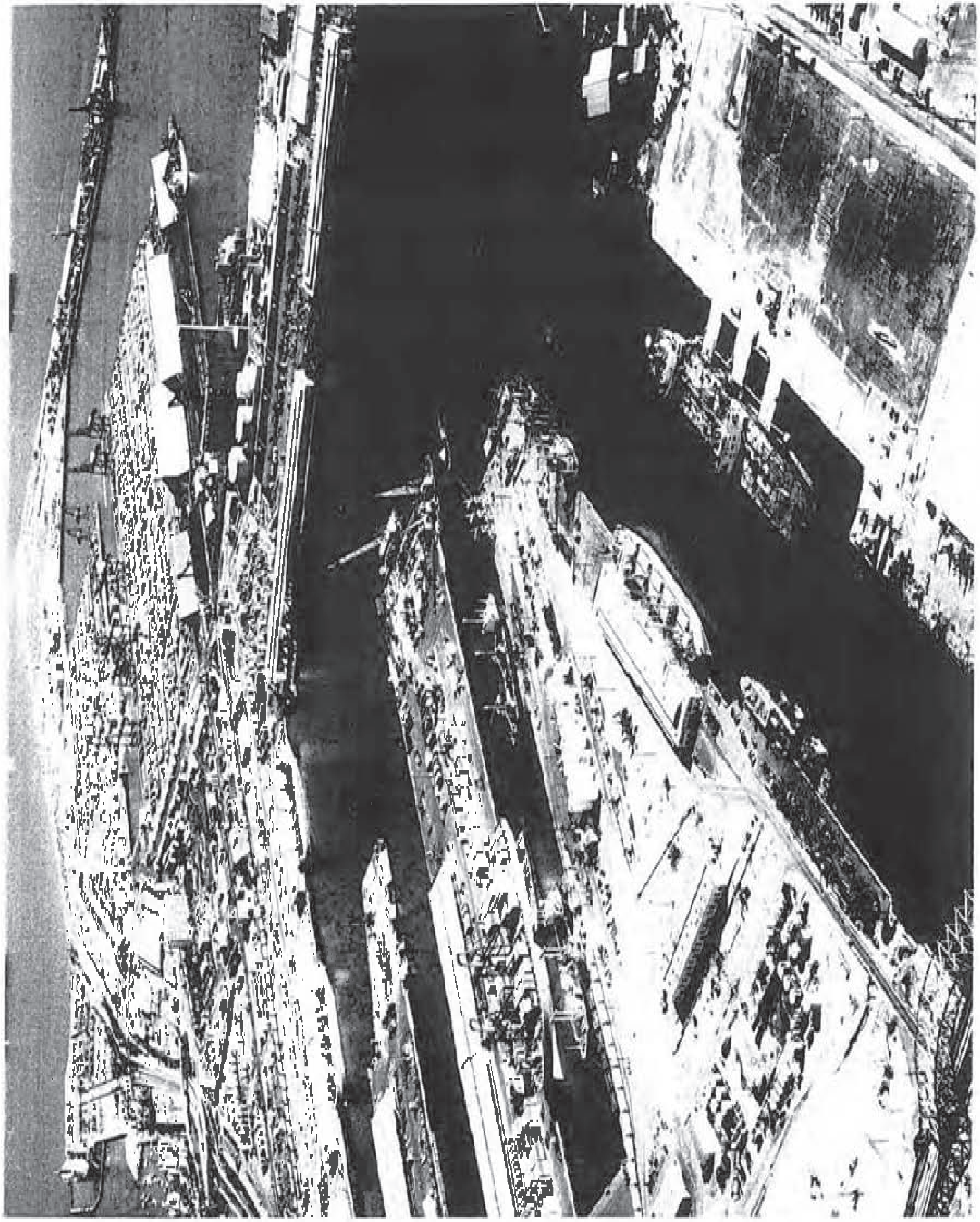

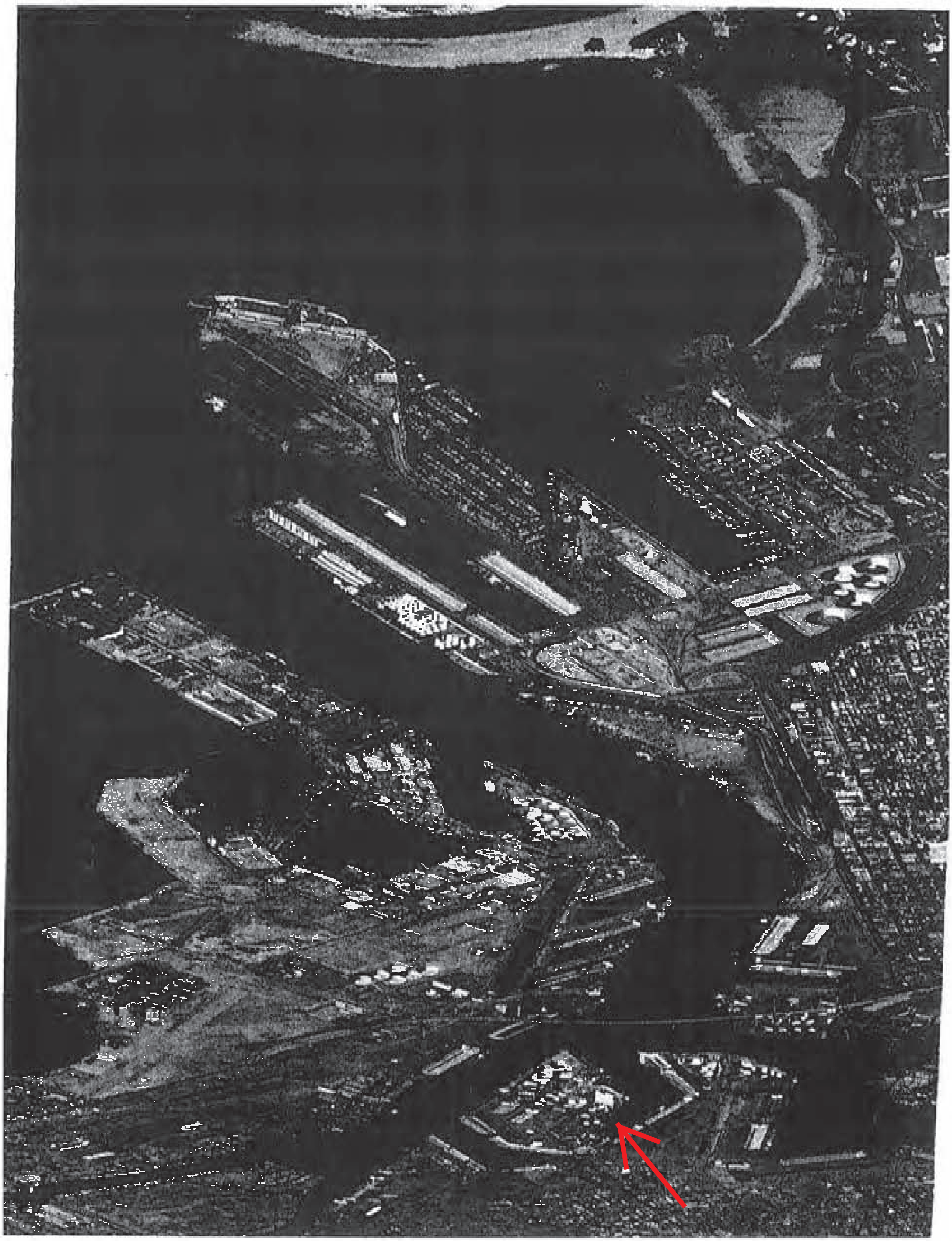

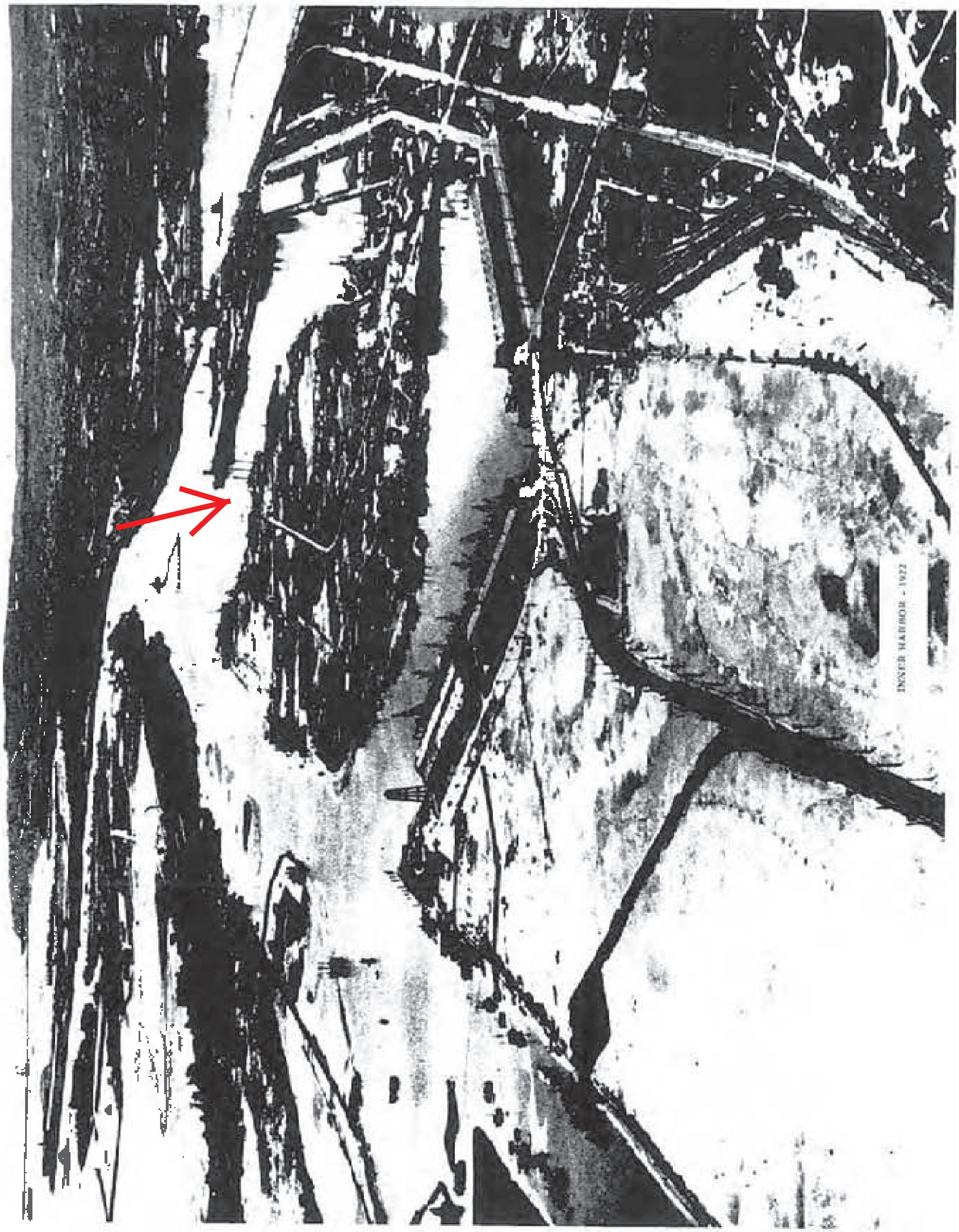
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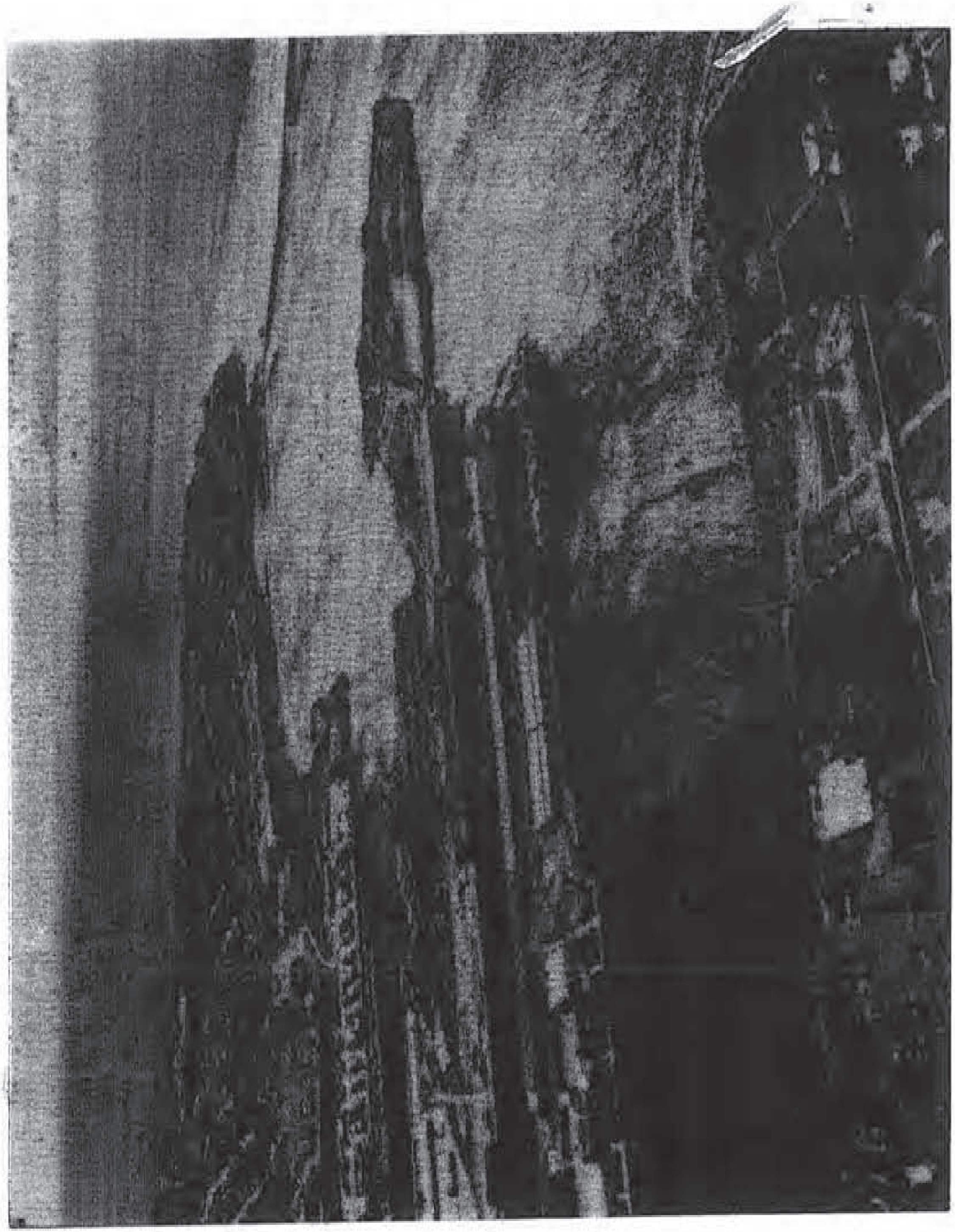
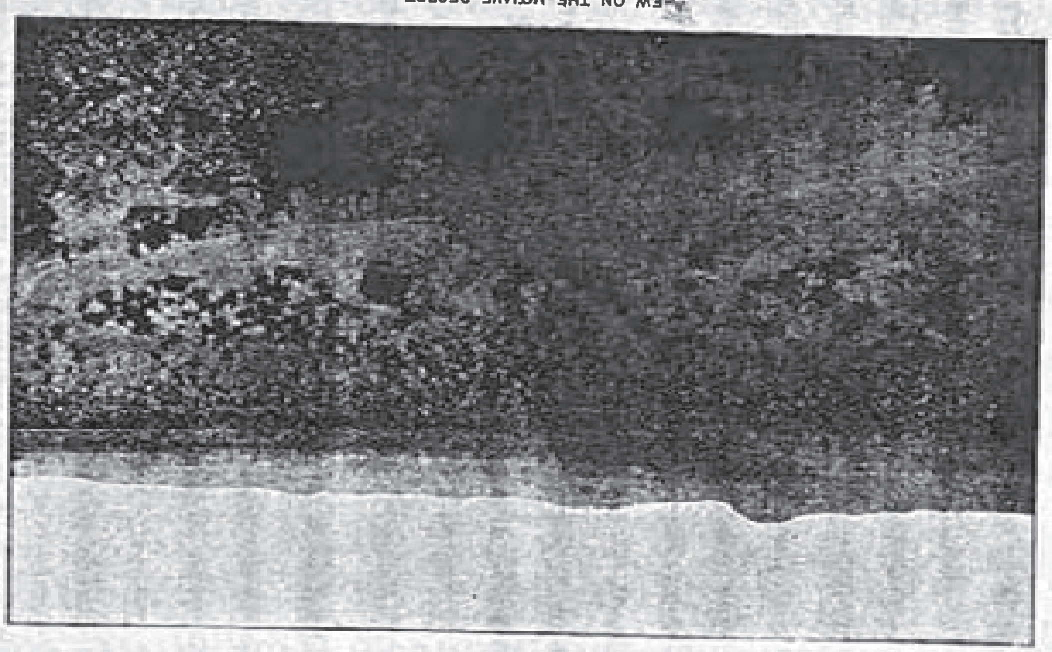


ILLUSTRATED SKETCHES
OF
DEATH VALLEY
AND
OTHER BORAX DESERTS OF THE PACIFIC COAST.

BY
JOHN R. SPEARS

CHICAGO AND NEW YORK:
RAND, McNALLY & COMPANY, PUBLISHERS
1892

VIEW ON THE MOJAVE DESERT



17? DEATH VALLEY

ium ceased its [illegible] to take up with the [illegible] [illegible] charge of [illegible] that greatly enlarged the yield of borax at Hachinhama.

Nevertheless the Nevada men had the weather gauge of Hachinhama—they found borax lying in fields [illegible] When competition began, prices went down until borax, the one-time high-priced drug, was worth less than sugar, and down went the whole business and the fortunes of about everybody in it. There is a trace of borax in the water of both the old lakes but the crystals in the ore are gone, and the amount to be [illegible] from the waters of either will not pay for the fuel to boil it down.

CHAPTER XV.

STRUCK IT RICH ON THE MARSH

THE people engaged in the borax business seem to have been so busy, each according to his own particular marsh or claim, in the early days, that no attention was given to making historical records of the matter. At least, that is the impression I received in talking with them, for facts about the doings of early prospectors in Nevada, who are not now in the business, are very hard to get. However, it appears that as early as 1860, Dr. Veatch, the California borax pioneer, had found traces of the salt in Mono Lake, near the Nevada line; learning which, one William Troup, of Virginia City, began to look out for borax. In 1864, locations for salt, useful in reducing silver ores, were made on the marsh near Columbus, Nev., and a borate of lime, now well-known in the trade as ulexite, or cotton balls, was found there, though it attracted little attention then. In 1869, however, a teamster in the desert region south of Wadsworth found a cotton ball, which eventually got into the hands of one engaged in working Lake Tehama, where the borate of lime was very much needed in the production of borax. A prospecting party searched vainly for the place where it had been picked up.

In 1871, however, Mr. Troup, the Virginia City man previously mentioned, found some cotton balls forty-five miles southeast of Ragtown, near Salt Wells, and carrying some of them to Ragtown, he borrowed a wash-boiler of a

15 (161)

Mrs. Kenyon, put in the boxes of lime, with some water and carbonate of soda, boiled the stuff, and when the mixture had cooled and crystallized out, he had produced the finest borax ever made in Nevada.

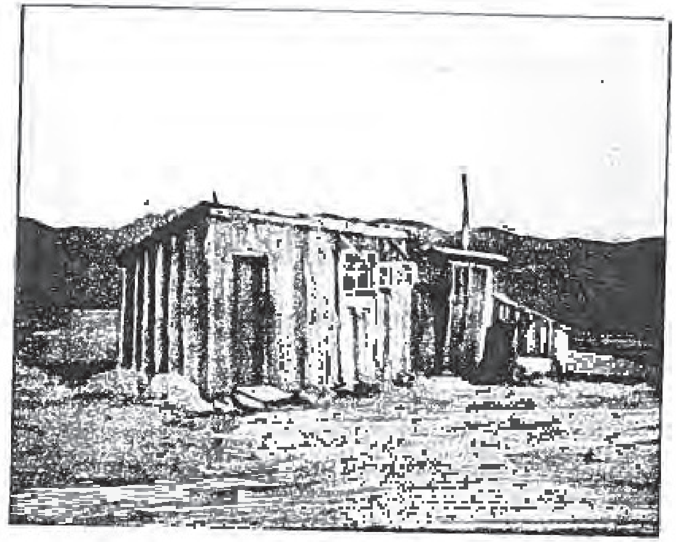
At about the same time it appears that Troup rediscovered cotton balls on the marsh at Columbus. Within a year small plants had been erected both at Columbus and the Salt Wells finds, while 1,500 pounds of the cotton balls had been shipped from Columbus to a firm in San Francisco, and there worked. None of these deposits, however, created any special excitement among those in the borax trade. Borax was worth 30 cents a pound by the carload, and there was no thought of any change of moment in the condition of affairs, till the discovery of the Teels' Marsh deposit of crude borax set all the prospectors on the Coast wild on the subject, and started a rush that flooded the market, until the business was well-nigh ruined. How this find was made can best be told in the words of the finder, Mr. F. M. Smith, who is now president of the Pacific Coast Borax Company, because his story well illustrates Nevada life at that time. In an interview, he said:

"In the fall of 1872, I found myself among the wood camps about ten miles from Columbus, Nev. I had been following mining camps from Montana to Idaho, from California to Nevada, since April, 1867. During this time, like most men who follow mining camps, I had engaged in nearly every vocation pertaining to mining. The chief object of the camp follower or prospector is always to find a good mine. In this enticing but most delusive pursuit, all available employments are accepted for the time, but only as incidental to the one object. I had recently been engaged in teaming, contracting for the delivery of wood to the mills, and timber to the mines.

"I then owned two or three wood-ranches, and a band

of pack-animals, and I had also accumulated the usual number of wildcat claims or mines.

"Just before I made the discovery of Teels' Marsh I had bought a wood-ranch of a fellow woodsman, and, by the help of a wood-chopper in my employ, had erected a good, comfortable cabin on a narrow gulch, commanding a fine view of the outlying country. The view from the adjacent timber



RESIDENCE OF F. M. SMITH, TEELS, MARSH, 1873.

included the Columbus Borax Marsh, which was being worked, also Teels' Marsh, of which nothing was then known as a borax deposit.

"I should say that an alkali marsh, so termed, differs from an Eastern marsh. It is not watery, nor necessarily soft. It is a dry lagoon or surface incrustation of alkali in some of its forms—soda, salt, or borax. It has a light, whitish appearance, often covering large areas, but quite variable in surface color. My prospecting had included borax claims, but I had very little knowledge of the business.

"One morning, immediately after my cabin was completed, I heard some one chopping wood near by. Upon going out to examine, I found a Mexican chopping in the timber designated and described as my property. He refused to leave when I ordered him off the premises, and I laid hands upon the ax. He was reinforced by another Mexican, and a white employe. I soon found that they intended to forcibly dispossess me. The nearest officer or Court of Justice was at Aurora, the county-seat, fifty miles distant, and the only convenient or satisfactory appeal was to the rifle. I had no weapons, and knew short arms were of little use. I went immediately to a fellow woodsman, two miles distant, who owned a Spencer rifle, and found that the weapon was at Columbus, ten miles away. He gave me an order for it, and I returned that night to my cabin with the carbine, and only four cartridges, all I could get in town to fit it. I found the Mexicans had reinforced their gang, and had been chopping down a fine cluster of pine trees in front of my cabin door, and had several cords of wood nearly piled up in place of the trees I had so admired. My chopper told me they were in full force, and intended to bring in a pack-train in the morning, to carry out the wood they had chopped.

"We breakfasted early the next morning, and my chopper took his ax, and went to the timber some distance away, to chop. I knew enough of him not to count upon him for any assistance in maintaining my rights, and did not ask him to help me.

"I soon heard the tinkling of the bell worn by the bell-mare which always leads the train, and took my position on

the hillside, just out of close shooting range with small arms, and some 125 yards from the wood-pile. Then the train appeared, and I counted twenty-one pack-animals, four Mexicans, one Indian, and one white man. Upon reaching the timber, two Mexicans alighted, and took one of the animals and led it to the pile of wood, and began to load.

"In loading the aparejo, it is customary to put on a big stick first. This wood was green and heavy, and it took two men to handle the larger sticks.

"They had seen me as they passed up the trail, but I had said nothing to them until they began to load, when I called out, 'Hold up there, don't load that wood,' and took aim with my rifle. At this, one of the Mexicans dropped his end of the log, and showed no inclination to take it up again, though urged by his companion to do so. Both replied to my challenge with abundant oaths. I persisted in my demand for them to 'clear out,' and, after plenty of cursing, one of the party began to approach, saying he wanted to talk with me.

"As he stepped forward, I took deliberate aim, and again bade him 'hold on.' He stopped advancing, but did not stop swearing. This was repeated several times. I knew I had no ammunition to waste, and that at close quarters with their knives and pistols I stood no chance, even were their numbers less.

"They finally offered to compromise by taking the wood they had chopped. I replied, they had no business to chop it on my claim, and no right to it, now it was chopped. I stood my ground with the rifle at my shoulder, and, as a final result, the train of twenty-one mules, four Mexicans, and two helpers, turned about and retired empty-handed, leaving me in possession.

"The next day they sent a delegation from Columbus to

the nature of the attack. The scratchings continued at intervals for several days.

"It was a dry season, and the alkali areas were more than ordinarily extensive. From the hilltops I could see the glistening white Teels' Marsh, and taking two companions one day, I visited the marsh, and found a heavy incrustation, which, on testing, seemed rich in borax. It afterward appeared that we had chanced to step upon the richest part of the marsh first.

"We made a preliminary location that day, and gathered samples, which on the day after, I took to an assayer at Columbus. We were so impressed with the appearance of the marsh, that we took a small supply of provisions and pack animals from the woodcamp, and returned to the ground, made a dry-camp, and at once located several thousand acres, most of which afterward proved to be worthless.

"After starting the men to work, I went to [illegible] the wood ranches, and then on to Columbus. On my way thither, the certificate of analysis, which pronounced it the finest specimen of borate of soda that had been found at that time, was handed to me. In Columbus I enlisted two associates, with one of whom I laid in fresh supplies, and started back for Teels' Marsh. Long after dark, at a point some little distance from the marsh-camp, we found the Mexican who had been chosen to drop the log when the attempt was made to run off my wood. He had been out hunting stock all day, and was glad to get the benefit of the camp we were ready to make, for he had no provisions, while we had plenty. He was formerly a cook, too, and made from our flour tortillas for our supper, the first I had ever eaten.

"I felt no anxiety to anticipate any attempt to locate the deposit which the favorable assay might invite. That, guided by the camp-fire of the helper I had left on the marsh, I pressed on to his camp, reaching there after midnight. It was a good thing I did so, for I found a friend of the assayer on the ground. He had been sent out to locate borax deposits. He had found my men, and remained with them till I came in. Pretty soon he asked me where 'Teels' Marsh' was, and I told him I knew an alkali flat about twenty miles from there, and, in the morning, I would send a man with him who was familiar with the country. Next morning he left very early, accompanied by one of my choppers. They were gone three days. It is scarcely necessary to say that, by the time of their return, I had the property well located.

"Some days later, the assayer himself put in an appearance, and I staked him out a good location, and put him on it, which was very pleasing to him, though perhaps scarcely deserved.

"Borax lands had heretofore been located under the saline laws of the State, one locator taking 160 acres. Soon after the date of my discovery—the fall of 1872—Commissioner Drummond had decided that borax land should be located as placer claims, allowing only twenty acres to the individual. This made the work of locating more difficult and expensive. Besides, borax land is usually very spotted, varying greatly in richness—that is, mixed, and only a small portion profitable to work. This feature rendered it necessary to thoroughly prospect, to make a careful selection, and to cover as much land that was valuable as possible, to warrant erecting a plant for the manufacture. It is true, borax was then worth 30 cents a pound by the car-load, but it soon dropped to one-third that, while grain cost $130 a ton, and hay $80 at Columbus, twenty-five miles distant, with no roads for transportation to my camp. Wood and labor were both expensive, and

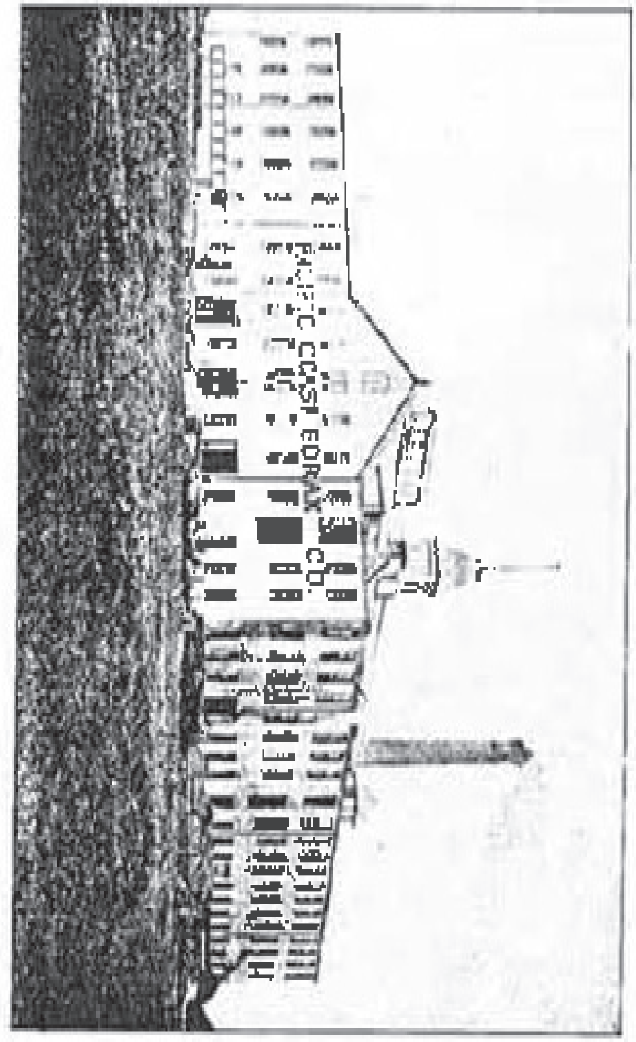
the product was far from market, with no suitable [illegible] of [illegible].

"We were compelled to relocate the property, and to secure the co-operation of all our friends, using their names as locators, and soon thereafter get deeds from them for their claims. The woodchoppers associated with me had been following mining camps too long, and had 'lost their grip.' Though fully aware of the richness of the deposit, they did not put a high value upon their interests, and perhaps it was true that the less money they had the better off they were. I made a trade with one of them, giving him a watch [illegible] for his interest. The other wanted $[illegible] for his claim, which I bought and turned over to one I supposed would be a desirable party. He passed a portion of the interest to other and unfriendly hands. This was only re-secured after long delay and much trouble. At one time as many as seven locators came onto the marsh and took forcible possession, standing with guns in hand behind little monuments they had built on the alkali flats. Their numbers enabled them to relieve each other, and I was outnumbered. I had to appeal to the courts for their ejectment.

"As soon as possible, I made arrangements, through my brother, with a Chicago company, to put up a plant, and the production of borax was begun. Borax was then little known beyond the blacksmiths and druggists, and was costly, druggists selling it at twenty-five cents per ounce. The total consumption in the United States, we soon learned, reached only about [illegible] tons per annum. Before we could get any into market, it fell to [illegible] cents a pound, which was all we realized.

"I have lived to see borax become an important article of commerce, and, by reason of the great reduction in price, a household staple of universal use. It is now cheaply sold in convenient packages by all grocers. Teels' Marsh has been operated almost continuously ever since. This property, for a long period of years, practically controlled the borax market, and was the richest and most extensive of all discoveries. The total product of the marsh has probably reached 15,000 tons.

"I have been identified with the borax business from that date to the present time, twenty years. Smith Brothers finally obtained sole control of Teels' Marsh, buying out over one hundred locations, and clearing up all adverse claims. It subsequently passed into my individual ownership, and was transferred to the Pacific Coast Borax Company about two years ago."



PACIFIC COAST BORAX CO'S WORKS, ALAMEDA, CAL.

(PAGE 1 of 2)

All Applications must be filled out by Applicant

Bldg. Form 1

PLANS AND SPECIFICATIONS and other data must also be filed

BOARD OF PUBLIC WORKS

DEPARTMENT OF BUILDINGS

1 Application for the Erection of Buildings

CLASS "A" ~~"B"~~ D Masonry

To the Board of Public Works of the City of Los Angeles:

Application is hereby made to the Board of Public Works of the City of Los Angeles, through the office of the Chief Inspector of Buildings, for a building permit in accordance with the description and for the purpose hereinafter set forth. This application is made subject to the following conditions, which are hereby agreed to by the undersigned applicant and which shall be deemed conditions entering into the exercise of the permit:

First: That the permit does not grant any right or privilege to erect any building or other structure therein described, or any portion thereof, upon any street, alley, or other public place or portion thereof.

Second: That the permit does not grant any right or privilege to use any building or other structure therein described, or any portion thereof, for any purpose that is, or may hereafter be prohibited by ordinance of the City of Los Angeles.

Third: That the granting of the permit does not affect or prejudice any claim of title to, or right of possession in, the property described in such permit.

WILMINGTON

TAKE TO REAR OF NORTH ANNEX 1st FLOOR CITY CLERK PLEASE VERIFY

Lot No. .... Block .... (Description of Property)

Marwan Lalcout [illegible]

Patents Bk 3 Pag 73

TAKE TO ROOM No. 408 SOUTH ANNEX ENGINEER PLEASE VERIFY

District No. 25 ... M. B. Page 17 ... F. B. Page ....

No. 300 Falcon Ave .... Street (Location of Job)

Bet. Fries + San Clemente

(USE INK OR INDELIBLE PENCIL)

1. Purpose of Building Refreshment Hall ... No. of Rooms — ... No. of Families —
2. Owner's name Pacific [illegible] Co. ... Phone [illegible] 1104
3. Owner's address 300 Falcon Ave
4. Architect's name Albert C. Martin ... Phone [illegible]
5. Contractor's name [illegible] ... Phone —
6. Contractor's address —
7. TOTAL VALUATION OF BUILDING (Including Plumbing, Gas Fitting, Sewers, Cesspools, Elevators, Painting, Finishing, etc.) $ 1000
8. Any other buildings on lot at present? Yes ... How used? [illegible]
9. Size of proposed building [illegible] ... Size of lot .... feet
10. Number of stories in height One ... Height to highest point 10'0"
11. Material of foundation Conc ... Character of soil [illegible]
12. Size of footings [illegible] ... Depth below surface of ground [illegible]
13. Number of chimneys — ... Material of chimneys —
14. Number of inlets to each flue — ... Interior size of such flues —
15. Material of exterior walls [illegible]
16. Material of interior construction —
17. Material of floors —
18. Material of roof —
19. Are there any other buildings within 30 feet of the proposed structure? Yes

I have carefully examined and read the above application and know the same is true and correct, and hereby certify and agree that if a permit is issued that all of the provisions of the Building Ordinances will be complied with, whether herein specified or not; also certify that the plans and specifications herewith filed conform to all of the provisions of the Building Ordinances and State Laws.

OVER

(Sign here) Albert C. Martin [illegible]
(Owner or Authorized Agent)

FOR DEPARTMENT USE ONLY

PERMIT NO.	Plans and specifications checked and found to conform to Ordinances, State Laws, etc.	Application checked and found O. K.	
4161	[illegible] Plan Examiner	[illegible] Clerk	JAN 24 1934
22727			

(Page 2 of 2)

REMARKS

I hereby agree to locate and erect this building or structure and every portion thereof, except unenclosed porches, back a distance from the front property line equal to the set-back line of the nearest building now erected on any lot in this block in Zone "A" or "B" on the same side of the street.

Owner.

300 sacks cement

1 Ton steel

APPROVED BY
Board of Harbor Commissioners
JAN 22 1924

PRESIDENT

SECRETARY

(Page 1 of 2)

All Applications must be filled out by Applicant

PLANS AND SPECIFICATIONS

BOARD OF PUBLIC WORKS

2 DEPARTMENT OF BUILDINGS

Application for the Erection of Frame Buildings

CLASS "D"

7/2 3

WILMINGTON

District No. 2517 M. B. Page 17 F. B. Page

No. 300 Falcon Street Street (Location of Job)

Mormon Island - Wilmington

(USE INK OR INDELIBLE PENCIL)

1. Purpose of Building Plant Wharf No. of Rooms No. of Families
2. Owner's name Pacific Coast Borax Co. Phone 885-504
3. Owner's address 1017 Central Building Los Angeles
4. Architect's name T. M. Cramer Plant Sup't Phone 885-504
5. Contractor's name W. M. Ledbetter Co. Phone MAI-4790
6. Contractor's address Pacific Electric Bldg.
7. VALUATION OF PROPOSED WORK $80,000.
8. Is there any existing (old) building on lot? How used?
9. Size of proposed building x Height to highest point 14.8' M.L.L.W. feet
10. Number of Stories in height Character of ground sand clay
11. Material of foundation Size of footings Size of wall Depth below ground
12. Material of chimneys Number of inlets to flue Interior size of flues x
13. Give sizes of following materials: REDWOOD MUDSILLS x Girders x
    EXTERIOR studs x INTERIOR BEARING studs x Interior Non-Bearing studs x Ceiling joists x Roof rafters x FIRST FLOOR JOISTS x Second floor joists x Specify material of roof
14. Will all provisions of State Dwelling House Act be complied with? Yes

I have carefully examined and read the above application and know the same is true and correct, and that all provisions of the Ordinances and Laws governing Building Construction will be complied with, whether herein specified or not.

Pacific Coast Borax Co.

OVER (Sign here) By T. M. Cramer (Owner or Authorized Agent)

FOR DEPARTMENT USE ONLY

PERMIT NO. 10914

JAN 1 1924

80 00

FOR PLANS SEE No.

(Page 2 of 2)

FOR DEPARTMENT USE ONLY

APPLICATION	O. K.
CONSTRUCTION	O. K.
ZONING	O. K.
SET-BACK LINE	O. K.
ORD. 33751 (N. S.)	O. K.
FIRE DISTRICT	O. K.

REMARKS

I hereby agree to locate and erect this building or structure and every portion thereof, except unenclosed porches, back a distance from the front property line equal to the set-back line of the nearest building now erected on any lot in this block in Zone "A" on the same side of the street.

Owner.

Attached hereto and made a part hereof are two maps:
Map No. 1, showing property of company with the position of wharf thereon, also position of piles in wharf.
Map No. 2, Detailed plan of proposed wharf and shows depths of pile penetration prepared for.

APPROVED BY
FEB 29 1924

(Page 1 of 2)

Bldg. Form 1

All Applications Must be Filled Out by Applicant

PLANS AND SPECIFICATIONS and other data must also be filed

BUILDING DIVISION

DEPARTMENT OF BUILDING AND SAFETY

Application for the Erection of Buildings

CLASS "~~A B C~~" D

To the Board of Building and Safety Commissioners of the City of Los Angeles:

[illegible]

TAKE TO ROOM NO. 6 REAR OF NORTH ANNEX 1st Floor

CITY CLERK PLEASE VERIFY

TAKE TO FIRST FLOOR 741 SO. BROADWAY

ENGINEER PLEASE VERIFY

Lot No. .... Block .... (Description of Property)

WILMINGTON

District No. .... M. B. Page .... C. S. Page ....

No. 300 Falcon St, Terminal Island Street (Location of Job)

Wilmington WILMINGTON

(USE INK OR INDELIBLE PENCIL)

1. Purpose of Building Storage No. of Rooms 1 No. of Families ....
2. Owner's name Pacific Coast Borax Co. Phone Wil. 631
3. Owner's address Box 400, Wilmington, Calif.
4. Architect's name Albert C. Martin Phone MI. 8347
5. Contractor's name .... Phone ....
6. Contractor's address ....
7. TOTAL VALUATION OF BUILDING (Including Plumbing, Gas Fitting, Sewers, Cesspools, Elevators, Painting, Finishing, or Heating, etc.) $ 75,000.—
8. Any other building or permit for a building on lot at present? Yes (How used) Manufacturing
9. Size of proposed building .... Size of lot 8 acres feet.
10. Number of stories in height One Height to highest point 32-0
11. Material of foundation Piling Character of soil Sand
12. Material of exterior walls Corrugated iron
13. Material of interior construction Steel
14. Material of floors Wood without Cu. Cement
15. Material of roof Corrugated iron

I have carefully examined and read the above application and know the same is true and correct, and hereby certify and agree, if a permit is issued, that all of the provisions of the Building Ordinances will be complied with, whether herein specified or not; also certify that plans and specifications herewith filed conform to all of the provisions of the Building Ordinances and State Laws.

OVER

(Sign Here) Albert C. Martin (Owner or Authorized Agent.)

FOR DEPARTMENT USE ONLY

PERMIT NO.	Plans and Specifications checked and found to conform to Ordinances, State Laws, etc.	Application checked and found	Stamp here when permit is issued
34241	12/10/26 [illegible] Plan Examiner	Zone E 12/10 [illegible] Clerk	[illegible]

(Page 2 of 2)

FOR DEPARTMENT USE ONLY

APPLICATION	O. K.
CONSTRUCTION	O. K.
ZONING	O. K.
SET-BACK LINE	O. K.
ORD. 33761 (N. S.)	O. K.
FIRE DISTRICT	O. K.

REMARKS

APPROVED BY
Board of Harbor Commissioners
DEC 5 1928
PRESIDENT
M. F. Rouse
SECRETARY.

APPROVED
NOV
ANGELES HARBOR DEPARTMENT

(Page 1 of 2)

All Applications Must be Filled Out by Applicant

PLANS AND SPECIFICATIONS and other data must also be filed

Bldg. Form 3

3

BUILDING DIVISION

DEPARTMENT OF BUILDING AND SAFETY

Application to Alter, Repair or Demolish

To the Board of Building and Safety Commissioners of the City of Los Angeles:
[illegible]
described in such permit.

	REMOVED FROM	REMOVED TO
TAKE TO ROOM No. 248 (2ND FLOOR) CITY CLERK PLEASE VERIFY	Lot ......, Block	Lot ...... Block ......
	Tract	Tract M.R. 45 ...
	......	Mormon Island
	......	SAN PEDRO DISTRICT
TAKE TO ROOM No. 5 (MAIN FL. FLOOR) ENGINEER PLEASE VERIFY	Book ...... Page ...... F. B. Page	Book 36½ Page 17 F. B. Page ......
	Front No. 300 Falcon Street, Wilmington Street	
	Side No. at Fries Avenue Street	

(USE INK OR INDELIBLE PENCIL)

1. What purpose is the present Building now used for? Borax Refinery
2. What purpose will Building be used for hereafter? Same
3. Owner's name Pacific Coast Borax Company Phone ......
4. Owner's address Wilmington, California
5. Architect's name Albert C. Martin Phone MU 0347
6. Contractor's name Care of Architect Phone ......
7. Contractor's address ......
8. VALUATION OF PROPOSED WORK {Including all Material, Labor, Finishing, Equipment and Appliances in Completed Building} $ 500.00
9. Class of present Building A No. of rooms at present ......
10. Number of stories in height Three (3) Size present Building 200 x 200
11. State how many buildings are on this lot Three (3)
12. State purpose buildings on lot are used for Power House, Store House (Apartment House, hotel, residence, or any other purpose)
13. What Zone is Property in? ......

STATE ON FOLLOWING LINES EXACTLY WHAT ALTERATIONS, ADDITIONS, ETC., WILL BE MADE TO THIS BUILDING:

Installation of a toilet room on the second floor of the Refinery Building

I have carefully examined and read the above application and know the same is true and correct, and that all provisions of the Ordinances and Laws governing Building Construction will be complied with, whether herein specified or not.

OVER

(Sign here) Albert C. Martin
(Owner or authorized Agent)

FOR DEPARTMENT USE ONLY

PERMIT NO.	Plans and specifications checked and found to conform to Ordinances, State Laws, etc.	Application checked and found O. K.	
17903	[signature] Plan Examiner	7/9/29 [signature] Clerk	JUL 10 1929

PLANS

(Page 2 of 2)

14. Size of new addition ______ x ______ No. of Stories in height ______
15. Material of foundation ______ Size footings ______ size wall ______ Depth below ground ______
16. Size of Redwood Mudsills ______ x ______ Size of interior bearing studs ______ x ______
17. Size of exterior studs ______ x ______ Size of interior non-bearing studs ______ x ______
18. Size of first floor joists ______ x ______ Second floor joists ______ x ______
19. Will all Lathing and Plastering Comply with Ordinance? ______
20. Will all provisions of State Housing Act be complied with? Yes

I have carefully examined and read the above blank and know the same is true and correct, and that all provisions of the Ordinance and Laws governing Building Construction will be complied with, whether herein specified or not.

