



Progress Update

Larkspur Ferry Service and Parking Expansion: Environmental Clearance and Preliminary Design Study

December 14, 2023

Jacobs

apex
STRATEGIES

chs Consulting Group

DLR Group

CIVIC EDGE
CONSULTING



Agenda

1. Project Overview
2. Progress Updates
3. Schedule and Next Steps



1. Project Overview



Project Overview and Background

Prior to the pandemic, Larkspur ferry service to San Francisco experienced continued growth, with full boats and parking at the Larkspur Ferry Terminal (LFT):

Larkspur ferry ridership trends	25% growth (2005-2019)
Larkspur ferry trips	<ul style="list-style-type: none">- 40/day (42 in summer)- Maximum 42 trips/day (prior environmental clearance)
Main parking lot	<ul style="list-style-type: none">- At capacity by 10 a.m. weekdays- Often at capacity by 9:30 or before; overflow lot also often at capacity
Customer arrival mode at LFT	79% park at the terminal



Project Overview – Scope

The study examines how the Larkspur Ferry Terminal can accommodate future increases in demand and reduce congestion on the U.S. Highway 101 corridor

- Forecasting future ferry service demand over 5-, 10- and 20-year horizons
- Developing and selecting a preferred Larkspur Ferry Terminal parking structure and landside access scenario to meet future demand
- Develop project consensus through stakeholder and community outreach
- Seek environmental clearance and develop preliminary parking structure design for ferry service and parking expansion, in preparation for future phases of project completion



Early Project Stages

Ferry Demand Forecasting

- Validation of baseline model results (transit demand forecasting)
- Pandemic – unprecedented impacts and conditions for transit

Analyses independent from future ferry demand

- Select environmental analyses: baseline Wake Wash; Aquatic Delineation
- Preliminary Parking Structure Alternatives



2. Progress Updates

- A. Stakeholder Outreach
- B. Wake Wash and Shoreline Erosion Analysis
- C. Ferry Demand Forecast Findings
- D. Preliminary Parking Concepts
- E. Future Phases – Preliminary Design and Environmental



A. Stakeholder Outreach



Summary of Outreach

- **Goal:** Understand the needs, issues, drivers, and likely key questions and areas of concerns of the Study
- **Work Completed:** 25 Stakeholder Interviews
- **Stakeholder Groups:**
 - Government and Elected Officials
 - Environmental Organizations
 - Commercial and Residential Property Owners
 - Community-Based Organizations
 - San Francisco and Regional Leaders
 - Transportation Agencies and Transit Groups
 - Business Leaders



What We Heard

- **Congestion on Sir Francis Drake Boulevard**
 - Limited parking
 - SMART nexus and the U.S. Highway 101 / Interstate 580 connector
- **Decrease of Ridership**
 - Ridership impacted as fewer people commuted for in-person work during COVID-19
- **Environmental Impact Report**
 - Requests for access to subject matter experts on environmental topics related to the Study
- **Transit Connectivity**
 - Make ferry trips and services synchronous with other forms of public transit, such as SMART and Marin Transit
- **Impacts to Nearby Residents**
 - Ferry wake
 - Impact on surrounding wetlands and habitats
 - Visual impact of expanded parking



