Working at the Richmond Field Station

Presented by the UC Berkeley Office of Environment, Health & Safety.

This awareness training is required for all persons who work at the Richmond Field Station, including faculty, staff, students and tenants who may work in or around the campus grounds or marsh.

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Learning Objectives

By the end of this presentation you will:

- Understand the history of the Richmond Field Station,
- Know about historic industrial contamination being removed from the property,
- Know how to prevent exposure to those contaminants and,
- Know who to contact for more information.

At the end of the presentation there will be a brief quiz

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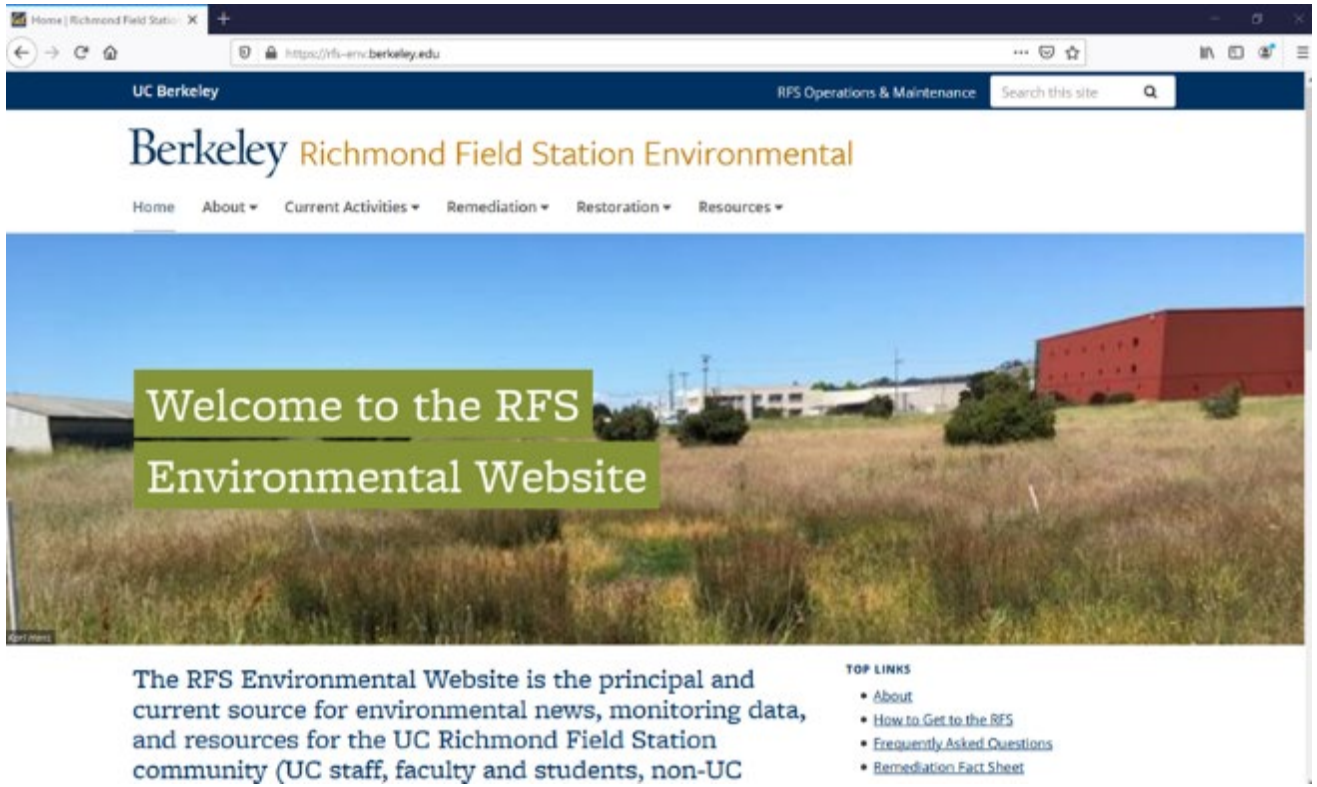
RFS Environmental Website

Serves as the principal and current source for environmental news on the Richmond Field Station

Visit **https://rfs-env.berkeley.edu** for information and regular activity updates



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Richmond Field Station (RFS)

- An academic teaching and research facility
- Located 6 miles northwest of the UC Berkeley Central Campus
- On the shores of San Francisco Bay
- Primarily used for large scale engineering research
- The University purchased the property in 1950

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Natural Features

The 169-acre property consists of about 100 acres of uplands with the remainder being marsh or bay lands

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Current Uses: Research

- More than 500,000 assignable square feet of research space
- One of the world's largest earthquake shaking tables
- Sophisticated test facilities for advanced transportation research
- 7.7 million volume Northern Regional Library Facility
- Regional laboratory for the U.S. Environmental Protection Agency, and other tenants

Earthquake Engineering Research Center Shaker Table

Current Uses: Open Space

- Coastal Terrace Prairie: the site contains one of the largest and best preserved remaining native coastal grasslands areas adjacent to the bay
- Eucalyptus Stands: provide a home for wintering monarch butterflies and nesting raptors
- Western Stege Marsh: The bay marsh and mudflats provide additional habitat for a variety of plants and animals, including the federally endangered Ridgway's rail

