Santa Cruz County Sanitation District

D.A. Porath Facility Master Plan

February 2019

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THE COUNTY OF SANTA CRUZ
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PROJECT INTRODUCTION

The D.A. Porath Facility (the Facility) is located at 2750 Lode Street on the southeast end of Lode Street within the community of Live Oak in the unincorporated County of Santa Cruz. Primary access to the 7.4 acre property is through a single paved entrance at the end of Lode St. (See Figures 1 and 2). Existing facilities are set back in a mature grove of eucalyptus trees and surrounded by security fencing and a motorized entry gate. The northern portion of the eucalyptus grove is a sensitive habitat for overwintering monarch butterflies.

The Facility serves as the primary pumping station between the eastern County sewer system and the City of Santa Cruz Treatment Plant. It also serves as the home base for all Santa Cruz County Sanitation District maintenance activities. District staff is organized in the following operational groups:

- Facilities Group
- Line Group
- Pump Group
- Electrical Group
- Pretreatment Group
- Operators Group
- Tools Group

These groups currently occupy space in three buildings: the Pump Building, Services Building, and Storage Warehouse. The Pretreatment Supervisor also occupies a small portable office on site. District maintenance vehicles are housed at the Facility alongside a number of small storage containers and sheds.

Since its construction in 1975, the Facility has seen an increase in staffing levels from 20 to 50 people. Existing buildings can no longer accommodate the space needs and functional requirements of daily operations. The Services and Pump Station buildings are near the end of their useful life, building systems are in disrepair, and many employees are housed in cramped, unsafe work environments. Vehicle parking and maneuvering space is also deficient.

A Master Plan document prepared in 1999 addressed minor building and parking layout improvements with a 5 year outlook. It also documented the eucalyptus grove and butterfly habitat and provided recommendations for its maintenance and preservation, which have been largely implemented. Since that time, the Facility has continued to operate without any major improvements.

In February 2018, a new Master Plan Report was requested by the District to document deficiencies at the Facility and identify practical and cost-effective capital improvements for the next 20 years. The report is organized to provide an overview of the project team's efforts through a majority of the Mater Plan scope of work. This includes data collection, space programming, and alternatives development and evaluation tasks. However, due to a change in District priorities which has curtailed our full scope of work, the report falls short of recommending a single approach to proposed Facility improvements. Major topics addressed in this report include:

- Data Collection Approach - Summarizes the tools, tasks, and procedures used to gather information.
- Environmental Considerations - Highlights significant physical characteristics of the site and butterfly habitat.
- Neighborhood Considerations - Highlights concerns that the neighboring community has about the site and potential improvements.
- Facilities Visual Assessment - Site visits conducted by the architect, structural engineer, and civil engineer to document existing conditions.

- User Groups and Spaces - Documents the organization, workflow, and critical relationships required by D.A. Porath Facility staff to complete their job requirements. Space needs are quantified and critical design criteria are established.
- Master Plan Layout Alternatives - Synthesizes collected data and analysis into several site layout alternatives for comparative evaluation.
- District Feedback – Staff comments on presented layout alternatives.

Figure 1 DA Porath Facility Local Context

Figure 2 DA Porath Facility Regional Context

EXECUTIVE SUMMARY

This Master Plan report for the County of Santa Cruz D.A. Porath Facility identifies and quantifies critical space needs and provides recommendations for building and site improvements to accommodate those needs with a 20+ year outlook. Information presented in this report is intended to provide the District with a roadmap for addressing deficiencies in existing facilities, reorganizing and optimizing available site, protecting existing habitat, incorporating neighborhood concerns, and constructing new facilities in a phased approach.

Project Objectives

Project objectives were established at a kick-off meeting with the District on 9/5/2018 :

- Evaluate and prioritize replacement and upgrade of aging facilities with a 20 year outlook
- Provide safe, code-compliant facilities for 50 employees
- Provide proper maintenance access to existing pump station
- Provide adequate parking and circulation space for vehicles and equipment
- Preserve and protect butterfly habitat and maintain vegetative buffer
- Improve staff access and security while maintaining public access

Space Needs Summary

Space needs have increased by roughly 5,300 square feet compared to existing indoor space. This is largely due to the need to provide code-compliant, dedicated workspace appropriate for a range of critical functions and activities. The *Summary of Space Needs* summarizes existing and proposed areas (see Table 1).

Examples of dedicated space improvements include:

- Separating the conference room from break room activities
- Providing private offices for supervisors
- Separating maintenance crew meeting space from offices and shops
- Removing pretreatment lab and offices from the Pump Building

New or notably increased areas include:

- Electrical and mechanical rooms
- Locker rooms and restrooms
- Health/wellness room
- Warehouse and general office storage

Outdoor space needs have also increased due to a deficiency in parking and circulation for staff and County vehicles and inadequate delivery vehicle access.

Table 1 Summary of Space Needs

Category	Existing Area (sq ft)	Proposed Area (sq ft)
Common Space	2,033	4,174
Facilities Group	799	1,239
Line Group	80	610
Pump Group	138	510
Shops Group	751	1,710
Electrical/Mechanical Group	784	1,922
Pretreatment Group	814	1,058
Operators Group	315	910
Warehouse	4,430	5,490

Existing Occupied Building Area: 10,700 sq ft

New Building Area Incl. 20% Structure and Circulation: 15,972 sq ft

Site

Proposed site improvements include a new parking lot for staff vehicles, a new paved entrance from Quartz St., paved access to the Boneyard, and covered outdoor filling station, waste disposal, and equipment storage areas. These improvements are proposed on three distinct areas of the site (See Figure 3). The West Site and Boneyard are currently undeveloped areas of the site with little to no trees. Public access is to be restricted where new County facilities are proposed. Remaining open space will be enhanced with wayfinding, controlled vegetation, and drainage improvements, with the intent of maintaining a public path through the site and past the butterfly roosting area.

Figure 3 DA Porath Facility Site

Master Plan Layout Alternatives

This report includes four layout alternatives that were developed and evaluated based on a set of established criteria and objectives. Each layout is derived from the approved *Summary of Space Needs,* but organizes the space program in different organizational groupings and configurations. To reduce construction budgets and durations, all new buildings are proposed to be of permanent modular construction. See Table 2 for a summary of alternatives.

Renovation Layout

The Renovation Layout proposes a complete renovation of the existing Service building and adds a second floor to accommodate additional space needs. A new 2-story Shops building is located adjacent to the existing Warehouse on the northwest side. And the existing Warehouse Building is expanded to the southeast. County vehicles remain on the Main site and staff vehicles are relocated to a new parking lot on the West site.

2-Building Layout

The 2-Building Layout proposes a new 2-story Main building in the center of the Main Site, providing a reconfigured parking and vehicle circulation loop around the building. And the existing Warehouse Building is expanded to the southeast. Most County vehicles remain on the Main site but some County trucks and all staff vehicles are located on a new parking lot on the West site.

3-Building Layout

The 3-Building Layout proposes a new, single story Main building in the center of the paved site, providing a reconfigured parking and vehicle circulation loop around the building. A second, single story building is located on the West site to house Pretreatment and Operation groups. And the existing Warehouse Building is expanded to the southeast. All County vehicles remain on the Main site and all staff vehicles are located on a new parking lot on the West site.