Who We Engaged With

Elected Officials

Senator Mike McGuire

Senator Scott Wiener

Assemblymember Marc Levine

Assemblymember David Chiu

Assemblymember Phil Ting

Supervisor Katie Rice

Supervisor Dennis Rodoni

Councilmember Catherine Way

Councilmember Scot Candell

Councilmember Gabe Paulson

Councilmember Kevin Haroff

Councilmember Dan Hillmer

Environmental Organizations

Sierra Club

Drawdown Marin

Marin Audubon Society

Business Organizations

Bay Area Council

Larkspur Chamber of Commerce

Residential and Commercial Property Owners

Greenbrae Improvement Club Homeowners Association

Paradise Cay Harbormaster

Paradise Cay Homeowners Association

Marin Country Mart

Transportation/Regional

Seamless Bay Area

SPUR

Marin County Bike Coalition

Ferry Passengers Advisory Committee

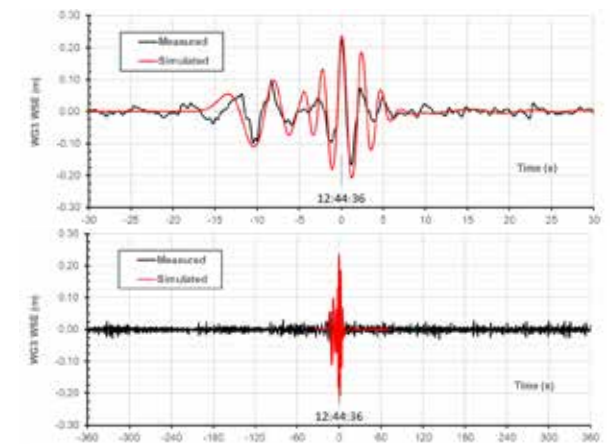
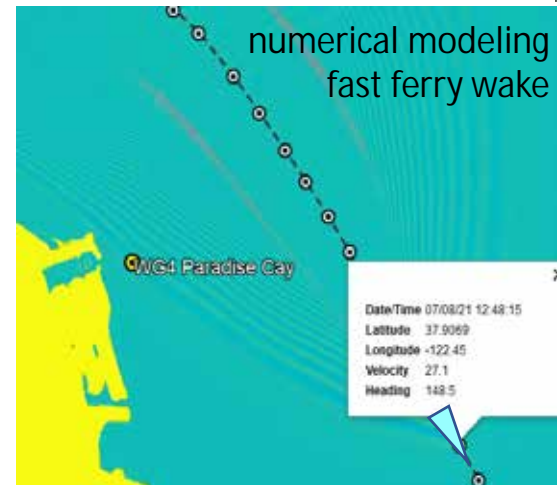
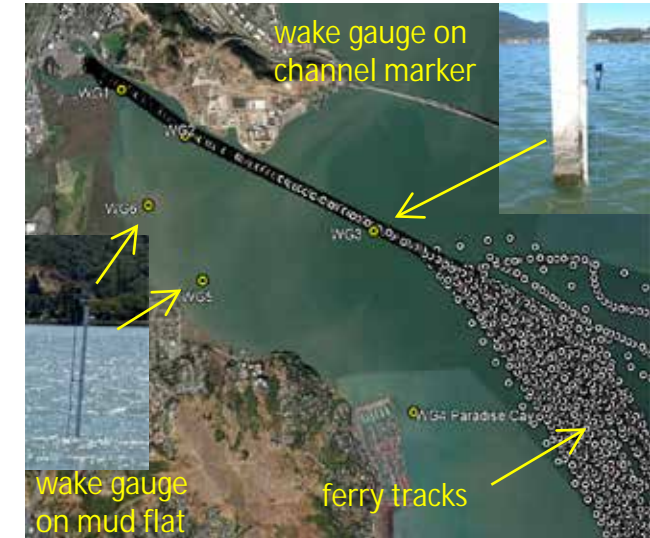


B. Wake Wash and Shoreline Erosion Analysis



Overview – Ferry Wake Analysis

- **Objective:** assess the impact of GGBHTD ferry wakes in the vicinity of the Corte Madera Channel and including the Paradise Cay Yacht Harbor.
- **Methodology:** for the baseline (actual) condition:
 - performed measurements at 6 wake gauge locations (WG)
 - defined design ferries: NAPA and SPAULDING CLASS
 - collected actual ferry tracks (location, speed, heading)
 - for each design ferry, selected one inbound and one outbound tracks
 - simulated wake generation and propagation
 - compared simulations and measurements
 - assessed wake impacts