Ridgway's rail in Stege Marsh

Long Range Development Plan

- In May 2014 the UC Regents approved the Long Range Development Plan (LRDP) to establish a new research campus the RFS and the adjacent 24 acre Regatta property.
- The LRDP guides development of these properties through 2050
- This training only applies to the RFS portion of the proposed campus
- For more information on the LRDP and accompanying CEQA documentation visit: https://capitalstrategies.berkeley.edu/richmond-bay-campus-long-range-development-plan

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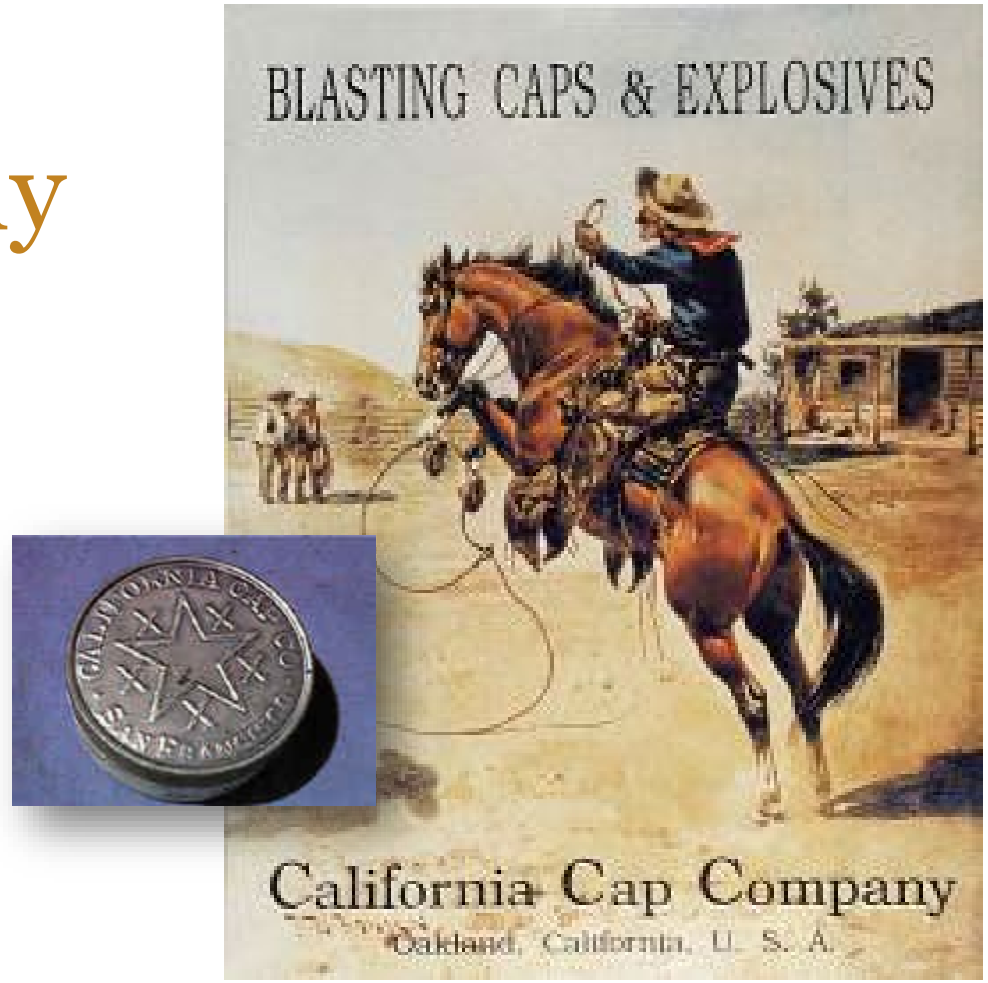
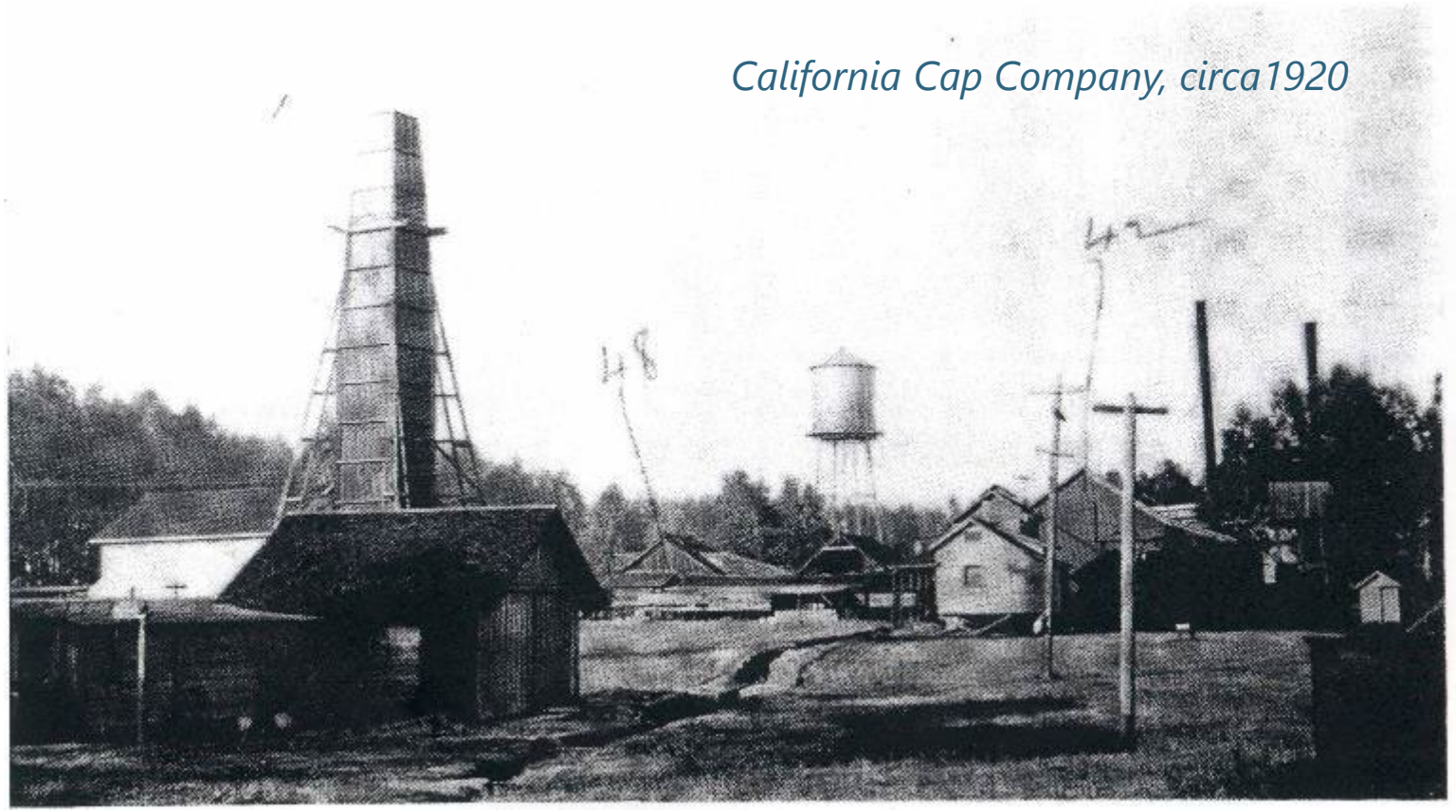
Site History