(Sign here) Albert C. Martin
(Owner or Authorized Agent)

FOR DEPARTMENT USE ONLY

APPLICATION	O. K.
CONSTRUCTION	O. K.
ZONING	O. K.
SET-BACK LINE	O. K.
ORD 33761 (N. S.)	O. K.
FIRE DISTRICT	O. K.

REMARKS

(Page 1 of 2)

All Applications Must be Filled Out by Applicant

Bldg. Form 3

PLANS AND SPECIFICATIONS and other data must also be filed

BUILDING DIVISION

3

DEPARTMENT OF BUILDING AND SAFETY

Application to Alter, Repair or Demolish

To the Board of Building and Safety Commissioners of the City of Los Angeles: [illegible]

TAKE TO ROOM No. 340 (2ND FLOOR) CITY CLERK PLEASE VERIFY	REMOVED FROM	REMOVED TO
	Lot ... Block ...	Lot ... Block ...
	Tract ...	Tract ...
	MORMAN ISLAND	SAN PEDRO DISTRICT
TAKE TO ROOM No. 5 (MAIN ST. BLOCK) ENGINEER PLEASE VERIFY	Book ... Page ... F. B. Page ...	Book ... Page ... F. B. Page ...
	From No. 300 FALCON ... Street	
	To No. ... Ave. ... Street	

(USE INK OR INDELIBLE PENCIL)

1. What purpose is the present Building now used for? REFINERY
2. What purpose will Building be used for hereafter? REFINERY
3. Owner's name PACIFIC COAST BORAX CO Phone ...
4. Owner's address 1010 CENTRAL BLDG.
5. Architect's name ALBERT C. MARTIN Phone ...
6. Contractor's name NOT AWARDED Phone ...
7. Contractor's address ...
8. VALUATION OF PROPOSED WORK (Including all Material, Labor, Finishing, Equipment and Appliances in Completed Building) $ 10,000.00
9. Class of present Building A No. of rooms at present ...
10. Number of stories in height ONE Size present Building 78 x 100
11. State how many buildings are on this lot TWO
12. State purpose buildings on lot are used for REFINERY ...
13. What Zone is Property in? ...

STATE ON FOLLOWING LINES EXACTLY WHAT ALTERATIONS, ADDITIONS, ETC. WILL BE MADE TO THIS BUILDING:

WORK CONSISTS OF ADDING STEEL FRAME BUILDING WITH GALVANIZED IRON SIDING AND ASBESTOS ROOF SUPPORTED ON EXISTING PIERS AND FOOTINGS, ALSO INCLUDES A DUMPING PLATFORM AT SOUTH EAST CORNER OF EXISTING CONCRETE BUILDING.

I have carefully examined and read the above application and know the same is true and correct, and that all provisions of the Ordinances and Laws governing Building Construction will be complied with, whether herein specified or not.

OVER

(Sign here) Albert C. Martin CB
(Owner or Authorized Agent)

FOR DEPARTMENT USE ONLY

PERMIT NO.	Plans and Specifications checked and found to conform to Ordinances, State Laws, etc.	Application checked and found	
2275	Plan Examiner	2/3/[illegible] ZE Clerk	ISSUED FEB 5 1926 ISSUED

2/ /25

(Page 2 of 2)

14. Size of new addition 46' x 150 No. of Stories in height One
15. Material of foundation Conc. Size footings See details size wall Depth below ground
16. Size of Redwood Mudsill x Size of interior bearing studs x
17. Size of exterior studs x Size of interior non-bearing studs x
18. Size of first floor joists x Second floor joists x
19. Will all Lathing and Plastering Comply with Ordinance? Yes
20. Will all provisions of State Housing Act be complied with? Yes

I have carefully examined and read the above blank and know the same is true and correct, and that all provisions of the Ordinance and Laws governing Building Construction will be complied with, whether herein specified or not.

(Sign here) Albert Martin AJS
(Owner or authorized Agent)

FOR DEPARTMENT USE ONLY

APPLICATION	O. K. MM
CONSTRUCTION	O. K. MM
ZONING	O. K. OP
SET-BACK LINE	O. K. OP
ORD. 33761 (N. S.)	O. K. OP
FIRE DISTRICT	O. K. OP

REMARKS

Not Harbor Property

(Page 1 of 3)

All Applications Must be Filled Out by Applicant

PLANS AND SPECIFICATIONS and other data must also be filed

3

CITY OF LOS ANGELES
DEPARTMENT OF BUILDING AND SAFETY
BUILDING DIVISION

SAN PEDRO DISTRICT

Application to Alter, Repair or Demolish

To the Board of Building and Safety Commissioners of the City of Los Angeles:
[illegible]

	REMOVED FROM	REMOVED TO
TAKE TO Room No. 240 (2ND FLOOR) CITY CLERK PLEASE VERIFY	Lot .... Block	Lot .... Block ....
	Tract	Tract ....
TAKE TO ROOM No. 6 (MAIN ST.) FLOOR) ENGINEER PLEASE VERIFY	Book ...... Page ...... F. B. Page	Book ...... Page ...... F. B. Page ......
	From No. ...... (Falcon St.) ...... Street	
	To No. ...... [illegible] ...... Street	

(USE INK OR INDELIBLE PENCIL)

1. What purpose is the present Building now used for? [illegible]
2. What purpose will Building be used for hereafter? [illegible]
3. Owner's name [illegible] Phone [illegible]
4. Owner's address [illegible]
5. Architect's name (Not to be filled in unless with name of Certified Architect or Licensed Engineer under State Act) Phone
6. Contractor's name [illegible] Phone 627-90 L.B.
7. Contractor's address [illegible]
8. VALUATION OF PROPOSED WORK {Including all Material, Labor, Finishing, Equipment and Appliances in Completed Building} $ [illegible]
9. Class of present Building 4 No. of Rooms at present [illegible]
10. Number of stories in height 3 Size present Building 100 x 100
11. State how many buildings are on this lot [illegible]
12. State purpose buildings on lot are used for [illegible] (Apartment House, Hotel, Residence, or Any Other Purpose)
13. What Zone is Property in? F

STATE ON FOLLOWING LINES EXACTLY WHAT ALTERATIONS, ADDITIONS, ETC., WILL BE MADE TO THIS BUILDING:

Build new office [illegible]

[illegible]

OVER (Sign here) [illegible]

FOR DEPARTMENT USE ONLY

PERMIT No.	[illegible]	[illegible]	[illegible]
5936	[illegible]	[illegible]	[illegible]

L. A. HARBOR DEPT O.K.

(Page 2 of 3)

14. Size of new addition..........x..........No. of stories in height..........Size of Lot..........x..........ft.
15. Material of foundation..........Size footings..........Size wall..........Depth below ground..........
16. Size of Redwood Mudsills..........x..........Size of interior bearing studs..........x..........
17. Size of exterior studs..........x..........Size of interior non-bearing studs..........x..........
18. Size of first floor joists..........x..........Second floor joists..........x..........
19. Will all Lathing and Plastering Comply with Ordinance? ....
20. Will all provisions of State Housing Act be complied with? ....

I have carefully examined and read the above blank and know the same is true and correct, and that all provisions of the Ordinances and Laws governing Building Construction will be complied with, whether herein specified or not.

(Sign here) ....
(Owner or Authorized Agent)

FOR DEPARTMENT USE ONLY

APPLICATION	O.K.
CONSTRUCTION	O.K.
ZONING	O.K.
SET-BACK LINE	O.K.
ORD. 33251 (N.S.)	O.K.
FIRE DISTRICT	O.K.

REMARKS

APPROVED BY
Board of Harbor Commissioners
MAR 1 8 1931
[signature] PRESIDENT
[signature] SECRETARY

APPROVED
Date MAR 1 2 1931
AS TO LOCATION AND PROJECTION
LOS ANGELES HARBOR DEPARTMENT
By [signature]

Note
Subject to conditions
contained in [illegible]
General Manager's letter
of March 16th 1931 attached

(Page 3 of 3)

14. Size of new addition ___ x ___ No. of stories in height ___ Size of lot ___ x ___ ft.

Depth below ground ___

[illegible]

To the Honorable
Board of Harbor Commissioners

SUBJECT – Application for Building Permit–
Pacific Coast Borax Company

Gentlemen;

Please find attached building permit, requested by the Pacific Coast Borax Company, and would recommend approval of same under the conditions that this agreement shall not be construed to acknowledge ownership or property rights to property herein described, other than those specifically herein set forth, and shall not be construed as a ratification of property interests in any manner whatsoever.

Very truly,

G. F. NICHOLSON,
Acting General Manager.

GFN
G

Attach–

(Page 1 of 2)

USE INK OR INDELIBLE PENCIL

3

CITY OF LOS ANGELES
DEPARTMENT OF BUILDING AND SAFETY
BUILDING DIVISION

Application to Alter, Repair, Move or Demolish

SAN PEDRO DISTRICT

REMOVED FROM | REMOVED TO

SAN PEDRO DISTRICT

Lot. Mormon Island

Tract

Present location of building: [illegible] Pacific Coast Borax Co. [illegible] Wilmington

New location of building: ~~[illegible]~~ 300 Falcon Ave (tentative)

Between what cross streets: approx. location at Fries Ave (pat)

Approved by City Engineer

1. Purpose of PRESENT building: Shower & Toilets — Families — Rooms
2. Use of building AFTER alteration or moving: Same — Families — Rooms
3. Owner (Print name): Pacific Coast Borax Co. — Phone
4. Owner's Address: Wilmington Cal 300 Falcon Ave
5. Certificated Architect: Frank L. Stiff — State License No. B 574 — Phone [illegible]
6. Licensed Engineer — State License No. — Phone
7. Contractor: [illegible] — State License No. — Phone [illegible]
8. Contractor's Address: [illegible]
9. VALUATION OF PROPOSED WORK (including all labor and material and all permanent lighting, heating, ventilating, water supply, plumbing, fire sprinkler, electrical wiring and/or elevator equipment therein or thereon) $ 800.00
10. State how many buildings NOW on lot and give use of each. (Residence, Hotel, Apartment House, or any other purpose)
11. Size of existing building x — Number of stories high — Height to highest point
12. Class of building — Material of existing walls — Exterior framework (Wood or Steel)

Describe briefly and fully all proposed construction and work:

Install Shower and Toilets in Present Building Pacific Coast Borax Co at Wilmington & [illegible]

Fill in Application on other Side and Sign Statement (OVER)

FOR DEPARTMENT USE ONLY 5067

PERMIT NO. 10161

PLANS

Plans and Specifications checked: [illegible]	Zone: B	Fire District: 300	Valuation: 12.00
Corrections verified: [illegible]	Bldg. Line: [illegible]	Street widening: [illegible]	OCT 23 [illegible]
Plans, Specifications and Application rechecked and approved: [illegible]	Application checked and approved: [illegible]		
For Plans Retained	Filed with		Inspector

PLANS, SPECIFICATIONS, and other data must be filed if required.

NEW CONSTRUCTION

Size of Addition .... Size of Lot........x........Number of Stories when complete...........

Material of Foundation .... Width of Footing .... Depth of footing below ground..........

Width Foundation Wall .... Size of Redwood Sill ....x........ Material Exterior Walls..........

Size of Exterior Studs .... Size of Interior Bearing Studs ....

Joists: First Floor ....x........ Second Floor ....x........ Rafters........x........ Roofing Material ....

I have carefully examined and read both sides of this completed Application and know the same is true and correct and hereby certify and agree, if a Permit is issued, that all the provisions of the Building Ordinances and State Laws will be complied with whether herein specified or not; also certify that plans and specifications, if required to be filed, will conform to all of the provisions of the Building Ordinances and State Laws.

Sign Here........ (Owner or Authorized Agent)

By........

FOR DEPARTMENT USE ONLY

Application	Fire District	Bldg. Line	Termite Inspection
Commission	Zoning	Street Widening	Ground Tests Verified

(1) REINFORCED CONCRETE

Barrels of Cement ....

Tons of Reinforcing Steel ....

(2) The building (and, or, addition) referred to in this Application is, or will be when moved, more than 100 feet from .... Street

Sign Here........ (Owner or Authorized Agent)

(3) No required windows will be obstructed.

Sign Here........ (Owner or Authorized Agent)

(4) There will be an unobstructed passageway at least ten (10) feet wide, extending from any dwelling on lot to a Public Street or Public Alley at least 10 feet in width.

Sign Here........ (Owner or Authorized Agent)

REMARKS:

PLAN CHECKING

I hereby certify that I am the applicant of this permit, and that in doing the work authorized thereby, I will not employ any person in violation of the Labor Code of the State of California relating to Workmen's Compensation Insurance.

Signature of Applicant

1

CITY OF LOS ANGELES

DEPARTMENT OF BUILDING AND SAFETY

BUILDING DIVISION

APPLICATION TO ERECT A NEW BUILDING OF TYPE

SAN PEDRO DISTRICT

Lot No.

Tract

Location of Building (House Number and Street) — Approved by City Engineer

Between what cross streets

USE INK OR INDELIBLE PENCIL.

1. Purpose of building — Families — Rooms
2. Owner
3. Owner's address
4. Certificated Architect — State License No. — Phone
5. Licensed Engineer — State License No. — Phone
6. Contractor — State License No. — Phone
7. Contractor's address
8. VALUATION OF PROPOSED WORK
9. State how many buildings NOW on lot and give use of each.
10. Size of new building — No. Stories — Height to highest point — Size lot
11. Material Exterior Walls — Type of Roofing
12. For Accessory Buildings and similar structures (a) Footing: Width — Depth in Ground — Width of Wall (b) Size of Studs — Material of Floor (c) Size of Floor Joists — Size of Rafters

I hereby certify that to the best of my knowledge and belief the above application is correct and that this building or construction work will comply with all laws, and that in the doing of the work authorized thereby I will not employ any person in violation of the Labor Code of the State of California relating to Workmen's Compensation Insurance.

Plans, Specifications and other data must be filed.

Sign here (Owner or Authorized Agent)

By

FOR DEPARTMENT USE ONLY

PERMIT No.

FOR DEPARTMENT USE ONLY		
(1) PLAN CHECKING	(2) REINFORCED CONCRETE	(3) The building referred to in this Application will be more than 100 feet from
Receipt No.	Severity of Cement	Street
Valuation $		
Fee Paid $	Tons of Reinforcing Steel	Sign here (Owner or Authorized Agent)

REMARKS:

CITY OF LOS ANGELES - DEPARTMENT OF BUILDING AND SAFETY
APPLICATION FOR BUILDING PERMIT AND
CERTIFICATE OF OCCUPANCY

THIS PERMIT IS FOR: [X] NEW BLDG./STRUCTURE [ ] ADD. ALTER. REPAIR EXISTING BUILDING [ ] RELOCATE EXIST. BLDG. [ ] DEMOLITION OF ENTIRE BUILDING

(A) PROJECT ADDRESS: 300 FALCON ST
CROSS STREETS: FRIES
TRACT: (PMT 3473) MORMAN'S ISLAND SEC 8 T5 SR13W
LOT: ARB 1
DIST. MAP: 24B205/21B205
ASSESSOR'S ID: 7440-019-001
CENSUS TRACT: 2949
COUNCIL DIST: 15
FIRE DISTRICT: II
FLOOD ZONE: YES
AFFIDAVITS, EASEMENTS AND RESTRICTIONS: ORD165406, CZC2, ZI1335, CFG8000, ZI1653, ZI2130

(B) PROPERTY OWNER: PORT OF LOS ANGELES
APPLICANT: U.S. BORAX INC
PHONE: 310-5225315
ADDRESS: 300 FALCON ST
CITY/STATE/ZIP: WILMINGTON, CA 90744
ENGINEER: M.T.I. ENGINEERING CORP 1171 N DIXIE DR STE 201, SAN DIMAS, CA 91773 909-5991786
CONTRACTOR: [illegible] 1966 S. [illegible] Bloomington CA 92316 CONT LIC 258034/081383-72
901-877-1142
PROPOSED USE OF BUILDING: (Z3) DUST COLLECTION BAGHOUSE SUP STRUCTURE
DESCRIPTION OF WORK: BAGHOUSE DUST COLLECTOR - SUPPORT STRUCTURE & FOUNDATION

(C) COMPLETE THIS SECTION ONLY FOR ONE AND TWO FAMILY DWELLINGS INVOLVING MECHANICAL WORK IN CONJUCTION WITH THE WORK DESCRIBED IN SEC. "B" ABOVE. A SEPARATE PERMIT SHALL BE OBTAINED FROM MECHANICAL BUREAU FOR ANY WORK WHICH DOES NOT MEET ANY OF THE FOLLOWING CONDITIONS

(D) TYPE OF INSPECTION: GEN; DISTRICT INSP. OFFICE: SP

(E) P.C. NO.: B95-5350
VALUATION: $ 600 0[illegible] /1500
PLAN CHECK: 86.06 / 59.94 / 1.68
90.00 / 10.00
CORNEJO
10/12/95
15514
10/12/95

FOR CASHIER'S USE ONLY

BLDG PLAN CHEC 26.06
ONE STOP 1.72
SYS DEV 5.16
MISCELLANEOUS 5.00
CITY PLAN SURC 2.58
TOTAL 100.52
CHECK 100.52

95WL 32484

10/12/95 04:23:30PM WL01 T-3703 C 11
BLDG PLAN CHEC 59.94
BLDG PERMIT CO 90.00
INVOICE # 0015514 88
PLAN MAINTENAN 10.00
EI COMMERCIAL 1.68
ONE STOP 3.23
SYS DEV 9.70
MISCELLANEOUS 5.00
CITY PLAN SURC 4.80
TOTAL 184.35
CHECK 184.35

B & S 08-8-6 Rev. 2/95

95197600325110101

BUREAU OF ENGINEERING

SEWERS
☐ AVAILABLE
☐ NOT AVAILABLE
SEWER RESERVATION NO. SEWER CERTIFICATE NO.

PLANNING APPROVED UNDER CASE NO.

LANDSCAPE/STREETSCAPE

CURB RAMP | DRIVEWAY

SEWER FACILITIES CHARGE
☐ NOT APPLICABLE
☐ DUE
☐ PAID

SITE PLAN REVIEW

FIRE DEPT.
☐ APPROVED
☐ HYDRANT UNIT
☐ OTHER

HIGHWAY DEDICATION
☐ REQUIRED
☐ COMPLETED

GRADING DIVISION
☐ HILLSIDE NOTICE MAILED
☐ HILLSIDE NOTICE POSTED
☐ PRIVATE SEWAGE SYSTEM OK

DEPT. OF TRANSPORTATION
☐ DRIVEWAY LOCATION
☐ ORD. NO.

EXCAVATION ADJACENT TO PUBLIC WAY

COASTAL TAX RECEIPT NO. DWELLING UNITS

CAL OSHA

HOUSING AUTHORITY

CRA APPROVED AGENCY PROJECT

ADDRESS

CULTURAL AFFAIRS

DEPT. WATER & POWER

CASH/SURETY BOND NO.

FROM OUTSIDE CITY

OLD ADDRESS

LICENSED CONTRACTOR AND WORKERS' COMPENSATION DECLARATION

GENERAL CONTRACTOR

I hereby affirm, under penalty of perjury, that I am the general contractor named on the reverse side of this permit and I am licensed under the provisions of Chapter 9 of the Business and Professions Code, and my license is in full force and effect. I am responsible for the following permits:

☑ Building ☐ Electrical ☐ Plumbing ☐ HVAC

I hereby affirm, under penalty of perjury, one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Sec. 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☑ I have and will maintain workers' compensation insurance, as required by Sec. 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier: Hawkley Cooke Inc. Policy No. NWC-24-6678

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the provisions of Sec. 3700 of the Labor Code, I shall forthwith comply with those provisions.

Sign: [signature] Date: 10-11-95

PLUMBING CONTRACTOR

I hereby affirm, under penalty of perjury, that I am the plumbing contractor named on the reverse side of this permit and I am licensed under the provisions of Chapter 9 of the Business and Professions Code, and my license is in full force and effect. I am responsible only for the plumbing permit.

I hereby affirm, under penalty of perjury, one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Sec. 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☐ I have and will maintain workers' compensation insurance, as required by Sec. 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier: Policy No.:

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the provisions of Sec. 3700 of the Labor Code, I shall forthwith comply with those provisions.

Sign: Date:

ELECTRICAL CONTRACTOR

I hereby affirm, under penalty of perjury, that I am the electrical contractor named on the reverse side of this permit and I am licensed under the provisions of Chapter 9 of the Business and Professions Code, and my license is in full force and effect. I am responsible only for the electrical permit.

I hereby affirm, under penalty of perjury, one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Sec. 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☐ I have and will maintain workers' compensation insurance, as required by Sec. 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier: Policy No.:

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the provisions of Sec. 3700 of the Labor Code, I shall forthwith comply with those provisions.

Sign: Date:

HVAC CONTRACTOR

I hereby affirm, under penalty of perjury, that I am the HVAC contractor named on the reverse side of this permit and I am licensed under the provisions of Chapter 9 of the Business and Professions Code, and my license is in full force and effect. I am responsible only for the HVAC permit.

I hereby affirm, under penalty of perjury, one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Sec. 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☐ I have and will maintain workers' compensation insurance, as required by Sec. 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier: Policy No.:

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the provisions of Sec. 3700 of the Labor Code, I shall forthwith comply with those provisions.

Sign: Date:

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF THE COMPENSATION DAMAGES AS PROVIDED FOR IN SEC. 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

CONSTRUCTION LENDING AGENCY

I hereby affirm, under penalty of perjury, that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civil Code).

Lender's name: Lender's Address:

ASBESTOS REMOVAL

☑ [illegible] ☐ [illegible] AQMD & EPA Sign: [signature] Date: 10-11-95

OWNER-BUILDER DECLARATION

[illegible]

☐ I, as the owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business & Professions Code) [illegible]

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044 Business & Professions Code) [illegible]

☐ I am exempt under Sec. ______ Bus. & Prof. Code for the following reason:

Print: Sign: Date: ☐ OWNER ☐ AUTHORIZED AGENT

FINAL DECLARATION

I certify that I have read this application and state that the above information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection purposes. [illegible]

Print: Michael D. Leahy Sign: [signature] Date: 10-11-95 ☐ OWNER ☑ AUTHORIZED AGENT ☐ CONTRACTOR

(Page 3 of 4)

CITY OF LOS ANGELES - DEPARTMENT OF BUILDING AND SAFETY
BUILDING PERMIT PLOT PLAN
PLEASE DRAW AND LABEL CLEARLY IN INK

THIS PERMIT IS FOR (Mark one): NEW BLDG./STRUCTURE; ADD, ALTER, REPAIR EXISTING BUILDING; RELOCATE EXIST. BLDG.; DEMOLITION OF ENTIRE BUILDING

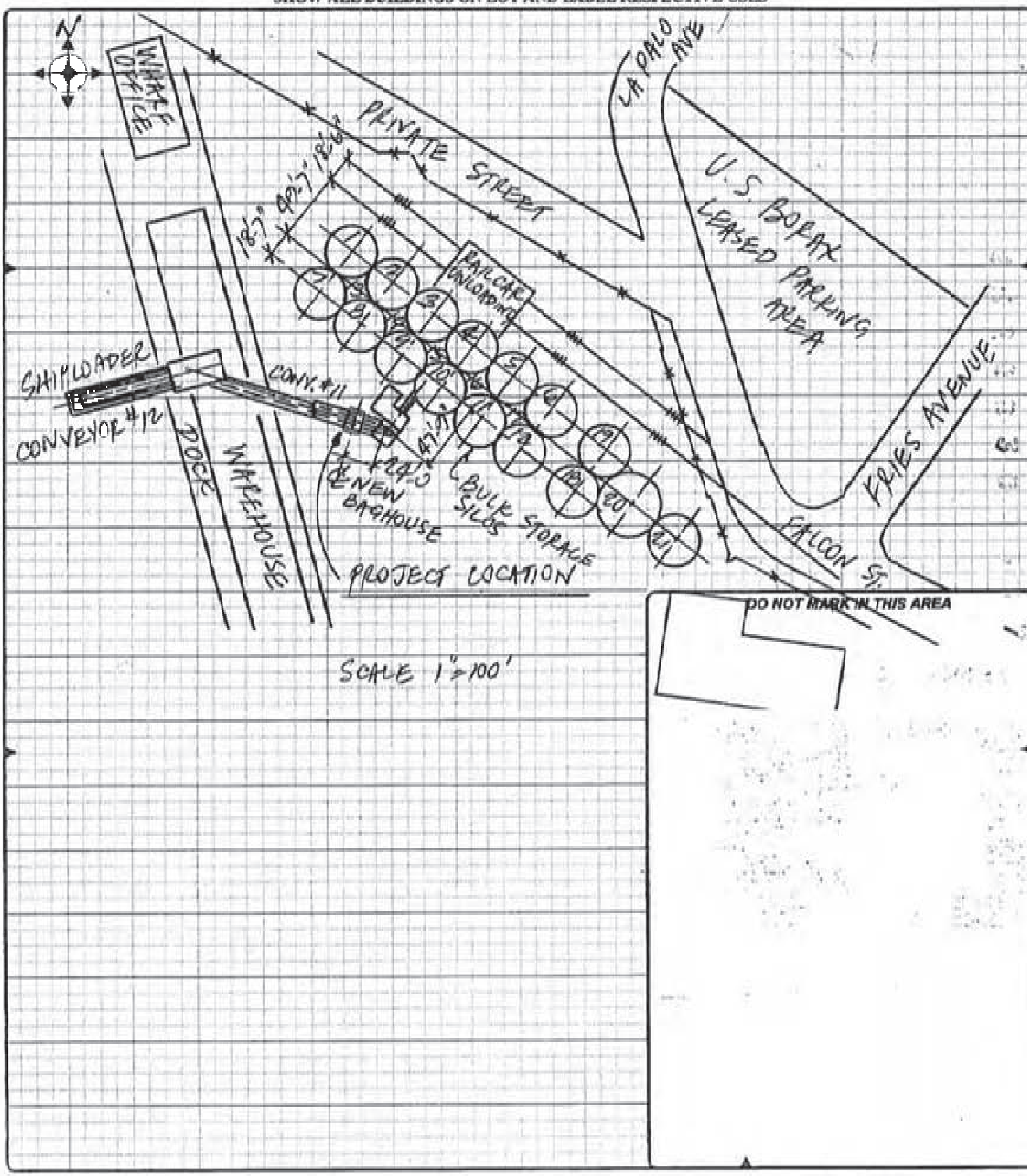
INCIDENT CODE

REF. NO.

PROJECT ADDRESS | SUITE/UNIT NO. | CROSS-STREETS

TRACT(S) and COUNTY REF. NO. | BLOCK | LOT(S) and ARB(S) | DIST. MAP | ASSESSOR'S ID

SHOW ALL BUILDINGS ON LOT AND LABEL RESPECTIVE USES



(Page 1 of 1)

Address of Building 300 Falcon Ave.

Permit No. and Year LA 25645 - 1952

Certificate Issued June 17, 19 52

CITY OF LOS ANGELES
DEPARTMENT OF BUILDING AND SAFETY

CERTIFICATE OF OCCUPANCY

NOTE: Any change of use or occupancy Must be approved by the Department of Building and Safety.

This certifies that, so far as ascertained by or made known to the undersigned, the building at above address complies with the applicable requirements of the Municipal Code, as follows: Ch. 1, as to permitted uses; Ch. 9, Arts. 1, 3, 4, and 5; and with applicable requirements of State Housing Act,—for following occupancies:

1 Story, Type IV, 20x20 Repair Garage, F-1 Occupancy.

Owner Pacific Coast Borax

Owner's Address 300 Falcon Avenue
Wilmington, California

Form B-[illegible] G. E. MORRIS, Superintendent of Building By JOHN G. MILLER

494059

F
865
W88

Woodman, Ruth C.
The story of the Pacific Coast Borax
Co., Division of Borax Consolidated,
Limited

THE STORY OF THE PACIFIC COAST BORAX CO.

Some [illegible] in China. A Persian is credited with introducing them, but who he was, what the circumstances were, where he obtained his borax—all these details are lost in the same obscurity that clouds most of the early history of borax. Only the places themselves remain, as evidence that certain peoples in Asia, centuries ago, were using borax for this purpose.

Three hundred years later the celebrated Arabian alchemist Geber conducted some experiments with borax crystals. In one of his manuscripts we find the word *baurach*, Arabic for borax, written for the first time.

It was Marco Polo who brought the first borax to Europe from Mongolia in the late thirteenth century. At the court of the Great Khan he must have seen the goldsmiths accomplishing with ease what the Venetian goldsmiths, with all their skill, had never been able to achieve. When he returned from his fabulous journey he carried home small lumps of crude, hand-picked natural borax, carefully packed in chamois bags, which were consigned to the crown jewelers. The Sanskrit name for this precious product was *tincana*. The Europeans called it *tincal*.

From then on crude borax became a regular article in the overland caravan trade from China to Italy. Just where in the vast wastes of Central Asia the crystals were found no one in Europe knew. Nor did they know anything about the nature of the crystals, other than that they worked miracles in soldering gold.

Even the celebrated sixteenth-century German metallurgist Georg Agricola whose *De Re Metallica* was considered the authority on mineralogy, confined himself to marveling at the one property of borax. Because of it he gave it the name *chrysocolla*—literally "gold glue."

In 1663 word filtered through to Europe that the source of borax was Tibet, but it was not until two centuries later that there was an authentic account of the Tibetan lakes which supplied the world with all its borax. Dr. Samuel Turner, sent by Governor Warren

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[illegible] in 1783, reported that these lakes lay in a great basin extending for a thousand miles from the Ladakh Mountains, in what is now Kashmir. The lakes were without outlet and therefore full of salts. Digging in the mud beneath the stagnant water, the natives found greasy, greenish masses of opaque crystals. How and when the Tibetans discovered the value of these crystals is unknown. The crude product was carried across the desert to Lhasa, where it was bartered for manufactured goods brought up from the seaports of India, and then started on its long journey over the Himalayas to Calcutta and eventually to Liverpool. There it was refined and used for glazing pottery.

For a long time the Venetians alone had known how to refine borax, and they kept their knowledge secret. Later the process was introduced in Holland and France but still closely guarded. Books on chemistry and mineralogy published during the late eighteenth and early nineteenth centuries are full of speculation as to the origin and nature of borax. Whatever its origin, one interesting thing had been discovered about it by an English chemist, Stephen Francis Geoffroy, who analyzed it in 1732. When alcohol and sulphuric acid were poured over it and lighted, the flame burned green.

In the middle of the eighteenth century another source of borax was discovered in a desolate valley in Italy. A chemist in the employ of the Duke of Tuscany found boracic acid held in solution in the waters of certain boiling springs. There were attempts from time to time to extract the acid, but all proved unproductive, until M. Larderel, an exile from the court of Napoleon, tackled the project in 1818. The returns were slim until 1827, when Larderel thought of utilizing the hot steam belching from the ground as fuel to boil down the acid-charged waters.

The world now had two sources of borax—Tibet and Italy. A third, in Iquique, Chile, was discovered in 1853. But the source which would surpass them all still lay, unsuspected, in California.

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Dr. John A. Veatch was the first man to discover borax in the United States, on January 8, 1856. He was examining the water of a mineral spring a few miles east of Red Bluff, in Tehama County, California, when he recognized the mineral which crystallized out of it as borax and realized its value. The springs in question were already appropriated for a health resort, but Dr. Veatch reasoned that if there was borax here there must be borax elsewhere in that locality which could be turned to commercial account.

After months of patient prospecting and repeated disappointments, he found that the muddy waters of a little lake in Lake County were heavily impregnated with borax. Dr. Veatch located the lake in his own name and, with the help of a friend, Dr. William O. Ayres, started operations. It was six months later, while driving a pipe down through the mud to speed production, that they struck the [illegible] of pure borax. This changed the whole picture. The lake waters, rich as they were, became trifling by comparison with this new discovery.

Dr. Veatch succeeded in interesting a group of San Francisco businessmen, who organized the Borax Company of California. But [illegible] with gold and silver—almost eight years elapsed before the company started production in 1864.

The output at Borax Lake caused the importation of borax into the United States to drop [illegible]. The price of borax dropped from [illegible] a pound. Nevertheless, the company made a profit. Then, abruptly, in 1868, operations ceased. The lake became so flooded due to the driving of an artesian well that it was no longer possible to carry on work there.

This calamity was mitigated somewhat by the discovery of another borax lake in the vicinity, known as Hachinhama, later renamed Little Borax Lake. For the next few years this second lake supplied the domestic demand for borax. Then, in 1871, the scene shifted to Nevada.

Dr. Veatch had prophesied to one William Troup of Virginia

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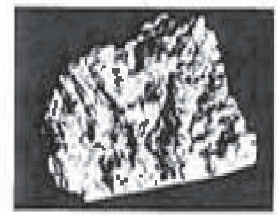

COTTONBALL

City, back in 1860, that borax would some day be found in the Nevada desert, and Troup had kept a vigilant watch ever since. He was finally rewarded when he picked up some cottonball a few miles from Columbus Marsh and again, a few days later, at Salt Wells. He carried samples to the little settlement of Ragtown, borrowed a wash boiler from a miner's wife, boiled the cottonball with some carbonate of soda, and thus produced the first borax in Nevada.

Within a year operations had started at both Columbus and Salt Wells. Imports declined further with the new discovery. Shipments of borate of lime from abroad in 1872 were only half what they had been in 1871. Refined borax was off almost 70%. The price of borax fluctuated that year between 33¢ and 38¢ a pound.

The Borax Company of California, at Little Borax Lake, decided to utilize these competitive deposits in Nevada to boost their own yield. Carloads of ulexite were brought across the Sierras and combined in tanks with the lake waters. The production of borax in California amounted to 280,000 pounds that year.

This was the situation at the time of F. M. Smith's discovery at Teel's Marsh—the discovery which was to start the first real borax rush.

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The Discovery at Teel's Marsh

Francis Marion Smith had just turned twenty-one when he said good-by to his family and the farm in Michigan and headed west. That was in the spring of '67. With him he carried $165, a pocket Testament, and a huge chocolate cake baked by his mother. So eager was he that when the train was halted by spring floods west of Chicago, he got out and walked the fifty miles of inundated track. During the next five years he drifted around, following the mining camps, supporting himself with any kind of job from dishwashing to Indian fighting.

Late in the summer of 1872 he learned of the operations at Columbus Marsh. Queer stuff, known as cottonball, lay encrusted on the surface of that ancient dry lake. It was collected, shoveled into iron tanks, and boiled to separate and crystallize the product. Already there were several of these so-called borax plants on the marsh. It took a lot of fuel to keep the fires going under the boilers, and fuel was scarce in that vicinity.

Smith saw an opportunity for himself. He located a wood ranch in the hills some ten miles from Columbus Marsh, built a little one-room cabin, hired a couple of woodchoppers, and went into the wood business. On his trips to the marsh with his loads of cedar and pine he had a chance to observe the borax operations and was interested.

Off in the opposite direction from his cabin, some ten miles to the northeast, lay another alkali flat—Teel's Marsh, which Smith soon investigated. The surface was thickly encrusted, with much the appearance of Columbus Marsh. Smith gathered some samples and carried them to an assayer in Columbus. When the certificate of analysis was handed to him two days later, he was amazed. The samples from Teel's Marsh were the richest specimens of cottonball ever discovered!

News of any strike travels with lightning speed around the desert. Although Smith wasted no time, on his return to Teel's Marsh he found a stranger camped there with his woodchoppers. The stranger introduced himself as a resident of Columbus. His friend, the

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assayer, had sent him out to locate some borate deposits at a place called Teel's Marsh. Had Smith heard of such a place? Could he direct him there?

Smith had—and could. There was an alkali flat some twenty miles away. He'd be glad to let one of his woodchoppers go along as guide. The two left very early the next morning. When they returned, three days later, Smith had done a pretty complete job of locating the property.

The claims were located under the saline laws of the State of Nevada, which allowed 160 acres to each locator. Hardly had the location notices been filed, however, when the U.S. Commissioner of Mines ruled that borax was a mineral and that borate lands, therefore, came under the Mining Act, which limited each claim to twenty acres. The ruling came as a blow to Frank Smith. It meant that the thousands of acres he had staked out at Teel's Marsh would all have to be relocated.

Word of the strike had caused a sensation on the Pacific Coast, and already prospectors were flocking to Teel's Marsh to grab off for themselves what they could of its rich surface. Claim jumpers made the most of their opportunities. Some came singly. These Smith ran off, in odd moments, between claim staking. Others appeared in armed gangs. To eject them he had to appeal to the courts. But eject them he did. Locators who legally had staked claims he bought out, one by one. Some men would have been content to let a few claims go by the board—but not Smith. Teel's Marsh was his discovery. With the dynamic force which characterized his entire career, he battled for his rights and eventually acquired possession of the entire deposit.

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WILLIAM T. COLEMAN

Cottonball

SMITH'S FIRST ACT, after filing his claims to Teel's Marsh, was to ask his brother Julius to become his partner. Julius Smith interested the Chicago firm of Storey Bros. in the enterprise, and that same fall of 1872 he arrived in Nevada, bringing with him the necessary machinery. The firm of Smith and Storey Bros. was formed and production at Teel's Marsh began.

The manufacturing process was relatively simple. At the outset, the crew at the works consisted of the Smith brothers and two men Frank Smith had picked up in Columbus. One of these men was John Ryan, whose name was to go down in borax history.

None of them knew much about making borax. Costs were high.

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All supplies had to be hauled twenty-five miles across the desert from Columbus. The output of borax from the established plants at Columbus Marsh and Little Borax Lake in California broke the market, and before the Smiths were able to sell any of their product the price had tumbled from 30¢ to 10¢ a pound in carload lots. Within a few months Storey Bros. sold its interests to the Smiths, and the firm from then on was known as Smith Bros.

Smith shipped his borax to William T. Coleman & Co. of San Francisco. The name of William T. Coleman probably carried as much prestige at that time as any in California. A Kentuckian by birth, he had joined the gold rush in '49 but once in California decided wisely that there was more money to be made in catering to the needs of the miners than in wielding a pick and shovel. He established a commission house and within a year was on his way to becoming one of San Francisco's foremost citizens. He organized and headed the famous Vigilantes of 1851 and 1856. He gave help and encouragement to the pioneer industries of his adopted state. It was Coleman who financed the first fish canneries in California; Coleman who shipped the first carloads of dried fruits to eastern markets; Coleman who handled the first borax produced in '64; Coleman to whom Smith turned, as a matter of course, when he was ready to market the product from Teel's Marsh. Smith needed someone with Coleman's experience and ability as his selling agent. Not only had the price of borax fallen to a third its former level, but the outlook was further dimmed by the tariff measure of 1872, putting borax on the free list. The Nevada Legislature, by taxing the proceeds of borax and soda mines early in 1873, made matters worse.

The entire industry was feeling the strain. The group operating at Little Borax Lake gave up altogether. By 1875, out of all the numerous companies which had joined the rush with such high hopes, only five remained. How long even these could survive was questionable, for their combined output was more than the demand. The uses of borax were still limited, the product relatively unknown to the general public.

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The Smiths sized up the situation and decided that now, [illegible], was the time to improve and expand their operations. As a first step they built a small plant in Oakland. Here they could turn out a more satisfactory product than on the desert, where sandstorms beset the crude little refinery. With a product which they could now claim legitimately as the purest borax manufactured, the brothers went out to work to widen their market.

In the fall of 1872, F.M. Smith went east, took a little store with an office at 135 Water Street, New York, and embarked on a one-man campaign to introduce the Smith Bros. brand to the drug and grocery trade. It was slow, discouraging, uphill work, but no one would have suspected it from the promotional literature which appeared the following year, proclaiming that Smith Bros. borax "is now in demand in every household throughout the country!"

The little folder, which the brothers distributed with every sample of borax, confined itself to a discreet list of uses—including "cleansing black cashmeres," "cleaning corners and corns," and keeping cream sweet by adding "a thimbleful of borax to every quart." Each recommendation was backed by the testimony of doctors or public officials. The magazine and newspaper articles of the day knew no bounds in their claims: the use of borax in washing water would prevent diphtheria, lung fever and kidney trouble; a borax shampoo would cure nervous headaches, provided the sufferer napped afterward and undertook no more brain work until the following day—and would thus "postpone the decay of the mental faculties."

In 1884, for reasons never made public, the Smith brothers dissolved partnership. Julius sold out his interest and quit the borax business altogether, leaving Frank sole owner of the firm of Smith Bros. and of Teel's Marsh.

Frank Smith had meanwhile acquired [illegible] acres at Columbus Marsh, along with a general store and some town lots in Columbus. Looking around for someone to take charge of the store, his eye fell on the Wells Fargo agent at Candelaria, Nevada, a young

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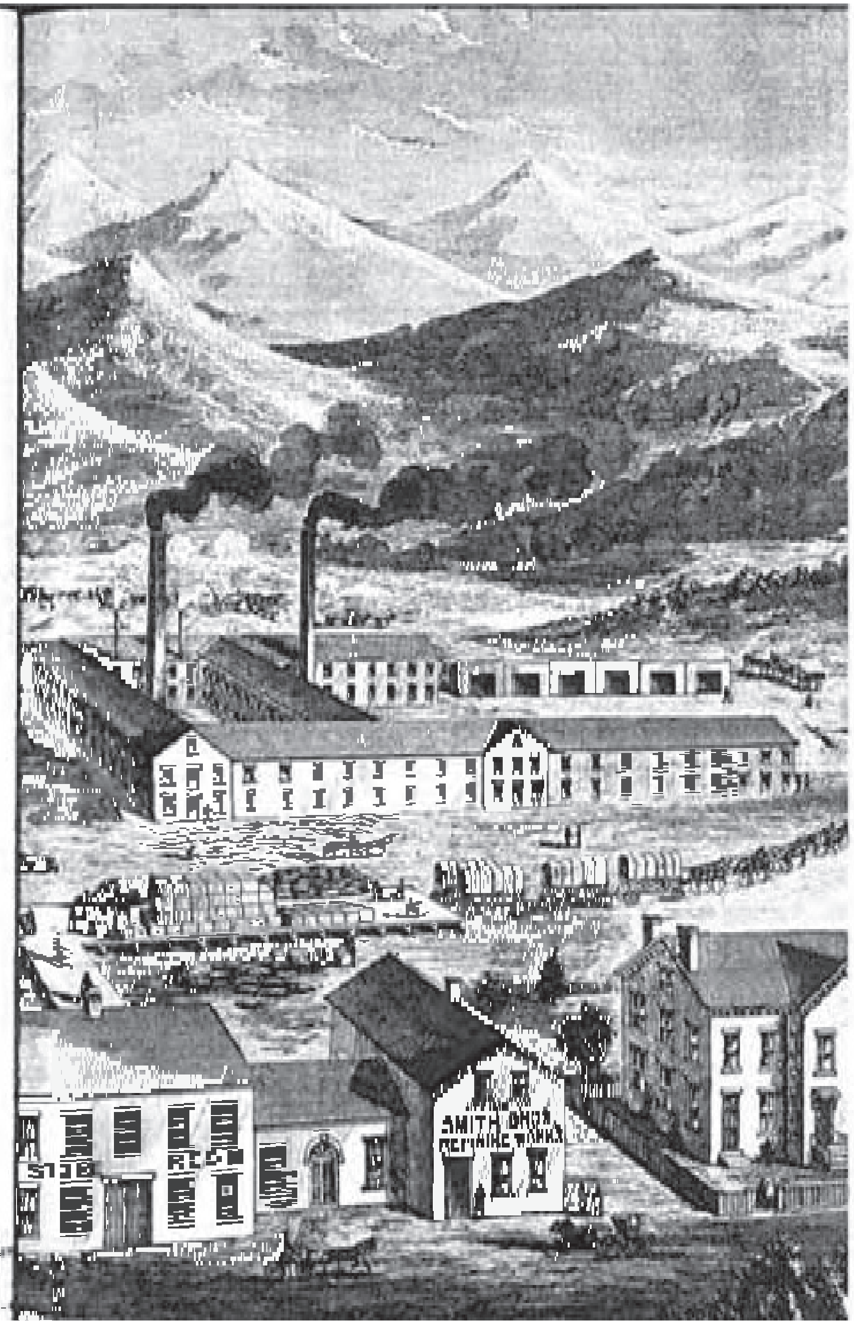
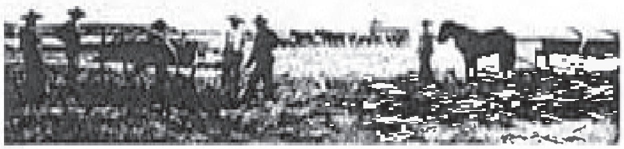




CHINESE LABORERS GATHERING BORATE CRUST ON THE DESERT FLOOR, ABOUT 1885

man by the name of Christian Brevoort Zabriskie. The following year when Smith organized the Pacific Borax Salt & Soda Company at Columbus Marsh, Zabriskie was made superintendent. It was the first step in his rise to the top of what was to become the Pacific Coast Borax Company.