Comparison: measurement / simulation

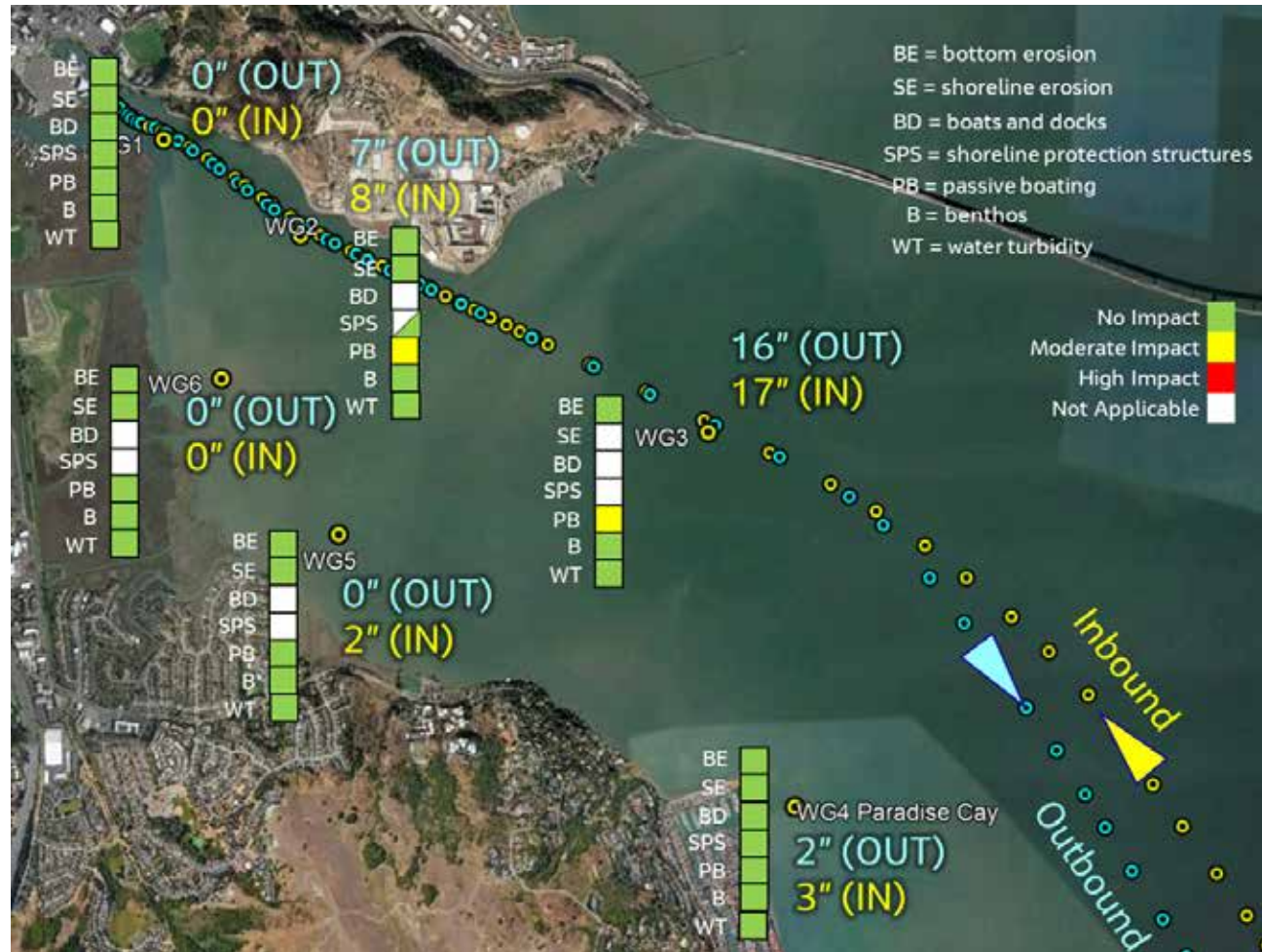


Wake Impact Analysis





Fast Ferry (NAPA) Wake Heights and Impact Assessment



- **Operating Restrictions:** speed restriction through Point San Quentin
- **Bottom erosion:** *no impact* (wakes are small or water depth relatively deep)
- **Shoreline erosion:** *no impact* (wakes are small or shoreline armored)
- **Boats and docks:** *no impact* (wakes less than 1 foot)
- **Shoreline protection structures:** *no impact* (wakes are smaller than 100-year wind wave)
- **Passive boating:** *no impact* if wakes are less than rowing shell freeboard, *moderate impact* if rowing shell not heading into the wakes
- **Benthos:** *no impact* (wake bottom stress does not erode bottom)
- **Water turbidity:** *no impact* (naturally high suspended sediment levels)