California Cap Company

- From 1870 to 1950 much of the Richmond Field Station property belonged to the California Cap Company
- The California Cap Company manufactured explosives on site until 1948
- Also manufacture on site, was mercury fulminate used in blasting cap production





California Cap Company, circa1920

Historic Contamination

Contaminants left on site by prior industries have been the focus of removal actions by the University since 1999. Contaminants left by the California Cap Company are being excavated and removed off-site for disposal

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Former Neighbors: Stauffer Chemical Company

- Located to the east of the Richmond Field Station
- Stauffer Chemical Company (later Zeneca Inc.) manufactured sulfuric acid and other industrial chemicals from 1897 to 1997
- These production activities created pyrite cinder waste in the marsh, which contains several heavy metal contaminants
- Large quantities of cinders were deposited in the marsh on the current Richmond Field Station and on the Zeneca property prior to 1950
- Pesticides were also manufactured at the Zeneca property until 1997 and have also caused contamination.

Stauffer Chemical, 1939

Western Stege Marsh Cleanup

Contaminated Stege Marsh prior to clean up

Cleanup Order

- In 1999, in response to an order from the San Francisco Regional Water Quality Control Board (RWQCB), UC Berkeley hired environmental consultants to investigate the extent of the contamination in Western Stege Marsh and the Richmond Field Station Uplands.
- The consultants found areas contaminated with mercury, as well as other heavy metals – including arsenic, lead, zinc, selenium, cadmium and copper – that are associated with pyrite cinder and blasting cap manufacturing wastes.
- They also discovered some polychlorinated biphenyls (PCBs) and confirmed that most of the contamination is the result of industrial operations dating back as far back as the late 1800s.

Western Stege Marsh Cleanup

Richmond Field Station cleanup work began in 2002 and additional cleanup work is planned.

This work is scheduled to occur mostly during the fall months to minimize affects to wildlife living in the Marsh.

Western Stege Marsh Cleanup

The Stege Marsh cleanup included excavation of contaminated soil, backfill with clean bay mud and soil, and grading.

Pyrite cinders at the Richmond Field Station were removed by Zeneca and taken back to their property for management.

Cleanup Oversight

All work is conducted with the approval and oversight of the California Environmental Protection Agency (CalEPA)

Air monitoring and other safety oversight is provided by staff from the Office of Environment, Health & Safety, and by experienced safety and environmental consultants.

Western Stege Marsh Restoration

The ongoing restoration of the Western Stege Marsh is a long term process and is managed and monitored by the UC Berkeley Office of Environment, Health & Safety.