4-Building Layout

The 4-Building Layout locates a new, single story Main building in the center of the paved site, providing a reconfigured parking and vehicle circulation loop around the building. A second, single story Shops building is located to the northwest of the Warehouse. A third, single story building is located adjacent to the Lode St. entrance on the West site to house Pretreatment and Operations groups. And the existing Warehouse Building is expanded to the southeast. All County vehicles remain on the Main site and all staff vehicles are located on a new parking lot on the West site.

All layout alternatives include the following improvements:

- Paved parking lot on the West site
- New entrance from Quartz St.
- Paved and regraded boneyard
- Repaved Main site
- Existing Pump and Warehouse Buildings to remain
- Expansion of the Warehouse
- Permanent modular construction

Table 2 Summary of Layout Alternatives

Alternative Name	# of Buildings	Est. Const. Cost (millions)	Building Name	Size (sq ft)	# of Stories	Location on Site
Renovation Layout	3 (1 Renovated, 2 New)	$19.4	A	8,166	2	Main
			B	6,000	2	Main
			C	1,000	1	Main
2-Building Layout	2 New	$15.3	A	14,258	2	Main
			B	1,000	1	Main
3-Building Layout	3 New	$14.6	A	10,448	1	Main
			B	3,810	1	West
			C	1,000	1	Main
4-Building Layout	4 New	$14.1	A	9,570	1	Main
			B	2,510	1	Main
			C	2,460	1	West
			D	1,000	1	Main

Phasing

A proposed phased sequence of construction accompanies each alternative to provide the District with recommendations for strategically spreading improvements over time as part of a long term capital improvements plan.

Modular Construction

All new buildings are proposed to be of permanent modular building construction. Permanent modular construction consists of high-quality, pre-engineered building modules, inclusive of major building systems, that are shipped as flat-packed or pre-constructed modules and assembled on site. A design team would work with the District and modular manufacturers to tailor the buildings to the desired configuration and aesthetic. By capitalizing on the efficiencies of this approach, the cost of construction is typically reduced by 20% compared to traditional construction methods. Modular construction has the added benefit of reducing construction duration, which in turn would reduce disruptions to Facility operations and the surrounding butterfly habitat.

DATA COLLECTION APPROACH

MWA Architects utilized an architectural programming process that included informational questionnaires, staff interviews, job shadows, and on-site walkthroughs to develop a complete understanding of interior and exterior space needs and associated design criteria. The following existing documents were also used as reference material:

- East Cliff Facility Master Plan, 1999
- Moran Lake Monarch Butterfly Habitat Management Plan, August 2010
- Habitat Assessment Report for Overwintering Habitat of the Monarch Butterfly, December 2014

- Tree Resource Analysis/Construction Impact Assessment/Tree Protection Plan, March 2015
- Stormwater Pollution Control Plan, June 2015

A questionnaire was distributed to all staff and user groups at the Facility (see Appendix A). District user groups included Line group, Pump group, Facilities group, Electrical group, Operators group, Pretreatment group, and Tools. The questionnaire focused on work practices, values, opportunities, and challenges of new or updated facilities. The questionnaire also helped prepare staff for questions asked during on-site interviews. For operational adjacencies, (see Appendix B).

User group interviews were conducted to learn about daily activities and tasks at the facility. During these interviews, staff shared concerns, opportunities, and hopes for facility improvements. Groups supervisors walked through each crew space to highlight existing constraints, operational adjacencies, and functional requirements for each user group.

A Space Needs table was developed based on the information gathered from the above points of collection. Required square footages and key space requirements were established and used for developing layout alternatives (see Appendix C).

Three workshops were conducted which informed the layout alternatives shown in Section 2. For presentation material delivered, (see Appendices D, E, and F).

SECTION 1

Environmental Considerations

The D.A. Porath Facility site has significant environmental considerations that influence improvement opportunities identified in this document. The most significant considerations are the eucalyptus grove butterfly habitat that surrounds the site and the Monarch butterfly population that occupies part of the grove during an overwintering period. The following considerations were developed through conversations with staff and a review of existing documents, including the Tree Protection Plan, the Monarch Overwintering Habitat Assessment Report, and the Moran Lake Monarch Butterfly Habitat Management Plan.

Eucalyptus Grove

- Existing: The eucalyptus trees are an important natural resource. However, the grove poses the following concerns:
    - The trees harbor an overwintering habitat for the Monarch butterfly population and serve as a critical wind break for the habitat.
    - Any removal of trees will require a replacement or mitigation plan as directed by an Environmental Impact Report.
    - Due to a shallow root system, the larger trees can fall over in strong winds, posing a risk to people and property. A downed tree could also block the only entry into and out of the Facility.
- Proposed:
    - No construction should take place during the butterfly overwintering period from roughly September 15 to March 15.
    - An average 20' setback radius should be maintained from existing eucalyptus trees. Actual setbacks will vary based on the size of the tree.
    - A minimum of two replacement trees should be planted for every one removed tree.
    - Construct new facilities utilizing prefabricated construction techniques to reduce construction time.
    - The new entry road from Quartz St. allows a second means of access for staff vehicles in case a eucalyptus tree falls across the Lode St. entrance.

Butterfly Habitat

- Existing: Monarch butterflies depend on this site and the surrounding ecosystem, including the neighborhoods and Moran Lake, in addition to the protection of the eucalyptus grove. The California Monarch butterfly has seen sharp population declines in recent years, and steps should be taken to ensure their protection. Butterfly roosting areas, located in the northern and eastern eucalyptus groves, should not be disturbed from September 15 to March 15. And construction activity on any part of the site is also discouraged during this period.
- Proposed: Specific steps to protect and enhance the habitat, outlined in the Moran Lake Monarch Butterfly Habitat Management Plan and the Habitat Assessment Report for Overwintering Habitat of the Monarch Butterfly, should be implemented:
    - Avoid locating frequently accessed facilities on the northern Boneyard site due to the access restriction through the eucalyptus grove.
    - Utilize prefabricated construction techniques to reduce construction time to avoid construction during the overwintering period.
    - Enhance the surrounding ecosystem with native plants that support the Monarch butterfly population.

Drainage

- Existing: Significant runoff from the North causes flooding. Management of source control at facility is insufficient.
- Proposed: Provide bioretention ponds to contain runoff from new paved parking, cover fill station, waste disposal, and outdoor storage. Enhance on-site drainage collection.
    - Surface water runoff is identified in the Facilities Visual Assessment, the Moran Lake Monarch Butterfly Habitat Management Plan, and by staff at the facility. These enhancements help preserve the eucalyptus grove, butterfly habitat, and overall ecosystem.

Public Access

- Existing: The public has access throughout the County property on all four sides of the fenced main site. Staff indicated that neighbors would be highly averse to closing off access to any side. The public uses the open space as a shortcut through the neighborhoods as well as recreationally.
- Proposed: Maintain public access around the facility.
    - Improve security and lighting around site
    - Provide wayfinding and informational signage
    - Provide a secure edge around County facilities

Neighborhood Considerations

The residential neighborhood surrounding the D.A. Porath Sanitation Facility has expressed concerns about ongoing operations, as well as hazards associated with the eucalyptus trees. The following considerations are developed from conversations with staff and issues documented in the 1999 East Cliff Facility Master Plan.

Noise Impacts

- Existing: Staff indicated public concern about noise from vehicles, generators, and other on-site activities.
- Proposed: Maintain core maintenance activities and parking for all County trucks on the main paved site. Improve shop space to allow work to be conducted inside.