SPAULDING CLASS Wake Heights and Impact Assessment



- **Operating restrictions:** speed restriction through Point San Quentin and into the Bay
- **Bottom erosion:** *no impact* (wakes are small or water depth relatively deep)
- **Shoreline erosion:** *no impact* (wakes are small or shoreline armored)
- **Boats and docks:** *no impact* (wakes less than 1 foot)
- **Shoreline protection structures:** *no impact* (wakes are smaller than 100-year wind wave)
- **Passive boating:** *no impact* if wakes are less than rowing shell freeboard, *moderate impact* if rowing shell not heading into the wakes
- **Benthos:** *no impact* (if wake bottom stress does not erode bottom)
- **Water turbidity:** *no impact* (naturally high suspended sediment levels)



Summary – Fast Ferry and Spaulding

Fast Ferry (multi-hull/catamaran) and Spaulding Characteristics

- Multi-hulls have shallower drafts and more beam, displacing less water and therefore producing less wake
- Multi-hulls are wider and more stable, reducing rolling and pitching which can contribute to wakes
- Multi-hulls can plane at high speed, reducing submerged volume and resulting in less drag and wake
- Spaulding-class vessels must operate under speed restrictions into San Francisco Bay to reduce wake impacts

Fast Ferry (catamaran)

No impact

- Corte Madera Marine Ecological Reserve Marsh
- Mudflat Erosion
- Mudflat Water Turbidity
- Natural Shorelines

- Shoreline Protection Structures
- Docks and Boats
- Passive boating – Corte Madera Creek Inlet and mudflat, Paradise Cay Yacht Harbor

Moderate impact

- Passive boating (rowing) – Corte Madera Channel

Spaulding-Class Ferry – extended speed restrictions into San Francisco Bay

No impact

- Corte Madera Marine Ecological Reserve Marsh
- Mudflat Erosion
- Mudflat Water Turbidity
- Natural Shorelines

- Shoreline Protection Structures
- Docks and Boats
- Passive boating – Corte Madera Creek Inlet and mudflat

Moderate impact

- Passive boating (rowing) – Corte Madera Channel, Paradise Cay Yacht Harbor (north and south basins)



Larkspur Ferry – Future Operations

- **October 27 Board Action**

- Vote to move towards all high-speed catamaran (fast ferry) operations in lieu of retrofitting Spaulding-class vessels
- Future fleet will consist solely of fast ferries

- **Fast Ferry Characteristics**

- Key criteria for wake generation – hull design, displacement (weight)
- Wake characteristics are similar across vessels of similar size

- **Environmental Review**

- Baseline (current fleet): mix of fast ferry and Spaulding-class vessels
- Future: fast ferry (catamaran) only



C. Ferry Demand Forecast Findings



Ferry Demand Forecast Approach

- Incorporated key attributes
 - Current ridership
 - Access modes
 - Historical trends
 - Parking occupancy
- Validated TAM model to better reflect current ridership level
- Tested Covid impacts





Challenges and Assumptions

- Covid

- Work from home (WFH) impacts - Downtown SF office vacancy rate to increase from below 5% to approximately 30% in early 2023.
- WFH rates in Marin County increased significantly from 11.4% before the pandemic to 42% during the pandemic.