March 2005, one year after Phase 2 excavation and back-fill

June 2006

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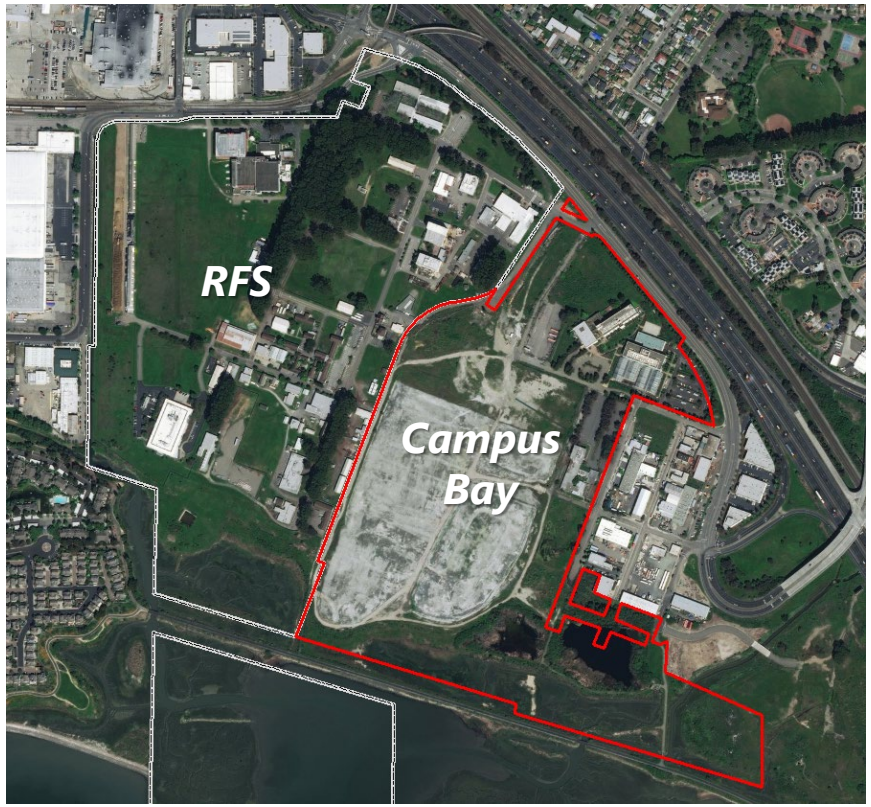
Neighbor Property: Campus Bay



- The neighboring Zeneca Property is now owned by HRP and is named “Campus Bay”
- Campus Bay is also being cleaned up under orders from the CalEPA Department of Toxic Substance Control (DTSC)
- Eastern Stege Marsh is also being restored as part of the cleanup effort
- Cleanup updates on the Campus Bay property can be found here

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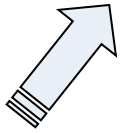
Health Concerns

Air Quality

- Air quality at the Richmond Field Station is generally very good due to the proximity to San Francisco Bay with on-shore prevailing winds transporting clean air from the Pacific Ocean.
- Remediation activities do have the potential to release pollutants or dust in nuisance levels.



typical sea breeze wind direction

Air Quality

Emissions from remediation activities are controlled through construction best management practices, such as using spray water to suppress dust and avoiding truck loading in windy conditions

Air monitoring data collected during remediation activities is available here: https://rfs-env.berkeley.edu/remediation/air-monitoring

Air Quality: The Uplands

- Under DTSC oversight, ongoing investigations continue in the Uplands regarding levels of heavy metals, PCBs, Pesticides, Volatile Organic Compounds (VOCs) and other contamination
- Air quality is regularly monitored during excavation activities to ensure levels remain within established limits.

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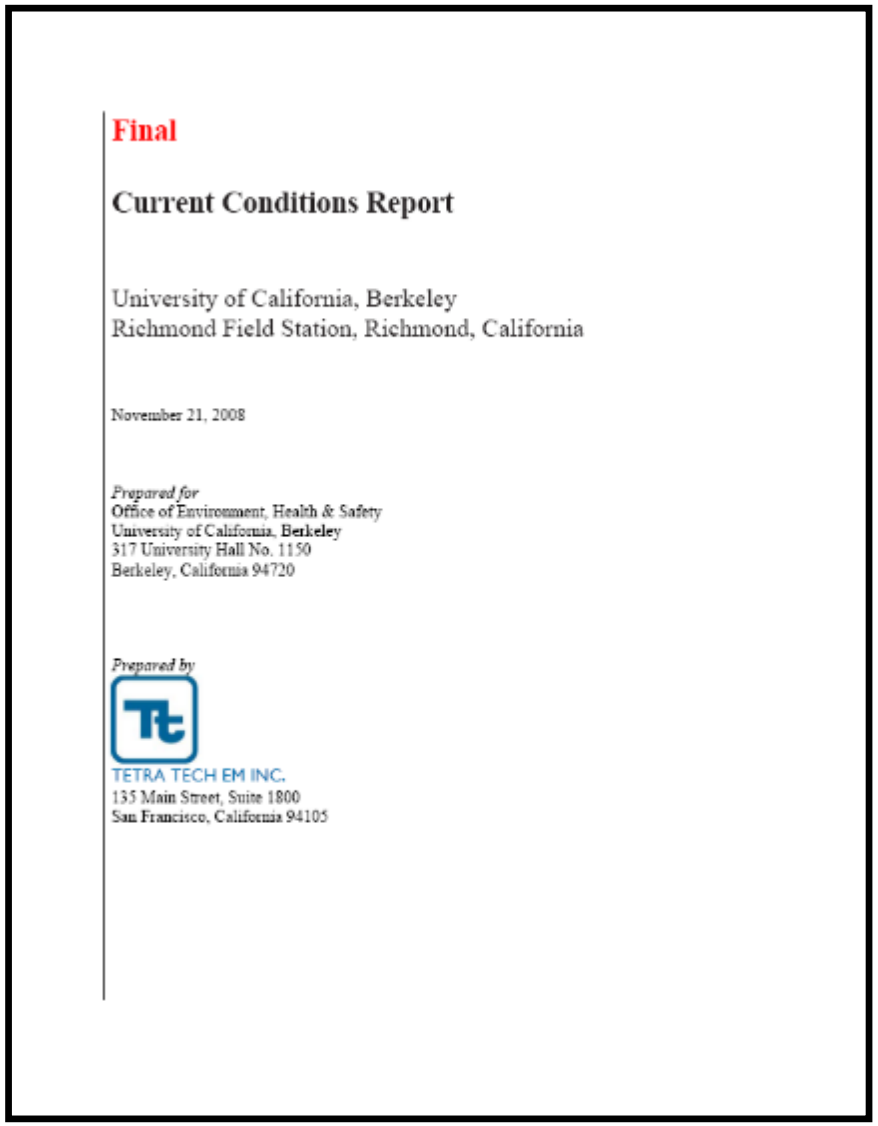
Current Conditions Report (2008)