Visual Impacts

- Existing: Staff indicated the neighbors are concerned about the facility expanding beyond the inner fence line and are averse to new buildings or site modifications adjacent to their properties.
- Proposed: Minimize additional building visibility and impact.
    - Minimize the scale and height of new construction and utilize subdued materials and colors.

Vehicular Impacts

- Existing: Staff indicated neighbors are concerned about County vehicle traffic and vehicle exhaust on Lode St. as well as staff vehicles parking on public streets due to insufficient space within the current facility.
- Proposed: Provide additional vehicle parking at the Facility and improve site access.
    - Provide a new staff vehicle parking area separate from County vehicle parking, limiting activity beyond the inner fence line to start of day and end of day.
    - Provide an alternate exit/entry to the Facility off Quartz St.

Odor Impacts

- Existing: The neighbors are concerned about sewage odors.
- Proposed: Relocate staff work spaces out of the Pump Building and upgrade the odor control system.

User Groups and Spaces

Groups

A brief outline of responsibilities is listed below. Descriptions provided reflect findings at the time of job shadows and interviews in September 2018. Vehicle counts reflect information indicated in the Site Vehicle List (see Appendix L).

- Line Group
  - The Line group is a field crew that typically consists of 10 staff including a Supervisor. Typical hours are from 7am to 4:30 pm. The group is responsible for the maintenance of County sewer pipes. Staff arrives at 7am for their daily meeting where the Supervisor assigns tasks for the day. Currently, the large group meets in the Conference/Break room. Assigned crews then collect materials, tools, and equipment to load their trucks before heading out for the majority of the day. Crews will return to the site to conduct maintenance and repairs in the shops during the day. Re-fueling and vehicle washing is typically done at the end of the day on site or at the Brommer facility. The crews return to the site by 3:30pm to complete paperwork related to their repairs and maintenance. This group uses the lock rooms for gear storage at the start and end of day, but typically do not use other spaces except for special events, trainings, or meetings.
  - The Supervisor typically remains at the D.A. Porath Facility during the day using common spaces. The Supervisor will work with crews in the field when required.
  - The Line group is assigned 19 County vehicles.
- Pump Group
  - The Pump group is a field crew that typically consists of 7 staff including a Supervisor. Typical hours are from 7am to 4:30pm. The group is responsible for the maintenance and upgrades of County pumps and pump stations. Staff arrive at 7am for their daily meeting where the Supervisor assigns tasks for the day. Currently, the group meets in the Supervisor's Cubicles. Assigned crews then collect materials, tools, and equipment to load their trucks before heading out for the majority of the day. Crews will return to the site to conduct maintenance and repairs in the shops during the day. Re-fueling and vehicle washing is typically done at the end of the day on site or at the Brommer facility. The crews return to the site by 3:30pm to complete paperwork related to their repairs and maintenance. This group uses the locker rooms for gear storage at the start and end of day, but typically do not use other spaces except for special events, trainings, or meetings.
  - The Supervisor typically remains at the D.A. Porath Facility during the day using common spaces. The Supervisor will work with crews in the field when required.
  - The Pump group is assigned 7 County vehicles.
- Facilities Group
  - The Facilities group typically consists of 8 staff who operate on three different shifts including a Supervisor position that works during the day. Typical hours are from 7:30 am to 4:00pm, except for dispatch, which is staffed 24/7 on three shifts. Dispatch's three shifts are from 7:30am to 4pm, 4pm to Midnight, and Midnight to 8am. Dispatch is responsible for communicating and coordinating groups in the field. They are also the point of contact for operations during the night or when staff is unavailable. Facility staff remain on site during the day. Their responsibilities are diverse, including crew dispatch, reception, purchasing, facility maintenance, administration, and janitorial work. The group requires offices and workstations, and uses common spaces like the break room and conference space throughout the day.

- The Supervisor remains at the D.A. Porath Facility during the day using common spaces.
- The Facilities group is assigned 5 County vehicles.

- Electrical Group
  - The Electrical group typically consists of 9 staff including a Supervisor. This group includes 2 mechanics that are supervised by the Electrical Supervisor. Typical hours are from 7am to 4:30pm. The group is responsible for the maintenance and upgrades to electrical and mechanical components at the County pump stations, treatment plants, and D.A. Porath facility. Staff arrives at 7am for their daily meeting where the Supervisor assigns tasks for the day. Currently, the group meets in their dedicated shop space. Depending on the task, assigned crews will collect materials, tools, and equipment to load their vehicles if they are working offsite. Otherwise, they begin working in their shop space on assigned tasks. They require workstations, an electrical shop, and common spaces like the break room. The group works closely with the other teams in the field.
  - The Supervisor typically remains at the D.A. Porath Facility during the day using common spaces. The Supervisor will work with crews in the field when required.
  - The Electrical group is assigned 9 County vehicles.
- Pretreatment Group
  - The Pretreatment group consists of 3 staff including a Supervisor. Typical hours are from 7am to 4:30pm. The group is responsible for testing samples from around the County and environmental compliance. Staff arrives at 7am for their daily meeting where the Supervisor assigns tasks for the day. Currently, the group meets at their workstations in the Pretreatment Office. The group requires office and lab space while needing access to common spaces such as, the break room and conference space throughout the day. The staff operates autonomously from the rest of the teams at the facility.
  - The Supervisor typically remains at the D.A. Porath Facility during the day using common spaces. The Supervisor will work with crews in the field when required.
  - The Pretreatment group is assigned 4 County vehicles.
- Operators Group
  - The Operators group typically consists of 6 staff including 2 Supervisors, with 4 staff focusing on wastewater and 2 staff on clean water. Typical hours are from 7am to 4:30pm. The group is responsible for the operation and general maintenance of the County Service Areas (CSAs) that are spread around the County. Staff arrives at 7am for their daily meeting where the Supervisor assigns tasks for the day. Currently the wastewater group meets at their workstations and the clean water group meets in the Supervisor's office. Operators typically spend the day away at their assigned CSA treatment facilities. Re-fueling and vehicle washing is typically done at the end of the day on site or at the Brommer facility. The crews return to the site by 3:30pm to complete paperwork related to their repairs and maintenance. This group uses the locker rooms for gear storage at the start and end of day. The operators require frequent support from the Line, Pump, and Electrical/Mechanical teams.
  - The Supervisors typically work in the field during the day, returning at the end of the day.
  - The Operators group is assigned 7 County vehicles.
- Tools Group
  - The Tools group consists of one staff member who manages all tools and supplies for the other teams and is supervised by the Facilities Supervisor. Typical hours are from 7am to 4:30pm. All teams check out their daily supplies from the tools room at the start of the day

and return them at the end. The Tools group requires an office with access to the Tools storage warehouse that is separate from general storage spaces.
    - The Tools group does not have any assigned County vehicles.

Space Types

The *Summary of Space Needs* table establishes physical space requirements for each group. The information is based on findings from the September 20, 2018 Programming Workshop including interviews, job shadows, and detailed observations of existing spaces. The purpose of the table is to validate space types and square footage requirements as they relate to the District's organizational and operational goals.

Although teams often work together in the field, at the Facility they largely require independent meeting and workspaces. Staff repeatedly requested that their team be organized as a unit, rather than grouped by type. Through a series of design iterations with staff, quantities and qualities of spaces were established and used for developing layout alternatives.