At the same time that he was organizing and operating the new company at Columbus Marsh, Smith was equally busy at Teel's Marsh, organizing the Teel's Marsh Borax Company as successor to Smith Bros. The output from these two plants now made him the largest producer of borax in the west.

A few hundred miles away in Death Valley, however, developments were taking place which were to put an end to all marsh operations.

Death Valley

DEATH VALLEY LIES IN CALIFORNIA, ALONG THE NEVADA STATE LINE. It is about 130 miles long and from six to fifteen miles wide. Walling it on either side are towering volcanic mountain ranges.

The first white men who set foot in the Valley were emigrants bound for the California gold fields in 1849. Looking for a short cut across the desert, they stumbled into the Valley, and not until they found themselves trapped there did they realize their terrible mistake. When they finally managed to escape, one of them, looking down from the summit of the Panamints on the scene of their sufferings, gave the place its name. "Good by, Death Valley," he said.

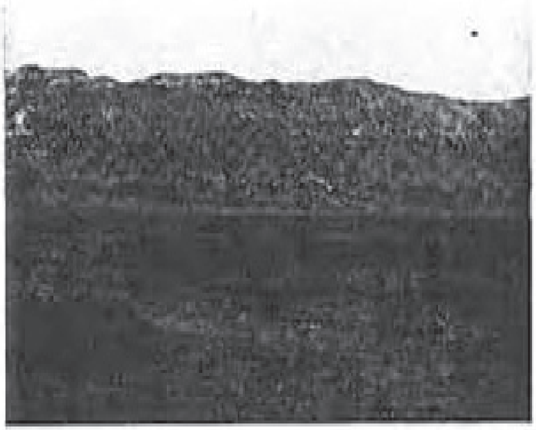
The Paiutes who roamed the valley before the advent of the white man called it *Tomesha*—Ground Afire. Before the Indians, there were other inhabitants—the unidentified men who carved the picture writings found on the rocks of the Death Valley canyons.

Death Valley today has the distinction of being the lowest, hottest, driest spot on the American continent. The "elevation" at Badwater, the low point of the Valley, is 279.6 feet below sea level. From Dante's View in the Funeral Mountains, one can look down on this spot and then westward to the Sierras where the summit of Mt. Whitney rises 14,495 feet—the highest and lowest points in the United States.

The Valley itself was created, according to geologists, some seven to eleven million years ago. At that time tremendous forces broke loose and changed the earth's surface. When the folding and faulting, the tilting and twisting were over, a great valley had appeared between what are now called the Panamint and the Funeral Ranges.

More millions of years passed. The valley became an inland lake, its deep waters charged with salt, borax and other minerals. Two million years ago, the waters began to evaporate, leaving a salt desert. In the rocks which were once the floor of the lake bed have been found fossil tracks and bones of prehistoric animals.

It was the borax, once held in these lake waters and deposited on



AN EARLY PHOTOGRAPH OF DEATH VALLEY. THE CROSS MARKED THE GRAVE OF A PROSPECTOR OR TEAMSTER

the Valley floor ten million years ago which was eventually to make Death Valley famous and open it up to the whole world.

The first man to find it there was Isadore Daunet, a Frenchman who, with five other disappointed prospectors, had quit the mining camp of Panamint City and was heading across the Valley to Arizona in midsummer, 1875. Three of the party died on the floor of the Valley. Daunet and two others, with the help of friendly Indians, managed to reach the camp of Darwin, in quite the opposite direction from Arizona. In his pockets Daunet carried out some strange white crystals he'd picked up in the Valley near the place where the [illegible] abandoned their wagons. But [illegible] when his [illegible] extraordinary [illegible] and [illegible] away.

Then, six years later, in the fall of 1881, Daunet heard some startling news. It was the story of Aaron Winters and his great discovery.

AARON AND ROSIE WINTERS

"She Burns Green"

Aaron Winters was a "desert rat" eking out an existence in Ash Meadows, just east of Death Valley, with his Spanish-born wife, Rosie. Their home was half dugout, half canvas lean-to; their worldly possessions a few head of cattle; their prospects for the future very dim. Then one night in 1881 a traveler on his way north on the Nevada desert stopped overnight at the Winters'. They shared their meager supper with him, and afterward the men talked. The stranger spoke of the interest in borax up north and from his saddlebag took some samples of cottonball, breaking one open to show the silky crystals inside.

As Aaron examined the cottonball in the lamplight, he'd seen stuff like this lying all over the floor of Death Valley.

As soon as the stranger had ridden off the next morning, he went into the Valley with Rosie to gather samples. They scraped up some cottonball from the ground north of Furnace Creek, then hurried back to their camp to make the test.

As the sun dropped behind the Panamints, Aaron poured the sulphuric acid and alcohol over the samples and with trembling hand applied a lighted match. For an instant he and Rosie held their breaths. Then Aaron let out a shout: "She burns green! Rosie, by God, we're rich!"

Winters didn't stop to stake out any claims or to file a location notice with the County Recorder. He just gathered up a sackful of samples and forwarded them to William T. Coleman in San Francisco. Within a few weeks a Coleman representative, William Robertson, appeared at Ash Meadows.

When Robertson left for San Francisco after inspecting the borax deposits in Death Valley, he handed Aaron Winters a check for $20,000.

The news of Winters' discovery reached Isadore Daunet in Darwin and revived memories of the white crystals he, too, had seen in the Valley back in the summer of '75. He enlisted four partners and hurried into the Valley where he located some 260 acres of borax near Bennett's Well. By the time Coleman's first crew arrived in the Valley with the necessary equipment for a borax plant, Daunet's Eagle Borax Company was already in operation. The Frenchman and his partners had dragged a huge iron boiling pan and some crystallizing vats across the mountains. They hired fifty men to gather cottonball from the marsh and went to work making borax. Their first shipment was so impure they could get only 8¢ a pound for it. Daunet discovered, too, that the midsummer heat in Death Valley was just as fierce in 1881 as it had been in 1875. Even if the men could stand it, the borax process couldn't. The solutions would not crystallize in temperatures of 120° and upward. Operations would have to be suspended during the summer months. The following year they did somewhat better, but it was to be their last season. Daunet committed suicide, his partners wea-

tered, and the plant was soon closed after having produced a total output of 130 tons. Today all that remains of the Eagle Borax Works is a huge rusted iron boiler, its black smokestack rising like a marker above a heap of white rubble—the last load of cottonball dumped there some sixty-eight years ago but never processed.

In the winter of 1882 Coleman's men set up a plant—the Harmony Borax Works—near the marsh where Winters had gathered his cottonball. Water was piped in from a spring and soda for the process was obtained from a nearby area. Indians cut and piled mesquite to use as fuel under the boiler. The work of gathering the cottonball was done by Chinese workmen.

In May the crystallizing tanks at the Harmony Works were covered with layers of thick felt for insulation against the blazing heat. Workers played a hose of water continuously on the felt to lower the temperature. But later in the season this did no good, since the water itself was scalding. This plant, too, would have to close down for the summer.

Luck, however, was with Coleman. Just at this juncture word came of another borax discovery in the desert east of Death Valley. Coleman bought it for $15,000. This solved the problem of the summer layoff at the Harmony plant. When the thermometer in Death Valley soared too high to make the manufacture of borax possible, operations were transferred to the Amargosa Works, where the temperatures in June, July and August remained around a comparatively cool 110°. In autumn this plant was closed down in favor of the bigger and richer deposits in the Valley.

Two separate companies were organized—the Harmony Borax Mining Company, incorporated in May, 1884, and the Meridian Borax Company, incorporated six months later.

The Twenty Mule Teams

William T. Coleman was under no illusion as to the transportation difficulties which lay ahead when he established the Harmony Borax Works in Death Valley — probably the most remote industrial plant in America. But he knew desert men, knew there was nothing they wouldn't tackle. By the time the fires were going under the first batch of cottonball, a contract had been signed with Charles Bennett, of Pahrump, Nevada, to haul the borax to Mojave. Bennett had good mules. His wagons were not large, but neither was the output that first season. It was a satisfactory enough arrangement, except for the cost. At the end of the season, when they were ready to shift operations to the new Amargosa plant, the Company decided they could do their own hauling more economically.

They bought eight of Bennett's mules and a twelve mule outfit which had been hauling for the late Eagle Works. Along with the latter went their young [illegible] Ed Stiles. [illegible] that Stiles, with his twelve animals, was hauling loads twice the size that the eight mule team did, and it set him thinking. If twelve mules could haul twice the borax that eight mules did, how much, then, could sixteen, or eighteen, or even twenty mules haul?

The following morning Stiles coupled [illegible] wagon on behind his own, and the water wagon on behind that, then hooked up the additional eight mules to his already long string of twelve. The combined team stretched out over a hundred feet from the wagons. Could a man handle an outfit that long? Ed Stiles proved that he could. That was the beginning of the "20 Mule Teams" which became a household word and a trademark known throughout the world.

It now remained to build wagons which would hold the tremendous loads such teams were capable of hauling. Each wagon was to carry ten tons — about half the capacity of a modern railroad freight car. But these wagons would not be rolling on steel rails over a smooth roadbed. They would be grinding through sand and gravel, lurching over boulders, pitching in and out of chuck holes, grinding up and down steep mountain grades.

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When the blueprints were finished they called for wagons with rear wheels 7 feet high and front wheels 5 feet high, each with steel tires 8 inches wide and 1 inch thick. The hubs were 18 inches in diameter and 22 inches in length. The spokes, of split oak, measured 5½ inches wide at the hub and 4 inches wide at the point. The axletrees were made of solid steel bars, 3½ inches square. The wagon beds were 16 feet long, 4 feet wide and 6 feet deep. Each wagon, empty, weighed 7,800 pounds. Loaded with borax it would weigh 31,800 pounds. Two such loaded wagons, plus the weight of the water tank, which held 1,200 gallons and weighed 9,600 pounds, made a total load of 73,200 pounds, or 36½ tons.

The cost was about $900 a wagon. That they were well built is proved by the fact that in the five years they were in constant operation not once did they break down. In the sixty-six years that they have been standing since, in the hot sun and dry air of Death Valley, they have not fallen apart. They have toured the United States, appeared at World Fairs and State Expositions, rolled along city streets in parades, and in 1937, fifty-two years after they were built, two of them traveled the original route from Death Valley to Mojave behind a twenty mule team—again without a breakdown.

While the wagons were being built, other men tackled the prob-

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tion of the route itself. To reach the western side of Death Valley and the pass over the Panamints, the teams would have to cross the salt bed known today as the Devil's Golf Course, its surface a mass of jagged pinnacles, anywhere from 6 inches to 3½ feet in height, hard as flint, sharp as knives. A crew of Chinese was put to work, hacking off these pinnacles of rock salt until they had beaten a wagon road, six feet wide and eight miles long.

The route led past the site of the old Eagle Borax Works along the edges of the Panamints and on up the long steep grade into Windy Gap. Once out of Death Valley and over the summit of the mountains, there remained one hundred miles of desert before reaching Mojave—a hundred miles in which there was no human habitation and only three springs of water. The loaded team could travel from fifteen to eighteen miles a day. At that rate it required ten days to make the 165-mile journey, which meant ten overnight stops, with at least half of them dry camps. In these camps water tanks were provided, which were towed by the teams from the springs to the dry camps and back again to be refilled. Each station was equipped with feed boxes. The teams bound for the Valley filled them and then used the feed on the return trip. Emergency blacksmithing equipment was also provided at each camp.

The twenty mule teams were actually not twenty mules but eighteen mules and two horses. Experience proved that it was advisable to have a pair of fine, strong draft horses as "wheelers." In hitching up the team, the wheelers would back into position, next to the wagon, on either side of the tongue. From the tongue stretched a steel chain, 120 feet long, equipped at proper intervals with spreaders and singletrees for the nine pairs of mules. The lead pair would take its place at the end of this chain and the other sixteen mules would then fall quickly into place. Each mule knew its place in the "string": in front of the wheelers came the pointers, who worked on the end of the tongue, ahead of them the "sixes," the "eights," the "tens," and so on, to the leaders.

The driver wielded a whip with a six-foot handle and a twenty-

two-foot lash. He also carried the traditional blacksnake. But the real guiding of the team was by the "jerk line"—a braided cotton rope, about half an inch thick, which was attached to the bridle of the nigh leader and ran the length of the team, through rings on the harness of each mule, back to the driver. This jerk line was his only means of communicating orders to the lead animals, 100 feet away. A steady pull on the rope indicated a left turn, a series of sharp jerks a turn to the right. The mules behind the leaders followed instinctively.

When rounding a sharp curve, by the time six or seven pairs of animals had turned, tremendous power was exerted at an angle which could easily pull the wagons off the road. To counteract this, the pointers and sixes were trained to jump over the chain and pull furiously at an angle to the rest of the team, until the wagons had safely reached the point of the turn—a very difficult maneuver.

It was the teamster's job to harness the mules each morning, inspect each piece of harness and hook up the outfit. He rode on the nigh wheeler and handled the brake of the lead wagon.

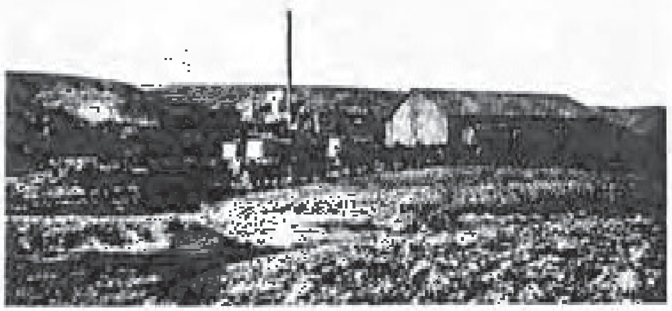
The swamper had many duties. He rode on the rear wagon and managed its brake on the downgrades. He kept the teamster supplied with rocks with which to "encourage" the mules on the upgrades. When they stopped at camp, he gathered the fuel, cooked, and washed the dishes. There was little drinking on the twenty-day round trip, but at Mojave the men generally made up for it. Between mid-afternoon, when they reached the little railroad settlement, and the following morning, when they started for Death Valley again, many a teamster blew his entire pay on liquor and faro.

Much has been written about the romance of the twenty mule teams. But to the men who drove them they were simply a practical means of hauling some two and a half million pounds of borax from Death Valley each year. It was not until long afterward that the twenty mule team system was recognized as one of the most remarkable transportation feats in the history of the country.

in San Francisco. The name of the new company was the Pacific Coast Borax Company.

A prospectus of the new corporation indicated that the Death Valley and Amargosa deposits would no longer be actively worked but held as reserves against the future. Nothing was said about the Teel's Marsh and Columbus Marsh deposits, but it was obviously only a matter of time before operations there, too, would be discontinued. The era of marsh operations was drawing to a close. The future of the Pacific Coast Borax Company—of the whole borax industry—lay in colemanite.

The man for whom it had been named, the man who had originally acquired the rich and strategically located deposit in the Calicos, was still working doggedly to pay off his creditors. Legally he could have settled for less, but he was not content to stop until every account had been paid, dollar for dollar. It took him four years to accomplish this, but the strain, at his age, was too much for him. William T. Coleman died late in 1893, one of the truly great figures in California's history.



A TWENTY-MULE TEAM AT THE HARMONY BORAX WORKS, DEATH VALLEY, ABOUT 1884

WAITING FOR THE MAIL

The Calico Mine

The new mine in the Calico Mountains lay nearer the railroad than any borax deposit that had yet been discovered. From the siding at Daggett, on the Santa Fe (then known as the Atlantic & Pacific Railway), to the camp at Borate, it was only six miles as the crow flies. As mules travel it was twelve miles, across a dry lake and up a twisted canyon into the mountains.

The camp itself was built in a canyon. The few frame buildings have long since vanished, but the sides of the canyon are still dented with dugouts which many of the men made for themselves as living quarters—cooler in summer than the Company bunkhouse.

Borate was a stag camp. Of its 100 citizens, only two had families with them—the foreman and the storekeeper. Each of these had his own house. There was a third residence, atop a high hill overlooking the mine, where the winds blew so fiercely that the building had to be bolted to the rocks to keep it from blowing away. This was "The Smith House," used by the president of the Company and other officials on their occasional visits to the camp. Next door to the store was a small building known as the reading room—misnamed, according to W. W. Cahill, the storekeeper, who was in charge. At least there was reading matter there, supplied by the Company. The store also housed the U. S. Post Office of Borate in the latter years of the camp, after the railroad was built. Prior to then, mail was delivered to the Calico post office and brought from there 4½ miles across the mountains to Borate. The postman was a girl by the name of Fannie Mulcahy, who made the trip on horseback two or three times a week. The miners chipped in a dollar a month apiece for the service. Few of them ever received any mail, but it was worth a dollar a month to see a girl.

When operations first started at Borate, the ore was hauled out by mule team. But in 1894 Smith felt this to be an outmoded form of transportation which should be replaced with something more efficient. The result was an experiment with "Old Dinah."

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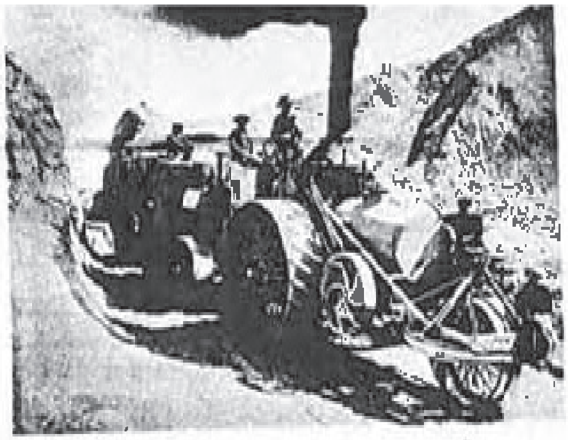

A SUNDAY OUTING ON "OLD DINAH"

"Old Dinah" was a traction engine which Smith purchased. Together with two ore wagons. Dinah burned coal, and she had a voracious appetite. A ton and a half of fuel was her daily ration for the round trip between the railroad and the mines. On hard, level ground Dinah chugged along comfortably at a speed of 3½ miles an hour, but when she struck soft sand she would dig herself in. Going up steep grades was, according to her crew, like climbing a bar of soap; the wheel far out front would rear up like a bucking mule—even with half a ton of sandbags loaded on it.

It took three men to handle Dinah en route—an engineer, a fireman, and a brakeman. It took a mechanic all night, every night, to put her in shape for the next day's run. At the end of a year Dinah was abandoned, and the mules took over the job again. She stands today, a museum piece, at the entrance to the Furnace Creek Ranch.

Since Smith's tractor had not solved the transportation problem, he decided to build a railroad from the main line to the mine. He also built a plant to concentrate the ore before shipping it to Alameda. The railroad, known as the Borate & Daggett, paralleled the wagon road most of the way. A short distance out of Daggett, at a station called Marion, a large modern calciner was erected.

The railroad was completed in 1898. The mule teams and the great desert wagons were then retired for a time. Their record of not a single breakdown still held.

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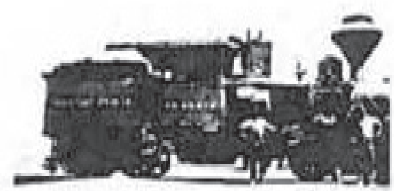
POKER IN THE COMPANY STORE AT BORATE. W. W. CAHILL STANDS AT RIGHT, LEW BASOR, CLARENCE BASOR'S BROTHER, SEATED AT LEFT

EMPTY CARS OF THE BORATE & DAGGETT APPROACHING BORATE

SMITH NAMED THIS ENGINE THE "FRANCIS" FOR HIMSELF. HE CHRISTENED ANOTHER LOCOMOTIVE ON THE BORATE & DAGGETT THE "MARION," ABOUT 1900



The Founding of the Pacific Coast Borax Company

The discovery of the Amargosa deposit convinced William T. Coleman that further prospecting should be done in Death Valley.

In December, 1882, a Coleman prospector working his way up a small canyon on the east side of the Valley, found a new form of borax different from the cottonball which was shoveled from the dry lake beds. This was a quartzlike mineral, occurring as an outcropping on the wall of the canyon. Assays proved it to be borate of lime, with a considerably higher boron oxide content than the cottonball ulexite. It was named *colemanite*, in Coleman's honor.

The strikes in the Death Valley country came thick and fast after that. Men forgot about the gold in the Lost Gunsight and the Lost Breyfogle Mines. They were after borax now. In 1883, prospectors discovered a white hill in the volcanic ranges just south of Furnace Creek Wash, its thousand-foot peak overlaid with pure ulexite. They named it Monte Blanco. In the Funeral Mountains overlooking Death Valley, ledges of colemanite were uncovered. On the desert thirty miles east of the Valley, the Lee brothers—Leander and Philander—located another deposit of this new ore. In Death Valley there still exist today the old mesquite markers of the early-day claims, with numbers and dates burned into the weathered wood.

The discovery of colemanite had no immediate effect upon the marsh operations. It was richer than cottonball, but it required a different and far more complex refining process, and at that time the company had neither the knowledge nor the equipment to handle it. Cottonball was plentiful and familiar at the Harmony and Amargosa works; they were just getting under way to manufacture borax on a large scale from this easily gathered material.

The mining of colemanite might have been delayed longer, had not another deposit been discovered in 1883 in the Calico Mountains south of Death Valley, by two prospectors in search of silver. This new mine lay only a few miles from the railroad.

The property was acquired by Coleman, who put his man, Robertson, to work on the problem of developing a method of refining

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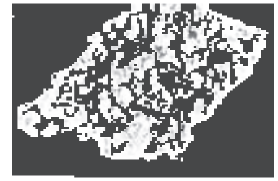

the ore. He also bought a former soap factory in Alameda, California, to be converted into a refinery. Since transcontinental freight rates were very high, it was cheaper to ship to New York from the west coast by water than by rail. Cheaper, even, to send the goods via Liverpool.

Development work was started at Calico during the mid-1880s and big-scale production lay just ahead, but Coleman was not destined to have a hand in it. In the spring of 1888, the financial world was rocked by headlines across the San Francisco papers announcing "Wm. T. Coleman & Co. Fails for $2,000,000!" The great commission house, thought to be as solid and impregnable as the Bank of England, had crashed. Coleman summed it up simply, in an interview with reporters: "Want of immediately available cash." To finance his increasingly large and diversified interests, he had borrowed heavily both in the east and in California. Some of the banks called their loans unexpectedly. He was unable to meet the demands. Everything he owned, including his valuable borax properties, passed into the hands of assignees. Coleman himself rolled up his sleeves and went to work to pay off his creditors.

In Nevada, F. M. Smith was still busy at Teel's Marsh and Columbus Marsh, leading all others in the production of borax. However, he had kept his eye on the Calico mine ever since it was located. Colemanite, he felt, was the ore of the future.

In March, 1890, twenty-two months after Coleman's failure, the entire assets of the Harmony and Meridian Borax Mining Companies were deeded to Smith. It was a big deal, including all the Death Valley and Amargosa claims, the ranch property in Death Valley, the Alameda refinery, and the Calico mine.

Smith's next step was to consolidate all these newly acquired holdings, together with his Nevada marsh properties, into one company. On September 4, 1890, incorporation papers were filed

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The Formation of Borax Consolidated, Limited

On January 1st, 1884, a New York office of the Pacific Coast Borax Company was opened at 48 Wall Street. L. W. Mather, who had been president of Smith's Pacific Borax Salt & Soda Company at Columbus Marsh, was in charge. He acted as Smith's sales agent in the east. It was a very happy choice. Mather's wide experience in the borax business, his excellent personal reputation, and his banking connections in New York were helpful to Smith.

In 1893 Mather's son, Stephen, joined the Company as advertising and promotion manager. In the opinion of those who knew him, Steve Mather—later Founder and Director of the National Park System—was one of the greatest salesmen this country has ever seen. It was on a tour of the middle west, canvassing the trade for package borax, that he became convinced that this potential market had scarcely been tapped. He put the proposition up to Smith, and as a result a Chicago office was opened in the fall of 1894. Young Mather remained in charge of it for the next ten years, when he resigned to go into the borax business on his own. He was responsible, among other things, for the use of the "20 Mule Team" as the trademark of the Pacific Coast Borax Company.

Smith, unfortunately for him, did not confine his efforts to borax. Like Coleman before him, he began to overexpand his business interests.

In 1895, in partnership with Frank C. Havens, he established the Realty Syndicate and acquired some 13,000 acres of valuable land in Oakland. To develop this real estate project successfully demanded adequate transportation facilities. With this in mind he had started, as early as 1893, to buy up and consolidate various streetcar lines, which were later to become a part of his famous, illfated Key Route System of railways and ferries.

In the summer of 1896 Smith sailed for England. Since the American market in borax had fallen off, he was anxious to find a possible European outlet for his product. On the same ship was a friend, Lewis Gerstle, then a vice-president of the Alaska Commercial Company of San Francisco, going to England for a visit. On his

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Oakland Tribune

arrival, he looked up a young nephew, James Gerstley, who had recently joined forces with Richard C. Baker in a chemical business, known as Redwood & Sons of London. They had bought a small factory at Belvedere, on the Thames, and were specializing in food preservatives, of which borax products formed the base. In fact, they had become one of the largest buyers of borax and boric acid on the English market. Their main problem, Gerstley informed his uncle, was to find a new source of supply of these materials.

"It's right here in London now!" Gerstle told him.

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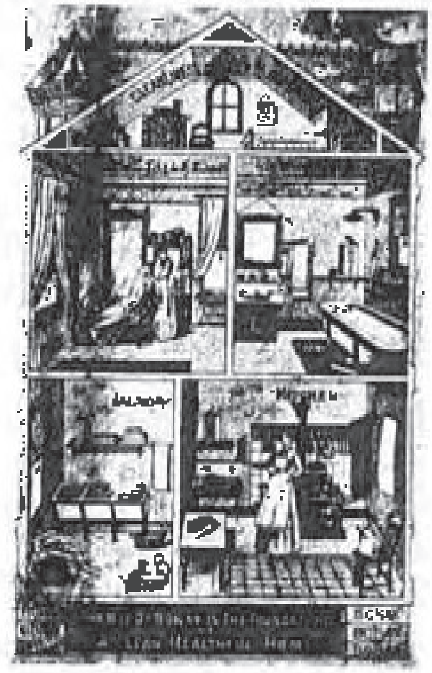
The following day a meeting was arranged between Smith, Baker and Gerstley. By the time they parted late that night, a contract had been drawn up, providing for a merger of their joint interests. The resulting company was called The Pacific Borax and Redwood's Chemical Works, Ltd., and on August 21st, 1896, the president of the Pacific Coast Borax Company signed an agreement to sell its entire assets—lands, buildings, machinery, everything necessary for the production of borax—to the new organization. A few months later Frederic Lesser, a keen businessman and an excellent linguist, joined the new company. Richard Baker, James Gerstley and Frederic Lesser were to play a major part in directing the company all their lives and the sons of Gerstley and Lesser are now active in the present firm.

One of the first decisions by the heads of the new company was to build a factory in the New York area, in order to meet other eastern refiners and importers on their own ground. A site was selected at Bayonne, New Jersey, and construction started in 1897. It was a drastic move, but by the time the building was completed in 1899 it had proved a wise one. With the new roaster at Marion calcining low-grade ore, and advantageous freight rates on the transcontinental railroads, it was cheaper to ship ore east and refine it there than in the west. From then on, only enough ore was sent to Alameda to take care of west coast needs.

Smith's horizon now stretched from San Francisco to London. The new contacts overseas were stimulating to a man of his ambition and imagination. He was beginning to be aware of the potentialities of business outside of the United States. Not only in England but elsewhere abroad there were markets waiting for raw material. Much of it the newly formed company could supply from its California mine. In some instances, however, foreign processes required a different type of ore. To make real headway in the foreign market one would have to provide whatever kind of ore was demanded.

Smith and his British colleagues agreed that when and if a suit-



able opportunity arose the Company would do well to acquire some other sources of raw material besides those in California and at the same time—in order to assure a steady outlet for such ores—they should expand their foreign refining operations. The opportunity was not long in presenting itself. When Smith arrived in London in 1898, Baker and Gerstley had a general plan drawn up for his approval for the formation of a new company to carry on these enlarged activities.

On January 11th, 1899, Borax Consolidated, Limited, came into existence, absorbing Pacific Borax and Redwood's Chemical Works, Ltd. Smith was the largest shareholder in this new company. His title was "Managing Director in America."

Building the Tonopah and Tidewater Railroad

By 1905 it was becoming evident that the mine at Borate was nearing exhaustion. It would be necessary before too long to open up a new deposit. The logical choice was the Lila C., located back in 1882 but never developed.

The Lila C., named for a daughter of William T. Coleman, lay east of Death Valley, about 130 miles from the main-line railroad. To negotiate those miles another desert railroad would have to be built.

When Senator William A. Clark of Montana heard of Smith's plan, he suggested that Smith connect with the Union Pacific (then known as the San Pedro, Los Angeles & Salt Lake Railroad) at the division point of Las Vegas. By running a spur up from the Lila C. they could also handle some profitable freight business from the booming camps of Tonopah, Goldfield and Rhyolite. Clark, himself, had a substantial stake in Rhyolite. There was no written contract with the Senator. Late in 1904 the Tonopah and Tidewater Railroad, familiarly known as the 'T & T', was organized as a subsidiary of Borax Consolidated, Limited.

In May, 1905, Smith's right-hand man, John Ryan, together with a young surveyor by the name of Clarence Rasor, and W. W. Cahill from Borate, arrived in the heat and dust of Las Vegas and set up headquarters in a tent. Ten miles of grade were soon completed. The next step was to connect with the main line. To their amazement, they met with a curt refusal from a top official of the Clark line.

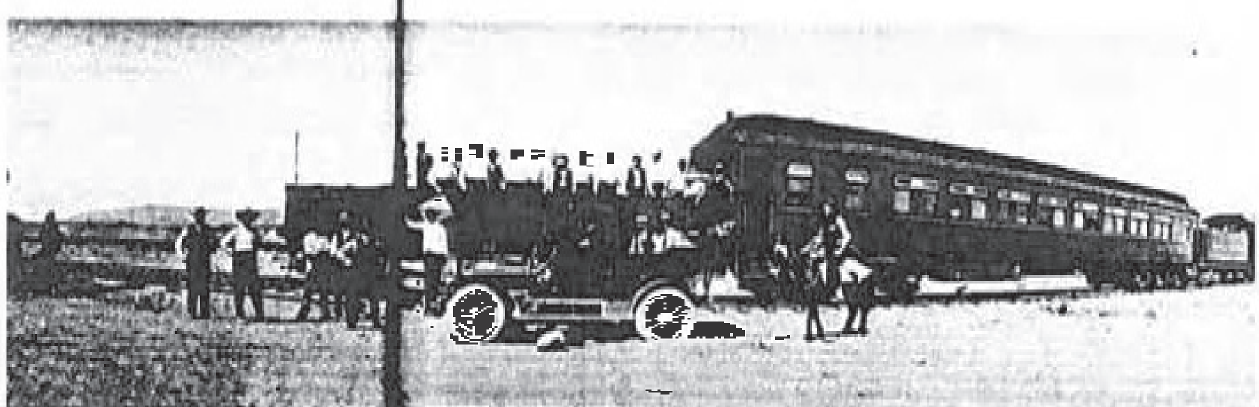
Smith hurried up the street to Clark's office in New York. The message came back that the Senator was in Europe and could not be reached. When he finally returned, the Senator was quite blunt. He hadn't changed his mind about the desirability of running a railroad from Las Vegas to the Nevada mining camps. As a matter of fact, he was going to build the railroad himself.

Smith knew it was useless to argue. He had already lost precious time. The ore at Borate was becoming increasingly difficult and costly to extract. He made an immediate deal with the Santa Fe Railway to connect with that road at Ludlow and run a line north to the Lila C. This was the middle of August.

Ludlow at that time was little more than a tank town. Two prospectors' shacks completed the residential district. A small frame building was hastily constructed to serve as temporary field headquarters for the T & T and living quarters for John Ryan and Wash Cahill. By the time the first mile of the new line was surveyed, the grading had begun.

The Amargosa Canyon was the toughest part of the entire route. It took nine months to complete eleven miles, working 1,000 head of animals and 1,100 men. By the time the rails had reached the station of Zabriskie it was June, 1907, just twenty-two months since the first grading had started.

During these months the Calico mine had become depleted. At the Lila C. everything was in readiness to start shipping. The mine had been opened up, the calcining plant was operating, but a



THE T & T AT A DESERT STATION, ABOUT 1908

A BORAX MINER AT THE ENTRANCE TO HIS HILL-SIDE DUGOUT

would probably be two or three months before the railroad reached the mine. The Borax Company could ill afford to wait that long. Again the wagons from Death Valley were hooked up, and while the T & T pushed northward through the heat of a third summer twenty mule teams hauled the ore from the Lila C. to the partially completed railroad.

The seven-mile spur from Death Valley Junction to the mine was finished on August 15, 1907, and that same day the Company started loading ore directly from the bunkers to the cars. The twenty mule teams had hauled their last load of borax across the desert.

With the Lila C. shipping by rail and able to supply all demands for ore, the camps of Borate and Marion also became part of the Company's past history. Workings in the Calicos were abandoned, buildings and machinery at the mine dismantled, and everything usable shipped to the Lila C. The tracks of the Borate & Daggett Railroad were ripped up and sold.

The first full-length run of the T & T from Ludlow to Beatty—169 miles—took place in December, 1907. The prospect of profitable outside traffic, however, had dimmed. The panic of 1907 hit the adjacent mining camps. Greenwater and Rhyolite folded. It was the beginning of the end of the great boom on the Nevada desert. For the next two decades it was borax that would keep that region alive.

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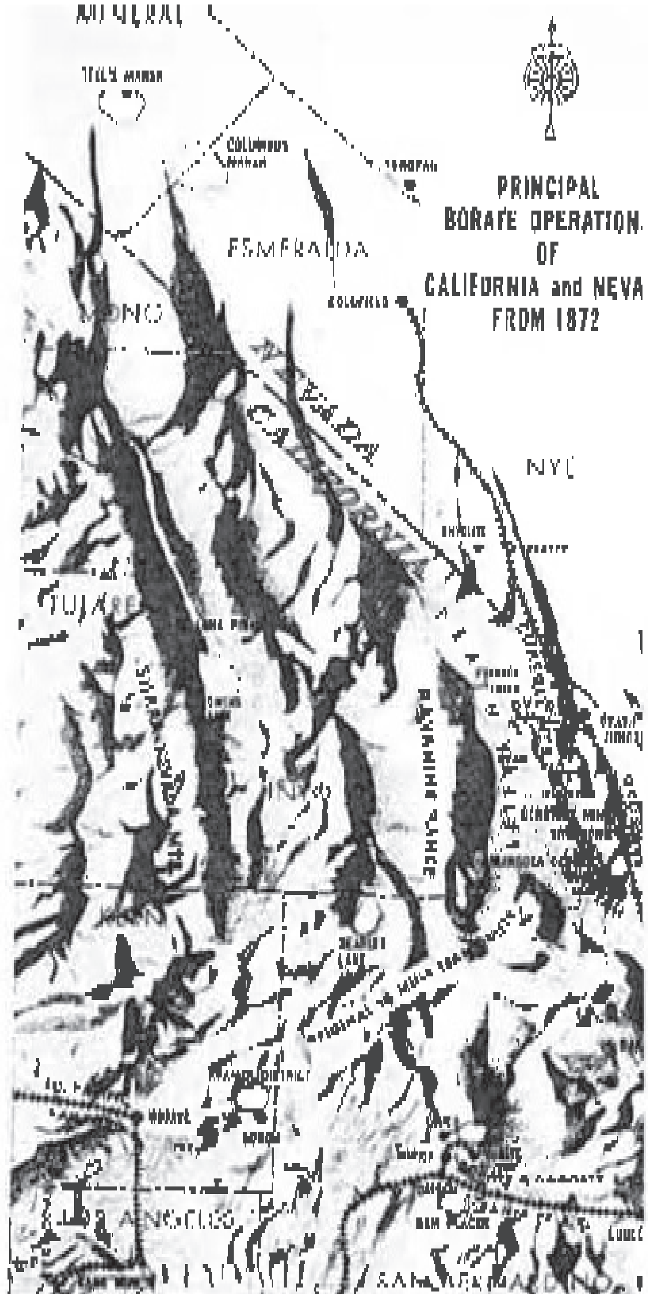


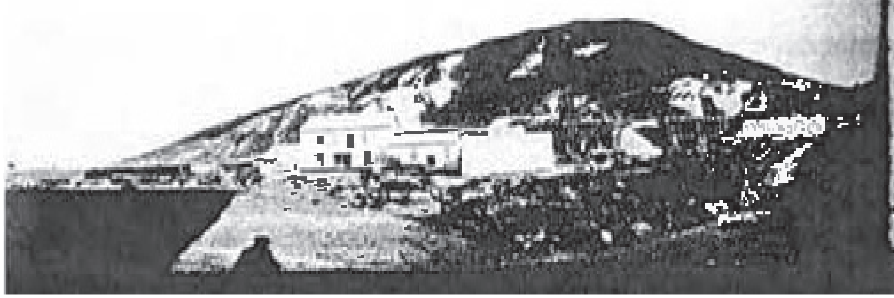
The Lila C.

Across the desert from Death Valley Junction, seven miles away, there are whitish patches against the low-lying black hills. These are the tailing dumps of the Lila C.—all that is left of the old camp today.

There was never much there in the way of buildings: the mill on one side of the tracks and on the other the town of Ryan, named for John Ryan. It consisted of four houses and the Company store, boardinghouse, and bunkhouse. As at Borate, many of the men lived in dugouts in the mountainside.

The camp offered nothing in the way of recreation. The Company transported the [illegible] men from Borate but the men who came off shift after eight hours preferred to play cards or just sit. Music was more popular. Eleven of the men—four of them Cornish brothers, each playing a different instrument—organized the Death Valley Brass Band. The camp had a piano, too. Young Fred Corkill, son of the former foreman at Borate, who was superintendent of the mill at the Lila C., gave it as a wedding present to the bride he brought out in 1910. The tones it provided were welcome, if a bit off key at first, the result of a hard trip up the line on the T & T and across the rocks in a van. But this was improved a couple of years later, when one of the other women in the camp took a correspondence course in piano tuning.

By the end of 1910, the Nevada deposits were worked out. But at the Lila C., the annual output was far exceeding the advance estimates. Quantities of rich ore still lay in sight. Smith, however, had had experience in the Calicos. Even the richest mine, he knew, could not last indefinitely. Following his announcement of the completion of the T & T, and the first shipment of ore from the Lila C., he added that the Borax Company was already looking toward the time when it might be necessary to shift mining operations again.



The Death Valley Railroad

By 1912 it was decided that the next mines to open up when the Lila C. became exhausted would be the group of claims in the Funeral Mountains, located by Coleman's men back in 1883 and '84—the Biddy McCarthy, the Grand View, and the Widow. A branch railroad would have to be built to connect them with the T & T, for by now there was no question of using mule teams for even a comparatively short haul.

The country was rough, far more difficult for railroading than the desert which the T & T crossed. The roadbed could not run along the bottom of the gulches; cloudbursts would wash it out, and the grades were far too steep. The railroad would have to follow the hillsides.

In the fall of 1913 Clarence Rasor made a location survey of a narrow-gauge road to the Biddy McCarthy, and in January, 1914, the Death Valley Railroad was incorporated. Construction started immediately, for by now the Lila C. was running out. As in the case of the T & T, there was need of haste.

A crew of [illegible] men and [illegible] mules were put on the job. It took them ten months, almost to the day. On December 1, 1914, the road was completed and ready to go into operation. *The Technical World* pronounced it "the most remarkable railroad in the world, in that it has a grade of no more than 1½% in an entire twenty mile length, through rugged and tortuous mountain country!" Actually, the grade in the last mile was 3½%, which made it necessary to cut the train every time it came in with extra freight.

For more than a year, while the railroad was being surveyed and built, development work had been going ahead at the mines it was to serve. At the same time a large roaster was under construction at Death Valley Junction, to handle the ore from the new deposits. By December, when the first ore train came rumbling across the trestles and around the narrow man-made ledges on the mountainsides to the Biddy McCarthy, the ore was piled up, ready and waiting.

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Smith's Resignation

The year 1914 brought another far more momentous change in the Pacific Coast Borax Company. F. M. Smith, its founder, president, and guiding genius, tendered his resignation.

Early in 1912 Smith, with two San Francisco associates, had startled the financial world by forming a $200,000,000 corporation, known as the United Properties Company. This giant corporation, promoted as a holding company for their combined assets, climaxed Smith's phenomenal business career and brought the fortune he had built up over a period of almost half a century crashing in ruins around him.

With the passing of each year Smith's interests had become greater and more diversified. Not only was he the borax king, he was the head of a score of other ambitious enterprises, most of them in or near Oakland. With the formation of the United Properties Company, he risked everything. Smith was a gambler, as well as an empire builder.

Within the Borax Company, routine business went on as usual during 1912. Its employees were as stunned as the rest of the public when the San Francisco and Oakland papers came out on a morning in May, 1913, with headlines announcing, F. M. SMITH'S FINANCIAL INTERESTS UNDER CONTROL OF TRUSTEES! The United Properties Company had collapsed, carrying Smith down with it to the tune of some $20,000,000.

The west coast financial world had not been so shocked since the failure of that other borax king, William T. Coleman, a quarter of a century earlier. For days the story occupied the most prominent place in the news.

A trust agreement was drawn up with the Mercantile Trust Company of San Francisco, whereby all Smith's assets passed into the hands of that company and an advisory committee, composed of the heads of five of the strongest banks and business institutions on both sides of the Bay.

Smith's holdings in Borax Consolidated, Limited, constituted the major part of his liquid assets, the only asset that could be realized on short notice. These would have to be sold to help pay off his indebtedness. The London market was the most advantageous, and in the spring of 1914 Frank Anderson, president of the Bank of California, representing the bankers and creditors in general, went to England to negotiate the sale. It was a bitter blow to Smith.

Under British law, the director of any English company who becomes insolvent ceases automatically to continue his directorship. It became necessary, therefore, for R. C. Baker to notify Smith to that effect, at the same time expressing the hope that, even though no longer a director of Borax Consolidated, Limited, Smith might remain in charge of its American affairs. But Smith chose otherwise. Shortly after the sale of his stock, he resigned as president of the Pacific Coast Borax Company, thus severing completely his relations with the company he had established.

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In the Funeral Mountains

When the exhaustion of the Lila C. buildings were transferred from the old campsite and set up at new Ryan to serve the new deposits New Ryan, 2,000 feet above the floor of Death Valley, became a permanent camp. From 1914 on, six mines in the district were opened up, connected by a two-foot railroad known as the "baby gauge," which wound and tunneled its way through the mountains for seven miles, transporting men and ore.

The camp boasted many features which the earlier camps had lacked: electric hoists and gasoline speeders in place of mules, showers in the men's dormitories, and a sanitary system. Harry Gower, who is still with the Company, was mainly responsible for the organization and running of the camp.

Ryan, with more than 200 residents, was more of a family camp than its predecessors and had considerably more social life. No longer was a reading room considered sufficient diversion for the miners and muckers. The Company provided a recreation hall, put on a weekly motion-picture show, and even built a swimming pool at the headwaters of Furnace Creek. Newcomers seeing the recreation hall for the first time, with its Gothic windows and belfry, were struck by its resemblance to a church. Originally it had been a little church in Rhyolite, built, it was said, largely with

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funds collected from the gambling houses of that boom town.

It was during operations at Ryan that the Company fought the biggest claim-jumping case in its history. In 1926, James Hughes, a former miner at the Lila C., posted location notices on some fifty claims in the Death Valley region, representing practically all of the Company's borate properties which were not actually being worked. His right to the land, Hughes declared, was based on the Company's failure to do the required $100 worth of assessment work per year on each claim.

Much of what followed reads like a western movie—the gang of claim jumpers barricaded behind bristling guns in a Death Valley canyon, defying the sheriff; the Borax Company combing the desert looking for miners and prospectors who had worked on former assessment crews; the picturesque testimony of these "desert rats" in the courtroom.

The Company won the case the following year, but it took seven years, and a final denial by the U. S. Supreme Court of any further hearing, to convince Hughes that his colossal holdup had failed.

The satisfaction of having won the case was tempered for many in the Company by the fact that John Ryan did not live to see the outcome. Although he had retired, he spent the last months of his life fighting Hughes. He died in May, 1928. He had been with the Company for more than forty years, since the early days at Teel's Marsh.

Many stories have been told about Ryan. A. G. Wells, former general manager of the Santa Fe in Los Angeles, always recalled the day the stocky Irishman walked into his office in digging clothes and dusty shoes, straight from the desert, where the T & T was under way. Pulling from his pocket a handful of crumpled unpaid bills for rails delivered, he figured up the total, wrote out a draft on the Pacific Coast Borax Company for $225,000, and signed it with his name. Was a countersignature required? Of course not. Was he bonded? No. He didn't even have an official title in the Borax Company. Why should he? Everybody knew John Ryan.