- Presents detailed history of site investigations
- Provides data on current chemical concentrations at the RFS
- Report is used to ensure that work is performed safely and helped to develop plans for future remediation projects
- Current Conditions Report link



Final

Current Conditions Report

University of California, Berkeley
Richmond Field Station, Richmond, California

November 21, 2008

Prepared for
Office of Environment, Health & Safety
University of California, Berkeley
317 University Hall No. 1150
Berkeley, California 94720

Prepared by
TETRA TECH EM INC.
135 Main Street, Suite 1800
San Francisco, California 94105

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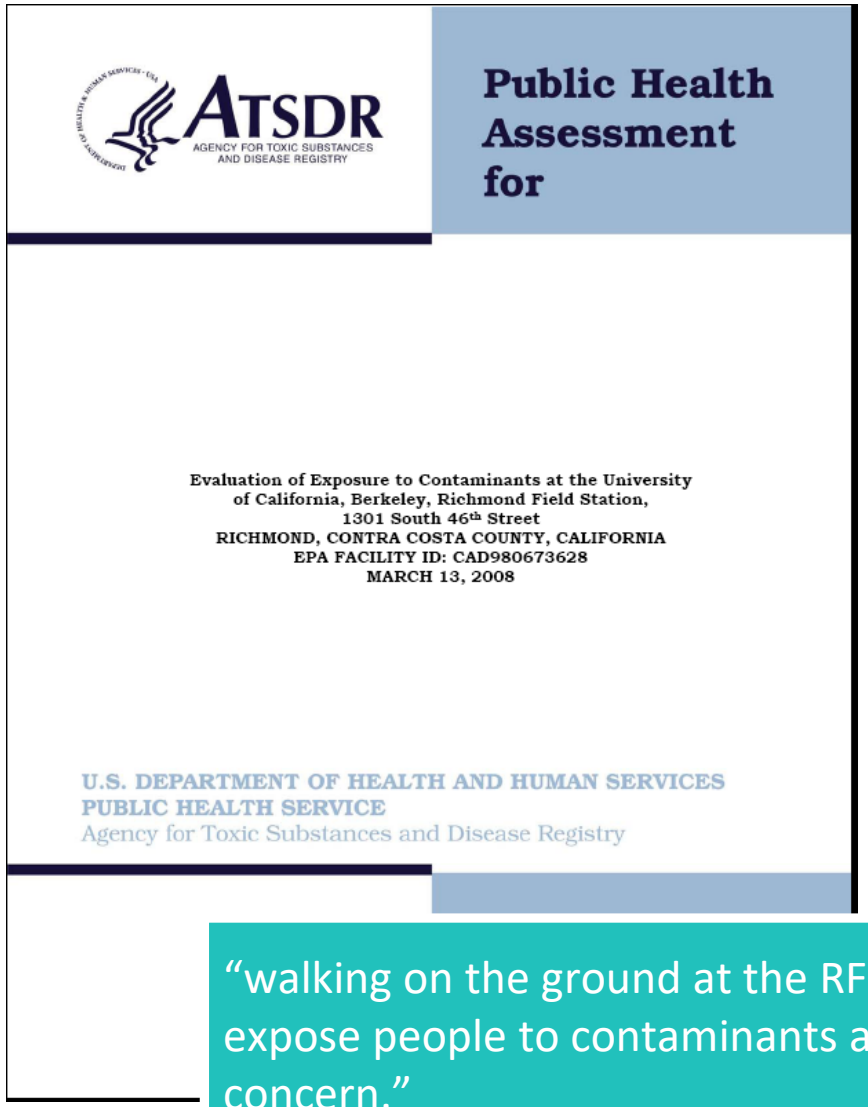
Public Health Assessment (2008)

- Contra Costa County Health Department Officials and the California Department of Public Health (CDPH) studied exposures and health effects arising from the Zeneca property and the Richmond Field Station.
- In 2008, CDPH and the federal Agency for Toxic Substances and Disease Registry released a Public Health Assessment for the Richmond Field Station
- The report recommends UC complete a variety of actions, many of which have already been done.