Space Types include: Common spaces, office/admin spaces, shops, warehouse/storage, lab, and outdoor space.

Common Spaces

- Lobby
    - Existing: No formal entry area for the public or vendors
    - Proposed: Add lobby space
        - Space will act as the "front door" to the facility, including chairs and educational information.
- Meeting Spaces
    - Existing: Insufficient shared meeting spaces. Large conference room combined with break room
    - Proposed: New conference/training room, small meeting rooms, and separate break room.
        - Conference/training room hosts all staff meetings, trainings, board meetings with the public, vendor workshops, and staff gatherings.
- Quality of Life
    - Existing: Staff currently exercises in the breezeway between Pump building and Service building
    - Proposed: Health/Wellness Space
        - Space shall contain exercise equipment, gym mats, mirrors, and other equipment per D.A. Porath staff request.
- Restroom Facilities
    - Existing: Insufficient restrooms/locker facilities that cause long waits and discourage staff use
    - Proposed: Mud room, Shared Lockers, Men's and Women's Restroom/Showers, Gender Neutral Restroom/Shower, Public Restrooms, Laundry Room and Janitorial
        - Mud room space accommodates dirty/clean overalls, rain and field gear for all staff, acting as a threshold between the outdoors and indoors. Benches, boot racks, and coat hooks for wet gear will be integrated and accompanied by a floor drain. The Men's and Women's Restroom/showers areas are separate from the shared locker area. The Gender Neutral Restroom/Shower is a separate space off the shared locker area.

Office/Admin Spaces

- Manager/Supervisor Office
  - Existing: Cramped office spaces do not provide privacy
  - Proposed: Manager/Supervisor's Office
    - The Manager's and Supervisor's offices should be grouped with their team meeting spaces and other team specific spaces. The number of spaces and their grouping is indicated in the Space Needs table.
- Team Meeting Spaces
  - Existing: No current daily meeting spaces for each team, teams meet in shared spaces or offices
  - Proposed: Dedicated Team Meeting Space for each team.
    - Meetings consist of daily morning meetings for each team.
- Staff Work Spaces
  - Existing: Insufficient work spaces for staff
  - Proposed: Workstations, Hoteling Stations
    - Provide dedicated desk space to staff grouped with their team spaces. Hoteling spaces are unassigned desk space for transient use by visiting managers, auditors, or temporary staff use.

Shops

- Line/Pump Shops
  - Existing: Shop space is utilized for storage, circulation, and task completion. Does not have enough space for the necessary types of shop tasks or for working on multiple tasks at once. Restricted shop space causes work to be done outside, which is impacted by weather.
    Proposed: Metal shop, Carpentry shop, Paint shop, Work area, Laydown space
    - Shop spaces are dedicated to specific tasks with additional unassigned work space and dedicated laydown space to avoid working in the rain.
- Electrical Shop
  - Existing: Insufficient shop space that is combined with staff workstations.
  - Proposed: Electrical Shop, Electrical Workstations
    - Separated shop and workstation facilities to provide dedicated spaces.

Warehouse/Storage

- Storage
  - Existing: Insufficient storage space
  - Proposed: Additional 1000sf of storage space
    - Storage for both long and short term use
- Equipment Parking/Charging
  - Existing: No dedicated parking or charging space requires equipment to be parked in storage area, restricting access. When access is needed, forklift/scissor lifts are forced to be parked in the rain.
  - Proposed: Cart Parking/Charging Space
    - Space is covered and does not interfere with access to storage spaces

Lab

- Pretreatment Lab
    - Existing: Lab space located on top of Wet Well, restricting access to critical Pump Station process. Lab has insufficient ventilation and Sample Receiving.
    - Proposed: Relocate lab space including proper ventilation and Sample Receiving space
        - The sample receiving area needs direct access to vehicle parking to transfer samples.

Outdoor Space

- Parking
    - Existing: Insufficient parking for all uses with no distinct separation between staff parking, guest parking, and County vehicle parking.
    - Proposed: Additional staff, visitor, County, electric cart charging, and covered equipment parking
- Outdoor Break Area
    - Existing: Outdoor break area
    - Proposed: Maintain an outdoor space for lunches and breaks
- Fill Station
    - Existing: Uncovered fill station
    - Proposed: Covered fill station to meet current code requirements
- Waste Disposal
    - Existing: Covered waste disposal area with no pollution source control drainage
    - Proposed: Covered waste disposal area with drainage to meet current code requirements
- Outdoor Wash Area
    - Existing: Outdoor wash area
    - Proposed: Maintain outdoor wash area
- Outdoor Shed/Container Storage
    - Existing: Temporary outdoor storage is fragmented and vulnerable to thefts and weather damage.
    - Proposed: Consolidated and updated covered storage space
- Outdoor Work Spaces
    - Existing: Vehicle circulation and parking areas used as outdoor work area and laydown space.
    - Proposed: Dedicated outdoor work area and laydown space.

Facilities Visual Assessment

The Facility is surrounded by the eucalyptus grove and is largely flat except for a steep grade change down to the creek on West edge of the site. Historical records indicate that a treatment plant used to be located at this site. The inner site is used for all current operations while the West site and Boneyard both experience limited use. Access to the fenced in Boneyard is through a gate on the northern edge of the site.

Site Assessment

Parking

- Vehicles parked on sidewalks and in wash down area, insufficient covered bicycle and motorcycle parking, double parked vehicles, uncovered equipment, damage from eucalyptus leaves.

Fill station

- Blocks vehicle circulation around the site when in use and the condition of underground tanks is unknown.

Waste

- Waste is not adequately covered at the site and liquids are not properly captured, allowing runoff into the surrounding ecosystem.

Storage

- Storage is handled in a variety of ways. Storage is located in the Warehouse structure, in utility sheds, under canopies, in standard shipping containers, and completely exposed to the elements. Secure, managed storage is insufficient for year-round operations.

Circulation

- Pedestrian
    - In shared space with vehicles and shop space. There are no crosswalks to indicate safe walking locations.
- Vehicles
    - Congested at start and end of shifts. Difficult circulation for trucks and deliveries, limited by location of fill station, vehicle wash, and unused monorail crane at the Pump building.
- Bicycles
    - Shares space with pedestrians and vehicles.

Building Assessment

Service and Pump Building

- Structural
    - A structural evaluation of the D.A. Porath Pump Facility in Santa Cruz, CA was performed using Tier 1 procedures outlined in ASCE 41-17 to determine if the building satisfied the target performance level of Life-Safety for the Seismic Hazard Level BSE-2E (5%, 50 years). The potential structural deficiencies identified during the evaluation include roof diaphragm discontinuities created by large openings over the breezeway, inadequate workshop mezzanine framing and lateral bracing, and a lack of lateral strength at the east end of the shop building. Based on these potential deficiencies, KPFF recommended reinforcing the reentrant corners of the diaphragm openings of the main building and demolishing the entire shop area of the building, including the mezzanine. KPFF also recommended an alternative to the shop demolition involving the addition of new lateral force resisting elements, but this was deemed impractical by the project team due to spatial constraints (See Appendix J).

- Walls (Windows, doors, cladding, insulation)
    - The exterior cladding and walls as well as the interior walls and doors appear to be in good working condition, but could use specific interventions to increase efficiency, comfort, and functionality of the space. Single pane windows do little to insulate the interior spaces. There are updates needed to conform to current building code requirements. Many work spaces do not have windows or sufficient access. The structural interior walls limit the flexibility needed to reorganize the interior as needs change.