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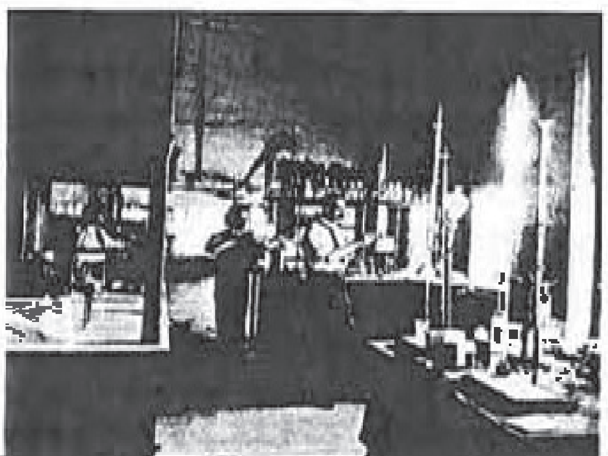
The Refineries

The Alameda refinery, enlarged by Smith in 1890, was the first industrial concrete building in the United States. The Bayonne plant, built in 1898, was the first reinforced concrete building in the east.

The big shipments from Bayonne were to Chicago. At the opening of the canal season each spring, barges, loaded with grain, docked at New York Harbor from the Great Lakes. With borax as the return cargo, the barges were pulled by tugboat to Albany. There mules took over and hauled the boats through the Erie Canal. At Buffalo the borax was reloaded aboard lake steamers for Chicago. Four to six hundred tons of borax were moved each year by mule-drawn barges, which, like the twenty mule teams of the west, no longer exist today.

During the first part of this century transcontinental freight rates began to go up. The completion of the Panama Canal, on the other hand, offered the prospect of lower rates by water from west to east, or to Europe, than ever before. There was no doubt that the Company's mining operations would continue to be in Southern California and Nevada, where all the important borax deposits in the past—and probably in the future—were located. Everything, in short, pointed to the west coast as the logical center of refining and manufacturing operations.

In 1913 the Company acquired the site of the present refinery at Wilmington, California. Up to that time, few manufacturers had



LABORATORY, BAYONNE REFINERY

AN EARLY POSTER ADVERTISING PACKAGE BORAX

recognized the advantages of that deep-water port. The Borax Company was one of the pioneers there.

The entry of the United States into World War I postponed the construction of the new refinery, and it was not until September, 1921, that the Wilmington plant was ready for operation.

The Alameda factory was closed down completely. It was old-fashioned, inadequate, and too far from the mines. Since the plant was not salable, the Company decided to raze it. One wrecking outfit after another examined the forty-year-old building, and all said the same thing: it defied demolition. Finally, in 1931, a retired army officer agreed to tackle the job. He placed some two hundred charges of TNT under the concrete walls and set them off simultaneously. When the dust cleared, "Borax" Smith's famous old soap works was no more.

A few years after the Wilmington plant was built, the Bayonne refinery was permanently closed down and dismantled.

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CLARENCE RASOR

The Discovery of Rasorite

WHILE THE Death Valley mines represented the Borax Company's major production from 1927 on, the Company also worked other deposits, along with those at Ryan. In 1911 operations started at Lang, California, and continued until that mine also worked out. Later the Crowley mine, near Shoshone, supplied the limited demand for its special type of ore, off and on for twenty five years.

Ever since 1913, when Dr. John Suckow accidentally struck colemanite there, the Borax Company had been interested in the Kramer district of Kern County, south of Death Valley. Over a period of years it had acquired title to a number of claims and had sunk more than forty drill holes in the search for ore. The drill holes revealed plenty of colemanite under the flat surface of the desert but nothing of a sensational nature, nothing to warrant a transfer of operations from Ryan, which was still satisfactorily supplying the Company's needs.

Then, early in 1925, drillers working under the supervision of Clarence Rasor brought up from a depth of 380 feet cuttings of lime-free borate of soda. Here was something new in California. Tincal had been found in the Kramer district.

The Borax Company purchased the property, after months of negotiation. In March, 1926, Roy Osborne, as general superintendent, with a mining crew of four, went to work sinking a shaft. By midsummer it was down 360 feet. No borate of soda. Three hundred and ninety feet. Still none. With every foot of drilling the tension grew. Perhaps the original hole had been salted and a costly mistake made.

On August sixteenth the night shift finally struck ore, but not the ore they had expected. Some of it was tincal, but most of it was of an unfamiliar fibrous structure. The crystals broke into long

needlelike splinters. [illegible] showed it was a borate but a form of borate never seen before.

There were three chemists waiting in the laboratory at Wilmington—Tom Cramer, George Connell, and H. F. Knight—when Rasor arrived that afternoon with a tremendous chunk of the new ore.

"What is it?" they inquired.

"That's what I want to know," said Rasor. "You fellows get busy and find out!"

The three men went to work. Water content, specific gravity, sodium and boron oxide content—one by one they were checked. There was some heavy chemical arithmetic, and the formula of the new ore appeared, $Na_2B_4O_7 \cdot 4H_2O$, a new form of borate.

Several years earlier George Connell had written an article in which he said there could be—and should be—a borate with that formula. He had even predicted that it should occur in long, needle-like splinters. This was it—a new sodium borate, one ton of which could, theoretically, make 1.38 tons of borax. The new deposit was located only three miles from a main line, over flat desert country. The new ore would be cheaper to mine, cheaper to transport, cheaper to refine. This bonanza had lain almost under the heels of the old twenty mule teams, as they crossed the desert from Death Valley to Mojave, some forty years before.

In recognition of Clarence Rasor's part in the discovery, and his long years of service, the Company named the new ore *rasorite*. It is also called *kernite*, after the county in which it was first found.

RASORITE

[illegible] production shaft was named for Roy Osborne, the deposit itself for R. C. Baker, vice managing director of the Company since Smith's resignation. The camp was christened Boron. A mill began to rise above the [illegible] all the [illegible] owned by Borax Consolidated, Limited, [illegible] Wilmington was closed, machinery was redesigned and rebuilt to handle the new ore.

Production at Ryan ceased altogether in 1928. For the first time in almost half a century, the Death Valley region was producing no borax. The Death Valley Railroad was sold and transported to Carlsbad, New Mexico, where it [illegible] today as the U. S. Potash R. R. The T & T continued operating until 1940—the last of the desert railroads which in the boom days had connected the Nevada mining camps with the main lines in the south. In 1942 the government took over and dismantled the road, to use the materials in the war effort.

The camp of Boron was a great step forward from the old borax camps. Attractive modern houses and dormitories were built—all air conditioned. Boron became a small, self-contained community in the heart of the desert with modern recreation facilities including a swimming pool, golf course, and softball diamond, lighted for night games.

The crushing and concentrating plant which was built in 1928 was only the beginning. In 1933 a concentrating and magnetic separation unit was designed and built. This was followed by the Rasorite Concentrate Anhydrous plant, which was completed in 1935. A new refinery plant was built in 1936. In 1937 and 1938 there were [illegible] additions to the concentrating and magnetic separation plant, and a new fine crushing plant. A third addition was installed in 1946 and a fourth in 1951. In 1949 a boric acid plant was built. The first section of the Anhydrous Rasorite plant was completed in 1947 and the second one in 1949.

The installations, together with the camp, are visible for miles in the desert.

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Present-Day Operations

MINING The Borate deposit in the Kramer district has a distinctive character, different from any of the deposits previously worked by the Borax Company.

It is what is known as a bedded deposit. [illegible] it is shaped like a huge [illegible] turtle, the upper surface sloping just as a turtle's shell would slope and the base comparatively level. It varies in thickness from a few feet at the edges of the deposit to several hundred feet at the center. The deposit [illegible] to a depth of anywhere from [illegible] to [illegible] feet, under what is known as an alluvial overburden. Geologists place the age of the deposit at about fifteen million years.

According to one theory, the borax in these beds was formed originally by the eruption of thermal springs which contained sodium borate. The solutions slowly evaporated over the years and the borax crystallized. These crystals were interspersed in the [illegible], which has now changed to shale. At the same time, or at later periods, the crystal formations were slowly covered with the [illegible] overburden.

The mining operations at Boron are similar to those in other mines, with a few exceptions. A shaft is sunk into, or close by, the ore body. From it, extending throughout the ore body, at different levels, are what the layman calls tunnels. Mining men know them as drifts and crosscuts, winzes and stopes—depending on their character.

The two general mining methods employed are:

(1) The Room and Pillar Method. The name is descriptive. Along the sides of the tunnels, a block of ore is mined out, forming a room or hole. A section of the ore is left in place to form a supporting pillar. Another room is cut out, and so on, thus giving a series of mined out rooms with supporting pillars.

(2) The Shrinkage Stope Method. In this operation, a long drift is cut into the ore body at a given level. Chutes are constructed in the bottom of the tunnel from which the ore can later be withdrawn. In taking the ore out by this method, the

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ROOF TRIMMING IN ONE OF THE MINES AT BORON

miners drill holes into the top of the drifts and blast the ore loose into the chutes below. As the ore is removed, new overhead working space is created in which to drill more holes and blast out more ore. The miners thus slowly work their way up to the top of the ore body.

Because of the nature of the formation, which has no solid rock to help support the alluvial overburden, special precautions have to be taken to protect the mine. As soon as the stopes are worked out, surface drill holes are driven down through the overburden, and the stopes are refilled with surface material taken from borrow pits adjacent to the mine.

The mine tunnels are a network of narrow-gauge railway tracks, over which trains of mine cars travel, carrying ore from the areas being worked to the loading bins at the mine shafts. In transporting the ore mined by the shrinkage stope method, the cars are simply backed beneath the chutes and filled. The ore mined by the room and pillar method is handled by so-called mucking machines. The operator, by manipulating a system of cables, can move a scoop back and forth from any position in the room. This pulls the ore into a hopper on the machine, which then dumps it into the ore cars—a great advance over the old hand-shovelling of early day muckers.

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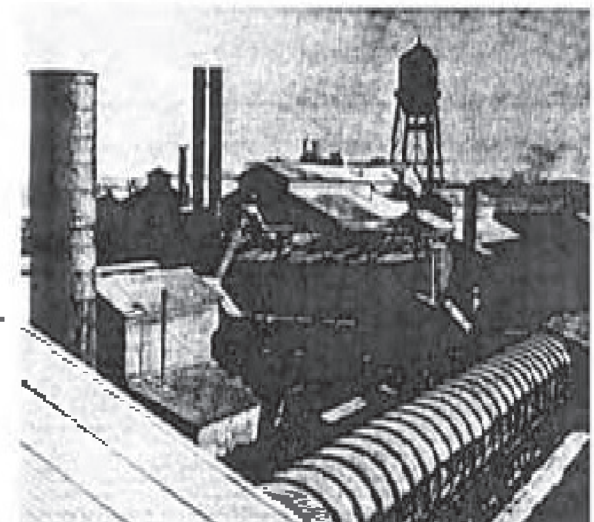
In 1950 and 1951, two new shafts into the ore body were completed. The area which they will serve is known as the Jenifer mine, named for the late president of the Pacific Coast Borax Company—Frank M. Jenifer. This new section will be mined, to a great extent, by new methods. Instead of drilling and blasting the ore free, "continuous miners" will be used — recently developed machines that cut the ore out of the solid formation. A belt conveyor system will transport the ore to the loading chutes at the shaft, replacing the ore trains except in sections of the mine where the ore bed dips steeply. There ore cars will be used.

Upon its arrival at the surface, the ore is loaded into hopper cars and sent either to the mill and concentrating plant at Boron or to the refinery at Wilmington.

Mill at Boron

The mill at Boron is built directly above the Baker mine—the first section of the deposit which was opened up.

Ore delivered to the Boron plants is crushed and screened to suitable size and then passed through magnetic separators which divide, to a certain extent, the shale from the borate minerals. What



THE STORY OF THE PACIFIC COAST BORAX CO.

happens to the concentrates after this depends upon the type of finished product required. They may be treated so as to give

(1) Fertilizer Borate, in two different grain sizes—coarse or fine,
(2) Borascu, used for weed control.

Or, by drying with varying degrees of heat, they may be converted into:

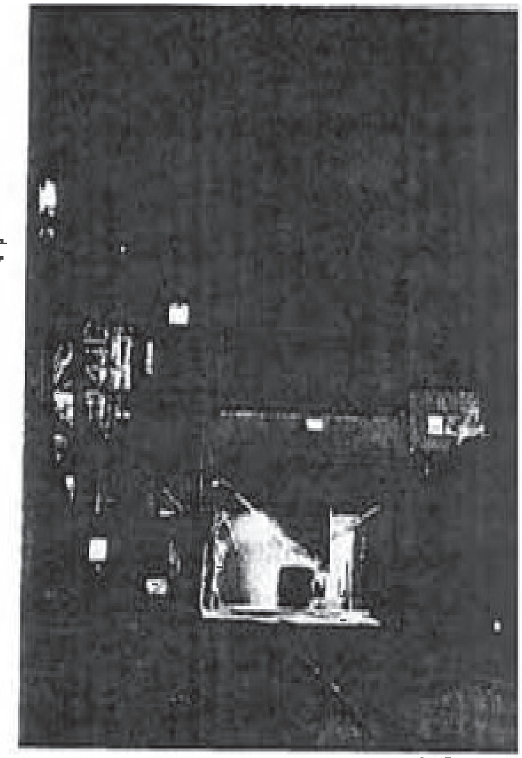
(3) Rasorite Special Concentrates, also known as Special Concentrates Dried;
(4) Fertilizer Borate, High Grade, in both fine and coarse mesh sizes; or
(5) Anhydrous Rasorite and Concentrated Borascu.

In the crushing and drying operations, considerable fine materials and dust are formed which cannot be either concentrated with the conventional equipment or returned to the finished products. In order to utilize such fine materials a borax plant was built at Boron. A boric acid plant was also built during the war, with the approval of the War Production Board, to meet the increased demand for this product. The processes used are very similar to those used at the main refinery at Wilmington.

The Wilmington Refinery, with its extensive up-to-date machinery, its main building and lesser plants all interconnected with mechanical conveying systems, its large steam-generating plant, and its dust control systems, bears little resemblance to the primitive refinery which the Smith brothers operated at Teel's Marsh or the Harmony Works on the floor of Death Valley. Constant additions to the Wilmington plant have resulted in new products as well as greatly increased productive capacity. Since World War II alone, basic borax output has increased threefold, while basic boric acid output has almost doubled.

Borax

In the refinery the crude ore is screened, the oversize put through a crusher, and then fed into cylindrical tanks known as



ore-dissolvers where, as the name indicates, the borate is dissolved. During the next few stages of the process all shale, mud and insoluble matter is removed, leaving a clear solution of borax. This is pumped into granulators where it is cooled until granular borax is formed. At this point, by controlling the temperature and concentration, either of two products can be made—regular borax or the pentahydrate (Borax 5 Mol), which has half the amount of water of crystallization. The borax is sent either to the borax dryers and made into fine granular borax or to the boric acid plant for conversion into boric acid or directly to the anhydrous borax plant.

THE STORY OF THE PACIFIC COAST BORAX CO.

Boric Acid

In the manufacture of boric acid, borax is put into concrete tanks and combined with sulphuric acid. The reaction yields boric acid and Glauber salts. The two are separated by another process and the boric acid is then redissolved, filtered, and pumped to coolers. The crystallized boric acid, again in suspension, is now passed through centrifugal baskets where the cooled mother solution is removed and the crystals washed. The boric acid is then passed through dryers. From the dryers the finished product is conveyed to storage bins to be packed and shipped.

Anhydrous Borax

Anhydrous means "destitute of water." The borax which is sent to the anhydrous plant is first passed through two rotary kilns which remove some of the water. The result is a product called calcined borax. From the kilns the calcined borax is then fed into a furnace where it is melted and the final water of crystallization removed. This fused, anhydrous borax, now the consistency of molten glass, flows continuously from this furnace on to pan conveyors and is subsequently cooled and crushed.

Special Products

The main refinery building also houses a number of smaller specialty plants which produce borax glass, anhydrous boric acid, sodium metaborate, potassium pentaborate, ammonium biborate, ammonium pentaborate, Spangles (small flake boric acid), and soap needed for 20 Mule Team Borax Soap Chips and for Boraxo. All of these utilize either borax or boric acid in their manufacture. Many of them are made in several forms—granular, various sized crystals, powdered, and an impalpable powder.

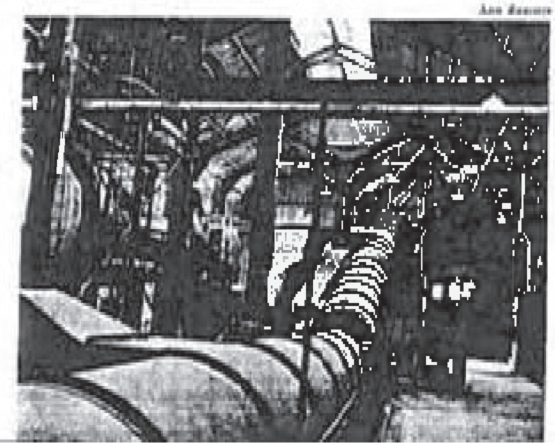
In addition to the standard grades, various special grades of borax and boric acid are manufactured, such as U. S. P. and Special Quality, a high-purity product which equals, and in some respects exceeds, the C. P. grades.

In short, the Borax Company produces borates to meet all possible needs. Even the large lumps of crystal borax used by their forefathers generations ago can be bought today by Indian and Chinese goldsmiths.

LOADING AN EXPORT SHIPMENT OF BORATE AT WILMINGTON

Ann Rosener

PART OF THE ANHYDROUS BASOR ITE PLANT, BORON



Ann Rosener

Some Uses of Boron Products

THE GREATEST consumers of boron products in the United States are the glass and ceramic industries. Together they represent the largest proportion of the Company's domestic market. The balance is divided among a hundred or more other industries.

Borax has been used in the manufacture of common glass since the early days of the glass industry. Today it is a key ingredient also in the production of special types of glass—the heat-resistant borosilicate glasses, familiar in kitchenware, laboratory and optical glass.

Newcomers to this glass field in recent years are the manufacturers of fiber glass. This amazing product is, to a certain extent, a borosilicate glass, identical to other glass in its initial stage of manufacture. The end product, however, is very different. It consists of glass fibers, some of them so minute that an individual strand can hardly be seen with the naked eye. These strands of glass are woven into thread, known as technical yarn, which can later be fabricated in much the same way as are conventional fibers of cotton, linen, wool, or synthetics. Unlike these other materials, fiber glass is fireproof, mildewproof, stainproof. It is making its appearance in more and more forms every year—for insulation, as a substitute for cork and kapok, to reinforce plastic articles. Its future appears limitless.

The enamel industry has always been an excellent customer for borax. It is borax which enables the material to be fused at comparatively low temperatures, thus preventing excessive warping of the enamelware. Porcelain enamel is actually a glass which has been fused to the surface of steel, giving it a hard protective covering which is attractive to look at and easy to take care of. Stoves and other pieces of kitchen equipment are coated with this porcelain enamel, of which borax is an essential part. Many bathroom fixtures are similarly coated.

In recent years, borax has been increasingly used in agriculture. Scientists discovered that boron, which exists naturally in most soils, is an essential food element for plants. Land under cultivation exhausts the small supply which nature originally put there, and

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it becomes necessary to replenish the soil with some form of boron which is easily assimilated by the plant. Borax has proved to be the answer. Small amounts of borax applied to the soil eliminate the diseases caused by boron deficiency—cracked stem in celery, which used to destroy as much as 50% of an entire crop; cork disease in apples; heart rot in sugar beets; dark center in turnips; top sickness in tobacco; yellowing of alfalfa. The list could be extended indefinitely, through forage and field crops, fruits and vegetables. The Borax Company has carried on experimental and educational work in cooperation with federal and state agricultural agencies. It has established fellowships in agricultural colleges and universities over the country and has inaugurated two stations for experimental work.

Only very small quantities of borax are needed as a plant nutrient. Too much becomes toxic to the plant. This knowledge has been utilized to destroy weeds and other vegetation in such areas as along railroad rights of way, under wooden bridges, around oil storage tanks and electrical transformer stations.

Borax is used by the packers of citrus fruit as a wash before packing oranges, lemons and grapefruit, to prevent the formation of blue mold decay, which used to ruin as much as 30% to 40% of a shipment. The list of other industries using borax or boric acid covers an extensive range of industrial and household products, too long to enumerate here.

Boron and its many compounds are as vital to a defense or war program as in our normal civilian economy. To cite just a few examples: boron-intensified steel for armor plate in the construction of warships; electrolytic condensers for the multiple control and communication systems; fiber glass for insulation and other purposes; the preservation and fireproofing of combustible materials, such as tenting and camouflage; fluxes in metal making and refining; magnesium founding. Other recent developments include the use of boron in steel alloys as an excellent substitute for currently short chromium, nickel, and molybdenum.

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In Summary

In 1864, when the first borax operations started in California, the total output in the United States amounted to just twelve tons. The price then was $750 a ton at New York. In 1949, the U. S. Bureau of Mines reported a production of 407,394 tons. The price at New York—$65.40 a ton.

These figures in their small way show the development of an industry in which the Borax Company has played such a prominent part.

The crude little refinery at Teel's Marsh, where the Smith brothers and John Ryan boiled cottonballs over mesquite fires, has become the large modern plants of Boron and Wilmington. Mule teams have long since given way to railroads. To keep pace with the expanding demands of modern industry, the Borax Company has spent large sums to increase output and to introduce new products. It has developed, through ingenuity and research, improved production methods to keep prices down despite steadily rising costs of material, labor and freight. It has introduced a greater variety of borate materials to the market during its history than any other producer in the world. While achieving its greatest expansion since World War II, it is still striving today to anticipate the future demands of industrial, chemical and metallurgical research.

[illegible]

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1914-26: the end of an era in Death Valley and a new discovery

By 1914 the Lila C. mine in the mountains above Death Valley was believed to be nearing exhaustion. Since 1908 John Ryan, the mines supremo, had been studying other remnants of the former Coleman empire to find a suitable successor. Financial considerations and the obstacles presented by the mountainous terrain were limiting factors in the choice among the six available mining claims, but by the end of December 1914 the new Biddy McCarthy mine was ready to send ore by the Death Valley railroad down to the new roaster at Death Valley Junction, and soon 80–90 tons a day were moving along this route. In April 1915 this narrow gauge railway was reported to be in excellent condition and giving no more trouble through sliding rock, and prospects were hopeful for mining and transporting any quantity of ore that might be required from the new deposits.[1]

At the six Ryan mines – Played Out, Upper Biddy (McCarthy), Lower Biddy (ditto), Grandview, Oakley and Widow – the reserves of ore available had all been increased by development work and mining, the first five moderately so, while the reserves at the Widow Mine, which presented the poorest chance of all from surface indications, were increased enormously to well over a million tons.[2] Thus in this group of mines using one common mining camp at New Ryan there were reserves of colemanite far in excess of the world's needs at the time. In addition, although Lila C. had closed in April 1915 as worked out, Fred Corkill (the second) reported in June 1919 that a large body of ore was still there. This expensive lapse appears to have been the result of deliberate non-cooperation resulting from a foreman's intense dislike of the temporary mines superintendent, and hasty plans were made to put in a narrow-gauge spur to retrieve at least 100,000 tons of this good ore.[3] It was not until November 1925 that the last shipment from Lila C. was made, and the camp and the railroad as far as Horton Junction was dismantled. Not unnaturally, Baker wrote that 'it makes one rather jumpy about borate'; for F. M. Smith, who in spite of his financial recklessness had a reputation for having a good nose for a borax deposit, had left the company; Fred Corkill (the first) had retired; and John Ryan, the trusted veteran of Death Valley borate-mining, had died in May 1918.

Baker in the years after 1918 was thus left without experienced management at

the mines, and he did nothing much to remedy it except to become involved himself to such an extent that when he was not in the United States he became absorbed in a voluminous and almost daily correspondence about every detail of matters at the mines, mill, refineries and every part of the organization of which he was now President. After Smith, it was a marked change in style and method, and while Zabriskie and his staff responded, it would be difficult to imagine that they were enthusiastic. Today this method of management by letter and coded cables – with no telephones, of course – appears cumbersome, but Baker was a hard-working and meticulous man who did not avoid decisions, and nothing escaped his attention.

The exposed ore at Ryan was colemanite, and a new mill had been built at Death Valley Junction – a calciner (or roaster). However, the ore bodies at Ryan are a mixture of colemanite and ulexite impregnated with lime and shale, and at depth the ulexite begins to appear in increasing quantities, with resulting milling problems. Ulexite does not disintegrate in a calciner to a fine flour-like product as does colemanite, and instead of passing through the screens it stayed with the shale and ended as waste on the tailings dump. Until this problem was solved ulexite had to be separated as much as possible at the mine, and large dumps accumulated.

When Herbert Faulkner, a very tall – six-foot-six – English mining engineer (his height brought him the nickname 'Highpockets'), arrived at the Ryan mines the ulexite problem was coming to the fore; either mine production dropped or there were loud complaints about the ulexite content from the mill at Death Valley Junction. He set about trying to solve the difficulty, with little assistance and a good deal of cynicism from those at the mill. It was a problem that needed time and technical experiment, and fortunately someone recognized that outside help was needed. Tom Cramer has described a visit to the Alameda refinery by Professor Richards of Harvard,[4] a leading authority in America on ore-treatment, who carried out trials on ulexite. As a result, a wet concentrator plant was built at Death Valley Junction which separated light and heavy particles (using a process known technically as jigging). After fairly prolonged teething troubles this plant began to reduce the piles of ulexite, but when it was burnt down in 1924 it seems that no one wanted to go back to the wet process. Rasor suggested calling in a consultant, Dr Stebbins of Los Angeles,[5] who developed a dry process based on grinding the ore to fine particles and separating the ulexite from the shale by using an air separator and vibrating tables. Fred Beik, an engineer from Wilmington, was sent to Death Valley Junction to build a new plant,[6] which successfully disposed of both ulexite stocks and tailing dumps, and this meant that the Widow mine – which was the most inexpensive to work but which contained ulexite – remained the main producer.

Faulkner, who followed the popular Billy Smitheran, had a tough time, not the least of his problems being ex-employees who jumped company mining claims and defended them with guns, and he was no doubt ready to go when he left in 1921 to take charge of the Borax Consolidated mine in Turkey.[7]

Another side of mining life is revealed in a letter written by Baker in August 1923, which gives an original view of Ryan and Death Valley Junction.[8] The background was the attempt to find a job in mining for the son of Colonel Reid, the vice-chairman of Borax Consolidated, an attempt which did not meet with the gratitude it deserved:

> The camp at the Junction is certainly not the same as Ryan, which is the Ritz of American mining camps and the best in the States and, as it would appear, spoilt your son for the average life at American mines. I have never seen at the Junction the general untidiness and litter he mentions although, as the railroad passes through the camp and the passengers are of a mining type a good deal of stuff may at times be thrown about by them. . . . Also a great number of motors pass through that district and the people use our camp and, generally, are not of the most tidy type. The so-called hotel, in which your son has been accommodated, was recently bought by us for the purpose of getting rid of a saloon which attracted men with bootlegging liquor and for gambling, and also it is our intention to use this place for more accommodation providing more conveniences for the men. . . . The lavatory accommodation is necessarily not like that at Ryan where the camp, being on the side of the mountains, allows for splendid drainage. Our camp at the Junction is on the flat and nothing but earth closets are possible. . . . I have been glad to use one of these places myself when at the Junction, until recently, when bungalow accommodation has been provided for the management

Improvements continued in all aspects of personal comfort at these camps. In November 1924 a civic centre was completed at the Junction, and Baker wrote:' 'Although rather expensive, [it] is a very good advertisement for the Company. . . . I am glad to see that the men have started a baseball team and I hope with you that they will give a good account of themselves.'

In fact the civic centre cost $300,000, and everyone thought that the mines and mill in Death Valley would be the centre of the borax industry for generations to come. In addition to the feeding and sleeping accommodation for two hundred men, the civic centre included a general store, company offices, a hospital unit, theatre, recreation hall, pool-room, and guest-house. The *Inyo Register* described it as 'a city under one roof'. For opening night at the recreation hall – named Corkill Hall – Baker crossed the Atlantic, Zabriskie came from New York, and all Ryan and Wilmington were there. All who could wore dinner-jackets and starched shirts, ladies were in long dresses, and an abundance of fresh flowers were delivered from Los Angeles by the Tonopah and Tidewater railroad. Thereafter nothing escaped celebration at the Junction – Easter, May Day, Thanksgiving, and Christmas were big affairs, and of course on St Patrick's Day the whole town burnt green – but on Sunday Corkill Hall became a church.

In the midst of all this there still stood on 'the other side of the tracks' the one institution that had existed at the Junction since the railroad was built, and before all this civilization arrived. Bob Tubbs's saloon and desert store were combined with what was sometimes called an hotel and sometimes a 'travellers' rest', but was in fact a brothel. To Tubbs's credit, he applied to the state school system for the first teacher to come to the Junction, and as a result 4 ft 8 in, eighteen-year-old Bess Davis duly arrived with her suitcase at the Junction and reported to the school trustee – namely, Tubbs. She was puzzled by the fact that she was not allowed to board with the Tubbses but was happy in the Corkill home. She stayed for two years, was a great success, married a Pacific Coast Borax man, Frank Grace, and 'lived happily ever after'.[10] Some probably thought the Junction had become too civilized when Tubbs was asked to move, but a good solution was found, and the organization moved a few miles away to a 'ranch' at a remote and romantic spot called Ash Meadows, where the Tubbs tradition continued to flourish until the house was destroyed by fire in the 1960s.[11]

These communities were remarkable examples of the resourceful pioneering spirit which pervaded the western United States during these times and earlier. Harry Gower – who joined Pacific Coast Borax in 1910 and retired half a century

later – planned, built and developed a township at Ryan which included a store, a recreation hall, a school, a church, a brass band and a way of life far above that of the usual rough mining-camps in the West. Homes, wives and children all had a place, and before the days of home refrigeration or air conditioning it was a real test of self-reliance and courage. Since it was adjacent to one of the hottest places on earth, it needed people of character, and there were many such who worked there. Pauline Gower, Harry's wife, taught the children, and was always ready to play on the piano whatever anyone wanted. Amateur theatricals were a feature of life at both Ryan and the Junction. But these mines and this mill were becoming expensive indeed, and their lifeline, the Tonopah and Tidewater railroad (about which much has been said earlier) continued profitless and a drain on Borax Consolidated's finances which no amount of optimism about possible new sources of revenue along the route could diminish.[12]

This was a disquieting feature at a time when competition from the American Trona Company was somehow refusing to subside as expected, and when there were other factors in the situation to make Borax Consolidated 'jumpy about borate'. Among these the rise in labour costs during the 1914–18 War has already been mentioned. It continued throughout the first post-war years until 1921, when reductions of wages in many industries became possible without fear of strikes, owing to world-wide reduction in demand. Consequently both the Death Valley mines and the mill at the Junction were shut down for seven months during 1921, and restarted on reduced wages. After that things rapidly went the other way, and a boom and the Bolshevik scare – which deterred the US Government from admitting enough immigrant labour – forced wages up rapidly.[13] Overseas, the Turkish situation did not help. It had been hoped to resume supplying British and European works from the Turkish mines soon after the War, but Mustapha Kemal's nationalist rising cut off supplies from 1920 until 1927, and production of colemanite had to be boosted at the American mines to fill the gap.

In the USA itself the 1914–18 War had made life very difficult for the New Jersey works at Bayonne. To an abnormally high level of wages had been added the cost of moving raw material from Death Valley mines in the West to the east coast. After the War advantage was therefore taken of the vastly shortened sea route to the East offered by the opening of the Panama Canal in 1914 and all borax-refining became based on the west coast. For this the 'Chandler' site was acquired at San Pedro for $50,000 in July 1921,[14] and since it was on the Wilmington side of Los Angeles harbour it was renamed 'Wilmington'. Although the refinery was not fully completed until nearly 1930, the US headquarters of Pacific Coast Borax moved there in August 1924.[15] Boric-acid production remained at Bayonne until 1929,[16] after which the deserted site awaited a purchaser until it was sold to the rival Stauffer Chemical Company for $100,000 in 1945.[17]

Wilmington was not the only new works to be established by Borax Consolidated at this time. Inevitably, the War had altered the European sales scene, and in particular the collapse of the Austro-Hungarian Empire had left the Company's works at Stadlau near Vienna serving the needs of only a small republic, instead of a vast multiracial territory.[18] More especially, the majority of enamellers and glassmakers were now included in the new state of Czechoslovakia, and it became imperative, particularly owing to tariff and currency considerations, to supply them from somewhere within this new state.[19] Accordingly the Aussig works (which formerly belonged to the refiner Billwaeder of Hamburg) was acquired for £9,000 from one Max Ullman in September 1920.[20]

Suckow, and each blamed the other for creating a situation which enabled the Doctor to enter the business at all. They also discussed Blumenberg, who since Daggett days had managed to lay claim to colemanite with sufficient success to tease both Pacific Coast Borax and Stauffer. Rasor chided Stauffer that he had bought out Blumenberg just as he had been about to run out of ore, and predicted – as it happened correctly – that it would merely enable him to show up again in borax-mining after a suitable interval. No admirer of Blumenberg, Rasor commented that he 'was cached away somewhere in Los Angeles. I am advised he devotes most of his time to young ladies of the movie class.'

As for Suckow, Rasor was unable to trace him, but he saw his agent Kleiner, who was 'sore as a boil', complaining 'that Suckow seldom comes to the office and when he does he spends most of his time "calling up chickens [chicks]".' Writing to Zabriskie, Rasor went on: 'I think I have intimated to you heretofore that Suckow seemed to be troubled with, or rather affected by some kind of sex complex. It has become very much apparent in the last year, and is getting much worse.' Rasor also reported that the Suckow mine contained considerable ore reserves, and it was not long before the financial demands of the Doctor's life-style brought an offer from him to sell, which was reluctantly accepted by Pacific Coast Borax in 1925.[40] However, Stauffer showed no interest in sharing Suckow's holding with them, and agreed to exchange his interest in the mine for Suckow's borax-refinery in Los Angeles, which ceased to produce in about 1927.

At this time Stauffer was endeavouring to organize a consortium of borax and potash interests to acquire American Trona, and a number of meetings with Dr Teeple took place which Stauffer and Zabriskie attended.[41] Baker was unwilling to consider taking such a step in harness with Stauffer, and also about the same time he turned down the proposal presented by a discontented shareholder called Gallois and a banker-creditor of Smith called Carlson, to try to acquire control of Smith's West End Chemical and Mining companies.[42] Smith had managed, in some seven years only, to enmesh both these companies in a web of unsound finance and long-term low-price contracts, and Baker and his colleagues had steadfastly refused to become embroiled again in his affairs, either to hinder or to help him. But even Baker allowed himself an uncharacteristic outburst when he heard Smith was offering borax in early 1925 at $6 a ton below Borax Consolidated's price, and 'a fine specimen of the low-down, unscrupulous, lying Hun' was an uninhibited reference to Smith's ancestry.[3]

In his later years Smith ran into antagonism from a section of West End shareholders in the form of a shareholder's protective committee, and in 1926 he resigned as President of the mining company.[44] He continued as President of the chemical company until he fell seriously ill in 1928; and then, on 27 August 1931, this old warrior of the West died at the age of eighty-five. Smith was succeeded by his wife Evelyn as President, assisted by her brother George Ellis, who in turn became President of West End Chemical Co. in 1940. This ran successfully and profitably, and in 1956 was acquired by Stauffer Chemical Company.

Meanwhile, the Pacific Coast Borax Company had by 1925 invested some $350,000 in getting title or contracts covering seven sections in the Kramer district, and portions of several more. This area had been familiar territory to Rasor ever since Suckow's colemanite discovery in 1913. Rasor's men had drilled about forty drill-holes but no mining had resulted, except to the small extent of the Suckow No. 2 shaft on Section 22. Drill-holes and exploration elsewhere in Kramer showed colemanite and ulexite averaging about 10 per cent boric oxide

(B_2O_3), while at Ryan there were vast reserves averaging 30 per cent (B_2O_3).[45] Thus after twelve years' exploration Kramer did not seem to be an area of much importance. Moreover, the Death Valley mines represented a substantial investment for Borax Consolidated, and unless there was some competitive or very significant cost reason for establishing new production facilities elsewhere, it was about the last thing they wanted to contemplate.

However, Rasor kept a watchful eye on the Kramer area and Corum – who drilled for Rasor, but also drilled on his own behalf and for others – reported to Rasor late in 1920 that at the eastern end of the Kramer district they had drilled down to basalt bedrock without finding anything.[46] Little of interest occurred in the area until October 1924, when Zabriskie reported to Baker that considerable activity had again commenced there, to which Baker replied:[47] 'I am glad to see that people are drilling wells in the latter district [i.e., Kramer] where there is not any prospect of their finding borate ore and that they are more likely to find water'[48] – this on the eve of a great discovery!

Another prospector, Widdess, who had also been working there for over five years, and had established claims, saw Rasor just before the end of 1924: he told him he had struck some blue shale at 440 ft and a green-flame test showed the presence of borate, adding that he would come back if he struck colemanite.[49] Rasor was nervous, but expected nothing.[50] However, by 11 March 1925 Zabriskie was cabling Baker[51] that Rasor recommended negotiation with Widdess for Section 18, as he had struck 13 ft of shale at 580 ft showing 11½ per cent boric oxide (B_2O_3) in the form of a soft white material like ulexite, and no colemanite. Rasor was already checking the ownership of other sections of land in the area, and got the Southern Pacific Railroad to agree not to sell Section 19 to anyone for the time being.[52] By the end of March Widdess was offering a quarter of Section 18 for $60,000, and was also approaching Stauffer and others.[53] At that point Baker pointed out that they had a good deal of that kind of stuff at Daggett and 'we require to keep our powder dry for other purposes'.[54]

A sample from a core sent to the Wilmington laboratory confirmed the 11½ per cent B_2O_3, and that the borate was largely, if not entirely, ulexite.[55] At the end of April Widdess started further drilling on Section 18 when Suckow appeared, claimed the mineral rights and put some men to work. On 24 April Widdess called the sheriff and had Suckow arrested and taken to Atolia, and both then retreated to Los Angeles 'to begin suit'.[56]

At the end of May Corum's independent activities on Section 24 also began to attract Rasor's attention. His first hole had struck blue shale some 260 ft nearer the surface than the Widdess strike, and showed about 67 ft of borate-bearing ore of the same type. Rasor concluded that borate was likely to be in Section 19 on Southern Pacific Railroad's ground, and he agreed with Zabriskie that they should buy the north half of Section 19 and the west half of Section 17 without delay. These were Railroad land grants from the US Government which carried with them all mineral rights, and these came with the land.

Corum had four partners: Hannan, an experienced mining prospector and driller; an ex-vaudeville actor specializing in hypnotic stunts (these two worked together on the drill); Corum's brother-in-law Edenburg; and Knean, an Irishman, president of the Santa Monica Paving Company, and also a man of some wealth and strong financial connections.[58] In August Corum brought samples to Rasor which Zabriskie described as 'native or crude borax, different from any we have ever seen'.[59] Rasor sent four samples from the drill core to the laboratory at Wilmington. They were small samples from which to draw any conclusions. Cramer reported[60] that most of the borate was soluble sodium borate with clay and shale impurities indicating tincal ore, and that one small crystal sample was gypsum only. In September Zabriskie wrote to Baker that Section 24 was a great surprise, 'and as it is tincal [it] opens an entirely new feature as to what the costs would be of refining'.[61]

From November onward things began to move fast. Rasor was convinced that although on the evidence available it was something of a gamble, the existence of a new large borate ore body was more than a possibility, and that Pacific Coast Borax needed to move quickly if it were to consolidate the position before too much was known by others who would be interested in picking up separate pieces.[62] Zabriskie's letters to Baker reflected Rasor's views, but the problem was to get Baker to agree to an expenditure of a possible $500,000 for the Corum and Widdess claims. This required testing powers of tact and persuasion because Baker had been sceptical about the Kramer district all along. Sitting in London, he was for good reasons preoccupied with the prevention of any unnecessary expenditure and the ever-present shadow of Trona competition from Searles Lake, and he began to ask for the kind of hard facts about the geology of the area which were simply not available, and which if they had been would have meant that the price and the number of people interested would almost certainly have put it out of reach of Borax Consolidated. On 20 November Baker was cabling that further information was necessary for him to form any opinion, that he could not understand how any assessment could be based on two drill-holes. He suggested that an option should be negotiated, and hoped to be in California in the New Year.[63] To this Rasor replied with spirit: 'Fat party is such a windjammer, I do not know how to credit him Stop Will see them all next week believe delay dangerous.' The 'fat party' was the talkative Dowsing.[64]

Meanwhile Knean was trying hard to persuade his partners not to sell and to develop the property themselves, but they declined and wanted cash.[65] Quite surprisingly, the property was offered to Rasor, and on 26 November he reported that Corum estimated their claim contained three million tons of ore between 1[illegible] and 40 per cent borate, and that there was no question of getting an option. Rasor felt there could well be a million tons of ore of grade 20 per cent or above, and he was against buying unless the Widdess property was bought as well.[66]

Baker continued to show scepticism about estimates based on two drill-holes an[illegible] wrote: 'We have shown too much anxiety to deal with these people and their id[illegible] have become too inflated. . . . A douche is needed – we cannot buy the earth.'[67] T[illegible] days later, on 18 December, Baker felt that $250,000 was about the limit to wh[illegible] Borax Consolidated could go. And so, without any understanding having b[illegible] reached, events moved to a board meeting of Borax Consolidated on 23 Decem[illegible] at which a decision would be made. On the previous day news had reached Bak[illegible] a third drill-hole that supported the other results, together with an assessme[illegible] Borax Consolidated's position by Rasor and his firm recommendation to buy [illegible] the Corum and Widdess properties. It would be interesting to know what wa[illegible] at the board meeting, particularly by Baker, but no record of the disc[illegible] survives. A nervous Zabriskie and an elated Rasor received a cable agree[illegible] negotiation for both properties for up to $450,000, subject to clean claims.[68]

It is greatly to the credit and judgment of Rasor that he maintained such a po[illegible] outlook while negotiating with two sets of difficult people and dealing w[illegible] complex legal background he found in trying to establish clean claims.[69]

certainly getting no encouragement from London, and his own description, after attending a hearing of the Suckow case in Bakersfield, that he was carrying water on three shoulders, describes the situation well, as does his modest comment that 'strange to say, [I] do not believe I spilled any'.[71] Apart from the legal action which Suckow eventually lost, only just avoiding a charge of perjury,[72] Pacific Coast Borax had the difficult task of seeing that the claims for these properties were properly filed, and of assessing the problem that certain properties containing sodium salts like Searles Lake were now only eligible for US Government leases under the Sodium Leasing Act of 1920 and not for the preferable patented lode and placer-mining claims applicable to other minerals discovered on public lands. Practically nothing was known about the sodium borate in these deposits or its possible extent. It was vital that the discovery should be kept secret to avoid a 'borax rush' in the area, and it appears that Corum and partners co-operated and followed the advice of Pacific Coast Borax and Frank Wehe, their lawyer in San Francisco, which enabled these claims to be registered on a sound legal basis. A lot had to be done over Christmas 1925 and the New Year to enable final negotiations to start. The claim on the Widdess Section 18 presented no problem, except for Suckow's unsuccessful intervention, as sodium borate was not then in evidence and the claim could be registered as a normal colemanite and ulexite discovery.