"walking on the ground at the RFS would not expose people to contaminants at levels of health concern."

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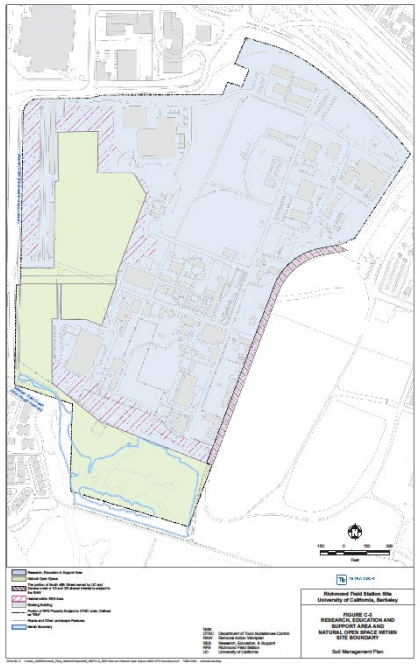
Public Health Assessment (PHA) Recommendations: Maps and Training

Workers at the Richmond Field Station are kept up-to-date and receive maps with the most recent information about contamination.

Workers that may be involved with the handling of contaminated soils or digging receive training in how to adequately protect themselves from potential exposure.



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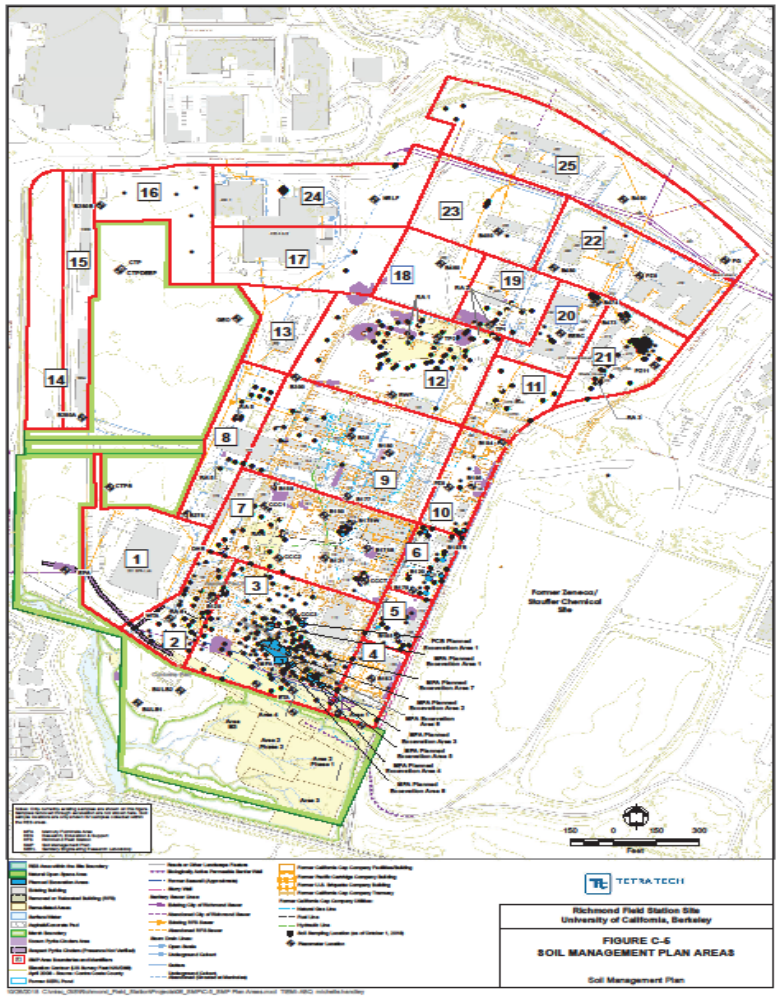
PHA Recommendations: Maps - The Uplands

- Most of the contamination affecting the Uplands area of the RFS has been removed
- The area of the former mercury fulminate production plant was remediated in January 2020, and the final report was published in May 2021. This area is in a fenced restricted access location west of Building 102.
- Miscellaneous areas of pyrite cinder are found in the Uplands where they were deposited by the California Cap Company to fill low lying areas or for weed control.
- These are mapped and available as “Figure 9” in the “Current Conditions Report.”



RFS Soil Management Plan Areas (from Soil Management Plan)

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PHA Recommendations—Training

- UC Berkeley offers and provides this General Awareness training to all personnel who work at the Richmond Field Station.
- Many of the Richmond Field Station maintenance employees are provided a 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) Class.
- Contact your supervisor or EH&S for information about HAZWOPER and other safety training that may be appropriate for your job activities.