- Roof
    - The roof appears to have been patched in penetration locations and there is evidence of ponding in low spots that are not associated with a drain. This includes drains, flashing, copings, and claddings. The roof requires replacement to meet current codes and to correct drainage patterns. Lead flashing and penetrations should also be replaced. There is staining on ceiling tiles on the building interiors indicating leaks but whether the roof, HVAC, or sprinkler systems are causing the leaks is unclear.
- MEP
    - Personnel shared that HVAC systems and plumbing were unpredictable and often they simply left outside doors open to correct discomfort. The temperature inside varies greatly depending on outside temperature, making the spaces uncomfortable on cool and warm days. The lab space does not have sufficient air changes required to meet code. Staff utilize cross ventilation through adjoining office spaces to ventilate the lab and provide make-up air. Staff mentioned frequent clogging of the plumbing and insufficient access to the pipes for repairs.

Warehouse

- The Warehouse Building is in relatively good condition. A structural evaluation was not performed. Based on conversations with staff, this building fulfills current and anticipated future storage needs; with the exception of proposed new storage space housed in an additional structural bay.

SECTION 2

Master Plan Layout Alternatives

Master Plan layout alternatives were developed using data collected from the detailed *Summary of Space Needs* table, existing site maps, and input from District staff. The unique site constraints and parking deficiencies were primary considerations for the configuration of layout. Four layout alternatives were developed and presented to District staff.

1999 Master Plan Comparison

Layout alternatives incorporated several recommendations from existing documentation:

- Update Men's and Women's locker room and restroom facilities to reflect current and predicted staff count and gender distribution.
- Improve ADA access throughout the Facility.
- Restripe Main site parking to accommodate additional County vehicles.
- Install additional parking outside the Main site.
- Eliminate regular Boneyard access through the butterfly overwintering area.
- Manage the eucalyptus grove according to arborist and biologist recommendations.

Renovation Layout

The Renovation Layout (see Figure 4) proposes a complete renovation of the existing Service building (A) and adds a second floor to accommodate additional space needs. A new 2-story Shops building (B) is located adjacent to the existing Warehouse on the northwest side. And the existing Warehouse Building (C) is expanded to the southeast. County vehicles remain on the Main site and staff vehicles are relocated to a new parking lot on the West site.

This alternative requires installation of a single, temporary office trailer to house displaced staff during renovation of the Service Building. It also requires a large up-front capital investment and limited phasing opportunities.

Cost

- Total: $19,457,115
    - Building A: $7,868,083
    - Building B: $2,952,300
    - Building C: $575,000
- This cost projection is based upon the preliminary program and represents a rough order of magnitude cost. The projection does not include costs for covered parking, any soft costs, or escalation. Soft cost range from 25-35%. (See Appendix K)

Proposed Phasing

1. Pave Boneyard.
2. Clear West site for staging/parking. Construct buildings B and C.
3. Install 1 temporary office trailer on West site.
4. Demolish existing Service building interiors and shops.
5. Construct building A and repave Main site.
6. Remove trailer and pave West site.