On 14 January 1926 Rasor closed the deal to acquire from the Corum syndicate their interest in Section 24 for $375,000 and from Widdess the south-west quarter of Section 18 for $75,000.[73]

Baker must have decided to recommend the proposition to Borax Consolidated, Limited's Board – no one else in London could have known enough about the situation to say much, other than to ask questions. He certainly got precious little additional geological information to help him. In his final assessment, recommending that they buy both Kramer properties, Rasor had written:

> The thought of Searles Lake of course always gives one a chill. No telling what will happen there in the end. With what we know now of Kramer District, I believe we would have in the new strike a formidable weapon with which to go after Trona. Whether we go into the Kramer District or Searles Lake District, the Ryan mines should be closed. The costs are about double what they should be; this is not the fault of the mines. It is the system that prevails at that place. Gerstley (mine) could furnish the tonnage for a year or two at half the Ryan cost.[74]

[illegible]e difficult and expensive possibility of having to fight American Trona with a [illegible] Searles Lake operation had been haunting Baker for some time, and this, [illegible] the frightening thought of what competitors might be able to do to Borax [illegible]olidated if Kramer was what Rasor thought it could be, were probably the [illegible]uments he used to convince his colleagues. However, to commit his company [illegible] a sum equal to its likely profits for the next two or three years, on the basis [illegible]h limited geological information, was a highly entrepreneurial decision of [illegible]se importance. It was unlike Baker not to have been in California during [illegible]vious six months, but after the deal was done he wrote explaining that 'but [illegible]ng in the doctor's hands' he would have been there, and with his usual [illegible]r he was telling Zabriskie and Rasor he was still very dubious and they had [illegible] be right![75] Although this was not understood in London, Rasor's agree[illegible] with Corum and his partners was to acquire only the east half of Section 24. [illegible]bled in response to Baker's query,[76] the north-west quarter was already [illegible]and had been purchased in 1920, but, said Rasor, the 'ownership of the

37. Zabriskie to R.C.B., 11.4.21.
38. M.D. to Zabriskie, 17.1.22.
39. P.C.B.: Rasor to Zabriskie, 1.8.24.
40. P.C.B.: Cable from Zabriskie to R.C.B., 25.6.25 and reply from M.D. to Zabriskie, 7.7.25.
41. P.C.B.: Cable from Z. to R.C.B., 7.1.25, and letter of 8.1.25.
42. P.C.B.: Zabriskie to R.C.B., 20.1.25.
43. M.D. to Zabriskie, 27.1.25.
44. Circular of Stockholders Protective Committee, May 1926.
45. P.C.B.: Zabriskie to R.C.B., 28.7.31; Siefke, J. W.: 'Geology of the Kramer Deposit' Jan. 1979, U.S. Borax files.
46. P.C.B.: Rasor to Zabriskie, 19.10.20.
47. M.D. to Zabriskie, 15.10.24, re Zabriskie's letter of 6.10.24.
48. M.D. to Zabriskie, 26.10.24.
49. Rasor to Zabriskie, 22.12.24.
50. Zabriskie to M.D., 1.2.25.
51. Cable from Zabriskie to M.D., 11.3.25.
52. Rasor to Zabriskie, 9.3.25.
53. Cable, Zabriskie to R.C.B., 23.3.25.
54. Zabriskie to Rasor, 2.4.25, quoting R.C.B.
55. P.C.B.: Cramer to Rasor, 10.4.25.
56. Rasor to Zabriskie, 29.4.25.
57. Zabriskie to R.C.B., 23.6.25.
58. Rasor to Zabriskie, 15.6.25; Zabriskie to R.C.B., 28.11.25 (in this letter Edenburg is referred to as Greenleaf).
59. Zabriskie to Baker, 28.11.25 (handwritten letter 20.8.25).
60. P.C.B.: Cramer to Rasor, 20.8.25.
61. P.C.B.: Zabriskie to R.C.B., 17.9.25.
62. P.C.B.: Rasor to Zabriskie, 18.12.25.
63. M.D. to Zabriskie, 20.11.25.
64. P.C.B.: Zabriskie to R.C.B., 23.11.25.
65. P.C.B.: Rasor to Zabriskie, 10.11.25.
66. Cable, P.C.B. to R.C.B., 26.11.25.
67. Cable, M.D. to Zabriskie, 7.12.25.
68. M.D. to Zabriskie, 18.12.25.
69. Cable, M.D. to Zabriskie, 23.12.25.
70. M.D. to P.C.B., 11.1.26.
71. P.C.B.: Rasor to Zabriskie (manuscript letter), 26.12.25.
72. M.D. re cable from Zabriskie, 28.12.25.
73. P.C.B.: Cable from Rasor, 8.1.26.
74. P.C.B.: Rasor to Zabriskie, 18.12.25.
75. M.D. to Zabriskie, 26.1.26.
76. M.D. to Zabriskie, cable 15.2.26.
77. P.C.B.: Rasor to Zabriskie, 31.12.25
78. M.D. to Zabriskie, 19.1.26.
79. P.C.B.: Zabriskie to Rasor, 6.1.26.
80. M.D. to Zabriskie, 2.2.26.
81. Osborne, L. D.: An account of his experience with the Pacific Coast Borax Company dated Ma[illegible] 1947.

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The aftermath of the discovery of sodium borate at Boron

When the discovery shaft struck the 'crystal borax' mineral Rasor had thought that its appearance indicated a form of colemanite and was somewhat disappointed[1] as unlike the tincal (sodium borate) which the drill-holes had indicated, colemanite would require an additional cost of milling. On 17 August Rasor put a bulk sample in the back of his 'Rickenbacher' and headed for the Wilmington laboratory.[2] It so happened that Cramer, Connell and Knight, the company's trinity of Stamford University graduates, were there at a meeting when he arrived, and indeed they all took a hand in carrying out the analysis of the needle-like crystals taken from one of the large lumps of ore that Rasor had brought. To everyone's astonishment they identified a crystal form of sodium borate never before reported[3] – $Na_2O.2B_2O_3.4H_2O$ – that is, one containing four instead of ten molecules of water of crystallization as in the case of tincal, a result which reminded them that Connell had written a 'fanciful' article some years previously (1922) predicting that such a form of borax could and perhaps should [illegible].[4]

The new sodium borate mineral was for the time being referred to within [illegible]ic Coast Borax as 'Rasorite', until it was later officially christened kernite by [illegible] US Government, thus indicating its place of discovery, Kern County, [illegible]ifornia. 'Rasorite' was registered as a trademark in honour of Clarence Rasor, [illegible] has ever since been the brand-name of some of the products derived from this [illegible]ody.

[illegible]ome published accounts the discovery of kernite at Kramer is (perhaps [illegible]) attributed to Hannan and Dowsing,[5] who were working on the drill in the [illegible]eastern quarter of Section 24 when it intersected sodium borate in June [illegible] The drill cores must have contained kernite, but the logs of the drill-holes [illegible] 'borax' and 'crystal borax', and this was assumed to be tincal, the only [illegible] mineral form of sodium borate. Neither Hannan nor Dowsing nor any of [illegible] partners, nor anyone in Pacific Coast Borax, identified kernite in the [illegible]es, and this only occurred over a year later in August 1926 in the [illegible]on laboratory.

[illegible] earlier Zabriskie had called attention to the unusual appearance of the crystal borax in the Corum drill core. Pure tincal contains 36·5 per cent boric oxide (B_2O_3), but Corum claimed the crystal borax he had found had been shown by analysis to contain 40 per cent B_2O_3. A manuscript note in the margin of one of Rasor's letters suggests that the tincal sample had probably been partially dehydrated to give this high borate value[6] and thus another clue that something unusual was present was overlooked (pure kernite contains 51 per cent B_2O_3). The Wilmington laboratory, which might have been expected to identify kernite earlier, seem to have been confined to one meagre set of drill-core samples sent there by Rasor in August 1925, when they identified sodium borate but observed nothing special about it.

It was typical of contemporary exploration to keep samples and information relating to drill cores closely guarded, and Rasor certainly trusted no one, not even those within his own organization, when he was trying to establish mining claims. Twenty-five years in the West had taught him a great deal; Osborne, his assistant, asked few questions and answered none, and the Italians sinking the shaft knew neither English nor what it was all about.

As ore reached the surface in increasing quantities, self-congratulation and euphoria was evident on both sides of the Atlantic. As Zabriskie explained to Baker,[7] the new ore introduced 'an entirely new feature'. It was really a 'concentrated borax of very high quality or borax minus the water, on which we would have to pay freight were we shipping the refined article'. He had discussed with Newman, the superintendent of the Bayonne Works, 'the features of refining this material into borax' and they had come to the conclusion that it would be simple and inexpensive, not requiring the addition of alkalies or other reagents', but there is no evidence that the Bayonne works was asked to process any material in bulk. Tests conducted in England found that the new ore contained almost pure crystal borax, no arsenic or lead, and only a minute trace of chlorides and sulphates.[8] 'It was definitely of the top grade . . . too good for commercial borax.' Baker and Zabriskie therefore concluded that this new mineral would probably require no processing, and could perhaps be ground and then shipped to customers for industrial use without further treatment. But it was not the first time nor the last in the history of mining that the examination of samples did not reflect the real problems to be encountered when mining and processing on an industrial scale.

In the same year, 1926, following their decision to build a new plant, American Trona (which had now become the American Potash & Chemical Corporation) announced[9] that they would soon be producing half the world's requirements, 50,000 tons of borax a year, and that the reduced prices in the last four years had been due to their efforts. Baker summed up the situation:[10]

> The sooner we can get large quantities of the ore the stronger will be our position. There is every indication that we have to face quite low prices in the meantime. At the meeting of Consolidated Goldfields yesterday, the Chairman referred to a cable he had just received from Count Dentstating that by January 15th [1927] they will be in a position to produce two and a half times as much . . . and it goes without saying they will have to sell it somewhere and somehow.

Therefore nothing, it seemed, could have been more timely for the fortunes of Borax Consolidated than the discovery at Kramer, but nobody realized what an obstinate mineral kernite was going to be. However, before long they were mining about 1,500 tons a month through the discovery shaft, now christened the

'Baker' shaft. By November a drill-hole on Section 13 showed a satisfactory extension of the deposit north of Section 24.[11] Another hole on Section 19, some 350 feet east of the discovery shaft, confirmed the thickness of the ore, and this area was chosen for sinking the main ('Osborne') shaft for what was to become the 'Baker Mine'. In December, much to Baker's relief, Section 19 had also been acquired from the Southern Pacific Railroad.[12]

Arrangements were made for the Santa Fe Railroad to build a spur to the mine as soon as the main shaft was completed, and consideration was being given to constructing the sort of economical mining camp that Baker had always dreamed of, but which had just as often eluded his cost-saving supervision[13] – 'We do not wish at the present time to go to a large expense in putting up a camp similar to Ryan but rather, as you say, to run the place on much the same lines as we are working at the lease' (i.e., the Gerstley colemanite mine). More explicitly, if they started with married men and families they would soon have the same sort of expensive upkeep that they had at Ryan, although they must expect that a more elaborate organization would have to be considered eventually.

The same spirit seems, in fact, to have guided the whole financing of the beginnings of this great mine. There is nothing to show that any share issue was made or any loans raised in these early years to provide the necessary capital; and the conclusion remains that it must have been financed from revenue or reserves, in spite of the deteriorating financial position of Borax Consolidated. As already noted, the district in which these new discoveries were located was called Kramer, but as operations developed and a mining centre was established the township was given the name Boron, by which it has now been known for over fifty years.

Early in 1927 Rasor estimated the deposit to contain at least 5 million tons of mineral, but as mining progressed it became apparent that the ore varied, and averaged about 70 per cent kernite and 30 per cent tincal[14] and that the discovery shaft had struck an area of almost pure kernite where the borate content was unnaturally high, averaging about 40 per cent B_2O_3. There were increasing references to black shale, and the difficulty of obtaining a uniform product from the ore increased. Hand-picked samples of kernite were tried by the enamel trade in Europe and the United States, which scented a new low-cost raw material. As often happens, the customers, although able to handle an impure product, needed one of constant composition, and variations in iron and other impurities in the mined product soon damped their enthusiasm. It was gradually realized that run-of-the-mine ore would average far less than the first indications from the discovery shaft.

Although shipments of kernite crystals selected by hand were sold in Japan for years, within six months the whole question of what to do with kernite to make it acceptable for sale was preoccupying almost everyone in the organization, and the Baker–Zabriskie dialogue is loaded with technical discussion and the need for a quick solution to the problem.[15]

The difficulty which kernite posed was that its solubility in water was about one-hundredth that of borax. The whole idea of such an insoluble sodium borate was a surprise, and the simple methods of refining which had been envisaged were not possible.[16] Before long Wilmington, Bayonne, Death Valley Junction, the Kent and Staffordshire refineries in England and Coudekerque in France were all trying to find a way to deal with kernite, with Baker at the centre applying a stick and not so large a carrot in order to try to keep Borax Consolidated in

At the beginning of 1927 trials were made at Wilmington using an autoclave (a

50 lb pressure vessel) to produce a temperature of 200°C in order to dissolve the kernite[17] and Cramer started working on the problem of large-scale refining using autoclaves and a batch process. Thoughts then turned to upgrading kernite by roasting it in the calciners at Death Valley Junction,[18] and Corkill, aided by the consultant Stebbins, started what proved to be a lengthy period of process development.

In the event it took two and a half years before Borax Consolidated could base its production on the new ore at Boron and supply its refineries and customers with products which were reasonably satisfactory. The Ryan mines at Death Valley ceased production in June 1927, and stocks and the Gerstley mine provided what additional colemanite was needed.

Today's mining world, with chemical, mechanical, civil and all kinds of specialist engineers on call, and with plant design based on research and pilot plants preceding full-scale operations, is difficult to reconcile with the industry of the 1920s. Pacific Coast Borax was no different from most of the mining industry, which has a long tradition of scepticism about the ability of laboratory-based scientists to answer their problems. 'Borax engineers' were few in number, and they had to deal with exploration, mining, milling, construction of railroads and other facilities; when any problem arose they had to tackle it when the rest of the day's work was under control. They worked under tough conditions financially and climatically, with Baker in London expecting quick and inexpensive answers. Hiring additional qualified staff probably never occurred to Baker, and no one suggested it. Apart from a bout of recruitment to strengthen the technical staff before the First World War, Pacific Coast Borax carried on with the old guard almost unchanged. Baker clearly suspected 'educated' engineers. Not only were they expensive but their ideas were liable to cause further expense, and to infect adversely those who had been trained to practise strict economy. When a mine superintendent was needed for the new mine at Boron the choice was Osborne, who was wholly 'borax' educated, and Baker and Zabriskie went to some lengths to sidetrack the Ryan manager Major Boyd, a graduate mining engineer, into a consultative role. Short bursts of extravagance on consultants were occasionally permitted, but only to solve special technical problems.

However, in fairness to Baker, it must be remembered that Borax Consolidated was afflicted with declining profits and sources of cash, and only a determined and skilled navigator could have steered the company past the Scylla of the Great Depression and the Charybdis of the low-priced by-product borax coming in increasing quantities from Searles Lake.

As the hopes of selling ground ore direct from the mine faded it became clear that the recalcitrant kernite needed further processing to produce an acceptable product. Trials at Death Valley Junction in the calciners had shown that roasting changed the kernite needles to a product rather like popcorn, which could be separated from the shale by an air-separation process; but the product picked up excessive amounts of moisture, and was impossible to handle commercially. Unsuccessful efforts were made to compress this fluffy borax into bricks at a pressure of up to 10,000 lb per square inch. In the end, in order to get a product which could be packed and shipped commercially it had to be rehydrated by damping with water and then crushed. This product, which contained 42 per cent water – i.e., about the same as the original kernite – was satisfactory, could be refined by simple methods. It also had a substantial freight advantage over ordinary refined borax, which contains 64 per cent of water. With

financial and human resources Corkill and Stebbins, working in gruelling heat throughout the summer of 1928, had finally arrived at this answer to the problem.[19]

For the process to be economical, the residual calcined shale (which contained a considerable amount of borax) had to be treated on a Stebbins vibrating table, and a fraction which was high in borax was added to the main stream and rehydrated. The end-product was called Calcined 'Rasorite' (C.R.). The whole process was something of a hotchpotch of technology, depending on the extraction of borax from the shale residues and the collection of the borax dust from all parts of the calcining process.

To send kernite to Death Valley for roasting was of course uneconomical, but by September 1928 there was sufficient confidence in the process to start moving the aged calciners to Boron.[20] However, in May 1929 Zabriskie was still explaining why sufficient calcined 'Rasorite' was not yet available for Europe, and that Corkill, now at Boron, was often working till 2 a.m. on the new process, while Cramer at Wilmington was just beginning to get production of refined borax up to the required level from the autoclaves.

Calcined 'Rasorite' (C.R.) just about saved the refineries of Borax Consolidated and those of their customers in Europe; and so the mining of borate of lime in South America and colemanite in Death Valley, after some fifty years of considerable activity, both reached the end of the road.

Meanwhile, Borax Consolidated had to face the uncertain outcome of exploration and mining activity all around its new property. Early in 1927 Baker wrote:[21] 'There is a good deal more publicity being given to the Kramer District than we like, but it is inevitable.' Indeed, general interest shifted from the Death Valley area just over a hundred miles south west to Boron with some rapidity, and irritations followed Pacific Coast Borax to their new pastures like a swarm of flies after a well-favoured milch cow. Every effort was made to keep the nature of the discovery quiet,[22] and even schools, museums and learned institutions received replies to their requests for samples saying that the mine was not yet fully developed, and that a perfect sample could not yet be offered. Scientific curiosity from the US Geological Survey found Zabriskie wishing that a prominent member of their staff would get interested in aerial explorations of the North Pole and spend most of his time in the Arctic regions'.[23] There was always, of course, the possibility that another sodium borate deposit might exist in some other part of the USA,[24] and there were two unfounded claims made within three years of the discovery of the Kramer deposit; but the real danger was rightly considered to lie in the probability that the deposit itself was extensive, with the consequent risk that some rich part might be left for others to claim.

The presence of interlopers in the vicinity soon made itself felt. In mid-August a syndicate headed by Buley, an oil-prospector, struck sodium borate at a depth of 890 feet in the south-western quarter of Section 24.[25] 'This is very annoying', wrote Rasor, 'as we fully believed that that part of the section, being on the formation, was perfectly safe. . . .' This syndicate became The Western Company, and rapidly produced two unpleasant surprises. Stauffer immediately concluded a contract with them for ore supplies;[26] and the realization dawned on the Pacific Coast Borax team that in this case both tincal and kernite had been below the hard rock layer that they had taken as bedrock, and that the same might be true in other areas where they had drilled and found nothing worth while. Immediate instructions were therefore given to probe deep into relatively unexplored areas – notably to the west of the deposit.

a New York firm had completed a $250,000 drilling campaign and were well pleased with the results.' Rasor did not hurry to New Mexico. In February 1929 he was investigating a hole bored somewhere in Utah by 'two men' called Mulvey and Means, which was alleged to contain carnallite (potash) but turned out to be a dud.[7] Meanwhile he had been making routine inquiries about New Mexico at the Bureau of Mines Geological Survey Department, and there he came across a great deal of information about the exploration work of a company called Snowden and McSweeney.[8]

V. H. McNutt, technical director of this company – who were oil operators – had obtained in 1925 a Federal Oil and Gas Permit to drill for oil on Federal land in Eddy County, New Mexico.[9] Permit-holders on Federal lands were required to send a portion of each drill core to the Geological Survey, and confirmation came back from the Survey that potash was present in the core of the first well drilled. Accordingly McNutt applied for and obtained a potash-prospecting permit on these same lands, and a series of holes were drilled between 1926 and 1930 to determine the extent and depth of the potash beds in the area.[10] Altogether about 3½ miles of 3 in. cores were obtained, which showed the existence of four beds of potash in the form of sylvite (potassium chloride ore). This was the most soluble and economic form of potash ore for conversion into refined muriate of potash (potassium chloride), or for sale in its crude form as 'manure salts'. The four beds discovered between 762 ft and 867 ft depth contained an estimated total of 231 million tons of potash, but the fourth or bottom bed, at 29·86 per cent K_2O, was almost twice as rich as the other three, and a fifth bed was appearing below it.

So Rasor went off, in September 1929, to the small township of Carlsbad in New Mexico, having promised Baker that 'the expense will not be very much'.[11] By December he delivered his report,[12] showing that the drill cores contained good potash values and claiming that the deposit contained enough ore to supply the needs of the United States for a hundred years.[13] The deposit was owned by 'the United States Potash Company', which was dominated by two elderly men, Snowden and McSweeney.

Baker, during one of his periodical visits to the States, met Snowden, and the meeting and Rasor's report had convinced him that this could be a major potash proposition,[14] and that even the Germans had not got a better one on which to work. On the other hand, the Snowden and McSweeney company, after abortive negotiations with American Cyanamid, decided to take a look at Borax Consolidated. McNutt visited Wilmington, and appears to have been suitably impressed with the company's technical resources, as he recommended to his board that an interest in the potash venture be offered to the company.[15]

Apart from the considerations dictated by the struggle with A.P. & C.C., there were more normal reasons which made the proposition an attractive one for the Borax Consolidated board. In 1929 the US potash market was substantial, and domestic production supplied only a small part of it.[16] At existing prices and estimated costs at Carlsbad the investment would show an attractive return.

The aspect of the negotiations which proved troublesome, however, was the proposed financing of this venture. At first all seemed most promising, even to the cautious Baker, who was confident that Snowden would appreciate that Borax Consolidated's knowledge of the mining and chemical sides would be useful. As soon as it was decided what financial arrangements were required.[17] He thought that the venture would best be financed in the joint interests of both parties, raising a part or the whole of the capital required from the public, as Kali

had recently done.[18] Preliminary negotiations were conducted principally with Snowden, but he died shortly after they began, leaving it to his younger partner McSweeney (then aged seventy five), to allow Borax Consolidated the precious extra 1 per cent over the 49 per cent interest in the U.S. Potash Company which Snowden had offered, and also the management of the venture.[19] The price eventually agreed for the 50 per cent interest was two million dollars, and the board of Borax Consolidated approved the deal on 8 September 1930. In a subsequent letter to J. P. Morgan[20] this was alluded to as 'a large sum' and it was paid in the form of notes maturing at 12, 18 and 24 months. This was in itself a heavy burden, which Lord Leven (Chairman of BCL), Baker and Gerstley eased by purchasing a total of 125 of the 2500 USP shares.[21] But there were further sums to be found. USP itself required an estimated $1,761,000 for the overall cost of the proposed mine and refinery, and a further $3m for working capital, and these were the figures put to J. P. Morgan of Wall Street, with the suggestion that Morgan take up an issue of 5 per cent preference stock or bonds.[22] This approach soon proved to have been a great mistake. Morgan stated that they could not take up the business, but would be pleased to give introductions to other finance houses[23] who then tended to take the attitude that, Morgan having considered the matter, they could not touch it. Morgan had in fact turned the idea down because they wanted a good share of the equity of United States Potash for a number of years, and Baker was not prepared to concede this, considering that the prospects for the project were too good to be given away for the sake of ready cash.[24] It was alleged that Morgan tipped off the other banks that this was the line they were going to take, and certainly Baker and his colleagues, after approaching the Continental Bank, Chase National Bank, and others, soon came to the same conclusion. A basic reason for the whole difficulty was, of course, that the effects of the Depression had reached all corners of the business world by 1931, and loan money was hard to obtain.

The method eventually adopted was to rely largely on financing the erection of the plant by deferred payments to contractors consisting of a certain part in cash and the rest in USP notes of the same type as those offered for the original purchase of the 50 per cent interest.[25] This meant that some financing would have to be done at once, though on a more restricted scale than that previously anticipated, and first thoughts were that it would have to be handled in Britain. Unfortunately, when Britain went off the gold standard on 20 September 1931 it put an end to any hope of raising money on the London market, owing to the potential exchange losses involved. It was therefore not until December 1931 that a deal was eventually made with a contractor in the USA to erect the refinery.[26] The Moore Company would put up the plant and would arrange the finance, and Borax Consolidated would pay 15 per cent of actual cost and bank interest, the total sum involved being about $800,000, which was to be paid over 17 months. In the absence of an adequate loan from the banks the monthly payments to Moore would probably have to be financed by USP drawing on Borax Consolidated in London, and this emphasized a weak side of this potash enterprise – the strain that it imposed on Borax Consolidated's finances throughout the 1930s. 'We are in the position', wrote Baker,[27] 'of having to provide money for the Potash Company as well as our own business in these most difficult times and we have invested in money and plant a minimum of $600,000 up to date. . . . All this is depleting our reserves.' So perhaps Snowden and McSweeney's main motive for bringing Borax Consolidated into the enterprise in the first place was not so much

Glass fibre has been used decoratively for centuries; first appearing in Egyptian and later in Venetian objets d'art, while French and German glass-makers produced it commercially for this purpose in the 1700s. In 1892 Edward Drummond Libbey exhibited a dress made of glass fibre and silk at the Columbian Exhibition in Chicago. Then during the First World War the Germans developed a method of producing glass fibres to replace asbestos, although this continued to be a process based on single strands drawn through an orifice, until the 1930s, when a process was developed in the United States whereby a continuous filament was formed by multiple strands of glass extruded from a heated platinum box or bushing with many tiny holes. This product was used as a fibre, now familiar in textiles, electrical work and in a resin bonded form as the structural basis of boat hulls and many similar engineered products. At the same time a way was found to produce staple fibres from which the rolls of glass fibre are made, which are used for thermal and acoustical insulation.

Sales by the Owens Corning Fibre Glass Corporation, who pioneered the process of manufacture of glass fibre, expanded from about $4 million in 1939 to over $80 million by 1950. In the post-war world this industry has sustained a continuously high growth rate, reinforced in recent years by the compelling need to conserve energy in almost every form of building structure in which energy is used, either for the purpose of heating or for cooling.

The chemical sodium perborate, made from borax and hydrogen peroxide, was first produced as a laundry additive in England in 1907. Mixed with soap-flakes – the 'Persil' oxygen washer – it removed stains and produced laundry whiteness with remarkable success. However it was after the Second World War and the introduction of washing machines and detergents aimed at the housewife, with all the marshalled power of the advertising world, that the use of sodium perborate (particularly in Europe) escalated year by year. This 'washing industry' now rivals the glass industry as borax's largest user in this area.

The 1940s had seen some fundamental changes in methods of production of end-products at Boron. The relatively high cost of processing kernite ore by calcination to make concentrated 'Rasorite' (CR) and its treatment in 'digesters' (autoclaves) under pressure to make refined borax at Wilmington, compared with the cost of processing tincal, put increasing emphasis on the mining of tincal and rejection of kernite. Before the end of the Second World War tincal had become the mined ore which was supplied to the processing plants at both Wilmington and Boron.

A magnetic separation process for removing shale and iron impurities from tincal had been developed at Boron in 1933. However, until the Suckow mine was leased in 1936 there was no adequate supply of tincal, and in the absence of any cost system relating to individual processes, and with the reluctance to spend capital, the calcination of kernite continued well beyond the time when it would have been preferable to switch to tincal ore. Some additional magnetic separators were installed in 1937, but calcination of kernite only ceased in about 1943 and there were substantial additions to the magnetic separation plant in 1946 and 1951. In the post-war period about half of the mined ore (tincal) went to the Wilmington refinery and the other half to the Boron mill for conversion to 'Rasorite' products for shipment overseas. Soon after the War ended plant was installed at Wilmington to produce anhydrous borax.

American Potash and Chemical Corporation were tied to producing potash, soda-ash and sodium sulphate in a fixed ratio to match any increase in bo[rax]

Clarence Rasor, the eyes and ears for some twenty-five years of Borax Consolidated's activities in North America

John Suckow, sometime 'partner' and always tough competition of Borax Consolidated in the Kramer area

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The end of underground mining at Boron and the beginning of U.S. Borax

Underground mining methods at Boron were similar to those used at other mines. A shaft was sunk into or close by the ore, and from it extending through the ore body at different levels were driven what the layman calls tunnels, which mining men call drifts and cross cuts, winzes and stopes, depending on their character. The two main mining methods used at Boron were the room and pillar and the shrinkage stope methods. By the early 1950s continuous mechanical miners had been introduced in the Jenifer mine to cut the ore at the face, instead of drilling and blasting, and mechanical moving belts had largely replaced the ore trains.

The Second World War brought about significant developments in the design and capacity of earth-moving equipment and vehicles. The economics of open-pit mining were revolutionized by these changes, and the Boron mine, with ore at a depth of a few hundred feet, had an unusually good potential for development by this method. However, a decision to change from underground mining to an open pit involved substantial capital expenditure, and in the case of the Boron mine it also gave an opportunity to redesign completely the refining process with a new plant alongside the mine instead of shipping raw material to Wilmington, where refined borax had hitherto been made.

In spite of these economic advantages Borax Consolidated, in the post-war years, was not yet in a financial position to meet the heavy capital costs involved. In April 1947 Fred Lesser wrote: 'We are not discarding the Open Pit method: we are only postponing it.' He added that the postponement would enable them to see the probable future trend of the demand for borax products, and this question was still an open one as late as February 1951, even during the Korean War boom. The serious drop in demand after the Korean War lasted from early 1952 until the autumn of 1953, but when demand then started showing every sign of being firmly on the upgrade again plans for an open pit and concentration of production at Boron were developed rapidly over the following two years.

Meanwhile the US Government had developed an unexpected interest in borates. J. M. Gerstley remembers that some time before Jenifer's death in 1950 an inquiry about availability of borates was received from the Office of [illegible] Ordnance at Washington, which indicated a military programme which was [illegible]

secret', and clearly a matter of major importance. Pacific Coast Borax co-operated with the US Government by providing experienced staff to assist in a basic study of the availability of borate mineral resources, particularly in the North and South American continents, which was conducted by the US Geological Survey.

Following the Second World War the development of improved-performance aircraft fuels became an important military objective. The high energy in boron compounds was well known, and in 1947 the British had made an evaluation of their use as ramjet fuels, but decided to take the matter no further. However, in 1952 the US Defense Department initiated Project ZIP, aimed at developing a superior fuel to the hydrocarbon jet fuel JP-4, and as it transpired later ZIP was focused on the use of these compounds of boron and hydrogen called boron hydrides, or boranes. However, for several years little was known about the project, as quite properly it remained a classified top-secret matter. The programme acted as something of a spur to the borax industry, and in U.S. Borax it accelerated the decision on open-pit mining, which permitted a much higher recovery of ore, and therefore greatly increased the ore reserves available for production. Also, many companies increased their research effort to develop new boron chemicals, and not only those who were the prime producers of the raw material borax.

Plans for the open pit and new refinery at Boron were completed by the beginning of 1954. The capital cost of the project of about $20 million was approved by the board of Borax Consolidated, Limited, subject to satisfactory financing plans being developed. This was by far the largest single project undertaken by the company since its formation in 1899. The creation of the open pit involved moving about 10 million tons of earth overburden over a period of two years at a cost of $2 million; however, the financial advantages arising from higher recoveries of ore and lower mining costs, together with a refinery alongside the mine, were ample to support the project.

The raw materials for the new refinery would be crushed and ground in the open-pit mine, and tincal containing about 24 to 25 per cent of the essential boric oxide (B_2O_3) would be converted to three main products: 'Borax 10 mol', 'Borax 5 mol', and 'Rasorite 46'. 'Mol' denotes the proportion of water (or number of molecules of water in crystallization), and Rasorite 46 was a crude product, similar to the Rasorite SCD which had been made at Boron by the magnetic separation process, and which now contained about 46 per cent of B_2O_3. New furnaces for the manufacture of anhydrous borax were also included in the plan.

Borax Consolidated's operations in the United States in the post-war period had enabled about $6 million to be conserved from internally generated funds which was now available to finance the new project, but the international dollar situation prevented the balance of the capital being raised in Britain, and this needed to be done in the United States.

Discussions with the Farmers and Merchants Bank in Los Angeles and the Chase in New York were well advanced in the autumn of 1954, when an unexpected development postponed the financial negotiations and caused some delay of the project, and also had a far-reaching effect on the whole structure and future of Borax Consolidated. A syndicate led by Coleman Morton, a financier in Los Angeles, and the New York finance house of Model, Roland and Stone made a bid in London to acquire the shares of Borax Consolidated, Limited. This was what would be described today as an unwelcome approach, and it started with an unusual event. When a list of those forming the American syndicate was obtained

100 YEARS OF U.S. BORAX

CHAPTER V. WITHIN OUR MEMORY

NEWCOMERS TO SOUTHERN CALIFORNIA may find it hard to believe that there was a time when one of the region's great attractions was its clean, dry, healthful air. Large numbers of sufferers from lung afflictions came to Southern California, particularly to the deserts, for cure or relief. Fifty to 40 years ago the population of the Antelope Valley consisted substantially of such "lungers", and some Southern California sanitariums specializing in respiratory ailments gained world-wide fame.

Dr. John K. Suckow of Los Angeles had this in mind in 1913 when he filed a homestead claim on a section of land in the Mojave Desert near Kramer, in eastern Kern County. A specialist in lung ailments and rheumatism, he planned to build a sanitarium on the desert site—never suspecting that he was providing the springboard for another great leap forward by the borax industry.

He engaged Les M. Griffin to drill a water well on the site, and Mr. Griffin's crew struck colemanite ore. The find was reported to Clarence Rasor, Chief Engineer of the Tonopah & Tidewater Railroad, who reported it to John Ryan, General Manager of the Pacific Coast Borax Company at Ryan. The Company bought Dr. Suckow's claim and re-filed on the land as a mining location.

The War and the Canal

The following year, 1914, two world events took place that deeply affected the Company. In April the Panama Canal was opened (President Woodrow Wilson opened it by pressing a button in his White House office). In August World War I broke out. The Canal cut 8,000 miles from the sea route between Los Angeles and New York, making it more economical to refine products in the West near the mines and ship finished product East, than to ship raw materials East and do the refining near the markets. The War caused a postponement of all major projects; it also boomed world demand for borates from California. Much of the world's borate supplies at that time came from South America, and the German naval blockade virtually cut off that source. Conversely, U.S. production of borates increased from 67,004 tons valued at $1,663,521 in 1915 to 102,705 tons and $2,359,295 in 1916, and 109,944 tons and $2,561,958 in 1917.

In 1916, during the war, the Company undertook a joint project with Solvay Process Co. of Syracuse, N.Y., to extract potash and borax from the brines of Searles Lake, to which the Company held patent land rights. The war had cut off supplies of potash from Germany, and a domestic source of that important fertilizer material was a national need. After considerable research at the Alameda refinery using Searles Lake water shipped to Alameda in tank cars, the process was pronounced feasible and a plant was built at Borosolvay on Searles Lake. Production began in the Spring of 1917. By 1921, with the war ended and a postwar recession on, demand for potash declined and the Borosolvay project was discontinued. Borax and potash are still produced at Searles Lake by American Potash & Chemical Company, now a subsidiary of Kerr-McGee.

When the war ended in 1918 the Company went ahead with plans to build a refinery in a Southern California port, phasing out the plants at Alameda and Bayonne.

President Richard C. Baker asked Frank Jenifer to find a site for the refinery, although Mr. Jenifer was not then officially a Company employee; he was Assistant General Manager of the Tonopah & Tidewater Railroad. After careful study Mr. Jenifer chose Mormon Island, Wilmington, where Harry Chandler, famous publisher of the Los Angeles *Times*, operated a war-time shipyard. The property was acquired in April 1923. (It is the only privately owned waterfront property in Los Angeles Harbor; the rest is held by the City of Los Angeles).

Mr. Baker and Mr. Jenifer favored reinforced concrete construction for the new building. The Company had pioneered reinforced concrete at Alameda and Bayonne, and it had worked well in both cases. George Connell and Fred Beik of the Alameda refinery staff (with cooperation from Nix Knight, then in charge of the Company's part of the Borosolvay operations, and Alfred Newman, Superintendent at Bayonne) designed a building to accommodate the latest improvements in borax production. Tom Cramer, then Superintendent at Alameda, was placed in charge of the project. One of Southern California's most successful architects and engineers, Albert C. Martin, designer of the new Los Angeles City Hall, was commissioned to draw the plans and supervise construction.

The Wilmington Plan

The final design called for a building 307 ft. long by 252 ft. wide, three floors high, with ceilings 18 ft. high on the first floor and 16 ft. high on the others. The

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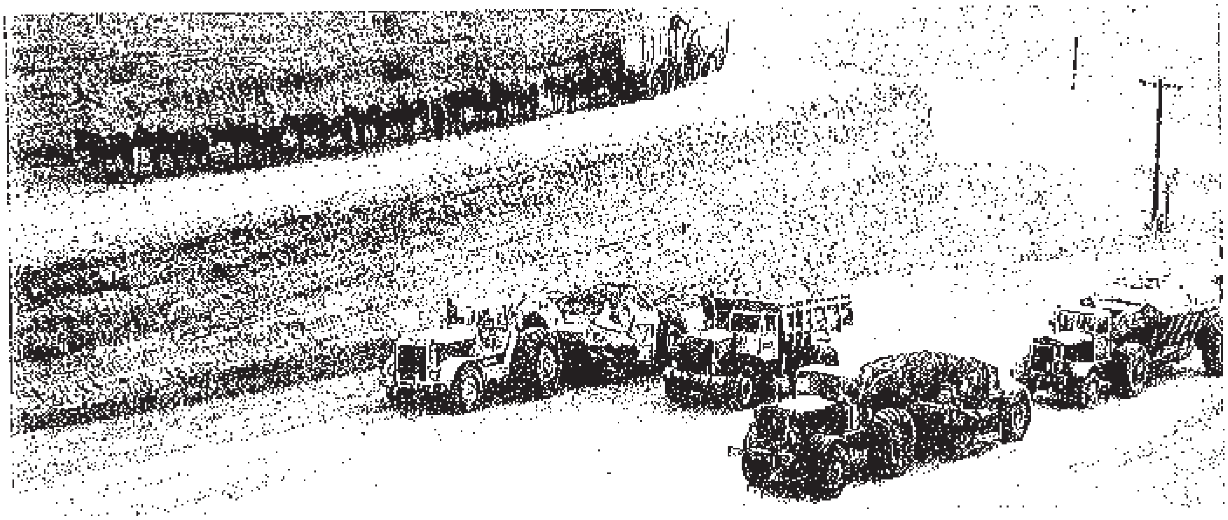
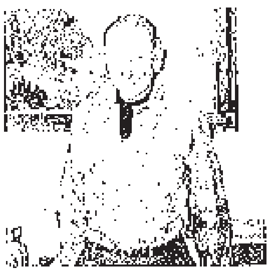
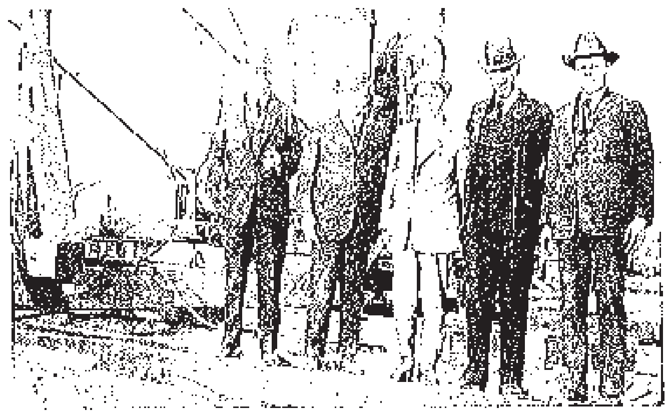


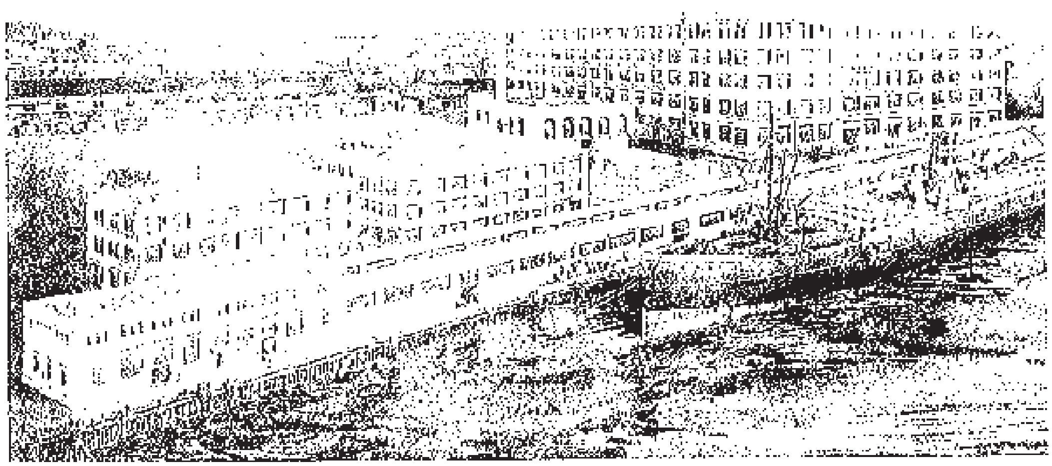


Les M. Griffin

John K. Suchow

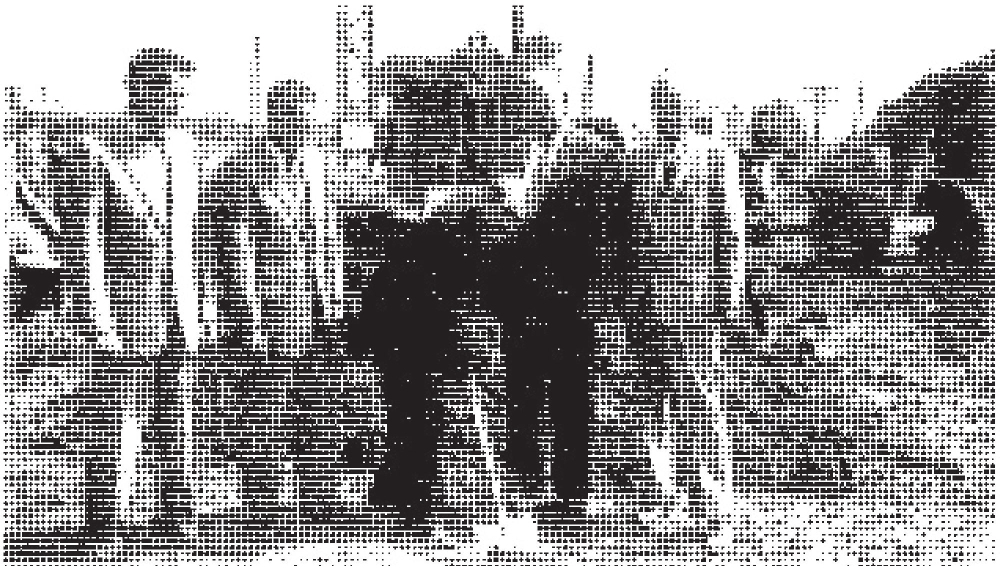
Photos courtesy
Mrs. Zella Griffin.





(Top) At the dedication of the open pit, the twenty-mule team and the modern scrapers, ore truck and water truck draw the contrast between old and new. Above, right, a distinguished group at the start of construction at Wilmington. From left, Richard C. Baker, Managing Director, BCL; Chris B. Zabriskie, Vice President and General Manager, PCB; Clarence Raser, Field Engineer, PCB; Lord Chichester, Chairman, BCL; and Tom Cramer, Refinery Superintendent. Below, architect's sketch of the Wilmington plant. Neither the wharf office (left) nor the wharf warehouse were built exactly as drawn; the two buildings in the left middle ground were never built.

33



Ground for the Anaheim laboratory was broken September 19, 1956 with an appropriate ceremony witnessed by (from left) Dr. Howard Steinberg, then Manager of Organic Research, now Vice President, Technical; James McWaters, Security First National (now Security Pacific) National Bank; George A. Connell, then Vice President, Research, now retired; Charles A. Pearson, then Mayor of Anaheim; and the late Harry Cower, then Manager of the Land Department.

roof was to have the bearing strength of a floor so that equipment could be mounted on it, and the plans allowed for two additional floors and lateral expansion on both sides.

The building was begun in 1923. In April 1924 piles were driven for the 800-foot-long dock. By late 1924 usable equipment from Alameda had been moved down, Wilmington was in operation and Alameda was closed. The first shipment from Wilmington—colemanite for New York—was loaded on the SS *Santa Paula* November 1, 1924.

The Bayonne refinery was more gradually phased out, closing in 1928. The Death Valley Junction concentrating plant was closed in 1926.

The new Wilmington plant was a great boost for the new Los Angeles Harbor, then just beginning to grow. Mr. Cramer recalls that on a trip to Wilmington from Alameda, he got off the train at Saugus to learn the results of the election of a U.S. Senator from California, but the Los Angeles newspaper he bought headlined the news that Pacific Coast Borax Company was building a new plant on Los Angeles Harbor. The election got second-place position.

Wilmington produced borax, Borax Soap Chips, BORAXO®, bar soap and borax "glass", that is, anhydrous borax fused in a furnace. At first the plant operated on colemanite dust from the Death Valley Junction calcining plant, but within two years colemanite was replaced by kernite, a new ore from the new mines at Kramer (Boron), and still later by tincal.

Kernite

During the war, only exploratory drilling was done at Kramer, but in 1925 samples of tincal (sodium borate) were brought up from 380 feet. This aroused tremendous excitement in Company executives; for tincal is pure sodium borate or borax, requiring comparatively simple processing, whereas colemanite (calcium borate) requires additional and costly processing to eliminate the calcium and substitute sodium in the formula. If sizable tincal deposits were found, an entirely new and more profitable field would be opened for the Company. Clarence Rasor, in charge of the Kramer tests, decided to sink a shaft, at very low cost and with the greatest secrecy, to keep word of the discovery from leaking out.

The shaft was sunk by a crew of four under Roy Osborne, who had joined the Company years before, at Lang. Mr. Osborne was asked to plan the shaft, headframe and equipment, but the project was such a great secret that even he wasn't told where the shaft was to be sunk until sinking was about to begin. As the shaft went

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Dedication of Death Valley National Park
Remarks of Preston Chiaro, Vice President - Boron Operations
Friday, November 10, 1995

Today U.S. Borax is pleased and very proud to join in this dedication of Death Valley as a National Park. U.S. Borax shares a rich heritage with Death Valley and with the National Park Service. It is a heritage of Industry, of Promotion, and of Conservation. Industry, because at places like Harmony, The Lila C. and Ryan men worked to provide a growing industrial nation with a necessary raw material - borax. Promotion, because it was the need for advertising that made Death Valley and borax household words and brought thousands here to visit. And Conservation, for the very beginnings of both the National Park Service and U.S. Borax have there roots here in Death Valley.