Normal Activity

- The PHA concluded that outside of the fenced former mercury fulminate plant there is no evidence that working in Uplands areas is hazardous.
- During normal activities—such as working in offices and labs, walking and bicycling around the Richmond Field Station, driving to and from work—Richmond Field Station occupants and visitors are not at risk of health effects from contaminants.
- Air sampling completed as recommended by the PHA showed results typical of indoor air.

RFS Building 152, UC Berkeley Art Practice - Graduate Critique in Ricki Dwyer's studio, 2018

Soil Disturbance at the Richmond Field Station

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Approval

Due to the unique environmental conditions at the Richmond Field Station, prior approval is required for any activities that could:

- disturb sensitive habitats or endanger the Ridgway's Rail,
- involve emissions of material into the air or water,
- involve digging in upland soils or marsh sediments,
- planting of vegetation,
- collecting plants or animals

The endangered Ridgway's rail, a resident of RFS's Western Stege Marsh

A written request for facility use must be submitted to the RFS Manager John Mitchell: jtmitchell@berkeley.edu, (252) 263-2237.

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Pyrite Cinders

- When digging at the Richmond Field Station, you may run into pyrite cinders.
- Pyrite cinders are readily identified due to their purplish color, and are usually found as a finely divided sandy, sometimes gravelly, soil
- Pyrite and associated mixed sulfide minerals contain metals including iron, copper, zinc, lead, mercury and arsenic.

Best Management Practices: Pyrite Cinders

- In addition to training and approvals for disturbing soil, a pyrite cinder Best Management Practices document exists

> "If pyrite cinder fill or other potentially contaminated material is found, workers shall inform the UC Berkeley Office of Environment, Health and Safety (EH&S) prior to performing intrusive activities."

- EH&S will notify DTSC and will inspect and provide oversight on these activities.

Pyrite Cinder Management Strategy

Should other contaminants be suspected or discovered during excavation, work will cease until EH&S is contacted and can evaluate the situation.

Biology and Natural Resources

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Eating Richmond Field Station Fruits

Analysis of edible fruits at the RFS have not shown contamination

Because the RFS is under an investigative order it is ***prohibited*** to collect and eat any fruit or other plant material including wild berries, apples and prickly pear fruit.

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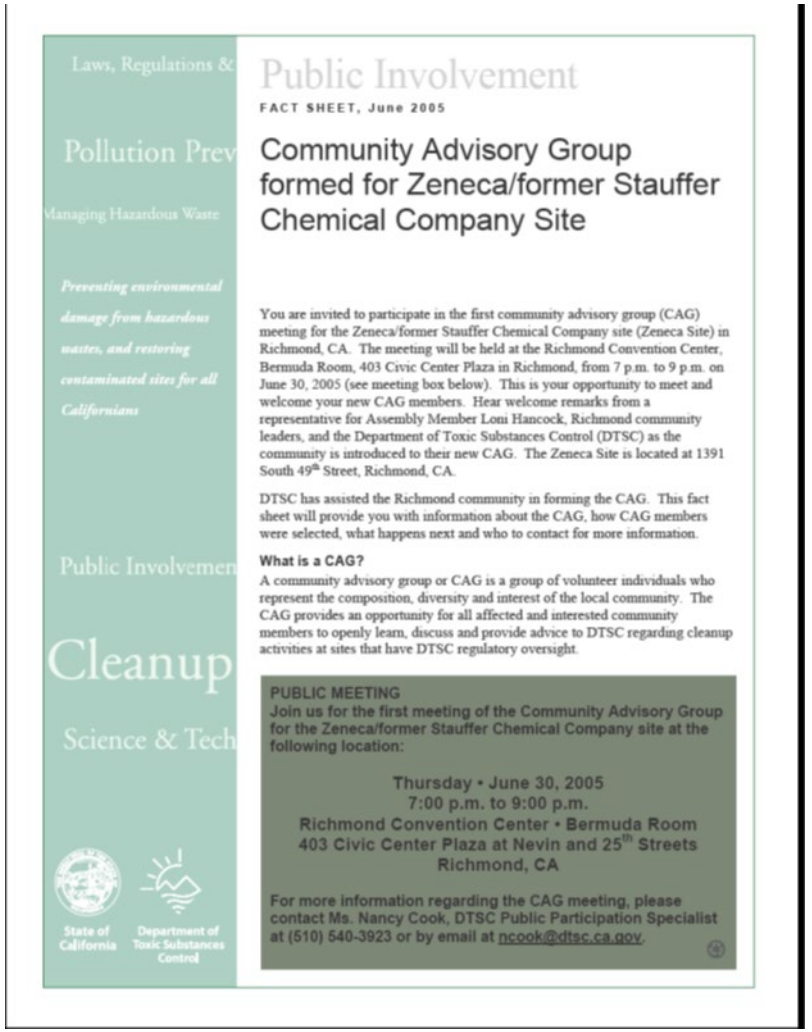
Ridgway's Rail Conservation

- The Ridgway's rail (*Rallis longirostris obsoletus*), is a federally listed endangered species known to inhabit Western Stege Marsh
- Once abundant in the Bay Area, the rail has suffered from hunting, predation by feral cats and rats, and from habitat loss
- Only around 1,000 rails remain
- It is against the law to disturb the Ridgway's rail and all marsh activities must be approved by EH&S
- To protect the rail, fostering feral cats at the RFS and allowing off leash dogs in the marsh area are prohibited