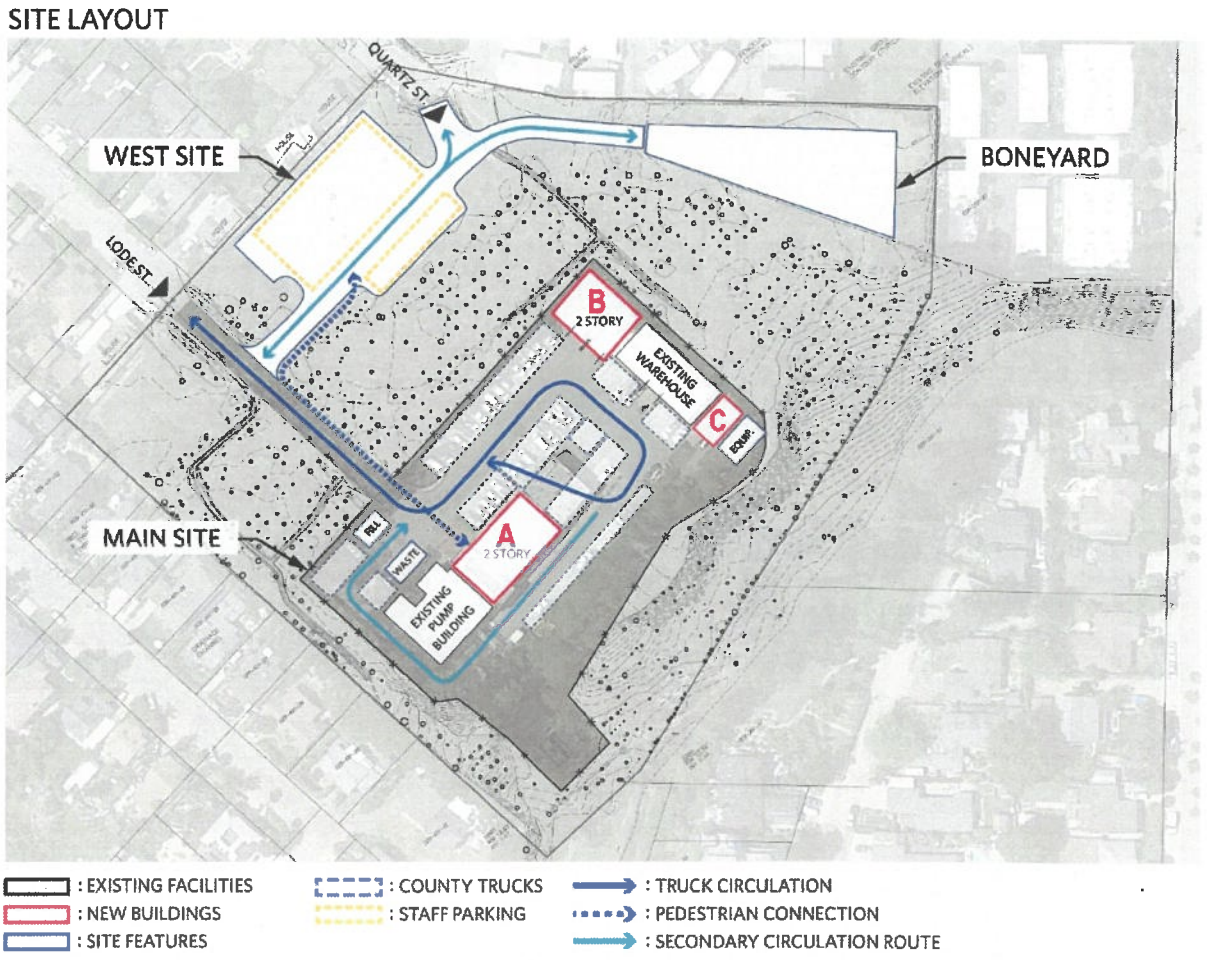
Structural Improvements

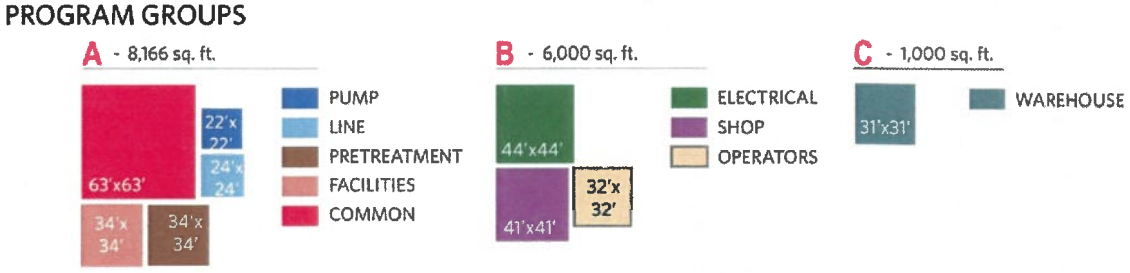
- Following the initial structural evaluation, the project team explored several options for repurposing the site, one of which included significant structural modification of the existing building. These modifications included the removal of existing interior CMU walls, demolition of the shop area of the building, and the addition of a second story. This repurposing option would have required seismic strengthening of the lateral force resisting system by anchoring new shotcrete walls to the existing exterior CMU walls. This option would have also required new concrete footings around the perimeter of the existing building as well as gravity and lateral force resisting systems for the new second story floor, walls, and roof. (See Appendix H)
- Given the substantial modification required for the repurposing of the existing building, the project team deemed this option impractical, concluding that a new facility would be more cost effective and better serve the district.

Civil Improvements

- Utility connections for sewer and water required for Building B.
- See Appendix G for Truck Turning Diagrams

Figure 4 DA Porath Facility Renovation Layout





2-Building Layout

The 2-Building Layout (see Figure 5) proposes a new 2-story building (A) in the center of the Main Site, providing a reconfigured parking and vehicle circulation loop around the building. And the existing Warehouse Building (B) is expanded to the southeast. Most County vehicles remain on the Main site but some County trucks and all staff vehicles are located on a new parking lot on the West site.

This alternative requires a large up-front cost and fewer phasing opportunities. It also requires multiple temporary facilities to house the bulk of the staff during demolition and construction.

Cost

- Total: $15,370,710
    - Building A: $6,954,150
    - Building B: $575,000
- This cost projection is based upon the preliminary program and represents a rough order of magnitude cost. The projection does not include costs for covered parking, any soft costs, or escalation. Soft cost range from 25-35%. (See Appendix K)

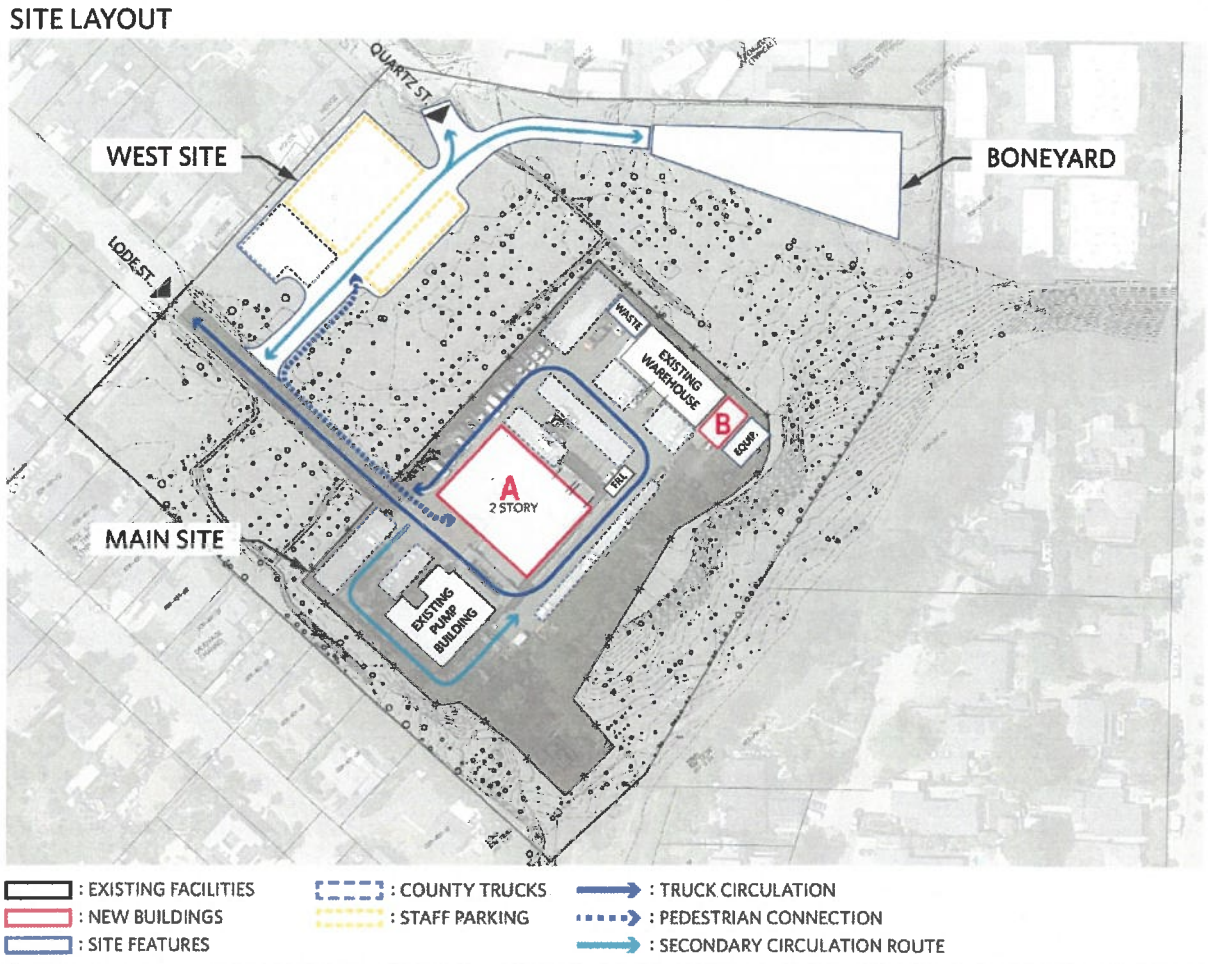
Proposed Phasing

1. Pave Boneyard.
2. Clear West Site for staging/parking. Construct building B (use as temporary shop).
3. Install 2 temporary office trailers on West site.
4. Demolish existing Service building and construct building A. Repave Main site.
5. Remove trailers and pave West site.

Civil Improvements

- See Appendix G for Truck Turning Diagrams

Figure 5 DA Porath Facility 2-Building Layout



3-Building Layout

The 3-Building Layout (see Figure 6) proposes a new, single story building (A) in the center of the paved site, providing a reconfigured parking and vehicle circulation loop around the building. A second, single story building (B) is located on the West site. And the existing Warehouse Building (C) is expanded to the southeast. All County vehicles remain on the Main site and all staff vehicles are located on a new parking lot on the West site.

By grouping compatible program areas into multiple buildings, improvements can be implemented in multiple phases of construction. This approach allows smaller capital improvement budgets and reduced disruptions to ongoing operations. It also requires a single temporary facility to house staff during demolition of the Service building and construction of its replacement.