It began in 1883 when William Coleman commissioned great wagons to be built - the largest wagons of their day. He assembled teams and teamsters who could meet the challenge of hauling borax ore 165 hard, hot, and dry miles from the mill in Harmony to the railroad at Mojave. Men like Ed Stiles, Johnny O'Keefe and Johnny Mills skillfully drove the teams. It was their job. The giant wagons and twenty mule teams were nothing more than the American West at work. These men were not famous. Their work was not glamorous. It was simply industry doing what it had to do to get the job done.

But a man named Stephen Mather saw something else in the wagons. He was a newspaperman hired by Francis "Borax" Smith in 1890 to help promote the sale of borax. Mather wrote to Smith, "As a suggestion, how would the brand name "Mule Team" do...? Smith didn't like the idea at first, but eventually agreed to "Twenty Mule Team." With the brand name, an American legend was born. Since then the Twenty Mule Team has been synonymous with Death Valley. From the 1890s through the 1920s the teams toured the country. The painted message on the wagons read "Borax from Death Valley." In 1930 Pacific Coast Borax started a radio program and called it "Death Valley Days." Mine Superintendent Harry Gower and writer Ruth Woodman combed the mountains and canyons looking for "old-timers" who could tell true stories of the region. In the 1950s those stories made their way from radio to television. In the minds and imagination of America, Death Valley was synonymous with a familiar bugle call, the twenty mule team, and borax.

This promotion of Death Valley led to something extraordinary - tourism. People wanted to see this place of legend. A place where pioneers has struggled and died. A place where prospectors found and, more often, lost fortunes in gold and silver. A place where a man named Scotty had a secret gold mine...or did he? And a place where those giant wagons rolled majestically across a seemingly endless desert. They came to see a place that had inspired writers and photographers. They came because the very name filled them with fear and awe and stirred the imagination. They came to see places with names like the Devil's Golf Course, the Devil's Cornfield, the Funeral Mountains, and Dante's View. And with so many sightseers coming to the Valley, they needed a place to stay.

In 1927, Pacific Coast Borax moved the mining operations out of Ryan. The miners' bunkhouses at Ryan were turned into guest houses. It was called the Death Valley View Hotel. But tourists could also stay at other Borax-built accommodations like the Furnace Creek Ranch or Death Valley Junction. And if they wanted to splurge a bit, the newly opened Furnace Creek Inn provided a luxurious oasis. For several years Pacific Coast Borax operated four hotels in Death Valley. And railroads, like the Tonapah and Tidewater, The Death Valley Railroad, and a Baby Gauge train, which originally were built for hauling ore, now carried tourists.

Also is 1927, a group of men visited Death Valley to consider including it in the National Park system. Among them was the first director of the National Park Service, Stephen Mather, the same Stephen Mather who 37 years earlier had originated the Twenty Mule Team promotion with Pacific Coast Borax. Also with them was Horace Albright, a local boy from Bishop, who was Mather's assistant. There were representatives from Pacific Coast Borax and the Union Pacific Railroad. All of them agreed Death Valley was worthy of park status. But Mather was afraid his old company connections would look like favoritism. Death Valley had to wait until 1933 when it became a national monument through the efforts of President Herbert Hoover and President Hoover's new park service director, Horace Albright. After completing his term with the Park Service, Horace Albright went to work with a U.S. Borax subsidiary in Carlsbad, New Mexico.

We at U.S. Borax, the successor to Pacific Coast Borax, share a unique bond with this valley and with the Park Service. Our roots run long and deep. From our mining and industrial operations, to our promotional and tourism campaigns, to our efforts to preserve and protect its scenic wonders. The land on which the National Park Service Visitors' Center sits was donated by the Borax company, as was the Harmony site and, of course, spectacular Zabriske Point, named for one of the presidents of Pacific Coast Borax.

So it is with great pride that U.S. Borax, today's largest supplier of borates worldwide, joins with the National Park Service, the United States Congress, the President of the United States, and all Americans in dedicating this special valley, this place of legends, as one of our newest and largest National Parks. Though the American landscape may change, just as surely as industry has moved from great wagons to giant trucks, we hope and trust that Death Valley will remain forever as a land of spectacular beauty and extraordinary history.

Thank you again on behalf of U.S. Borax for the opportunity to be a part of this historic dedication.

A FAMOUS SYMBOL BECAME…

…ONE OF THE WORLD'S BEST KNOWN AND MOST RECOGNIZABLE TRADEMARKS

In 1896, the 20 MULE TEAM symbol became the trademark of the Pacific Coast Borax Company (predecessor to U.S. Borax) and the many industrial and household products of the company. Through vigorous promotion and advertising the "BIG-TEAM" captured the imagination of the public.

Long after their practical usefulness had ended, the teams were destined to make many promotional and ceremonial appearances on behalf of the Company.

PROMOTIONAL APPEARANCES

1904-1906 2 year U.S. Tour — St. Louis World's Fair — Philadelphia, Chicago and New York.

1916 U.S. Tour — Woodrow Wilson Inauguration, Washington, D.C.

1917 Pasadena Rose Parade — First Place Commercial Float.

1936 La Fiesta de Los Angeles

1937 San Francisco Bay Bridge Dedication; Opening of the Death Valley-Lone Pine Highway

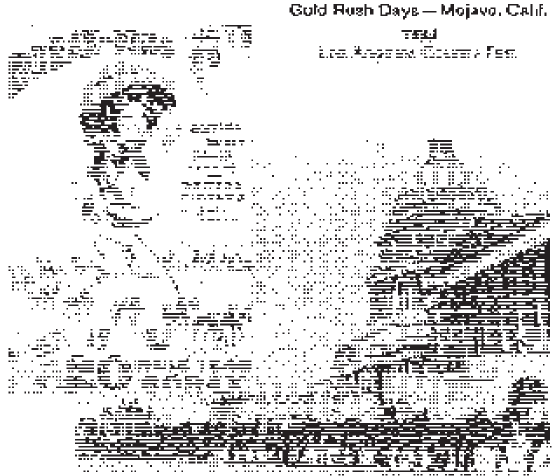
1940 40-city U.S. Tour in conjunction with MGM film "Twenty Mule Team" starring Wallace Beery

1949 Centennial of California Admission to the Union, Los Angeles.

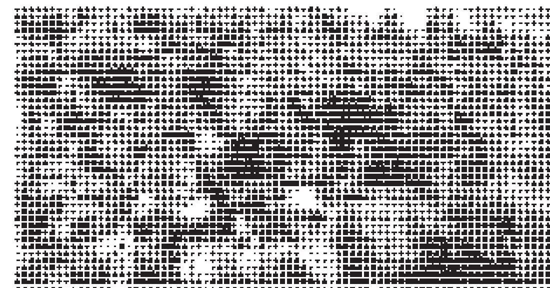
1950 Las Vegas, Nevada, Old Timer Parade, Hollywood Bowl Appearances

1957 Boron, California, U.S. Borax Open Pit Mine Dedication.

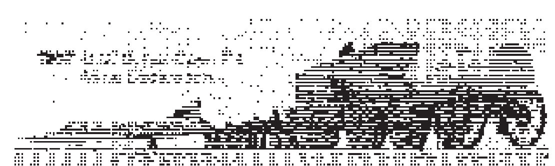
1958
Gold Rush Days — Mojave, Calif.



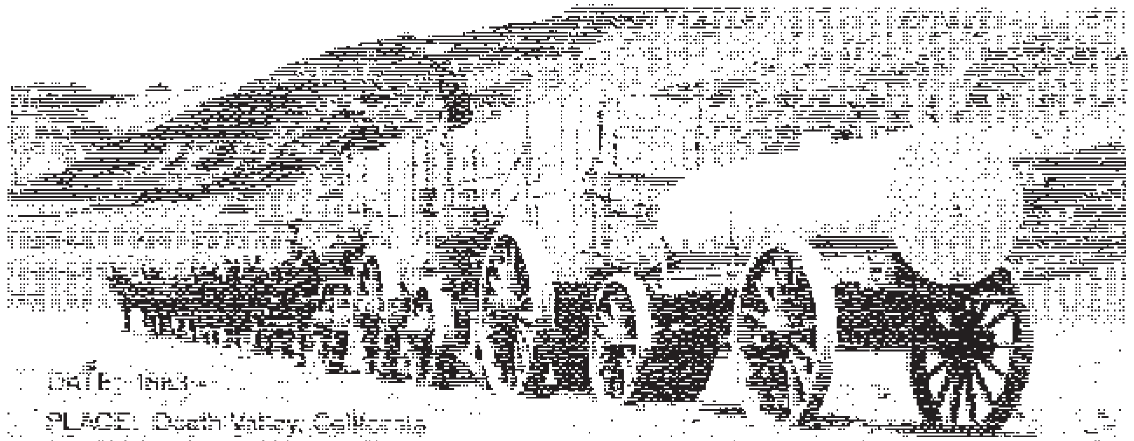
1916 Woodrow Wilson Inauguration.



1940 U.S. Promotional Tour of M.G.M. movie "Twenty Mule Team" staring Wallace Beery



Early history of the mule team is probably better known than that of any corporate symbol in North America, and possibly in the world. For many years, millions and millions of people have heard the clarion call of the popular television program, "Death Valley Days" and have seen the Twenty Mule Team… a living corporate signature.



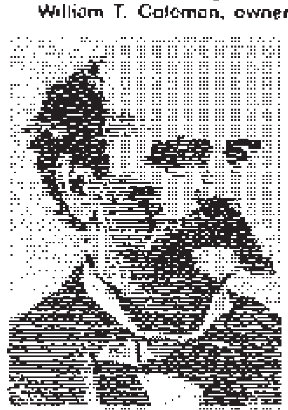
DATE: [illegible]
PLACE: Death Valley, California
PROBLEM: To haul thousands of tons of borax ore from Furnace Creek to Mojave . . . 165 miles of barren wasteland and treacherous mountains

and the . . . TWENTY MULE TEAM ROLLED

The saga of the twenty mule teams began with the discovery of borax in California in 1881. This mineral, used for thousands of years in ceramics and in the working of gold, previously had come from Tibet and Italy. Its discovery in California's Death Valley resulted in a rapid increase in the use of borax in the United States in various industrial processes and as a household cleanser.

With a growing demand for borax and an apparently unlimited reserve of crude ore, a practical and economical method had to be devised for freighting borax ore from the "mines" in Death Valley's vast dry lake beds to the nearest railhead at Mojave. It was the hottest, driest, roughest most desolate 165 miles imaginable.

William T. Coleman, owner of the Old Harmony Borax Works near what is now Furnace Creek Ranch, took on this Herculean task. The borax transportation system had to be built around the capabilities and limitations of mules, horses, men and wagons.



William T. Coleman

He had seen 8 and 12 mules hauling heavy loads, and had observed that the payload increased disproportionately with each added pair of animals. Experimenting, Coleman found that twenty mules could move 36 tons with relative ease. The mules were hitched to single-trees and double-trees hooked into an 80-foot chain which ran the length of the team and fastened directly onto the lead wagon. Ed Stiles, the most expert "long-line skinner" of the time, was hired to drive the first twenty mule team between Harmony and Mojave.

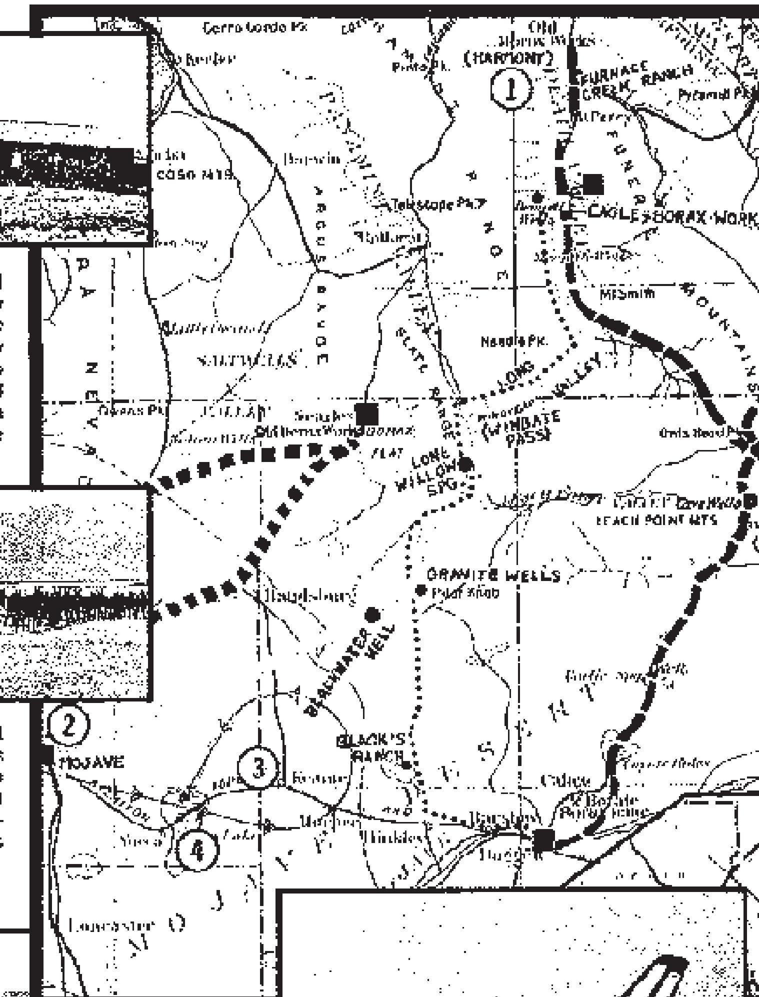
The route finally decided on, from Death Valley to Mojave, covered 165 miles of raw, blistering temperatures (often running to 130°F in summer), desolate mountains and desert, and was dictated by the topography of the country and availability of water. Work crews were sent out to hack, blast and hammer a roadbed of sorts over this rugged wasteland. The mules and wheels of the wagons were counted on to do the rest.

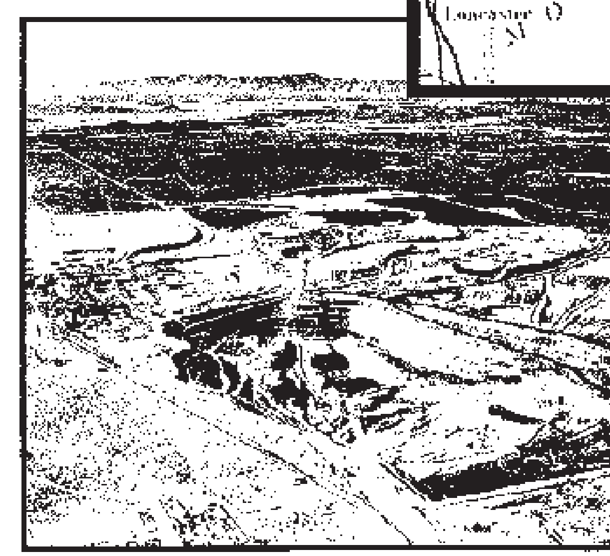
There arose the problem of survival, and that meant water and food. It was about 26 miles from Harmony to the first water at Bennett's Wells, five miles to Mesquite Wells, 53 miles to Lone Willow, 20 to Granite Wells, an easy six miles to Blackwater, then a 50-mile waterless stretch to Mojave.

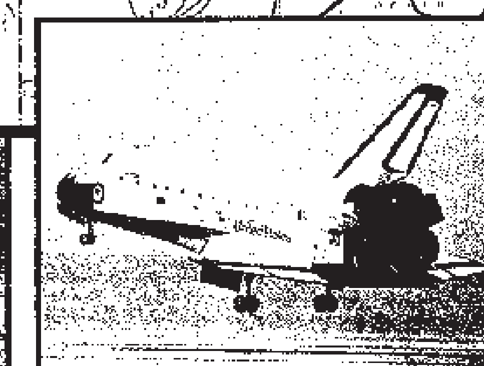
But a loaded team could travel an average of only 17 miles

(1) A mule team is loaded with 24 tons of borax ore at Harmony Borax Works for the torturous 10 day, 165 mile trek to the Mojave Railhead (2) (designated by heavy solid line) where it is unloaded into rail cars and then filled with feed and supplies to be dropped off on the return trip at various trail stations and for the mine at Harmony.

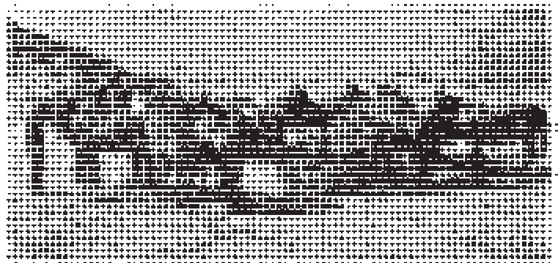
(3) Today's U.S. Borax open pit mine that produces over 80% of the free world's supply of borax is located just a few miles from the original twenty mule team trail. It would take over 250 mule teams to transport the borax ore processed in this modern facility in one day.



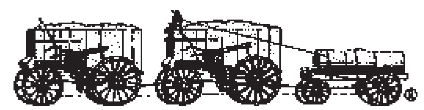




(4) A CENTURY LATER, America's Space Shuttles — Columbia and Challenger — soared over the original twenty mule team trail on the Mojave Desert, passing over the Boron open pit mine of U.S. Borax (left) before landing at Edwards AFB. The spaceships use thousands of heat protective tiles coated with borosilicate glass tinted black with silicon boride (the boron compounds originated at the U.S. Borax open pit mine) — it's a small world!



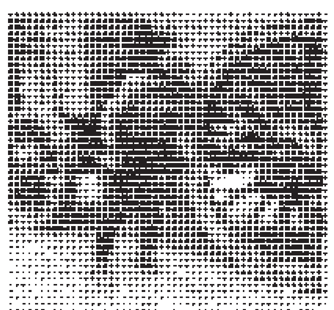
a day, so the gaps between natural water supplies had to be filled by caches of water transported in 500-gallon iron tanks on wheels (wooden tanks would have dried up and fallen apart when empty). Water, hay and grain were spotted a day's journey apart. The natural springs, too, had to be improved by digging out and cleaning; in some places where springs were at a distance from the road, water was piped down. As for the men's food (mostly bacon and beans) it was carried along on the wagons.



THOSE INCREDIBLE WAGONS

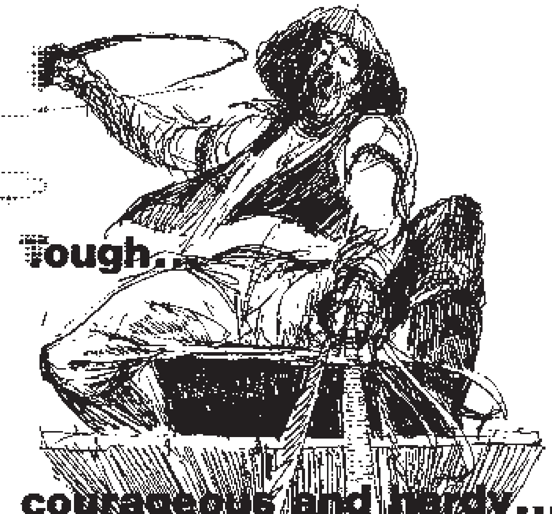
Perhaps the most difficult problem was designing and building wagons capable of hauling heavy loads of borax over the rough desert and mountain trails, a breakdown in the wrong place could be a major disaster for both men and animals.

The wagons which were built in Mojave for $900 each had rear wheels seven feet high and front wheels five feet high, each with steel tires eight inches wide and one inch thick. The hubs were eighteen inches in diameter and twenty-two inches in length. The spokes, of split oak, measured 5½ inches wide at the hub. The axle-trees were made of solid steel bars, 3½ inches square. The wagon beds were sixteen feet long, four feet wide and six feet deep. Empty, each wagon weighed 7800 pounds. Two loaded wagons plus the water tank (which held 1,200 gallons) made a total load of 73,200 pounds or 36½ tons.



From 1883 to 1889, the twenty mule teams hauled borax out of Death Valley, over the steep Panamint Mountains and across the desert to Mojave, traveling 15 to 18 miles a day, a twenty-day round trip. During those years the twenty mule teams carried over 20 million pounds of borax out of the Valley without a single breakdown—a considerable tribute to the ingenuity of the designers and builders, and to the stamina of the teamsters, swampers and animals.

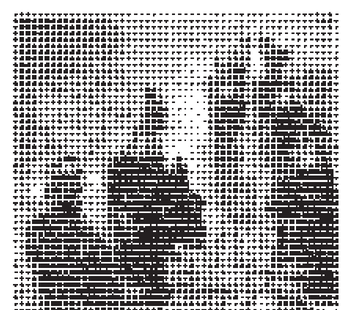
Today, a century later, one set of wagons is still in running condition and can be seen at the visitors viewing point on the edge of the U.S. Borax open pit mine at Boron, California. Other sets, in Death Valley, are displayed at Furnace Creek Ranch at the Old Harmony Borax Works.



Tough... courageous and hardy... the muleskinner...

Each twenty mule team crew consisted of two men, a driver (the muleskinner) and a swamper.

The muleskinner drove his team from the "box" of the first wagon, or, in rough going, from the back of the "nigh wheeler," or left-hand animal nearest the wheel. His only means of controlling the teams were his voice and the "jerkline," a long rope running through a collar ring of each left-hand mule up to the leaders. A steady pull turned the team to the left, a series of jerks sent it to the right. A sight which never failed to win admiration was that of the "big team" taking a sharp turn - see details of this maneuver on the following page.



The driver, besides driving, which of itself demanded great skill and strength, had to be a practical veterinarian, for he was responsible for curing any mule that got sick on the road; and a wheel-wright to make minor repairs to the wagons. The swamper helped apply the brakes on downgrades, helped stimulate the mules on upgrades, gathered fuel, cooked, washed the dishes, unharnessed the mules at the end of each day's run, and did other chores. Drivers earned $100 to $120 a month, swampers about $75. They were usually silent, short-tempered men; the loneliness, monotony and hardships of their work made them no easier to get along with. There are tales of quarrels between swamper and driver, some ending in murder and lynching.

It was a hazardous life. Added to the heat, desolation, rattlesnakes, and general chance of injury, the great wagons themselves were a menace. Brakes gave way at times on steep grades. Then the 36-ton juggernauts would thunder down the incline hard on the heels of the frantic mules, the skinner yelling and hoorawing at his team in a desperate effort to keep them outrunning the wagons. Camp was made on the desert each night. The one-way trip, from mine to railroad point, took about ten days.

THE MOST FAMOUS OF THE "REAL" MULESKINNERS...

"Borax Bill"

BILL PARKINSON (c. 1883-1889)

MULE TEAM SKINNERS

Beadslee, Lph — (Circa 1880-90)
Bennett, Charles — (c. 1883) Original 20 Mule Team Driver
Cartwright, Charles — (c. 1880-90)
Delameter, J. A. (c. 1939)
Eagles, Curtis — (c. 1940) U.S. Tour - Wallace Beery Movie
Elwood, Tom (c. 1880-90)
Ewell, Tex — (c. 1919) U.S. Tour
Galbraith, W. L.— (c. 1914)
Hawn, J. A.— (c. 1882-89)
Ishamel, George (c. 1936) San Francisco Bridge Dedication
Kibbitts, Bill (c. 1904) U.S. Tour — World's Fair, St. Louis
Menzies, Harold (c. 1916) U.S. Tour
Moon, Ira — (c. 1919) U.S. Tour
Morgan, Bruce — (1957) U.S. Borax Mine Dedication
Morris, Emory — (c. 1876) Original 20 Mule Team Driver
Nelson, Cris — (c. 1880-90)
O'Keefe, Johnnie — (1936) San Francisco Bridge Dedication
Parkinson, Bill — (c. 1883-89) Original 20 Mule Team Driver
Pitcher, Ed (c. 1880-90)
Pyle, John (c. 1880-90)
Pyle, Red — (c. 1880-90)
Riggs, Jeff — (c. 1880-90)
Rogers, Manuel — (c. 1880-90)
Shadley, W. D. (c. 1880-90)
Squires, James F. — (c. 1883-89)
Stiles, Ed — (c. 1883) Original 20 Mule Team Driver
Seymour, Alf — (c. 1880-90)
Small, Jim (1919) U.S. Tour
Smith, Walter (c. 1880-90)
Spainhover, Russell (1949) California Centennial
Thomas, Miles — (c. 1880-90)
Tilton, Frank — (c. 1883-89) Original 20 Mule Team Driver
White, Charles — (c. 1880's)
Wilson, Wm. Frank (1916) U.S. Tour — Woodrow Wilson Inauguration
Yount, Sam — (c. 1880-90)

THE MOST FAMOUS OF THE "MAKE-BELIEVE" SKINNERS

Wallace Beery

In 1940, Metro-Goldwyn-Mayer produced "Twenty Mule Team," a popular movie starring Wallace Beery as a muleskinner with Leo Carrillo and Marjorie Rambeau. A 40 city tie-in promotion featured the live twenty mule team in conjunction with the release of the movie in each metropolitan area.

MAN'S FAITHFUL BEAST OF BURDEN...

The Mighty Mule

Staunch, sturdy, strong and durable... this intelligent and hardy animal of work played a vital role in the development and building of a greater America.

SWINGING THE TEAM AROUND CURVES

It was relatively easy to drive the mule team along a straight road. However, swinging a curve in a mountain pass or over rough terrain presented a real test of driver and team.

Sections of the mule team were chosen and trained to perform special jobs. As the team started around a sharp curve, the chain tended to be pulled into a straight line between the lead mules and the wagon. Therefore, in order to keep the chain going *around* the curve, some of the span of mules were ordered to leap the chain and pull at an angle away from the curve. (See drawing.) These mules, the "pointers," the "sixes" and the "eights" would step along side-ways until the corner had been turned.

Swinging a curve successfully was a real demonstration of the training and intelligence of the mules as well as the skill of the driver.

THE LEADERS (2 MULES)

These mules were chosen for intelligence because they had to lead the others.

THE SWING TEAMS (10 MULES)

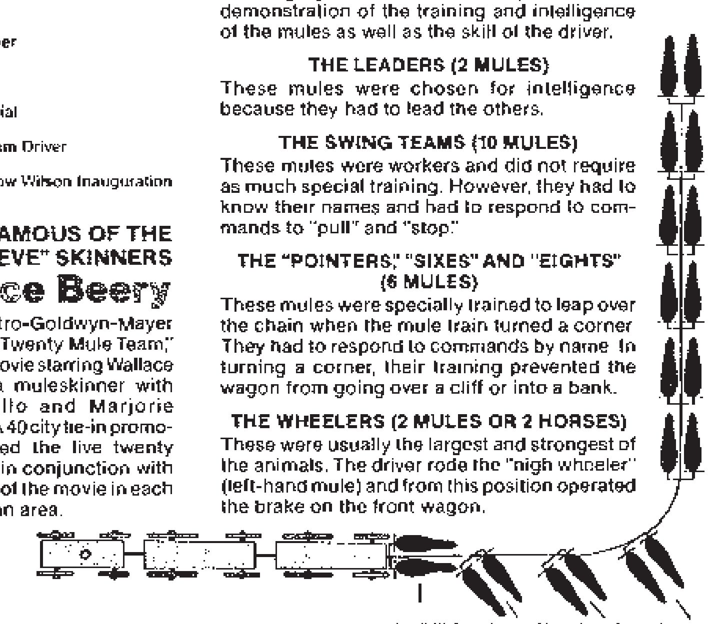
These mules were workers and did not require as much special training. However, they had to know their names and had to respond to commands to "pull" and "stop."

THE "POINTERS," "SIXES" AND "EIGHTS" (6 MULES)

These mules were specially trained to leap over the chain when the mule train turned a corner. They had to respond to commands by name. In turning a corner, their training prevented the wagon from going over a cliff or into a bank.

THE WHEELERS (2 MULES OR 2 HORSES)

These were usually the largest and strongest of the animals. The driver rode the "nigh wheeler" (left-hand mule) and from this position operated the brake on the front wagon.



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Attachment E

State of California - The Resources Agency **DEPARTMENT OF PARKS AND RECREATION** **PRIMARY RECORD**	Primary#________ HRI#________ Trinomial________ **NRHP Status Code**________
Other Listings ________ Review Code Reviewer Date ________	

Page 1 **of** 14 ***Resource Name or #:** (Assigned by recorder) U.S. Borax Wilmington Facility

P1. Other Identifier:
***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**
***a. County:** Los Angeles **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** Torrance **Date** 1981 **T** 5S; **R** 13W; N/A **¼ of** N/A **¼ of Sec 8; B.M.** SB
c. Address 300 Falcon Street City Los Angeles Zip 90744
d. UTM: (Give more than one for large and/or linear resources) Zone 11, 382667 mE/ 3735965 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
APN: 7440-019-001. Located on the west side of Falcon Street at Berths 165-166 of the Port of Los Angeles.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The U.S. Borax Wilmington Facility at 300 Falcon Street encompasses approximately 7.6 acres within the industrial Port of Los Angeles, California. The property is bordered to the north by Berth 164, occupied by Valero; to the east by Berths 174 to 181, occupied by Pasha; to the south by Berths 167 to 169, occupied by Shell; and to the west by the Slip No. 1. The subject property contains a grouping of buildings and structures used in the refining and shipping of Borax. The facility is owned and operated by Rio Tinto.
SEE CONTINUATION SHEET

P3b. Resource Attributes: (List attributes and codes) Industrial Buildings – HP8

***P4. Resources Present:** ☒Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

P5b. Description of Photo: (view, date, accession #) View to the West, January 2013

***P6. Date Constructed/Age and Source:** ☒Historic ☐Prehistoric ☐Both
1924, pre-1952, 1963, 1979 (U.S. Borax, *100 Years of U.S. Borax, 1872-1972* [Los Angeles, CA: U.S. Borax, 1972], 32-34.)

***P7. Owner and Address:**
Private

***P8. Recorded by:** (Name, affiliation, and address)
URS Corporation
4225 Executive Square, Suite 1600
San Diego, CA, 92108-4314

***P9. Date Recorded**: January 2013

***P10. Survey Type:** (Describe)
Reconnaissance Survey

***P11. Report Citation**:
(Cite survey report and other sources, or enter "none.") Memorandum of Record for the Historical Evaluation of the U.S. Borax Wilmington Facility, 2013
***Attachments:** ☐NONE ☐Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐Other (List):

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BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 **of** 14 ***NRHP Status Code** 6Z

***Resource Name or #** (Assigned by recorder) U.S. Borax Wilmington Facility

B1. Historic Name: Pacific Coast Borax Company – Wilmington Facility

B2. Common Name: U.S. Borax Wilmington Facility

B3. Original Use: Borax Refinery

B4. Present Use: Borax Refinery

***B5. Architectural Style:** Utilitarian Industrial

***B6. Construction History:** (Construction date, alterations, and date of alterations)

The Refinery Building, designed by Albert C. Martin, was built in 1923 and 1924. The Connecting Shed was built by 1952, generally following Martin's 1923 original design for an addition at that location. The original portion of the Warehouse was built in 1924, with major additions to the north and south by 1952 that generally followed Martin's 1923 original design for the expansion of the Warehouse. The Wharf Office, designed by Albert C. Martin, was built in 1924. The Power Plant, designed by Albert C. Martin, was built in 1923 and 1924. The original portion of the Bulk Storage Silos structure was built in 1962 and 1963, with a later addition in 1979. Presently, many of the facility's large multi-pane windows have been in-filled. Non-historic period conduit, ventilation, and industrial equipment have been added to the facility. Other alterations include the replacement of the original board-formed wall texture with a smooth stucco exterior wall treatment as well as the modification and removal of the stringcourse and rectangular capitals for the installation of industrial equipment.

***B7. Moved?** X **No** _____**Yes** _____**Unknown Date:** ____________________ **Original Location:**_______________

***B8. Related Features:**

The subject property contains a dock along the west boundary that is adjacent to Slip No. 1. Miscellaneous industrial equipment such as tanks, piping, sheds, and a railroad spur are also located within the boundaries of the subject property, which is surrounded by a chain-link fence.

B9a. Architect: Albert C. Martin (1924) b. Builder: Norman B. Patten, building superintendent (1924). G.H. Schulte, structural engineer (1924), Davidson Construction, general contractor (1924), Fred Beik, piping and equipment plans (1924)

***B10. Significance: Theme** N/A **Area** Los Angeles, CA

Period of Significance N/A **Property Type** Industrial Facility

Applicable Criteria N/A (Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The historical significance of the U.S. Borax – Wilmington Facility was determined by applying the procedure and criteria for Los Angeles Historic-Cultural Monument (LAHCM) and California Register of Historical Resources (CRHR) designation.

Based on site investigations and historic research, the U.S. Borax Wilmington Facility does not appear to possess the requisite significance to be eligible for designation as a LAHCM or listing on the CRHR.

SEE CONTINUATION SHEET

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**

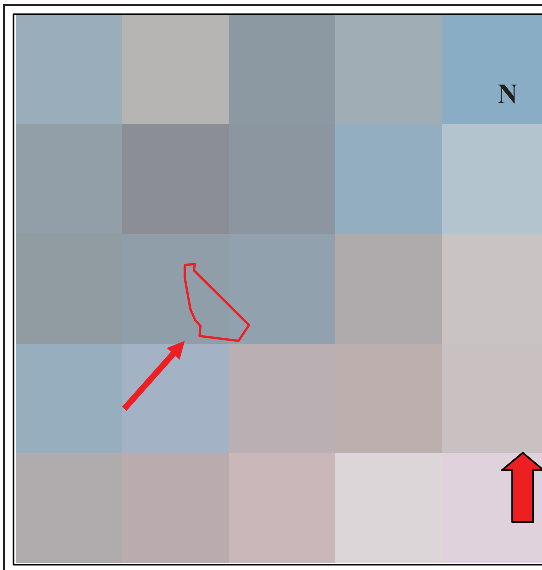
SEE CONTINUATION SHEET

B13. Remarks: None

***B14. Evaluator:** URS Corporation

***Date of Evaluation:** January 2013

(This space reserved for official comments.)



Torrance (1981) USGS Map **N**

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***P3a. (Continued)**
Architectural Description

Refinery Building

The Refinery Building, designed by Albert C. Martin, was built in 1923 and 1924 and is a Utilitarian Industrial-style refinery. It occupies the south end of the subject property and has an east-facing orientation. It is three stories with a rectangular plan. Due to changes in refining technologies since 1924, the resource has undergone extensive alterations and upgrades. The building features a flat roof covered with composition sheet. Distributed across the rooftop are large tanks, pieces of electrical equipment, and conduit visible from the pedestrian right-of-way. At either corner of each elevation, there are groupings of three simple rectangular pilasters extending from the ground level to the roofline. In many cases, the stylized rectangular capital of the pilasters has been removed and the surface of the column has been altered or removed to accommodate industrial equipment.

Fenestration on all elevations includes original, large, multi-pane metal industrial windows with hopper panels near the center of most. A number of the locations where windows once existed have been in-filled, and many of the remaining windows have been altered or retrofitted for equipment installation. The walls of the refinery building no longer retain their original board-formed concrete texturing. Instead, a modern stucco texture covers the wall surface. The retexturing is most apparent over the locations of in-filled windows. None of the wall surfaces indicate evidence of historic-period signage visible in historic photographs.

The main entry, which is off-centered on the primary (east) façade, is filled with a non-original metal commercial door. The stoop for the main entry extends south passed a large non-original roll top door that is off-centered on the primary façade. This area serves as the East Dock for the Refinery Building. Both the loading dock and main entry are located beneath a corrugated metal awning. A smaller loading station with a non-original metal roll top door is located off-centered on the southern half of the primary façade. At the far south corner of the primary façade is a set of non-original industrial metal double doors beneath a similar corrugated metal awning. At the center and north corner of the primary elevation are two additional non-original single panel metal doors. Large non-historic period conduit, rigging, and other industrial equipment components are attached to the walls.

Although broader, the north elevation has similar characteristics and alterations to the primary façade. These similarities included a substantial amount of window in-fill, non-original stucco texturing on wall surfaces, and a significant level of alteration due to the installation of modern industrial equipment. Along with these changes, a non-original concrete exterior walkway has been installed along the north elevation. This addition extends across the entire elevation and includes a metal handrail separating the platform from an asphalt roadway. Additionally, the rectangular stringcourse that historically spanned the entire center of the north wall has been largely removed to allow for industrial equipment mounting. Additional no-original equipment includes a concentration of conduit and metal framing near the center of the north elevation that connects the Refinery Building with the adjacent Power Plant.

Along with the alterations to the texture and form of the elevations mentioned above, the south and west elevations have both received significant non-original structural additions. With regard to the south elevation, in order to adapt the Refinery Building to new technologies, a two-story processing structure was attached to the wall. The large-scale alteration appears to be two separate tanks supported by a base constructed of steel beams. Access ladders, conduit, and vents extend from the structure to the south elevation. Directly adjacent on the west elevation of the Refinery Building is the Connecting Shed.

Connecting Shed

The Connecting Shed was built by 1952, generally following Martin's 1923 original design for an addition at that location. It is a Utilitarian Industrial-style building. It occupies the southeast portion of the subject property and has a south-facing orientation. It is one story with an L-shaped plan. The building features four consecutive and similar width front-gable roofs covered with composite sheet. Located on the southernmost portion of the roof are electronic equipment and piping. The roof features a plain parapet that is stepped on the south and north elevations and topped with a simple cornice. Mounted on the parapet are non-original spotlights. A simple cornice wraps around the building below the parapet. A sign with a historic photo of the Borax 20-Mule Team and the words "Rio Tinto" are painted on the parapet of the primary (south) façade.

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***P3a. (Continued)**

Fenestration on the primary (south) façade includes a number of paired multi-pane, metal-framed, industrial windows, two bays with non-original metal roll top and swing up doors, and an industrial door. The north elevation features four evenly-spaced bays and a number of paired multi-pane, metal-framed, industrial windows. The east elevation is directly adjacent to the Refinery Building and the west elevation is directly adjacent to the Warehouse. The walls of the north and south elevations are covered with non-original corrugated metal sheeting. Large non-historic period conduit, rigging, and other industrial equipment components protrude from the wall. Non-original safety barriers, metal corner braces, and post bollards have been added near bay corners. The north elevation features a single, long awning of corrugated metal sheeting that is supported by steel truss bracing. The awning runs the length of the building connecting with the Warehouse awning and providing cover for a concrete loading dock that also continues from the Warehouse.

Warehouse

The original portion of the Warehouse was built in 1924, with major additions to the north and south by 1952 that generally followed Martin's 1923 original design for the expansion of the Warehouse. It is a Utilitarian Industrial-style warehouse. It occupies the east side of the subject property, beside Slip No. 1, and has an east-facing orientation. It is one story with a narrow rectangular plan. Due to changes in refining technologies since 1924, the Warehouse has undergone extensive alterations and upgrades, including the significant additions by 1952 on the north and south elevations that quadrupled the size of the building. The Warehouse features a side-gabled roof covered with composite sheet. A non-original rooftop structure is located on the northern end of the rooftop. The structure is supported on a steel platform and features a covered conveyor belt that extends from the Bulk Storage Silos structure, a boom that can drop down for ship loading, corrugated-metal sheeted shed-like buildings, and numerous pipes and other industrial features. Like the adjacent Connecting Shed to the southeast and the Wharf Office to the north, the Warehouse roof features a plain parapet that is stepped on the north elevation and topped with a simple cornice. Mounted on the parapet are non-original spotlights. A simple cornice wraps around the building below the parapet.

Fenestration on the east, north, and west elevations includes a number of multi-pane metal industrial windows and evenly-spaced bays with non-original metal roll top doors. The primary (east) façade and the west elevation each feature approximately 29 bays. The north elevation has one bay. The south elevation is directly adjacent to the Connecting Shed. The walls of the east elevation are covered with non-original corrugated and flat metal sheeting. Large non-historic period conduit, rigging, and other industrial equipment components are attached to the walls. Non-original safety barriers, metal corner braces, and post bollards have been added near bay corners. None of the wall surfaces indicate evidence of historic-period signage notable in historic photographs.

The north and west elevations have similar characteristics and alterations as the east elevation. These similarities include non-original metal corrugated sheeting wall covering and non-historic period conduit, rigging, other industrial equipment components, safety barriers, metal corner braces, and post bollards, which have been added near openings and corners. The west elevation features a single, long awning of corrugated metal sheeting that is supported by steel truss bracing. The awning runs the length of the building, providing cover for a raised concrete loading dock.

Wharf Office

The Wharf Office, designed by Albert C. Martin, was built in 1924 and is a Utilitarian Industrial-style wharf office. It occupies the northwest corner of the subject property and has an east-facing orientation. It is two stories with a rectangular plan. The resource has undergone some alterations to accommodate the changing needs of the facility. The building features a side-gabled roof covered with composite sheet. Distributed across the roof ridge are approximately seven vents and a hatch or sunroof, all visible in historic photographs. The roof features a plain parapet that is stepped on the south and north elevations and topped with a simple cornice. Mounted on the parapet are non-original cameras and spotlights. A simple cornice wraps around the building below the parapet.

Fenestration on all elevations includes large original multi-pane industrial metal-framed windows with hopper panels near the center of most. They are generally arranged in groupings of three. Many of the windows contain non-original air conditioning units that are supported on metal platforms with metal braces. Two fixed, wood-framed windows are located on either side of the northernmost entrance of the east elevation.

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***P3a. (Continued)**

One of the panes has been in-filled with wood. The walls of the Wharf Office no longer retain their original board-formed concrete texturing. Instead, a modern stucco texture covers the parapet and corrugated metal sheeting covers the walls below the parapet. Numerous tracks of non-original conduit, piping, and other industrial equipment are attached to the walls.

The primary (east) façade has three entries, of which only the northern entry is original. The two southern entries are additions to the building and are filled with single industrial metal doors with one pane. The southernmost entry is covered by a non-original metal security door. The original entry (the northernmost entry) is filled with a wood-framed door with a single light. An original awning protrudes from the wall above the entry. A non-original awning extends over one of the first-story windows.

The south elevation has two original entries: one centered on the first story and one centered on the second story, the latter of which is reached by a metal staircase that replaced an original staircase. The entries are filled with non-original single industrial metal doors with one pane. The north and west elevations have similar characteristics to the other façades but they have no entries.

Power Plant

The Power Plant, designed by Albert C. Martin, was built in 1923 and 1924. It is a Utilitarian Industrial-style steam power plant. It occupies the center-north portion of the subject property. It is approximately two stories in height with an L-shaped plan. Due to changes in power generating technologies since 1924, the resource has undergone extensive alterations and upgrades. The building features a slightly barreled roof covered with composite sheet. Distributed across the rooftop are pieces of non-original electrical equipment, vents, piping, and two tall, narrow, metal steam stacks. The roof has a simple parapet on which numerous non-original conduit pipes, other pipes, security cameras, and lights are mounted on or behind.

Fenestration on all elevations includes large rounded, arched, metal-framed windows with two hopper panels near the center. A number of the locations where windows once existed have been in-filled and many of the remaining windows have been altered to accommodate pipes and other industrial equipment. The walls of the power plant building no longer retain their original board-formed concrete texturing. Instead, a modern stucco texture covers the walls, which are beveled at the base. The retexturing is most apparent over the locations of in-filled windows. Seismic bracing bolts are visible on all the walls below the parapet. Evidence of disintegration of the plaster and concrete is visible on some walls.

The power plant has a number of entries on the east elevation, including a non-original metal roll top door, a non-original single industrial metal door with a single pane, and a non-original double metal industrial door with two panes. Four windows have been in-filled on the east elevation. In addition, the original concrete stack adjacent to the east elevation is no longer present. A non-original sign is attached to the east wall and reads “Rio Tinto/Wilmington Operations.” Non-original access ladders, conduit, other piping, lights, vents, and other utility equipment have been attached to the walls.

The north, west, and south elevations have similar characteristics and alterations as the east elevation. These similarities included a substantial amount of window in-fill (three windows in-filled on the north elevation and two windows in-filled on the south elevation), non-historic period stucco texturing on wall surfaces, and a significant level of alteration due to the installation of modern industrial equipment such as non-original access ladders, conduit, other piping, lights, vents, and utility equipment. A non-original metal structure connects the west elevation of the Power Plant to the adjacent Refinery Building to the west.

An electrical substation is located directly to the north of the Power Plant.

Bulk Storage Silos

The original portion of the Bulk Storage Silos structure was built in 1962 and 1963, with a later addition in 1979. It is a grouping of 16 tower silos, topped with an industrial building and featuring associated industrial equipment, such as pipes, tanks, railroad car loading bays, and conveyor belts. The structure occupies the northeast portion of the subject property, adjacent to a railroad spur to the east.