Summary

Community Advisory Group (CAG)

- A volunteer member Community Advisory Group (CAG)
- Created in June of 2005 to discuss and provide advice to DTSC regarding cleanup activities at the Richmond Field Station and other nearby properties
- Meets monthly on the 2nd Thursday at the Downtown Richmond Civic Center
- DTSC Public Participation at PublicParticipation@dtsc.ca.gov for information



Laws, Regulations &

Pollution Prev

Managing Hazardous Waste

Preventing environmental damage from hazardous wastes, and restoring contaminated sites for all Californians

Public Involvemen

Cleanup

Science & Tech

State of California

Department of Toxic Substances Control

Public Involvement

FACT SHEET, June 2005

Community Advisory Group formed for Zeneca/former Stauffer Chemical Company Site

You are invited to participate in the first community advisory group (CAG) meeting for the Zeneca/former Stauffer Chemical Company site (Zeneca Site) in Richmond, CA. The meeting will be held at the Richmond Convention Center, Bermuda Room, 403 Civic Center Plaza in Richmond, from 7 p.m. to 9 p.m. on June 30, 2005 (see meeting box below). This is your opportunity to meet and welcome your new CAG members. Hear welcome remarks from a representative for Assembly Member Loni Hancock, Richmond community leaders, and the Department of Toxic Substances Control (DTSC) as the community is introduced to their new CAG. The Zeneca Site is located at 1391 South 49th Street, Richmond, CA.

DTSC has assisted the Richmond community in forming the CAG. This fact sheet will provide you with information about the CAG, how CAG members were selected, what happens next and who to contact for more information.

What is a CAG?

A community advisory group or CAG is a group of volunteer individuals who represent the composition, diversity and interest of the local community. The CAG provides an opportunity for all affected and interested community members to openly learn, discuss and provide advice to DTSC regarding cleanup activities at sites that have DTSC regulatory oversight.

PUBLIC MEETING

Join us for the first meeting of the Community Advisory Group for the Zeneca/former Stauffer Chemical Company site at the following location:

Thursday • June 30, 2005
7:00 p.m. to 9:00 p.m.
Richmond Convention Center • Bermuda Room
403 Civic Center Plaza at Nevin and 25th Streets
Richmond, CA

For more information regarding the CAG meeting, please contact Ms. Nancy Cook, DTSC Public Participation Specialist at (510) 540-3923 or by email at ncook@dtsc.ca.gov.

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Airing Concerns

- Staff members at the Richmond Field Station are welcome to voice concerns or ask questions at any time regarding the cleanup and marsh restoration projects.
- Employees are encouraged to discuss matters of concern with their supervisors and managers or other University representatives.
  - No employee will be subject to reprisals for doing so.
  - If you are concerned about reprisals for expressing your concerns regarding these (510) 642-7053 issues, you can contact the UC Berkeley Office of Human Resources at or, if represented by a union, your union representative.

Key Take Aways

- It is safe to work at the RFS. However, it is important to follow established procedures if soil disturbance is planned and to avoid disturbing sensitive wildlife.
- The University continues to manage an ongoing cleanup process that began with the remediation and restoration of the West Stege Marsh and continues with ongoing investigations of the Uplands as well as indoor air monitoring and a pyrite cinder management strategy.
- County and State health officials have determined that the Field Station is safe for workers and visitors—only persons who disturb soil require special training and precautions.
- Other personnel who wish to do work that disturbs Richmond Field Station soil must first obtain approval through Richmond Field Station Operations by contacting John Mitchell at jtmitchell@berkeley.edu

Resources

- Richmond Field Station Environmental Website:
  https://rfs-env.berkeley.edu/
- Richmond Field Station UC Berkeley and Outside Contacts:
  https://rfs-env.berkeley.edu/about/contacts
- Richmond Field Station Regulatory Agencies:
  https://rfs-env.berkeley.edu/remediation/regulatory-agencies
- Richmond Southeast Shoreline Area (RSSA) Community Advisory Group (CAG):
  https://rfs-env.berkeley.edu/remediation/cag
- Campus Bay/Zeneca DTSC Project Status:
  https://rfs-env.berkeley.edu/current-activities/campus-bay-site

Contacts

Richmond Field Station Management

- John Mitchell, RFS Facilities Manager and Assistant Dean, College of Engineering, (252) 263-2237, jtmitchell@berkeley.edu

UC Berkeley Office of Environment, Health & Safety (510) 642-3073

- Environmental programs ep-ehs@berkeley.edu
- Alicia Bihler, Environmental Programs Manager, (510) 725-2528, abihler@berkeley.edu

Community Advisory Group

- DTSC Public Participation Specialist, PublicParticipation@dtsc.ca.gov

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Your assistance is requested…

This training is required for all persons who work at the Richmond Field Station. Please help by ensuring that your Field Station colleagues, including any new personnel, also complete it.

Thank you.

Quiz

- **Click on the following link to take the Working at the Richmond Field Station Awareness Training quiz: https://forms.gle/UWVPfNWmHXXRm8LK8**
- **Upon completion you will be emailed your answers. Please use this email for any RFS access requirements**