Cost

- Total: $14,663,703
    - Building A: $4,803,600
    - Building B: $2,000,250
    - Building C: $575,000
- This cost projection is based upon the preliminary program and represents a rough order of magnitude cost. The projection does not include costs for covered parking, any soft costs, or escalation. Soft cost range from 25-35%. (See Appendix K)

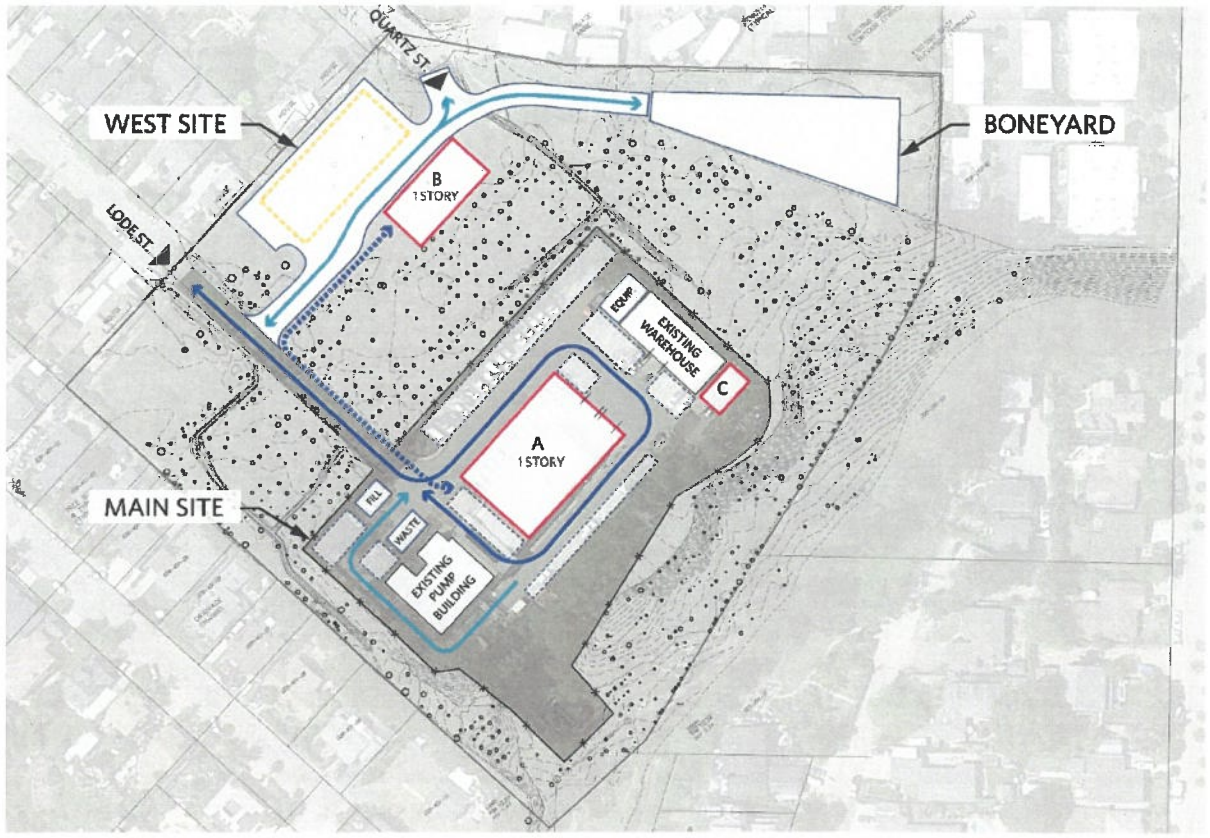
Phasing

1. Pave Boneyard.
2. Clear West Site for staging/parking. Construct buildings B.
3. Construct building C (use as temporary shop).
4. Install 1 temporary office trailer on West site.
5. Demolish existing Service building and construct building A. Repave Main site.
6. Remove trailer and pave West site.

Civil Improvements

- Utility connections for sewer and water required for Building B.
- See Appendix G for Truck Turning Diagrams

Figure 6 DA Porath Facility 3-Building Layout



4-Building Layout

The 4-Building Layout (see Figure 7) locates a new, single story Main building (A) in the center of the paved site, providing a reconfigured parking and vehicle circulation loop around the building. A second, single story Shops building (B) is located to the northwest of the Warehouse. A third, single building (C) is located adjacent to the Lode St. entrance on the West site to house Pretreatment and Operators. And the existing Warehouse Building (D) is expanded to the southeast. All County vehicles remain on the Main site and all staff vehicles are located on a new parking lot on the West site.

By creating multiple program groupings, improvements can be implemented in separate phases. The phases can be staged and constructed within the County's determined timeline. This approach allows for a reduction in large single expenditures and construction disruptions to ongoing operations. It also requires a single temporary facility to house staff during demolition of the Service building and construction of its replacement.

Cost

- Total: $14,126,614
    - Building A: $4,067,250
    - Building B: $1,443,250
    - Building C: $922,500
    - Building D: $575,000
- This cost projection is based upon the preliminary program and represents a rough order of magnitude cost. The projection does not include costs for covered parking, any soft costs, or escalation. Soft cost range from 25-35%. (See Appendix K)