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***P3a. (Continued)**

The silos are arranged in two groupings: 12 silos on the north, which were first used in 1963 and which are arranged two-by-six; and four silos, which were a 1979 addition, are arranged in a T-shape, and are separated from the other grouping by a gap. The silos are constructed of reinforced concrete and feature cylindrical forms with flat roofs. The silos are approximately 100 feet in height and have approximately 30-foot diameters. The silos have ground-story entries that are filled with double metal industrial doors with single panes. Metal staircases are attached to the sides of each of the silos; the staircases lead to secondary entrances located approximately one-third up the side of the silos. Some of the silos also feature metal access ladders that extend from the ground level to the roof.

The two groupings of silos are attached via a rooftop industrial building, which has a narrow and long rectangular footprint. The building is centered on the roof of the Bulk Storage Silos structure, extending from one end to the other, bridging the gap between the two silo groupings. The industrial building is primarily one-story with some two-story attached small additions. The building has a gabled roof covered with composite sheeting, corrugated metal wall surface, and numerous windows and entries that connect to metal catwalks, stairwells, and other appurtenances such as industrial equipment, small sheds, and structures that are located on the rooftop of the larger silo structure. Conduit, large piping, and security lights are mounted on the walls of building.

A railroad car loading bay, constructed of metal and covered with corrugated metal sheeting, is attached to the structure at the ground-level on the east elevation. Vertical gravity silos and associated piping and equipment are mounted on the flat roof of the loading bay. The west elevation of the structure features numerous ground-level tanks, vertical gravity silos, and other related industrial structures, some mounted on steel frames. A covered conveyor belt clad in corrugated metal sheeting connects the structure with the rooftop of the Warehouse to the west.

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***B10. (Continued)**
Historic Context
U.S. Borax

In 1962, Thomas Cramer, the first superintendent of the U.S. Borax Wilmington Facility, noted "[t]he story of the Wilmington Refinery is a forty year part of the hundred year history of the borax business in America."[1] In fact, U.S. Borax traces its origins to 1872 when founder Francis Marion Smith discovered the presence of borate deposits in Nevada. During those initial operations, the raw borate material was refined near the site of its extraction. According to Cramer, refining facilities were built beside marshes in Nevada. By 1883, following the discovery of borates in Death Valley, the refined product was being hauled great distances across the desert by 20-mule teams.[2] Smith founded the Pacific Coast Borax Company (predecessor to Borax Consolidated, which then became U.S. Borax) in 1890.[3] The 20 Mule Team symbol became the trademark of the Pacific Coast Borax Company in 1896.[4]

While exploiting a new source of borate deposits in the Calico Mountains, Smith decided to move away from the traditional onsite refining process to a large-scale refining operation in Alameda, California. The Alameda refinery was purchased about 1883 and expanded by Smith in 1890. The new Pacific Coast Borax Company refinery was sited on Alameda Point in order to take advantage of inland rail connections and convenient access to shipping in the San Francisco Bay. The siting of the Alameda plant marked a key innovation point for the company. From then on, processing no longer occurred on site at the mines but ore was instead transported to a coastal plant for refining and shipping.[5] Additionally, the Alameda facility pioneered the use of reinforced concrete construction, a method that was subsequently used at the Bayonne, New Jersey facility in 1897. Smith resigned from the company in 1914.[6]

After World War I, the company chose to construct a new facility that would have ready access to the ships traveling through the new Panama Canal and would have proximity to raw materials being extracted in Death Valley. The company purchased property on Mormon Island in the Port of Los Angeles. In 1923, construction began on the Wilmington Facility and in 1924 the Alameda refinery was closed. The Bayonne refinery in New Jersey was also phased out.[7]

In 1927, soon after the Wilmington Facility was finished, the company opened an underground borate mine in Boron, California in the Mojave Desert. In 1956, the company became U.S. Borax when it merged with United State Potash Corporation. In 1957, the company built the Boron refinery and borax production was moved to Boron. The Boron Mine was converted to a surface mine in the late 1950s. In 1967, the company was acquired by Rio Tinto.[8] In 1980, U.S. Borax built its borax acid plant. Today, U.S. Borax continues to operate the Boron Mine, which is California's largest open pit mine.[9]

U.S. Borax Wilmington Facility

The U.S. Borax Wilmington Facility was constructed on Mormon Island on land previously used as the Chandler Shipyard, a World War I shipyard. Architect Albert C. Martin was retained to prepare the plans for the new facility, which was to include a refinery building, power plant, warehouse, office building, and a 150-foot stack. Norman B. Patten served as Martin's building superintendent and G.H. Schulte was the

[1] Thomas Cramer, "Wilmington Refinery: Pacific Coast Borax Company" (memorandum, U.S. Borax Company, June 26, 1962).
[2] Thomas Cramer, "The Mormon Island Story," *Pioneer,* September 1962, 12.
[3] "View of the Borax Industry, ca. 1898-ca. 1915," *Online Archive of California,* http://www.oac.cdlib.org/findaid/ark:/13030/tf0n39n8j3/entire_text/ (accessed January 24, 2013).
[4] U.S. Borax, "A Famous Symbol Became One of the World's Best Known and Most Recognizable Trademarks," *The Courageous and Fascinating "Century-Old" Saga of the Famous 20 Mule Team of Death Valley* (advertisement, U.S. Borax, date not specified).
[5] U.S. Borax, *100 Years of U.S. Borax, 1872-1972* (Los Angeles, CA: U.S. Borax, 1972), 32-34; U.S. Borax, "Bit of History," *Pioneer,* July-August 1968, 17.
[6] George Herbert Hildebrand, *Borax Pioneer: Francis Marion Smith* (La Jolla, CA: Howell-North Books, 1982), 56.
[7] U.S. Borax, "Borax Timeline," *About Borax,* http://www.borax.com/about-borax/timeline (accessed January 23, 2013).
[8] Ibid.
[9] U.S. Borax, "History," *About Borax,* http://www.borax.com/about-borax/history (accessed January 23, 2013).

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***B10. (Continued)**

structural engineer. Davidson Construction was retained as the general contractor.[10] Martin was a master architect; however, the design of the U.S. Borax Wilmington Facility does not embody notable architectural designs attributed to Martin's significant works. Along with the 1927 Inn at Furnace Creek which he crafted for the Pacific Coast Borax Company in Death Valley, Martin is known for his contributions to the Los Angeles skyline with his designs of the Los Angeles City Hall (1926), St. Vincent's Church (1923), and the Department of Water and Power Building (1963).

The facility was constructed using the same reinforced concrete construction method that the company had employed first at Alameda 32 years previously and subsequently at Bayonne, New Jersey. Because the soil at Mormon Island could not sustain the load of the concrete buildings, piles were first driven below the ground-water line before concrete pads and pedestals were poured. The final design for the refinery called for a 207-by-252-foot building with three stories and a rooftop water tower. Martin's drawings also planned for a future expansion of the facility, including two additional refinery floors (never built), a lateral expansion on either side of the refinery (later partially constructed as the Connecting Shed and additions to the original Warehouse), and two additional buildings (never constructed). The stack was finished by November 1923. The main components of the buildings were completed on the last day of that same year, six months after the foundations had been finished.[11]

Meanwhile, the previously-installed boilers in the power plant and the plans for piping and equipment were drawn by Fred Beik by late fall 1923. By February 1924, the first of the equipment, the Sweetland press and Raymond power-mill, were installed in the refinery. Concurrently, the last of the building windows, roofing, and painting were being finished. The bulkhead had been put in and the channel in front of the property dredged during 1923, so construction of the wharf, warehouse, and wharf office building began in 1924. Separately, the Alameda facility was dismantled, and the bulk borax production goods were transferred to Wilmington. On November 1, 1924, the first cargo was loaded onto a ship from the Wilmington Facility.[12] On January 28, 1925, a survey map of the Borax Consolidated Wilmington facility was completed, which illustrated the site as containing a Factory (Refinery), Power Plant, Stack, Oil Tank, Office (now Wharf Office), Warehouse, Wharf, and Mud Scow Dock.[13] The Wilmington facility produced borax, Borax Soap Chips, BORAXO, bar soap, and borax "glass".[14] The U.S. Borax Wilmington Facility was an early occupant of the Port, but it nevertheless was established years after the port had attained success through the shipping of such commodities as lumber, petroleum, and citrus products.[15]

Robert Shaw, Wilmington facility manager beginning in 1983, recollected that Borax Consolidated was challenged by Los Angeles in 1935 in regard to ownership of the property.[16] The U.S. Supreme Court decided in the company's favor on November 11, 1935. The company was able to successfully prove that the property was part of the original Mormon Island and was never tideland; therefore, Los Angeles could not claim that the property was "public land" and take ownership. The property is now the only privately-owned property in the Port of Los Angeles.[17]

Since Martin drafted his designs for the refinery in 1923, large-scale changes to the property have undermined the architect's original design intent. Large additions to the south and north ends of the warehouse building and a Connecting Shed between the Refinery and the expanded Warehouse (generally based on Martin's 1923 designs for expansions) were constructed by 1952.[18] Following a feasibility study undertaken in the early 1960s, U.S. Borax began plans for major terminal facilities at the Wilmington facility.[19] Construction began on the terminal (Bulk Storage Silos) in 1962 and the first railcar of product was loaded into the 12-silo structure in 1963.

[10] U.S. Borax, *100 Years*, 32-34.
[11] Cramer, "Wilmington Refinery)," 32-34.
[12] Ibid.
[13] U.S. Borax, Map of the Property of Borax Consolidated, Ltd. at Los Angeles Harbor, Slip No. 1 (Mormon Island), Wilmington California (map on file, U.S. Borax, 1925).
[14] U.S. Borax, *100 Years*, 34.
[15] Ibid., 32-34.
[16] Robert Shaw, "Wilmington Recollections" (memorandum, U.S. Borax Company, 1988).
[17] Borax Consolidated, Ltd. v. Los Angeles, 296 U.S. 10 (1935).
[18] NETR Online, *Historic Aerials,* www.historicaerials.com (accessed January 24, 2013).
[19] U.S. Borax, *Annual Report 1962* (Los Angeles, CA: U.S. Borax, 1962), 16.

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***B10. (Continued)**

The 100-foot-tall by 30-foot-diameter concrete silos introduced a massive and substantial change to the property. A large conveying system was constructed at the same time to move the bulk borates from the silos to the holds of ships at the dock.[20] In 1979, an additional four-silo structure was constructed to the south of the original 12-silo structure.[21] Over time, additional alterations have occurred to the subject property and its buildings, including seismic retrofitting of many of the buildings and structures between 1988 and 2004, which also resulted in the removal of the original 150-foot stack near the power plant;[22] introduction of large industrial equipment such as tanks, silos, conveyor belts, and piping; infilling of many of the buildings' windows and entries; and attachment of conduit, other piping, utility equipment, security lights, cameras, and signage to the exterior walls of the buildings.

Currently, the Wilmington Facility serves as Rio Tinto's primary North American shipping facility. The refinery produces 16 specialty products, including wood preservatives and flame retardants, which can be stored in the facility's 35,000 tons of storage capacity before being transferred to docked ships for export.[23]

LACHM Evaluation

LAHCM Criterion 1: The property was assessed under LAHCM Criterion 1 for its potential significance as a property in which the broad cultural, political, economic, or social history of the nation, state, or community is reflected or exemplified.

Though the U.S. Borax Wilmington Facility has been located at the property since 1924, the industrial complex is not representative of broad trends of the nation, state, or community. As indicated previously, the U.S. Borax Wilmington Facility was constructed on Mormon Island to take advantage of ready access to the Panama Canal and the proximity to raw materials being extracted in Death Valley. At the time of the refinery's completion, international shipping to and from the Port of Los Angeles through the Panama Canal had been common practice for about a decade. The U.S. Borax Wilmington Facility was built years after several other more important buildings and structures were already constructed, shipping such commodities as lumber, petroleum, and citrus products. In addition, the process of transporting ore extracted from Death Valley to a coastal plant for refining and shipping was not an innovation facilitated by the subject property. In fact, this method was popularized in the late 1800s when 20-mule teams traversed the desert to carry the minerals to rail lines that would ultimately deliver the ore to the original Pacific Coast Borax Company Refinery on Alameda Point.

According to historical research, the property is not representative of any type of achievement or development associated with industrial refining or commerce. Therefore, the U.S. Borax Wilmington Facility does not reflect or exemplify broad cultural, political, economic, or social history of the nation, state, or community. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 1.

LAHCM Criterion 2: The property was assessed under LAHCM Criterion 2 as a property which is identified with historic personages or with important events in the main currents of national, state, or local history.

Historical research revealed that the property does not appear to be directly associated with the significant contributions from the life and career of an individual, such as Francis Marion Smith, who may have made important contributions to the history of the United States, California, or Los Angeles County. In fact, Smith resigned from Borax Consolidated in 1914, ten years before completion of the facility. Other individuals associated with the property, such as facility supervisors, were not revealed to have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 2 for association with historic personages.

[20] U.S. Borax, *100 Years*, 36.
[21] Shaw, "Wilmington Recollections."
[22] Oren Brown, "Seismic Work at the US Borax Facility at Wilmington" (memorandum to Randy Luckman, U.S. Borax Company, February 11, 2004).
[23] Rio Tinto Minerals, "Our Operations," http://www.riotintominerals.com/ENG/ourbusiness/25_our_operations.asp (accessed January 24, 2013); Rio Tinto Borax, "About Borax: Worldwide Locations, U.S. Borax Inc. – Wilmington Operations," *Deed and Legal Description, File Name 314* (website screenshot on file, U.S. Borax, date not specified).

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***B10. (Continued)**

Currently, non-hsitoric features such as 100-foot-tall Bulk Storage Silos structure, major alterations to the buildings, and industrial equipment obscure Martin's contribution. Pre-1952 additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design. Therefore, although portions of the U.S. Borax Wilmington Facility were designed by Martin, the refinery is not a good representation of the master architect's work that influenced his age. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 4.

CRHR Evaluation

CRHR Criterion 1: The property was assessed under CRHR Criterion 1 for its potential significance as a part of a historic trend that may have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

Though the U.S. Borax Wilmington Facility has been located at the property since 1924, the industrial complex is not representative of a significant event associated with the trends or events that have made a significant contribution to the broad patterns of history. As indicated previously, the U.S. Borax Wilmington Facility was constructed on Mormon Island to take advantage of ready access to the Panama Canal and the proximity to raw materials being extracted in Death Valley. At the time of the refinery's completion, international shipping to and from the Port of Los Angeles through the Panama Canal had been common practice for about a decade. The U.S. Borax Wilmington Facility was built years after several other more important buildings and structures were already constructed, shipping such commodities as lumber, petroleum, and citrus products. In fact, this method was popularized in the late 1800s when 20-mule teams traversed the desert to carry the minerals to rail lines that would ultimately deliver the ore to the original Pacific Coast Borax Company Refinery on Alameda Point.

According to historical research, no significant events occurred at its location and the property is not representative of any type of achievement or development associated with industrial refining or commerce. Therefore, the U.S. Borax Wilmington Facility is not associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing in the CRHR under Criterion 1 or to be considered a historical resource for purposes of CEQA.

CRHR Criterion 2: The property was assessed under CRHR Criterion 2 for its association with the lives of persons important to local, California, or national history. Historical research revealed that the property does not appear to be directly associated with the significant contributions from the life and career of an individual, such as Francis Marion Smith, who may have made important contributions to the history of the United States, California, or Los Angeles County. In fact, Smith resigned from Borax Consolidated in 1914, ten years before completion of the facility. Other individuals associated with the property, such as facility supervisors, were not revealed to have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing in CRHR under Criterion 2 or to be considered a historical resource for purposes of CEQA.

CRHR Criterion 3: The property was assessed under CRHR Criterion 3 for embodying the distinctive characteristics of a type, period, or method of construction, or representing the work of a master or possessing high artistic values.

To determine its architectural significance, the U.S. Borax Wilmington Facility requires evaluation as individual buildings designed in the Utilitarian Industrial-style, as well as individual components to a potential historic district. Based on historic research and field survey, the U.S. Borax Wilmington Facility does not appear to possess distinctive characteristics of a significant Utilitarian Industrial design. While the plans for the U.S. Borax Wilmington Facility depict several characteristics typical of the Utilitarian Industrial-style typical in California in the 1920s, the property, in its current form, lacks the majority of these distinctive architectural characteristics and its architectural integrity has been significantly compromised. Presently, many of its large multi-pane windows have been in-filled. The non-historic period conduit, ventilation, and industrial equipment added to the facility have obstructed and significantly altered historic-period materials.

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Currently, non-hsitoric features such as 100-foot-tall Bulk Storage Silos structure, major alterations to the buildings, and industrial equipment obscure Martin's contribution. Pre-1952 additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design. Therefore, although portions of the U.S. Borax Wilmington Facility were designed by Martin, the refinery is not a good representation of the master architect's work that influenced his age. As such, the property does not appear to be eligible for listing as an LAHCM under LAHCM Criterion 4.

CRHR Evaluation

CRHR Criterion 1: The property was assessed under CRHR Criterion 1 for its potential significance as a part of a historic trend that may have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

Though the U.S. Borax Wilmington Facility has been located at the property since 1924, the industrial complex is not representative of a significant event associated with the trends or events that have made a significant contribution to the broad patterns of history. As indicated previously, the U.S. Borax Wilmington Facility was constructed on Mormon Island to take advantage of ready access to the Panama Canal and the proximity to raw materials being extracted in Death Valley. At the time of the refinery's completion, international shipping to and from the Port of Los Angeles through the Panama Canal had been common practice for about a decade. The U.S. Borax Wilmington Facility was built years after several other more important buildings and structures were already constructed, shipping such commodities as lumber, petroleum, and citrus products. In addition, the process of transporting ore extracted from Death Valley to a coastal plant for refining and shipping was an innovation facilitated by the subject property. In fact, this method was popularized in the late 1800s when 20-mule teams traversed the desert to carry the minerals to rail lines that would ultimately deliver the ore to the original Pacific Coast Borax Company Refinery on Alameda Point.

According to historical research, no significant events occurred at its location and the property is not representative of any type of achievement or development associated with industrial refining or commerce. Therefore, the U.S. Borax Wilmington Facility is not associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing in the CRHR under Criterion 1 or to be considered a historical resource for purposes of CEQA.

CRHR Criterion 2: The property was assessed under CRHR Criterion 2 for its association with the lives of persons important to local, California, or national history. Historical research revealed that the property does not appear to be directly associated with the significant contributions from the life and career of an individual, such as Francis Marion Smith, who may have made important contributions to the history of the United States, California, or Los Angeles County. In fact, Smith resigned from Borax Consolidated in 1914, ten years before completion of the facility. Other individuals associated with the property, such as facility supervisors, were not revealed to have made a significant contribution to the broad patterns of California's history and cultural heritage. As such, the property does not appear to be eligible for listing in CRHR under Criterion 2 or to be considered a historical resource for purposes of CEQA.

CRHR Criterion 3: The property was assessed under CRHR Criterion 3 for embodying the distinctive characteristics of a type, period, or method of construction, or representing the work of a master or possessing high artistic values.

To determine its architectural significance, the U.S. Borax Wilmington Facility requires evaluation as individual buildings designed in the Utilitarian Industrial-style, as well as individual components to a potential historic district. Based on historic research and field survey, the U.S. Borax Wilmington Facility does not appear to possess distinctive characteristics of a significant Utilitarian Industrial design. While the plans for the U.S. Borax Wilmington Facility depict several characteristics typical of the Utilitarian Industrial-style typical in California in the 1920s, the property, in its current form, lacks the majority of these distinctive architectural characteristics and its architectural integrity has been significantly compromised. Presently, many of its large multi-pane windows have been in-filled. The non-historic period conduit, ventilation, and industrial equipment added to the facility have obstructed and significantly altered historic-period materials.

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These alterations include the replacement of the original board-formed wall texture with a smooth stucco exterior wall treatment as well as the modification and removal of the stringcourse and rectangular capitals for the installation of industrial equipment. The absence of these original designed features undermines the distinctive architectural characteristics of the U.S. Borax Wilmington Facility. Additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design. Also, the simple, rectangular chimney was not depicted in the 1924 drawings and does not match the original design of the building. The modern alterations and upgrades to the refinery complex detract from its intended architectural character.

Further, while the facility was constructed using reinforced concrete construction method, the facility is a late example of this method of construction. In fact, the company had pioneered the method at the Alameda facility 32 years previously and at Bayonne, New Jersey 27 years before, and by 1924, the construction method was relatively common.

While the design of the U.S. Borax Wilmington Facility was undertaken by Albert C. Martin, a master architect, the property does not embody notable architectural designs attributed to Martin's significant works. Along with the 1927 Inn at Furnace Creek which he crafted for the Pacific Coast Borax Company in Death Valley, Martin is known for his major contributions to the Los Angeles skyline with his designs of the Los Angeles City Hall (1926), St. Vincent's Church (1923), and the Department of Water and Power Building (1963). Moreover, since Martin drafted his plan for the refinery in 1923, large-scale changes to the property have undermined the architect's original design intent. Currently, non-historic features such as 100-foot tall Bulk Storage Silos structure, major alterations to the buildings, and industrial equipment obscure Martin's contribution. Pre-1952 additions to the Warehouse and the Connecting Shed, though generally based on Martin's original plans, are not true representations of the original design. Therefore, although portions of the U.S. Borax Wilmington Facility were designed by Martin, the refinery is not a good representation of the master architect's work.

Given the lack of integrity and the numerous alterations to the U.S. Borax Wilmington Facility, the property no longer retains its character-defining features and does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values. Therefore, the property does not appear to be eligible for listing in the CRHR under Criterion 3 or to be considered a historical resource for purposes of CEQA.

CRHR Criterion 4: The property was assessed under CRHR Criterion 4 for the potential to yield or likelihood to yield information important to prehistory or history of the local area, California, or the nation.

The U.S. Borax Wilmington Facility does not appear to have the potential to yield important information about the development of borate refining or the Port of Los Angeles that is not readily available and presented previously. Therefore, the property does not appear to be eligible for listing in the CRHR under Criterion 4 or to be considered a historical resource for purposes of CEQA.

For a property to be eligible for listing in the CRHR, it must also retain its historic integrity in addition to meeting one of the CRHR criteria. The CRHR traditionally recognizes a property's integrity through seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association. Though the facility does not meet the criterion for eligibility to the CRHR, the following summarizes its historic integrity analysis:

Location is defined as the place where the historic-period property was constructed or the place where the historic event took place. The subject property has not been moved; therefore, it retains its integrity of location.

Design is defined as the composition of elements that constitute the form, plan, space, structure, and style of a property. The form, plan, and space of the property have been altered by several additions and different periods of development. While some of the property's design features remain (such as some stepped parapets, cornices, and several rectangular capitals) the form, plan, space, and structure have been significantly compromised as a result of upgrading and adapting the facility to new refining technologies.

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Setting is defined as the physical environment of a historic-period property that illustrates the character of the place. The refinery was built in an industrial port area of Los Angeles. Currently, the property retains its setting. Due to several episodes of development and re-development, it does not retain the setting associated with the exponential growth of the port in the early 1900s following the opening of the Panama Canal.

Materials are defined as the physical elements combined in a particular pattern or configuration to form the historical resource during a period in the past. Many of the original materials have been altered or removed, such as a decorative wall features and board-formed concrete textured walls. Also, the addition of new industrial equipment and structures such as the Bulk Storage Silos has introduced materials not historically associated with the U.S. Borax Wilmington Facility.

Workmanship is defined as the physical evidence of the crafts of a particular culture or people during any given period of history. The property does not represent physical evidence of the crafts of a given period of history.

Feeling is defined as the quality that a historic-period property has in evoking the aesthetic or historic sense of a past period of time. The property in its present form does not evoke a historic sense of feeling, but rather that of a relatively recently constructed refining facility.

Association is defined as the direct link between a property and the event or person for which the property is significant. While the property is associated with Albert C. Martin, the property in its present form does not convey a direct link with the prominent architect.

Overall, while the facility has retained some aspects of historic integrity, the property does not appear to meet any of the CRHR or LAHCM criteria, and therefore is not considered a historical resource for purposes of CEQA.

***B12. (Continued)**

Board of Harbor Commissioners of the City of Los Angeles. "Virtual History Tour." Last modified 2001. http://www.laporthistory.org/.

Borax Consolidated, Ltd. v. Los Angeles, 296 U.S. 10 (1935).

Brown, Oren Brown. "Seismic Work at the US Borax Facility at Wilmington." Memorandum to Randy Luckman, U.S. Borax Company, February 11, 2004.

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____. "The Mormon Island Story." *Pioneer,* September 1962.

Gettemy, Rob. "Sea Snarls at Man as Land Subsides." *Los Angeles Times*, December 6, 1953: H1, 5.

Hildebrand, George Herbert. *Borax Pioneer: Francis Marion Smith.* La Jolla, CA: Howell-North Books, 1982.

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Shaw, Robert. "Wilmington Recollections." Memorandum, U.S. Borax Company, 1988.

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____. Map of the Property of Borax Consolidated, Ltd. at Los Angeles Harbor, Slip No. 1 (Mormon Island), Wilmington California. Map on file, U.S. Borax, 1925.

Weinman, Lois J. and E. Gary Stickel. *Los Angeles-Long Beach Harbor Areas Cultural Resource Study.* Los Angeles: U. S. Army Engineer District, April 1978.

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Attachment F

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Weinman, Lois J. and E. Gary Stickel. *Los Angeles-Long Beach Harbor Areas Cultural Resource Study.* Los Angeles: U. S. Army Engineer District, April 1978.

URS

Jeremy Hollins, MA

Senior Architectural Historian/ Architectural History Team Lead

Areas of Expertise

Vernacular Architecture
19th – 20th century California Architecture
Historic Preservation Treatments and Law
Secretary of Interior Professional Qualification Architectural History (36 CFR Part 61)

Years of Experience

With URS: 5 years
With Other Firms: 2 year

Education

MA, University of San Diego, Public History, 2005
BA, University of Rhode Island, History [Environmental], 2003

Continuing Education

SRIF "Section 106: Principles and Practice," 2006
FEMA Institute Independent Study Course IS-00253 "Coordinating Environmental & Historic Preservation Compliance," 2006
FEMA Institute Independent Study Course IS-00650 "Building Partnerships in Tribal Communities," 2006
Certificate Program, Urban Planning, UC San Diego Extension; In Completion
Association of Environmental Professionals "Introductory and Advanced CEQA Workshop Series," 2005
California Preservation Foundation Annual Conference, 2005

Overview

Jeremy Hollins is a Secretary of Interior Professional Qualified Architectural Historian for URS' San Diego office. Since 2003, Mr. Hollins has performed numerous historic evaluations, context studies, and determinations of eligibility and effect for a range of resources based on local, state, and National Register criteria and through technical reports, DPR 523 series forms, HABS reports, cultural landscape reports, historic structures reports, and resolution documents. He has a detailed knowledge of the laws and ordinances which affect historic properties, such as Section 106 of the NHPA, CEQA, NEPA, Section 4(f), California Public Resources Code, State Historic Building Code, and the Secretary of Interior Standards for the Treatment of Historic Properties. Additionally, two academic journals have published Mr. Hollins' work, and he was an adjunct instructor in 'World Architectural History' at the New School of Architecture before coming to URS in 2006.

Project Specific Experience

Verizon Wireless, Telecommunication Projects – CA and NV.: Architectural History Task Manager on over 95 intensive architectural history field surveys in California and Nevada for telecommunication projects' direct Areas of Potential Effect (APE) and viewshed (indirect APE). Projects completed as part of Section 106 of the NHPA and the FCC Programmatic Agreement with the California Office of Historic Preservation (OHP). Conducted and oversaw archival research, evaluated the projects' APE for eligibility for listing in the NRHP and California Register of Historic Resources (CRHR), identified effects, completed appropriate DPR 523 forms, drafted the reports for submission to OHP, and provided technical editing expertise. Resources identified and evaluated have dated from the late nineteenth century to the recent past, were located in various settings (dense urban, suburban, rural, and industrial), and have included numerous property types such as residential and commercial buildings, churches, educational institutions, hospitals, water towers, windmills, farm and ranch landscapes, an oil refinery, and irrigation canals. Responsible for scoping, budget and tasks management, client/agency interaction, and submission of compliance materials (2008-Present)

Brightsource Solar Energy, Rio Mesa Solar – Blythe, CA.: Oversaw architectural history field survey and archival research as architectural history task manager for a large solar project in the Colorado Desert (partially within BLM land) in accordance with Section 106 of the NHPA, NEPA and, CEQA. Oversaw architectural history field survey of project footprint, transmission line and substation locations, and half-mile buffer. Oversaw historic research and community consultation, and the recordation and evaluation of approximately 30 cultural resources,

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including historic-age transmission lines, canals and irrigation ditches, historic roads, mines, and borrow pits. (2011)

FAA, San Francisco International Airport Runway Safety Area Program – San Francisco, CA.:
Task manager for reconnaissance survey of the historic-age runways, taxiways, canal, and approach-lighting trestles within the project APE; evaluated the airport facilities pursuant to Section 106 of the NHPA, NEPA, and CEQA; assessed effects and impacts from the proposed undertaking; completed DPR 523 forms; and authored the Historic Architecture Survey Report. (2011)

Los Angeles Unified School District, Alameda Transportation Relocation Project – Historical Architecture Assessment – Los Angeles, CA.:
Oversaw a historic architecture assessment in accordance with CEQA and according to City of Los Angeles criteria for listing as a historical or cultural monument. Managed an intensive architectural history survey, archival research, and evaluation. Authored the letter report to assess the significance of the three mid-twentieth century light industrial buildings on the site and any project impacts according to CEQA. (2011)

National Oceanic and Atmospheric Administration (NOAA), Integrated Water Resources Science and Services (IWRSS), University of Alabama Section 106 Compliance – Tuscaloosa, AL.:
Leader of project planning and photo guidance for a desktop evaluation of eligibility and effect pursuant to Section 106 of the NHPA for buildings associated with the mid-nineteenth century Bryce Hospital (Alabama State Hospital for the Insane) NRHP-eligible historic district. Task manager for resolution of adverse effects and completing SHPO consultation regarding the necessary HABS standards. (2011)

Caltrans and Alameda Corridor Transportation Authority, HAER, Level II, for the Commodore Schuyler F. Heim Bridge, Schuyler Heim Bridge Replacement and SR-47 Expansion Project – Long Beach, CA.:
Managed HAER for Commodore Schuyler F. Heim Bridge, a 1948 steel vertical lift bridge eligible for listing in the NRHP, to fulfill NHRA Section 106 mitigation requirements. The study was completed consistent to the specific guidelines and requirements of the United States Department of Interior and Library of Congress for a Level II HAER and included written historical and descriptive data, 5-by-7" large-format photographs and negatives, and 4-by-5" large-format photographic copies of as-built drawings and negatives. Oversaw project planning (client meetings, site visits, access permits, contract and engagement with photographer), facilitated field work, archival research, report drafting and editing and archival processing. Project required extensive FHWA, Caltrans, and Port of Los Angeles-Port of Long Beach coordination and consultation. Project was nominated for a URS Pyramid Award for Technical Excellence. (2010-2011)

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Caltrans and City of Santa Ana, Bristol Street HPSR and HRER, Phase 3 and Phase 4 – Santa Ana, CA. Task manager for an intensive architectural history field survey of the direct APE and a reconnaissance survey of the indirect APE in accordance with the Programmatic Agreement between the FHA, the Advisory Council on Historic Preservation, the California OHP, and Caltrans. Managed archival research, wrote a historic context, evaluated the APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded 66 resources (primarily early to mid-century residences in planned subdivisions) on the appropriate DPR 523 forms, and authored the HPSR and HRER. Adapted unique approach for recordation based on historic subdivisions and property types to facilitate and streamline compliance. (2010-2011)

Caltrans and SANDAG, Lenwood Road HPSR, ASR, and HRER – Barstow, CA.
Task manager for cultural resources studies, and preparation of HPSR, ASR, and HRER. Oversaw archival research, historic context, evaluated the project APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded forty-one resources (Historic Route 66-related commercial buildings and single-family residences) on the appropriate DPR 523 forms, and drafted the Historic Resources Evaluation Reports and Historic Properties Survey Reports. (2009-2011)

Pio Pico Energy Center, LLC, Pio Pico Energy Center, Otay Mesa – San Diego County, CA.:
Supervised an intensive architectural history field survey of the project survey area in accordance with CEQA and CEC guidelines. Oversaw archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, recorded two new resources (circa 1909 ranch complex and 1960 ranch-style residence) and re-recorded a third (historic road) on the appropriate DPR 523 forms, and drafted the architectural history portion of the cultural resources technical report for submission to the CEC. (2010-2011)

FEMA, Lake Valley Roof Replacement – Lake Valley Fire Protection District, CA.:
Managed and planned strategic tasks man tasks for preliminary NHPA Section 106 compliance evaluation of project involving hundreds of mid-twentieth century recreational residences and roof replacements. (2010-2011)

FEMA, Marcucci – Jackson, CA.:
Completion of Section 106 studies per the FEMA Programmatic Agreement for flood damage control (culvert replacement). Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

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FEMA, Sutter Creek Broad Storm Drain Diversion – Sutter Creek, CA.:
Managed Programmatic Agreement between FEMA, the California OHP, the California Governor's Office of Emergency Services, and the Advisory Council on Historic Preservation for proposed flood damage control (culvert drainage system alterations near a NRHP-eligible creek wall and historic district) tasks Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

FEMA, Fairfax Pavilion – Fairfax, CA.:
Completion of Section 106 studies per the FEMA Programmatic Agreement for seismic retrofit to NRHP-eligible property). Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

FEMA, Lake Elsinore Seismic Retrofit – Lake Elsinore, CA.:
Managed Programmatic Agreement between FEMA, the California OHP, the California Governor's Office of Emergency Services, and the Advisory Council on Historic Preservation to proposed seismic retrofit tasks for preliminary NHPA Section 106 compliance evaluation of project involving the city hall buildings. (2010)

Caltrans and Riverside County Transportation Department, Clay Street Grade Separation Project – County of Riverside, CA.:
Task manager for cultural resources studies, and preparation of HPSR, ASR, and HRER. Oversaw archival research, historic context, evaluated the project APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded 5 resources on the appropriate DPR 523 forms, and drafted the Historic Resources Evaluation Report and Historic Properties Survey Reports. (2010)

United States Postal Service, USPS San Diego Midway Processing and Distribution Facility Property – San Diego, CA.:
Oversaw NRHP eligibility (including Criterion Consideration G) and effects for NHPA Section 106 compliance for the proposed disposition of the USPS San Diego Midway Processing and Distribution Facility property, which contained a large 1972 Brutalism and New Formalism-style building. Supervised a records search, Native American consultation, historic research, evaluation, integrity analysis, assessment of adverse effects, and drafting of report. (2010)

Apex Energy Group, Pio Pico Energy Center – Chula Vista, CA.:
Oversaw an intensive architectural history field survey of the project's APE in accordance with CEQA and the CEC guidelines. Supervised archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, recorded three resources (1897 reservoir and 1919 dam, late-1950s public park facilities,

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and early twentieth-century livestock pens) on the appropriate DPR 523 forms, and drafted the architectural history portion of the cultural resources technical report for submission to the CEC. (2009-2010)

FEMA Santa Maria Seismic Retrofit–Santa Maria, CA.:
Supervised NRHP- and CRHR-eligibility of the Cook and Miller Court Complex, a Monterey style complex constructed in 1954, in compliance with NHPA Section 106 and the Programmatic Agreement between FEMA, California OHP, California Emergency Management Agency, and the Advisory Council on Historic Preservation. Completed DPR 523 forms. (2009)

Tessera Solar, Imperial Valley Solar (formerly Solar II) – El Centro, CA.:
Supervised archival research and compiled findings regarding Juan Bautista de Anza National Historic Trail and historic gravel mines in the project APE and vicinity pursuant to Section 106 of the NHPA, NEPA, and CEQA. Input archaeological field data to DPR 523 form database. (2009)

Naval Air Facility El Centro Fire Station – El Centro, CA.:
Task manager for background research to evaluate eligibility of historic-age utilitarian industrial buildings at Naval Air Facility El Centro. Manager and oversaw the evaluation and architectural history description for technical report for fire station project. (2011)

California High Speed Rail Authority, High Speed Train – Sylmar to Palmdale, CA.:
Task manager for field reconnaissance data analysis, records search review, and cultural resource location map revisions pursuant to Section 106 of the NHPA and CEQA. (2009)

Lost Hills Solar, Lost Hills – Kern County, CA.:
Facilitated research and drafted the historic context pursuant to CEQA. (2009)

Clay Street Grade Separation, Riverside County Transportation Department, Riverside County, CA.:
Cultural Resources Task Manager (URS Corporation)
Performed Section 106 Compliance Study for Riverside County Transportation Department for the at-grade crossing of Clay Street with the Union Pacific Railroad. Prepared HPSR, ASR, and DPR 523 series forms for project per Caltrans/FHWA guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. (2010)

Westside Extension Cultural Resources Technical Report and Historic Survey Report, Los Angeles County Metropolitan Transportation Authority (Metro), Los Angeles, West Hollywood, Beverly Hills, Santa Monica, and the County of Los Angeles, CA.:
Architectural History Task Leader (URS Corporation)
Led architectural history tasks for the Los Angeles Metro Westside Extension project, which involved the planning and design of a heavy-rail subway connecting City of Los Angeles, West Hollywood, Beverly Hills, Santa Monica, and the County of Los Angeles. Responsibilities include Metro, FTA, and SHPO coordination/meetings; authoring project Programmatic Agreement; organizing field survey activities and background research; and authoring the Section 106 of the NHPA, NEPA, and CEQA technical studies. Field survey activities and background research required development of project-specific field survey forms, photograph protocols, architectural style guide, APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. In total, the project identified and evaluated a total of 91 NRHP-listed, -eligible, or contributing resources, and over 200 non-significant historic-period properties. (2009-2010)

NHPA Section 106 Compliance for ARRA Projects Undertaken by National Railroad Passenger Corporation (Amtrak). CA, WA, NM.:
Architectural Historian (URS Corporation)
West Coast lead for California, Oregon, Washington, and New Mexico National Historic Preservation Act Section 106 consultation and State Historic Preservation Office (SHPO) coordination regarding Amtrak's receipt of $1.3 billion in American Recovery and Reinvestment Act (ARRA) funds under an expediated timeline for receive ARRA funding. Responsibilities included field assessments/built environment surveys with engineering teams; development of design guidelines per project based on the Secretary of the Interior's Standards for Rehabilitation; and completion of Section 106 compliance materials (letter reports). Project required extensive coordination with SHPOs (e.g., CA, WA, and NM). SHPOs) to ensure Section 106 concurrence (No Adverse Effect to Historic Properties) was received in less than 30 days for each project. In total, project involved alterations and additions to nearly 7 NRHP-eligible and -listed properties (e.g., Los Angeles Union Station). Project was nominated for a URS Pyramid Award for Innovation. (2009-2010)

California High-Speed Train Project EIR/EIS-Los Angeles to Palmdale Segment, California High-Speed Rail Authority, Los Angeles County, CA.:
Architectural History Task Leader (URS Corporation)
Led architectural history tasks for the CA High Speed Train Palmdale to Los Angeles Union Station. Responsibilities include sub-consultant management; organizing field survey activities and background research; and authoring the technical reports and EIR/EIS sections. Field survey activities and background research required development of project-specific field survey forms, photograph protocols, architectural style

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guide, APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. (2009-Present)

BNSF Tehachapi Cultural Resources Assessment, Kern County, CA.:
Architectural Historian (URS Corporation)
Architectural historian for the evaluation of built environment resources and features located within APE for an eleven mile addition of a double-track in the Tehachapi area, near the Tehachapi Loop. Developed historic context and performed determination of eligibility, integrity analysis, and identification of effect. Prepared DPR 523 series forms and co-authored the technical reports per Caltrans Division of Rail CEQA-level standards. Project required complex evaluation of Cesar Chavez former office and gravesite, involving Criterion Considerations C, D, E, F G. (2008-Present)

California High-Speed Train Project EIR/EIS-Fresno to Bakersfield Segment, California High-Speed Rail Authority, CA.:
Architectural Historian (URS Corporation)
Technical reviewer for the Section 106, NEPA, and CEQA studies for the High Speed Train Fresno to Bakersfield segment. (2010)

Alosta Avenue Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1929 Plate-Girder bridge and the California Central Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. (2008)

Long Beach Blvd. Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1932 Warren truss Bridge and the Union Pacific Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. (2008)

Willow Street Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1932 Warren truss Bridge and the Union Pacific Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. (2007)

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Palomar Road Widening Cultural Resource Survey, County of Riverside, Riverside County, CA.:
Architectural Historian (URS Corporation)
Performed historic research and CRHR and NRHP determination of eligibility for a 19th century rural (garden) cemetery (historic designed landscape) in Wildomar. NRHP evaluation required application of Criterion Consideration D: Cemeteries. Information was incorporated into DPR 523 series forms and final technical report. (2007)

California High-Speed Train Project EIR/EIS Methodology and Detailed Work Plan, Federal Rail Authority and High-Speed Train Authority, Statewide, CA.:
Architectural Historian (URS Corporation)
Prepared Architectural History Methodologies for the completion of the state-wide Section 106, NEPA, and CEQA compliance of the High Speed Train Project EIR/EIS. Developed research, survey, identification, evaluation, and consultation methodologies for completion of the project, as well as identified possible constraints. Also prepared the Detailed Work Plan for the LA-Palmdale Segment Project EIR/EIS. (2007)

US-101/McCoy Lane Interchange Project ASR and HPSR, Caltrans Santa Barbara County, CA.:
Architectural Historian (URS Corporation)
Prepared the Historic Context for a Section 106, NEPA, and CEQA compliance study for improvements to the US-101/McCoy Lane interchange. Performed primary and secondary sections. The historic context examined the development of oil prospecting in the Santa Maria Valley and the development and operation of the Battles Plant Facility, which was adjacent to the APE. (2007)

US 101/SR 46W Interchange Improvement, City of Paso Robles, Paso Robles, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Study for proposed undertaking. Survey discovered 5 previously unrecorded historic properties and evaluated the resources within 2 historic contexts. Performed determination of eligibility, identification of effect, analysis of integrity, and recommended mitigation measures for project. Completed DPR 523 series forms, HRER, and HPSR for Caltrans. (2006)

2701 North Harbor Drive Demolition Project EIR, San Diego Unified Port District and San Diego County Regional Airport Authority, City of San Diego, CA.:
Cultural Resources Task Manager/Architectural Historian (URS Corporation)
Served as Task Manager for CEQA-level cultural resources assessment. Performed fieldwork and authored Cultural Resources EIR section and technical report for the demolition of 50 structures at San Diego International Airport. Project considered potential effects to a National Register-eligible historic district (comprised of 17 properties). Duties included coordination of field survey, CHRIS records search, Native

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American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, and development of mitigation measures. (2008-2009)

Phase I Archaeological Assessment of Nuevo Business Park II, Private Client, Riverside, CA.:
Architectural Historian (URS Corporation)
Performed CEQA-level cultural resource assessment of 5 rural historic-period landscapes associated with agricultural/subsistence activities in Riverside County. Developed historic context on Riverside County's commercial agriculture industry, performed built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report per County of Riverside Planning Department regulations. (2008)

Anaheim Historic Resource Evaluation, City of Anaheim, Orange County, CA.:
Architectural Historian (URS Corporation)
Performed CEQA-level cultural resource assessment for three historic-period residences (Tudor Revival, modern ranch, contemporary style) within the City of Anaheim. Performed background research, wrote historic context on northeast Anaheim's transformation from agricultural to industry in the mid-20th century, performed built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report. (2007)

Space Shuttle Program NEPA, Section 106, and 110 Compliance, NASA, Third Party Peer Review of Technical Reports:
Architectural Historian (URS Corporation)
Performed third party NEPA, Section 106 and Section 110 review of technical reports for NASA for the decommissioning of its Space Shuttle Program properties. Reviewed properties per Criterion Considerations B (Moved Properties) and G (Properties less than 50 years), federal government definition of personal properties, and as geographic historic districts. Space Shuttle Program properties were located at Dryden Flight Research Center (Edwards, CA), White Sands Space Harbor, and White Sands Test Facility (Las Cruces, NM). (2007)

Pacific Gateway Cargo Center, Ontario International Airport Construction Monitoring and Treatment Plan, Ontario International Airport, Ontario, CA.:
Architectural Historian (URS Corporation)
Authored construction monitoring and treatment plan for subsurface features and built environment. Plan was for the redevelopment of 96 acre site, and included monitoring guidelines for construction/grading, and a visual inspection program for surrounding historic resources. Plan encompassed entire building process from pre-construction meetings to post-construction reports. (2006)

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West Moreland Clean Harbors Landfill Expansion Cultural Resource Assessment, Private Client, West Moreland, CA.:
Architectural Historian (URS Corporation)
Performed CHRIS Center Records Search for Study Area for proposed landfill site. Results of Record Search were tabulated and used for cultural resource assessment of Study Area. (2006)