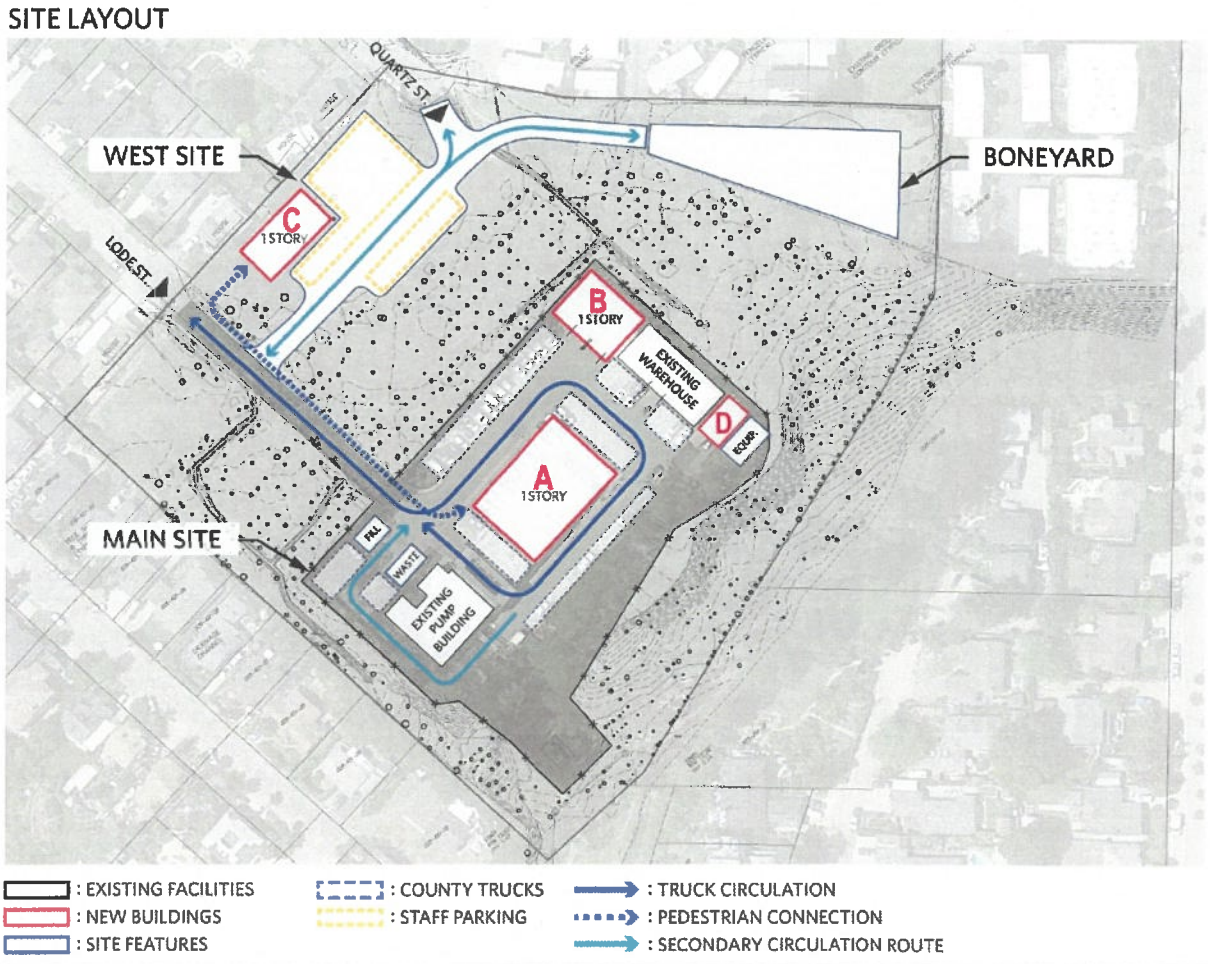
Phasing

1. Pave Boneyard.
2. Clear West Site for staging/parking. Construct building C.
3. Construct buildings B and D.
4. Install 1 temporary office trailer on West site.
5. Demolish existing Service building and construct building A. Repave Main site.
6. Remove trailer and pave West site.

Civil Improvements

- Utility connections for sewer and water required for proposed Building B and C.
- See Appendix G for Truck Turning Diagrams

Figure 7 DA Porath Facility 4-Building Layout



Construction Type

Modular construction typically results in a cost effective building solution with time saved during both design and construction project phases. The modules are prefabricated and inspected off site in a controlled environment, thereby resulting in a consistent, high-quality product that can be quickly assembled in the field. With fast and efficient construction, lower project costs are inherently anticipated.

Furthermore, modular construction is often advantageous when compared to traditional construction techniques in that modules are typically constructed of light-weight building materials such as light-gage steel or wood. A lighter building with less mass produces lower seismic forces for the design of the seismic lateral force resisting system (LFRS). Typical modular building construction consists of the modules themselves acting as the primary LFRS system through already code approved techniques such as built-in shear walls or braces. However, if seismic demands are exceedingly large, small scale shear walls or braces within the modules cannot develop these large demands. Therefore, concrete core shear walls or other forms of robust lateral resistance are added in parallel to module construction, also identified as a dual system. Care must be taken to ensure that the modules are adequately anchored to any LFRS elements, as well as adequately interconnected.

In summary, modular construction is a viable building solution, becoming more and more widely accepted and used in high seismic regions for low to mid-rise buildings. KPFF has provided structural engineering for a variety of modular construction types and can provide further information related to our experiences, if requested.

General Civil Improvements

New asphalt paving exceeds 22,500 SF of new and replaced impervious area so Tier 4 – Peak Runoff management is required. This requires the site to have an underground control structure or at grade detention pond or basin to ensure post construction peak runoff does not exceed pre-construction runoff for a 10-year 24-hour storm event. Tiers 1-3 requirements would also need to be met and that includes the use of bioretention areas or flow through planters.

Layout Alternative Evaluation

Comparison Matrix

The Comparison Matrix (see Figure 8) provides a defined list of criteria to compare each layout. The criteria are not exhaustive and the totals are not absolute. The District may choose to prioritize criteria using weighted values to reach a different conclusion about the strengths and weaknesses of each layout. A brief explanation of criteria is available in the Evaluation Criteria section.

Figure 8 DA Porath Facility Comparison Matrix

	Renovation Layout	2-Building Layout	3-Building Layout	4-Building Layout	Reason
Parking	+	−	+	+	2 bldg. layout moves some county vehicles to west site
Workflow	+	+	+	−	4 bldg. layout separates elec. shop from elec. office
Environmental Impact	○	○	○	○	Similar increased activity on west site
Disruption to Operations	−	−	+	+	Staging and operation impact
Neighborhood Impact	○	○	−	−	Increased activity on west site
Construction Cost	−	○	○	○	Renovation cost more than new construction
Life-Cycle Cost	+	○	○	○	Multiple buildings require separate systems for each
Cost per phase	−	−	+	+	Multiple buildings allow lower cost per phase
Visitor Interface	○	○	+	○	3 bldg. layout limits visitors to west site
Circulation (future study)					Vehicle circulation and parking layout
Total	**0**	**-2**	**4**	**1**	

Evaluation Criteria

The following set of criteria was used to evaluate the layout alternatives and reflect the County's values and Master Plan objectives. They were established and verified through our meetings and workshops with District staff and supervisors.

- Parking
  - Provides sufficient parking for staff and County vehicles in a desirable arrangement.
- Workflow
  - Relationship of buildings and program is efficient and supports workplace productivity and safety according to staff.
- Environmental Impact
  - The final site layout and construction process support the surrounding ecosystem.
- Disruptions to Operations
  - The construction process and phasing minimizes impact to ongoing operations.
- Neighborhood Impact
  - The final site layout and construction process minimizes impact to the neighbors.
- Construction Cost
  - Minimizes the total project cost.
- Life-Cycle Cost
  - Minimizes the cost of operating the facilities over their lifecycle.
- Cost per Phase
  - Minimizes large single capital expenditures by utilizing multiple phases that can be implemented over an extended timeline.
- Visitor Interface
  - Provides clear wayfinding and easy access for people utilizing the property.
- Circulation
  - Site circulation is efficient, safe, and accommodates the range of vehicles that need to access the site.

DISTRICT FEEDBACK A

District Comments

On November 28, 2018, layout alternatives were presented in a workshop. The following comments were noted:

- Convert the existing Warehouse building and shops to office space.
- Building a new warehouse and shop in the Boneyard.
- Use the Boneyard for employee parking and use Quartz St. as the main entrance to the Boneyard.
- Locate all employee parking in an overflow parking area to the left of the Lode St. entrance.

APPENDICES

Appendix A	MWA: Kick-Off Questionnaire
Appendix B	MWA: Adjacency Diagrams
Appendix C	MWA: Space Needs Table
Appendix D	MWA: Workshop 1 Presentation
Appendix E	MWA: Workshop 2 Presentation
Appendix F	MWA: Workshop 3 Presentation
Appendix G	KPFF: Turning Exhibit
Appendix H	KPFF: Structural Repurposing Narrative
Appendix J	KPFF: Structural Screening and Evaluation
Appendix K	Mack5: Program Cost Plan
Appendix L	MWA: Site Vehicle List

Existing Documents – For Reference (not included)

- D.A. Porath Treatment Facility Existing Surface
- East Cliff Transmission Facilities
- East Cliff Facility Master Plan, 1999
- Moran Lake Monarch Butterfly Habitat Management Plan, August 2010
- Habitat Assessment Report for Overwintering Habitat of the Monarch Butterfly, December 2014
- Tree Resource Analysis/Construction Impact Assessment/Tree Protection Plan, March 2015
- Stormwater Pollution Control Plan, June 2015
- Updated Fleet List D.A. Porath Facility