La Posada Hotel Engineering Contingency Plan, Private Client, Winslow, AZ.:
Architectural Historian (URS Corporation)
Planned and wrote an Engineering Contingency Plan for the La Posada Hotel (within the La Posada National Register District) for the removal of oil seepage from a raised concrete foundation. Plan provided scope, costs, and recommended Rehabilitation and Restoration treatments (per Secretary of Interior Standards for the Treatment of Historic Properties). Project required informal consultation with AZ SHPO and Materials Contractors. (2006)

IERF Building Historic and Architectural Documentation (HABS), University of California, Irvine, Irvine, CA.:
Architectural Historian (URS Corporation)
Performed equivalent of HABS Level 2 survey of a 1986 Frank Gehry-designed academic complex at the University of California – Irvine. Responsible for architectural investigation, physical history, historic context, and coordination with HABS photographer. (2006)

Uptown San Diego Historic Reconnaissance Survey, City of San Diego, San Diego, CA.:
Architectural Historian (IS Architecture)
Historian for the identification and evaluation of 20,000 resources in San Diego. Responsible for jointly preparing survey's first volume, which included "Data Analysis, Phase Implementation, Methodology, Styles Guide/Context, and Proposed Districts/Conservation Overlays." Evaluated and grouped resources based on association to historic context, and drafted district and overlay records, contributing elements, boundaries, and integrity. (2005-2006)

100MW Solar/Bio-Waste Power Plant, Spinnaker Energy, Inc., Fresno County, CA.:
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed fieldwork and co-authored Cultural Resources AFC section and technical report for a proposed hybrid solar and bio-fuel power plant in Fresno County. Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. (2008)

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Carrizo Energy Solar Farm AFC Data Requests, Ausra, Inc., San Luis Obispo County, CA.:
Architectural Historian (URS Corporation)
Performed additional historic research and field surveys for CEC AFC Data Requests to determine the presence of a potential cultural landscape within the northern Carrizo Plains near the vicinity of the Project Area. Research efforts included a review of primary and secondary sources, development of an evaluative context, and recordation and evaluation of 8 potential contributing resources through DPR 523 series forms. Recordation and evaluation followed National Register Bulletin 30: Guidelines for Evaluating and Documenting Rural Historic Landscapes. (2008)

Carrizo Energy Solar Farm AFC Supplemental Filing, Ausra, Inc., San Luis Obispo County, CA.:
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed CHRIS records search and authored Cultural Resources AFC section for a 150-mile transmission line corridor intended for use as part of the 177 MW solar power project located in San Luis Obispo County, California. (2008)

Confidential Solar Energy Project, Confidential Private Client, Imperial County, CA.:
Architectural Historian (URS Corporation)
Performed primary and secondary source research to develop a historic context for the project area in support of a CEQA-level assessment for submission to the CEC. Context focused on Imperial County transportation/circulation networks (Highway 80), local military activities, irrigation agriculture, and the San Diego-Arizona Railroad. (2008)

Carrizo Energy Solar Farm 177 MW Solar Plant, CEC, Ausra, Inc., San Luis Obispo County, CA.:
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed fieldwork and authored Cultural Resources AFC section and technical report for a 177 MW solar power project located in San Luis Obispo County, California (640 acre solar farm; 380 acre construction laydown). Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties, analysis of effects, and development of mitigation measures. (2007-2008)

Stirling Energy Systems – Solar 2 Project and Data Request 125, CEC, Imperial County, CA.:
Architectural Historian (URS Corporation)
Performed primary and secondary source research to develop a historic and evaluative context for the project area. Context focused on Imperial

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County transportation/circulation networks (Highway 80), local military activities, irrigation agriculture, and the San Diego-Arizona Railroad. Also, recorded and performed determination of eligibility, analysis of integrity, and identification of effect for six historic-period properties. Prepared for Stirling Energy Systems. (2007-2009)

Solar Hybrid Power Plant Cultural Resources Assessment, Bethel Energy, Imperial County, CA.:
Architectural Historian (URS Corporation)
Performed CEQA-level cultural resource assessment of two early 20th century earthen and concrete-lined canals in Imperial Valley area. Performed CHRIS Center Record Search, developed historic context on Imperial Valley's irrigated commercial agriculture industry, performed built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report. (2007)

Calnev Expansion Project, Kinder Morgan, San Bernardino County, CA.:
Architectural Historian (URS Corporation)
Served as Architectural Historian for cultural resources assessment for NEPA and CEQA project. Performed fieldwork and authored technical report for a 190-mile portion of a proposed 245-mile pipeline expansion project from Colton, CA to Primm, NV. Deliverables were submitted to the BLM as the lead agency for NEPA and the County of San Bernardino as the lead agency for CEQA. Duties included coordination of field survey, CHRIS records search, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. In total, recorded and evaluated 39 unrecorded historic-period properties and 17 previously recorded historic-period properties. Prepared for Kinder Morgan, Inc. (2008)

Carson Cogeneration Plan Expansion, BP, Inc., Los Angeles, CA.:
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment for a cogeneration plant expansion. Performed fieldwork and co-authored Cultural Resources AFC section and technical reports. Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. (2008)

1507 Mt. Vernon Avenue Historic Property Assessment, Patch Services Engineering, City of Pomona, Los Angeles County, CA.:
Project Manager/Architectural Historian (URS Corporation)
Project Manager/ Architectural historian for the evaluation of a 1927 paper mill located within a cogeneration power facility. Developed

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historic context, construction chronology, and performed determination of eligibility, analysis of integrity, and identification of effect. (2008)

Starwood-Midway Power Plant AFC Data Requests, Starwood Energy, Fresno County, CA.:
Architectural Historian (URS Corporation)
Performed additional historic research and field surveys for CEC AFC Data Requests to determine the location of a historic farm in relation to the Project Area. Research efforts included a review of historic maps, aerial photographs, real estate and county records, and newspaper articles. The Data Requests, and associated figures and maps, were submitted to CEC via a Letter Report. (2007)

Revised Niland Cultural Treatment Plan and Research Design, Niland Gas Turbine Plant Project, CEC, Niland, CA.:
Architectural Historian (URS Corporation)
Authored the Historic Period Research Questions used in the Treatment Plan. Research questions focused on emigration, irrigation, flooding episodes, and power generation in Imperial Valley. (2007)

Confidential Pipeline Expansion Project Feasibility Study and Constraints Analysis, Private Client, CA and NV.:
Architectural Historian (URS Corporation)
Performed CHRIS Center Records Search for 223-mile pipeline expansion. Results of Record Search were tabulated and included in Feasibility Study. Also coordinated all cultural resource mapping with GIS personnel. (2006)

Cultural Resource Survey and Assessment, Imperial Irrigation District, Niland and El Centro, CA.:
Architectural Historian (URS Corporation)
Staff architectural historian for the evaluation of built environment resources and effect caused by alterations to power plant facilities. Evaluated resources per California Register criteria and developed recommended mitigation measures for project. Co-authored the Technical Reports, DPR 523 series forms, and Application for Certification. Identified an historic bank, eligible for the California Register of Historic Resources, related to the early development of Niland and a historic powerplant building, associated with the early development of the Imperial Irrigation District and eligible for the California Register. (2006)

Cook & Miller Court Complex Seismic Retrofit, FEMA, Santa Barbara County, CA.:
Architectural Historian (URS Corporation)
As part of HMGP-funding, evaluated the NRHP and CRHR eligibility of the Cook & Miller Court Complex, a Monterey style complex constructed in 1954, in compliance with Section 106 and the PA Completed architectural history survey, background research, DPR 523 series forms and findings memorandum. (2010)

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Franklin Reservoir Improvement Section 106 Compliance Project, FEMA, Los Angeles County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADWP for the replacement of five catch basins for a 1940s dam within the City of Beverly Hills. Prepared DPR 523 series forms and technical report for SHPO. Developed historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. (2008-2009)

Santa Monica City Hall MOA Seismic Retrofit, Jail-Area Adaptive Use, and ADA Improvements, FEMA, Los Angeles County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Review on behalf of FEMA for the seismic retrofit, jail-area adaptive use, and ADA improvements of the National Register-eligible City Hall. Reviewed consultant and City prepared studies and drawings, performed integrity analysis and identification of character defining features, analyzed effects, and developed a resolution of effects plan. Coordinated with ACHP, SHPO, OES, FEMA, and City, and authored Notification Letter and Draft MOA to resolve effects. Prepared for FEMA (2008-2009)

Harada House Section 106 Review, FEMA, Riverside County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Review on behalf of FEMA for emergency repairs to a National Historic Landmark (Harada House) within the City of Riverside. Reviewed project through NEMIS database, and responsible for SHPO consultation, applying Section 106 Programmatic Agreement Allowances, integrity analysis, and identification of effects. Drafted Notification Letter for ACHP, SHPO, OES, FEMA, and City. (2008)

Ross School Flood Mitigation Assistance, FEMA, Sonoma County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Review for FEMA for a flood elevation assistance project. Performed CHRIS Center Record Search and determination of eligibility, analysis of integrity, and identification of effect. Compliance study submitted via letter report to FEMA. (2008)

Sonoma County Flood Mitigation Assistance, FEMA. Sonoma County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for flood mitigation assistance project. Performed CHRIS Center Record Search and determination of eligibility, analysis of integrity, and identification of effect. Compliance study submitted via letter report to SHPO. Prepared for Sonoma County. (2008)

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Napa County Flood Mitigation Assistance, FEMA, Napa County, CA.:
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for flood mitigation assistance project. Performed CHRIS Center Record Search and performed determination of eligibility, analysis of integrity, and identification of effect. Compliance study data transmitted via letter report to SHPO. Prepared for Sonoma County. (2008)

Municipal Water District - Upper Feeder Line, FEMA, Riverside County, CA.:
Architectural Historian (URS Corporation)
Staff architectural historian for the evaluation of built environment resources for FEMA disaster recovery project. Evaluated resources ("Pratt" truss bridge and gaging station) per National Register criteria and requirements of Section 106 of the NHPA. Performed determination of eligibility, identification of effect, analysis of integrity, and recommended mitigation measures for project. Prepared for Riverside County. (2006)

San Diego Vegetative Management, FEMA, San Diego County, CA.:
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for vegetative management for the San Diego County communities of Bay Terrace, Del Cerro, Encanto, Lake Murray, Marion Bear Park, Serra Mesa, Black Mountain, Carmel Valley, Los Penasquitos, Tecolote Canyon, Scripps Ranch, and Tierrasanta. Performed CHRIS Center Records Search and wrote historic contexts for communities of Bay Terrace, Del Cerro, Encanto, Lake Murray, Marion Bear Park, Serra Mesa, Black Mountain, Carmel Valley, Los Penasquitos, Tecolote Canyon, Scripps Ranch, and Tierrasanta. Part of technical reports submitted to FEMA for Section 106 Compliance. Prepared for City of San Diego. (2006)

Hurricane Katrina Public Assistance, DR-1604-MS, FEMA, Biloxi, MS.:
Architectural Historian (URS Corporation)
Historic Preservation Specialist for NEPA review of over 100 public assistance projects. Reviewed projects through NEMIS database. Responsible for SHPO consultation, applying Section 106 Programmatic Allowances, determinations of eligibility, integrity analysis, and identification of effects. Drafted MOAs, developed mitigation measures, ensured projects met Secretary of Interior Standards for the Treatment of Historic Properties, and coordinated and led meetings between applicants, FEMA, and Mississippi SHPO. Projects included over 10 National Register Properties, 1 National Historic Landmark, and 15 Mississippi Landmarks. (2006)

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Nevada City Fuel Reduction Project, FEMA, Deer Creek Environs, Nevada County, CA.:
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for wildfire mitigation of 600 acres. Mr. Hollins participated in kick-off meetings; performed extensive background research; developed an evaluative historic context; completed architectural history surveys for the Undertaking; and, prepared DPR 523 series forms and a findings memorandum. Four previously recorded cultural resources, one previously unidentified historic-period residential camp site, and five historic-period isolates were recorded in the Area of Potential Effect (APE) - all associated with the early history of 19th and 20th century northern California gold mining. (2006)

Water

Calaveras Dam Staff Housing Replacement Project, San Francisco Public Utilities Commission, Sunol, Alameda County, CA.:
Architectural History Task Manager (URS Corporation)
Architectural History Task Manager for the CEQA evaluation of a historic-period rural property that would be demolished to accommodate new staff housing for the SFPUC, as part of Calaveras Dam replacement project. CEQA evaluation included preparation of a technical archaeology and architectural history memorandum, recordation of the property through DPR 523 series forms, and preparation of project area maps. Developed evaluative historic context for the Spring Valley Water Company, Sunol, and Alameda County historic-period rural properties. (2010)

City of Los Angeles Lower Franklin Reservoir No. 2 - Debris Basins Replacement, Los Angeles, CA.:
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for LADWP's replacement of five catch basins for a 1940s dam within the City of Beverly Hills. Mr. Hollins performed extensive background research; developed an evaluative historic context; completed architectural history surveys for the Undertaking; and, prepared DPR 523 series forms and a findings memorandum. (2009)

MCB Camp Pendleton Bachelor Enlisted Quarters Siting Study, San Diego County, CA.
Architectural Historian (URS Corporation)
Reviewed MCB Camp Pendleton GIS layers and cultural resources records and data to identify potential direct impacts to previously recorded cultural resources located within a 500-foot radius of proposed Bachelor Enlisted Quarters at MCB Camp Pendleton. Provided cultural resources analysis as part of a preliminary NEPA constraints and siting study to support the preparation of the Project's design-build RFP for FY2008, FY2009, and FY2010. In total, 25 potential BEQ sites were analyzed for potential direct impacts to cultural resources. Prepared for MCB Camp Pendleton. (2008)

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Desert Installation Appearance Plan and Airfield Security Study for NAF El Centro, NAS Fallon, NWS Seal Beach, NAS Lemoore, and NAWS China Lake:
Architectural Historian (URS Corporation)
Architectural Historian responsible for developing cultural resources considerations, base-wide historic contexts, design guidelines for historic structures and districts, and base-wide visual themes. Project was completed at five installations throughout California and Nevada. Within the historic district analysis, the character-defining features, visual quality and context, and historic contexts were identified to classify built environment styles and a harmonizing theme. In addition, all built environment properties within the installations were identified and categorized, in order to provide clear visual design guidance and functional and aesthetic guidance. Lastly, based on the preceding data, design guidelines (including material and construction elements) were then established for each installation. Prepared for NAVFAC. (2008)

Telecommunications

Verizon Wireless Communications Tower Section 106 Compliance, CA and NV.:
Lead Architectural Historian (URS Corporation)
Performed or supervised the completion of over a hundred Section 106 Compliance Studies for FCC on behalf of Verizon Wireless for new tower support structures and collocated towers throughout California and Nevada. Performed determination of eligibility, analysis of integrity, and identification of effect. Projects completed within various counties of California. Prepared FCC Form 620 or 621, DPR 523 series forms, and letter report. (On-Going)

Verizon Wireless Communications Tower Viewshed Analysis, Wendover, NV.:
Architectural Historian (URS Corporation)
Performed specialized historic viewshed analysis for FCC on behalf of Verizon Wireless for a new tower support structure in Wendover, NV. Viewshed analysis considered the project's effect within a half-mile radius. Results of the viewshed analysis were submitted via letter report to SHPO. (2008)

Historic-Period Property Evaluation Report – Twin Peaks, San Francisco Planning Department, San Francisco, CA.:
Architectural History Task Manager (URS Corporation)
Architectural History Task Manager for the Section 106 of the NHPA and CEQA evaluation of a historic-period religious building (church) located within the City of San Francisco, which would be substantially altered. CEQA evaluation was completed in compliance with San Francisco Planning Department regulations, as well as the guidelines established by the Major Environmental Analysis (MEA) staff and the Planning's Department's Preservation Coordinator. Section 106 of the NHPA and CEQA evaluation included preparation of a letter report, DPR 523 series

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forms, APE maps, historic maps and images, records search information, and a San Francisco Planning Department Supplemental Information Form for Historic Resource Evaluation form. Historic-period property was evaluated using the Criterion Consideration A: Religious Properties, in addition to NRHP/CRHR criterion. (2010)

Scripps Park Historical Structures and Cultural Landscape Report, La Jolla, CA.:
Project Manager (Independent Contractor)
Project Manager and lead investigator for historic context and treatment plan of site. Work entailed identifying landscape features, flora/botanical species, existing conditions, review of original drawings and plans, historic sequence of events, construction chronology, and archaeological discoveries. Responsible for assigning tasks, overseeing sub-consultants work, coordination of report, budget, and application of Secretary of Interior standards, CEQA, and Coastal Commission regulations. Project submitted to City of San Diego and Coastal Commission for Restoration and Reconstruction of site and future planning. (2005)

Guy Fleming House at Torrey Pines Park Historic Structures Report, San Diego, CA.:
Lead Historian (IS Architecture)
Created historic context, performed site assessment, documented present conditions, and developed treatment plan for National Register site for California State Parks. Coordinated and oversaw sub-consultants' work (i.e., engineers, architect, spectrographers, archaeologist, paint-chip analyst). Organized meetings and was lead contact between State Parks and project staff. Building is a 1925 vernacular Pueblo Revival Building, formerly the headquarters for California State Parks southern office. (2005)

Half Round Building HABS Report, Escondido, CA.:
Lead Historian (IS Architecture)
HABS Level 1 documentation and research for City of Escondido on a Quonsett hut type building which predated World War II. Responsible for historic context, current conditions analysis, oral interviews, and overseeing project architect, engineer, and photographers work. Organized meetings and lead contact between city and project staff. Left firm before completion of the project. (2005)

Historic Reconnaissance and Intensive Survey, La Jolla, CA.:
Historian (La Jolla Historical Society)
Responsible for review, quality control, and redrafting of Context Statement and Historic Districts for City of San Diego. Reviewed survey data, performed archival research, and drafted new historic districts. Led workshop between city staff, public, client, and project team. (2005)

New School of Architecture and Design, San Diego, CA.:
Adjunct Instructor for "World Architectural History"

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Professor for class of 55 students (graduate and undergraduate) - curriculum examined Prehistoric through Romanesque architectural history. (2005)

Warners Ranch Adobe Farmhouse and Barn Historical Structures Report and HABS Report, Warner Springs, CA.:
Lead Historian (IS Architecture)
Coordinated the production of the Historic Structures Report of National Register site. Responsible for drafting historic context, current conditions analysis, and co-authored treatment plan with preservation architect. Oversaw sub-consultants' work (i.e., contractor, engineers, architect, spectrographers, archaeologist, paint-chip analyst). Lead contact between client (Vista Irrigation District) and staff. (2004)

Casa de Bandini and Casa de Pico Historic Structures Report, San Diego, CA.:
Project Historian (IS Architecture)
Co-authored the Historic Structures Report of two National Register Sites for California State Parks. Report included historic context, current condition analysis, and treatment plan for buildings' adaptive use. Responsible for deliverables to client, and the coordination of sub-consultants' work (i.e., engineers, architect, spectrographers, archaeologist, paint-chip analyst). (2004)

City of Cape May General Plan Update, Cape May, NJ.:
Field Associate (Vital Computer Resources)
Responsible for 400-resource historic reconnaissance survey for City of Cape May Tax Assessor Office and Planning Department. Created measured field sketches, collected lot information, interior/exterior elements, construction details, alterations, integrity, and identified if contributor to potential district. Information was used to update existing Residential-Building Records, PDO information, future EIR content, future Land Use and Zoning Ordinance amendments. Cape May is a National Historic Landmark City and has high concentrations of Queen Anne and Stick Style buildings. (2003)

Community Involvement

Traffic and Parking Commission, City of Del Mar, Del Mar, CA.:
Appointed by the Del Mar City Council to serve four-year term as member of five person committee. Meet monthly and make recommendations to City Council based on public input and participation. Responsible for resolving traffic and parking issues; such as speeding, reoccurring regulatory violations, traffic congestion, parking problems, and application of new technologies. Work and meet regularly with the public, City Council, Parking Enforcement, the Fire Department, the San Diego Sheriff's officers, City Manager's office, Public Works and Planning Departments, and the City's Traffic Engineer. (July 2005-July 2009)

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Publications

"Village Memories: A Photo Essay on La Jolla's Past," *Journal of San Diego History*, Vol. # 54, Fall 2008

"Until Kingdom Come: The Design and Construction of La Jolla's Children's Pool," *Journal of San Diego History*, Vol. # 51, Winter/Spring, 2005

Chronology

2006-Present: URS Corporation, Senior Architectural Historian, San Diego, CA

2005-2006: New School of Architecture, Adjunct Instructor, San Diego, CA

2004-2005: IS Architecture, Architectural Historian, La Jolla, CA

2003-2004: La Jolla Historical Society, Archivist and Preservation Specialist, La Jolla, CA

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Joel Levanetz, M.A.

Architectural Historian

Areas of Expertise

Secretary of Interior Professional Qualification Architectural History and History (36 CFR Part 61)
19th – 20th Century Architecture
Archival Research
Historic Preservation Treatments and Law
Urban History

Years of Experience

With URS: 2 Years
With Other Firms: 2 Years

Education

MA, Public History, University of San Diego, 2008
BA, Anthropology, University of Wisconsin-Madison, 2006

Overview

Joel Levanetz is a Secretary of Interior Professional Qualified Architectural Historian and Historian for the URS San Diego office. Since 2008, Mr. Levanetz has been active in the field of architectural history. In this discipline, Mr. Levanetz has applied his knowledge and ability to a range of projects, including historic structures reports, historic resources assessments, Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) documentation, and DPR 523 series form preparation.

Mr. Levanetz possesses a detailed understanding of relevant regulations and ordinances that affect historic properties, such as Sections 106 and 110 of National Historic Preservation Act (NHPA), the National Environmental Protection Act (NEPA), the California Environmental Quality Act (CEQA), and the Secretary of Interior Standards for the Treatment of Historic Properties. He has applied this understanding to a breadth of historic assessments and determinations of eligibility across a range of administration levels including local, state, and National Register of Historic Places (NRHP). Among the agencies served by Mr. Levanetz are the Federal Emergency Management Agency (FEMA), Bureau of Land Management (BLM), California Energy Commission (CEC), Federal Communications Commission (FCC), Federal Aviation Administration (FAA), Department of Housing and Urban Development (HUD), California Department of Transportation (Caltrans), as well as countless local agencies and private clients.

Project Experience

Transportation

California High Speed Rail Authority, High Speed Train, Palmdale to Los Angeles Union Station Segment EIR/EIS and Technical Report – Los Angeles County, CA., Architectural Historian: Survey lead and co-author of the Historic Architecture Survey Report, Historic Properties Survey Report, and the historic architecture section of the EIR/EIS for the Palmdale to Los Angeles Union Station segment of the California High Speed Train project pursuant to CEQA and NHPA. Delineated area of potential effect (APE), conducted archival research, oversaw task management and led execution of survey spanning from Palmdale to downtown Los Angeles. (Ongoing)

BNSF Mojave Subdivision, Tehachapi Pass, Second Main Track-Bena to Marcel – Kern County, CA., Architectural Historian: Conducted a desktop evaluation of properties in the Project Area Limits (PAL) associated with events in local and state history such as the National Register of Historic Places-listed Nuestra Señora Reina de La Paz, associated with labor rights leader Cesar Chavez. Following Caltrans Division of Rail standards and comments, drafted the Historical

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Resources Evaluation Report (HRER), Archaeological Survey Report (ASR), and Historical Resources Compliance Report (HRCR). (2011)

Caltrans and Alameda Corridor Transportation Authority, HAER, Level II, for the Commodore Schuyler F. Heim Bridge, Schuyler Heim Bridge Replacement and SR-47 Expansion Project – Long Beach, CA., Architectural Historian:
Peer-reviewed HAER Level II photo and written documentation of Heim Bridge within the Port of Los-Angeles-Long Beach to fulfill NHRA Section 106 mitigation requirements. Ensured project met all Standards and Guidelines of HAER Level II for submission to the Library of Congress. Project was nominated for a URS Pyramid Award for Technical Excellence. (2011)

Caltrans and City of Santa Ana, Bristol Street, Phase 3 and Phase 4 – Santa Ana, CA., Architectural Historian:
Performed Section 106 Compliance Study for the City of Santa Ana Public Works Agency for the roadway widening at Bristol Street from Civic Center Drive and Seventeenth Street and from Warner Avenue to Saint Andrew Place. Assisted in the preparation of HPSR, HRER, and DPR 523 series forms for project per Caltrans/FHWA guidelines. Tasks included APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. (2011)

Caltrans and SANDAG, Lenwood Road – Barstow, CA., Architectural Historian:
Performed Section 106 Compliance Study for the San Bernardino Associated Governments for the roadway and railroad track grade separation at the Lenwood Road rail crossing. Updated HPSR, ASR, HRER, and DPR 523 series forms for project per Caltrans/FHWA guidelines. Performed determination of eligibility, analysis of integrity, and identification of effect on residential and commercial properties associated with Historic Route 66 in San Bernardino County. (2011)

Caltrans and Riverside County Transportation Department, Clay Street Grade Separation Project – County of Riverside, CA., Architectural Historian:
Conducted Section 106 Compliance Study for the Riverside County Transportation Department for the roadway and railroad track grade separation at the Clay Street rail crossing. Prepared HPSR and ASR for project per Caltrans/FHWA guidelines, requested records search information, tabulated and evaluated the records search results, conducted historic research, evaluated potential impacts to previously-recorded properties and completed DPR 523 forms. (2011)

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Caltrans and Los Angeles County Metropolitan Transportation Authority, Interstate 710 Corridor Project between Ocean Boulevard and the State Route 60 Interchange – Los Angeles County, CA., Architectural Historian:
Provided secondary critical review of the Historic Property Survey Report (HPSR) and Historical Resources Evaluation Report (HRER) prepared by Galvin Preservation Associates in compliance with Section 106 of the NHPA and Caltrans's Section 106 PA. The review focused on the content of the work product including compliance with applicable codes and standards and consistency with requirements in the proposal and Project Execution Plan (PXP). A total of 172 historic-period (45 years of age or older) resources were documented and evaluated in the project APE. (2011)

Caltrans, I-405 Widening – Los Angeles and Orange Counties, CA., Architectural Historian:
Assisted the cultural resources task lead with preliminary project planning for the I-405 Widening project in Lose Angeles and Orange Counties. Reviewed records search results and records search results maps, requested NAHC Sacred Lands File search, and assisted with contacting Native American tribal representatives. (2010)

Orange County Transit Authority and Cities of Santa Ana and Garden Grove, Santa Ana and Garden Grove Fixed Guideway EIS/EIR – Santa Ana and Garden Grove, California, USA., Architectural Historian:
Served as archival researcher as well as technical report and EIS/EIR section co-author for an approximately four mile proposed streetcar line in the City of Santa Ana. Completed determination of eligibility, analysis of integrity, and identification of effect for approximately 100 resources in accordance with the NHPA, NEPA, CEQA, and Federal Transit Administration guidelines. Project requirements included APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, field map and field form creation, and impact analysis. Architectural history resources recorded ranged from late nineteenth to late-1970s commercial, residential, institutional, and industrial properties, including an NRHP-eligible steel-truss bridge and two NRHP-listed historic districts as well as numerous locally landmarked and individually NRHP-eligible buildings. (2011)

Los Angeles County Metropolitan Transportation Authority (Metro), Westside Subway Extension, EIR and Historic Survey Report–Los Angeles, CA., Architectural Historian:
Assisted with architectural history tasks for the Los Angeles Metro Westside Extension project. Tasks included archival research, reviewing the historic context, evaluating the project APE for eligibility, identifying and evaluating NRHP-listed, -eligible, or contributing resources, considering project effects by alternative, proposing mitigation measures, and reviewing the technical report and EIR section. (2010)

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Energy

BrightSource Energy, Siberia and Sonoran West Projects Application for Certification – San Bernardino and Riverside Counties, CA. Architectural Historian:
Serving as the cultural resources field data manager, archival researcher, and technical contributor for large solar projects. Co-authoring the architectural history portion of cultural resources section of the Application for Certification, which will evaluate the direct and indirect impacts of the project to cultural resources. Will complete determination of eligibility, analysis of integrity, and identification of effect for resources in accordance with the NHPA, NEPA, CEQA, and California Energy Commission guidelines. (Ongoing)

BrightSource Energy, Rio Mesa Solar Energy Project Application for Certification – Riverside County, CA., Architectural Historian:
Served as the field surveyor and archival researcher for an approximately 8,000 acre solar project in the Colorado Desert of California. Co-authored the architectural history portion of cultural resources section of the Application for Certification, which evaluated the direct and indirect impacts of the project to cultural resources. Completed determination of eligibility, analysis of integrity, and identification of effect for 30 resources in accordance with the NHPA, NEPA, CEQA, and California Energy Commission guidelines. (2011-2012)

Chevron Central Reliability Center and Central Tool Room/I&E Shops Project Cultural Resources Technical Memorandum – El Segundo, CA., Architectural Historian:
Prepared a preliminary CEQA Compliance Study using the criteria outlined in Section 5024.1 of the California Public Resources Code (CPRC) for the removal of seven historic-period structures and construction of modern facilities at the refinery. Drafted a technical memo for Chevron to identify historic properties and determine possible effects of the project on these properties. Work included APE delineation, analyzing records search results, historic context and site history development, identification and evaluation, and Native American consultation. (2012)

Pio Pico Energy Center, LLC, Pio Pico Energy Center, Otay Mesa – San Diego County, CA. Architectural Historian:
Performed a historic architecture assessment for alterations to plans for a proposed gas plant in San Diego County in accordance with CEQA and CEC guidelines. Conducted archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, and updated the architectural history portion of the cultural resources technical report for submission to the CEC. (2011)

Bethel Energy, L.L.C., Bethel 10 – Imperial County, CA., Architectural Historian:
Performed an intensive architectural history field survey of the project's APE in accordance with CEQA and the CEC guidelines for a proposed gas plant in Chula Vista. Conducted archival research and evaluated the

project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA. Recorded several resources on the appropriate DPR 523 forms, including an international border marker and the All-American Canal. Drafted the architectural history portion of the cultural resources technical report for submission to the CEC. (2010)

Infrastructure Development

Verizon Wireless Telecommunication Projects, Section 106 Compliance – CA and NV., Architectural Historian:
Performed over 55 NRHP compliance studies for the Federal Communications Commission on behalf of Verizon Wireless for new tower support structures and collocated towers throughout California and Nevada. Completed determinations of eligibility, analyses of integrity, and identifications of effect. Resources identified and evaluated have dated from the late nineteenth century to the recent past, were located in various settings (dense urban, suburban, rural, and industrial), and have included numerous property types (residential and commercial buildings, churches, educational institutions, hospitals, water towers, windmills, farm and ranch landscapes, an oil refinery, and irrigation canals). (Ongoing)

Centre City Development Corporation, Rehabilitation and Construction of New Urban Plaza at Horton Plaza – San Diego, CA., Architectural Historian:
Served as field survey and research lead for a unique subsurface investigation in downtown San Diego. Authored the Historic Architecture Monitoring Technical Report and attachments for the San Diego Register of Historical Resources-listed Horton Plaza. Drafted content and format consistent with the Project Execution Plan (PXP), compliant with applicable codes and standards, and following technical project standards. (2012)

San Francisco Public Utilities Commission, Peninsular Pipelines Seismic Upgrade – City and County of San Francisco, CA., Architectural Historian:
Coordinated and led field survey for improvements to water utilities across northern San Mateo County. Led archival research and drafted the Historic Architecture Survey Report (HASR). Completed determination of eligibility, analysis of integrity, and identification of effect for approximately 30 resources in accordance with the NHPA, NEPA, and CEQA. Project requirements included APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, field map creation, and impact analysis. Architectural history resources recorded included a Dr. Alister Mackenzie-designed, NRHP-eligible 1929 golf course, portions of three pipelines dating to the early 1900s, and three mid-century residences. (2011-2012)

North Hollywood Park Field House Demolition Project Cultural Resources Investigations – Los Angeles County, CA.< Architectural Historian:
Prepared a preliminary CEQA Compliance Study using the criteria outlined in Section 5024.1 of the California Public Resources Code

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(CPRC) for the removal of a Spanish-Colonial Revival style field house constructed in the 1930s. Drafted a technical memo for the City of Los Angeles Department of Recreation and Parks to identify historic properties and determine possible effects of the project on these properties. Work included APE delineation, archival research, analyzing records search results, historic context and site history development, identification and evaluation, and Native American consultation. (2011)

FAA, San Francisco International Airport Runway Safety Area Program – San Francisco, CA., Architectural Historian:
Assisted an assessment of the historic-age runways, taxiways, canal, and approach-lighting trestles within the project APE for runway safety area improvements required by the FAA at the San Francisco International Airport. Airport facilities were evaluated pursuant to Section 106 of the NHPA, NEPA, and CEQA. Assessed effects and impacts from the proposed undertaking; completed DPR 523 series forms; and co-authored the Historic Architecture Survey Report. (2011)

Government & Military

FEMA, Dant Wash Drain Diversion – Reno, NV., Architectural Historian:
Performed Section 106 Compliance Study for FEMA for a flood damage mitigation assistance project involving the replacement of a culvert and historic-age retaining walls. Performed determination of eligibility, analysis of integrity, and identification of effect. Drafted findings memo. (2012)

FEMA, East Bay Hills Hazardous Fire Risk Reduction Program – Alameda County, CA., Architectural Historian:
Prepared a preliminary Section 106 Compliance Study for FEMA for a fire damage mitigation assistance project involving the removal of vegetation from potentially hazardous areas throughout the East Bay Region. Drafted an EIS section for FEMA to evaluate and record historic properties as well as determine possible effects of the project on potentially historic properties. Tasks included APE delineation, identification and evaluation, and Native American consultation. (2010)

FEMA, Northwest Reno Fire Mitigation Program – Washoe County, NV., Architectural Historian:
Performed a Section 106 Compliance Study for FEMA for a wildfire damage mitigation assistance project involving fuel removal from open spaces in disparate residential areas. Executed extensive field survey which included both surveying the built environment and assisting the survey of over 400 acres for archeological resources. Performed determination of eligibility, analysis of integrity for individual properties and potential cultural landscapes, and identification of effect. Drafted the finding of no historic properties. (2012)

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FEMA, Caliente Flood Mitigation Assistance, Lincoln County, NV., Architectural Historian:
Performed a Section 106 Compliance Study for FEMA for a flood mitigation assistance project involving the elevations of early twentieth century residences in Lincoln County. Performed determination of eligibility, analysis of integrity, and identification of effect. (2012)

FEMA, Carson Senior High School Seismic Retrofit – Carson, CA., Architectural Historian:
Prepared a preliminary Section 106 Compliance Study for FEMA for a seismic retrofit project involving the seismic upgrade of a mid-century high school gymnasium design by a recognized, Los Angeles-based architectural firm. Authored a memo for FEMA recommending a project approach, including APE delineation, identification and evaluation methods, and specific application of the Secretary of the Interior Standards for Rehabilitation for the historic property. (2011)

FEMA, San Anselmo City Hall – San Anselmo, CA., Architectural Historian:
Performed a post-mortem Section 106 Compliance Study for FEMA for a flood damage mitigation assistance project involving the repair of the Town Hall Complex, an early 19th century building which houses the Public Library, Fire Station and Town Hall Offices. Executed determination of eligibility, analysis of integrity, and identification of effect. Drafted the finding of no historic properties. (2011)

FEMA, North Tahoe Roof Replacement – North Tahoe Fire Protection District, CA., Architectural Historian:
Co-authored a memo for FEMA recommending a project approach, including APE delineation, identification and evaluation methods, Native American consultation and involvement, and specific application of the Secretary of the Interior Standards for Rehabilitation for any identified historic properties. (2010)

FEMA, Fairfax Pavilion – Fairfax, CA., Architectural Historian:
Drafted a Section 106 Compliance Study for FEMA under an earthquake damage mitigation assistance project for a memorial pavilion in Fairfax. Performed determination of eligibility, analysis of integrity, and identification of effect. Drafted findings memo. (2012)

National Oceanic and Atmospheric Administration (NOAA), Integrated Water Resources Science and Services (IWRSS), University of Alabama Section 106 Compliance – Tuscaloosa, AL., Architectural Historian:
Created field methodology and photo guidance for survey conducted by qualified university staff. Completed evaluation of eligibility and effect pursuant to Section 106 of the NHPA for buildings associated with the mid-nineteenth century Bryce Hospital NRHP-eligible historic district. Through consultation with interested parties and Alabama SHPO, determined appropriate level of recordation and drafted modified HABS report approved by SHPO. (2011)

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United States Postal Service (USPS), Historic Context Study 1940-1971 – Nationwide, Architectural Historian:
Conducted interviews with key individuals for historic context theme and research methods development. Distributed information to project team members identifying potential research repositories for various historic-period post offices throughout the Western Region. (2012)

US Navy, Marine Corps Air Station Chocolate Mountain Aerial Gunnery Range (MCAS CMAGR) Land Withdrawal Renewal – Riverside and Imperial Counties, CA., Architectural Historian:.
Assisted with research to identify potential cultural resources in the project APE for the cultural resources section of the Legislative Environmental Impact Statement (LEIS). (2011)

United States Marine Corps, Marine Corps Base (MCB) Camp Pendleton, Area Development Plan, Museum District Plan – County of San Diego, California, Architectural Historian:
Contributed to the Museum District Plan by reviewing primary and secondary sources, developing a historic context, and reviewing data forms for the district's historic-period buildings and structures. Assisted in the identification of potential future projects and addressed the specific needs of the Marine Corps Mechanized Museum, with recommendations for improvement and repair based on the Secretary of the Interior's Standards for Rehabilitation. (2012)

Projects performed at another Firm

Quieter Home Program, San Diego, CA., Historian (Heritage Architecture and Planning):
Undertook an extensive architectural historic field survey for the San Diego Airport Authority. Determined the eligibility of hundreds of residences in the project's extensive Area of Potential Effect. Conducted a large-scale historical investigation for each of the subject properties to ensure that exterior treatments applied to the homes beneath the flight path did not violate local, state or federal regulations. (2008-2010)

Carl G. Bray House, Indian Wells, CA., Historian (Heritage Architecture and Planning):
Compiled historical data from various repositories, drafted historical context and executed a historical evaluation for the home and gallery of artist Carl G. Bray for the Carl Bray House Historic American Buildings Survey (HABS). This was implemented by authorities in Indian Wells as a measure to mitigate the demolition of the structures. (2010)

Historic Structures Report, Bonsall Schoolhouse, County of San Diego, CA., Historian (Heritage Architecture and Planning):
Completed a historic structures report for the late 19th century one-room schoolhouse located on the current school grounds. This project required field work, archival research, historical context development, technical writing and integrity analysis. (2009)

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Lanterman Developmental Center, Pomona, CA., Historian (Heritage Architecture and Planning):
Led a team of architects to record and analyze the 120 structures that constitute the Lanterman campus for the California Department of General Services. Drafted a comprehensive Historic Resources Assessment Report that included a historical overview, an evaluation of the integrity of each building and information regarding potential historic districts. Each structure was identified and evaluated for their significance based upon the criteria set forth by the local, state and national registers. (2009)

Professional Societies/Affiliates

National Trust for Historic Preservation
California Preservation Foundation
San Diego History Center
Phi Alpha Theta, History Honor Society
Phi Kappa Phi, Honor Society

Awards

Nomination, URS Pyramid Award for Technical Excellence, 2011. Historic American Engineering Record for the Commodore Schuyler F. Heim Bridge, Schuyler Heim Bridge Replacement & SR-47 Expressway

Publications

James Wood Coffroth, The Journal of San Diego History, 2009
A Compromised Nation: Redefining the U.S.-Mexico Border, The Journal of San Diego History, 2008
Architectural Feature, The Times, San Diego Historical Society, 2007-2008
Belle Baranceanu: The Artist at Work, Resource Library, Traditional Fine Arts Organization, 2007
Lydia Knapp Horton, The Times, San Diego Historical Society, 2007

Lectures and Public Presentations

Arts, Crafts and Architecture: The American Craftsman. Continually presented to a variety of interested parties at the George White Marston House, 2007-2008
Topics on Early San Diego History. Presentations given to participants of the Conference on Early San Diego Regional History, 2007-2008
Curator's Talk. Presentations given to students of the "School in the Park" Program, 2007-2008
These Days. Live interview with KPBS host Tom Fudge regarding the history of enduring San Diego's summer heat, 2007

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Continuing Education

New School of Architecture & Design Lecture Series: 2009, 2010, 2011, 2012
Published "James Wood Coffroth, (1872-1943): West Coast Promoter," 2009

Chronology

URS Corporation, Architectural Historian, San Diego/La Jolla, California, 2010-Present
New School of Architecture & Design, San Diego, California, 2008-Present
Heritage Architecture and Planning, Historian, San Diego, California, 2008-2010
San Diego History Center (formerly San Diego Historical Society), Curator, San Diego, California, 2006-2008
Archeology Field Technician, ASM Affiliates, 2005-2006

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Brandt-Hawley Law Group

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April 8, 2013

Christopher Cannon, Director of Environmental Management
Los Angeles Harbor Department
425 South Paloes Verdes Street
San Pedro, CA 90731

via email ceqacomments@portla.org

Subject: Comments on Program EIR
Port Master Plan Update

Dear Director Cannon:

This office represents the Los Angeles Conservancy regarding the Port Master Plan Update and EIR. Our statewide practice focuses on citizen enforcement of the California Environmental Quality Act. The many CEQA cases handled by this office over the last thirty years include published appellate decisions in *Friends of Sierra Madre v. City of Sierra Madre, Flanders Foundation v. City of Carmel, Lincoln Place Tenants Association v. City of Los Angeles, The Pocket Protectors v. City of Sacramento, Preservation Action Council v. City of San Jose, Friends of the Santa Clara River v. Castaic Lake Water Agency, Architectural Heritage Association v. County of Monterey, League for Protection v. City of Oakland, Galante Vineyards v. Monterey Peninsula Water Management District, Stanislaus Natural Heritage Project v. County of Stanislaus,* and *Sierra Club v. County of Sonoma.* BH-1

Consistent with the comments presented by the Conservancy and National Trust for Historic Preservation, I note that CEQA requires both indirect and direct impacts of the Master Plan Update to be addressed to the extent that they are known or reasonably foreseeable at this programmatic level. The uses being described within the Master Plan parameters foretell significant adverse impacts on listed or potentially-eligible historic resources. These uses conflict with mandates of the Coastal Act and CEQA that require avoidance of such impacts when feasible. (*E.g.*, Pub. Resources Code, §§ 21002, 21080, 21084.1, 30708.)

BH-2 The Master Plan Update Program EIR should expand its analysis of a range of reasonable alternatives to include uses compatible with the feasible adaptive reuse of designated or historic resources. Impacts on such resources should be considered and mitigated. The EIR should be revised and recirculated.

Thank you for your attention to these comments.

Sincerely,

Susan Brandt-Hawley

Comment Letter BH: Brandt-Hawley Law Group

Response to Comment BH-1:

This comment references comments on the PEIR and PMPU provided by the Los Angeles Conservancy and National Trust for Historic Preservation and notes that CEQA requires the PEIR to address both direct and indirect impacts of the proposed Program on historical resources to the extent they are known and avoid impacts where feasible. The LAHD has no current plans to demolish any of the buildings in the Fish Harbor area of Terminal Island or specifically at the Southwest Marine facility, and would not contemplate such an action unless there was a proposed development project requiring their removal. In such a case, project-level cultural resource evaluations would be conducted in accordance with CEQA and the *Built Environment Historic, Architectural, and Cultural Resource Policy*, as described in Response to Comment LAC-3, to ensure that historic resources are adequately considered. The PMPU simply indicates permitted future land uses, and that the proposed land uses would not preclude adaptive reuse or other means of preserving historic resources on Terminal Island (note that adaptive reuse is only one means of avoiding significant impacts on historic resources). Accordingly, there are no other “reasonably foreseeable future activities” that should be considered in the PEIR, and the PEIR complies with CEQA.

Response to Comment BH-2:

This comment states that the PEIR should expand the analysis of alternatives to include adaptive reuse of designated or historical resources. The alternatives considered in the PEIR, and land use changes described in the PMPU, do not preclude adaptive reuse of historical buildings. Instead, the range of land uses, along with the LAHD’s established policies and the mitigation measures imposed through the PEIR, afford adequate protection for historic resources in the Port. Specifically, the LAHD has adopted its *Built Environment Historic, Architectural, and Cultural Resource Policy* that specifies the mechanisms that will be used to ensure the preservation and adaptive use, where feasible, of cultural resources. Accordingly, the land use designations in the PMPU do not conflict with the goal of protecting historic resources, and the alternatives considered in the PEIR already incorporate the preservation and reuse of historical properties. As such, expanding the PEIR to include additional alternatives specifically focused on adaptive reuse of historical properties would be unnecessary because this concept is already addressed in the existing alternatives. Correspondingly, the LAHD disagrees with the suggestion that the PEIR should be recirculated.

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