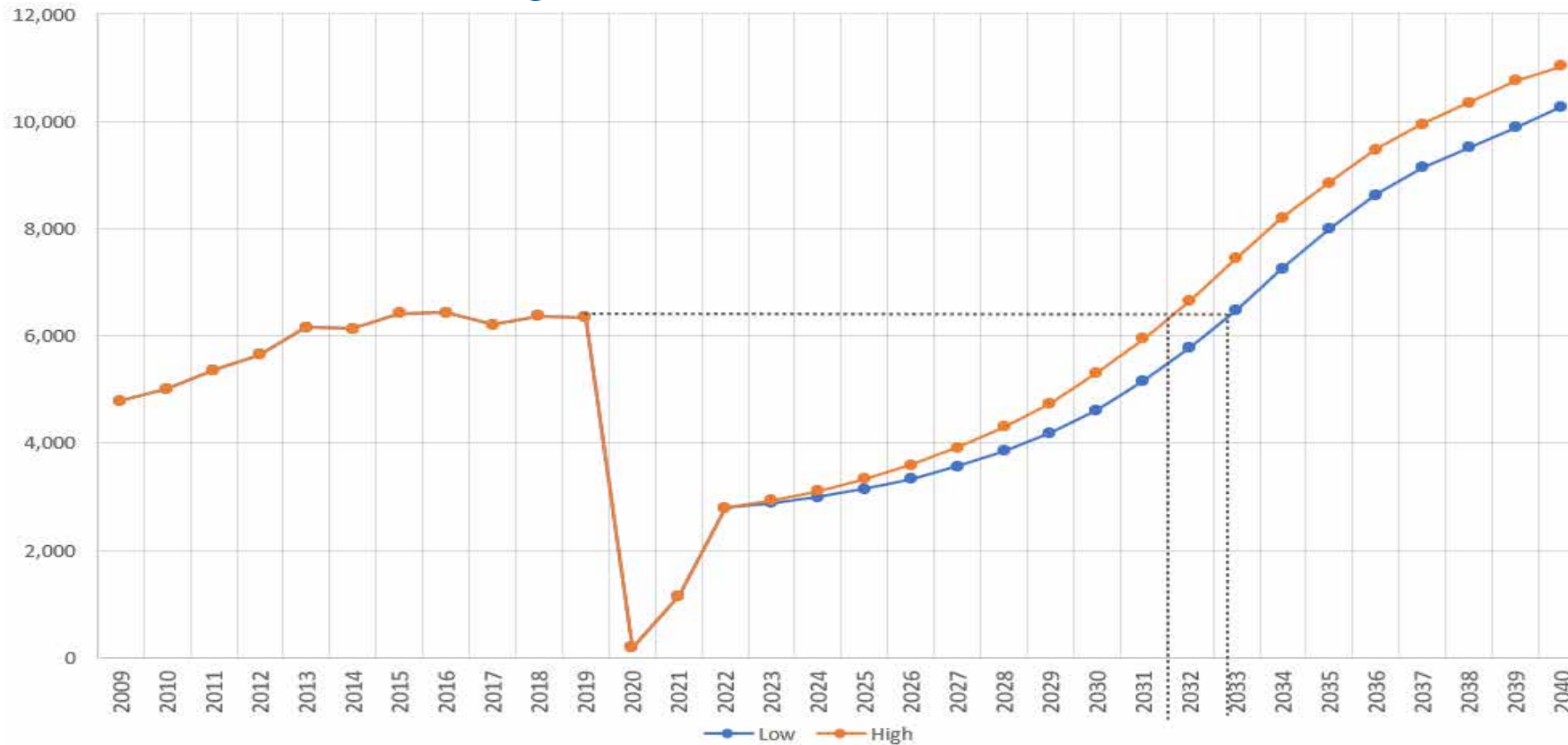
- Ridership Forecast Range

Developed from three WFH Scenarios:

- Pre-COVID (high): 11.4% WFH
- Mid-point: 25% WFH
- Peak COVID (low): 42% WFH



Larkspur Ferry Ridership Forecast



	Existing (2019)	5-Year (2025)	10-Year (2030)	20-Year (2040)
85 th Percentile Daily Ridership	6,348	Low: 3,142 High: 3,326	Low: 4,614 High: 5,307	Low: 10,268 High: 11,031
85 th Percentile Southbound Ridership	3,120	Low: 1,645 High: 1,742	Low: 2,416 High: 2,779	Low: 5,377 High: 5,765



Conclusions and Recommendations

- Covid impacts (WFH and high office vacancy rates) on Larkspur Ferry Ridership would require a few more years to understand
- Continued, shifting ridership characteristics: increases in mid-day, weekend and non-work trips; higher mid-week work trips
- Increased U.S. Highway 101 congestion in the Marin/Sonoma corridor from intra-county suburb to suburb trips will benefit demand for the Larkspur Ferry
- District should monitor ferry ridership changes every 2 years and update future ridership for 2025 and 2030 based on actual ridership data
- Should market conditions change in downtown San Francisco, ferry ridership may return to 2019 levels sooner than forecast



D. Preliminary Parking Concepts



Facility Design Considerations

- **Visual impacts**
- **Seismic stability**
- **Pedestrian access**
- **Demand management**
- **Multimodal and multi-use**
- **Bay and environmental impacts**
- **Displacement during construction**
- **Phased approach:** near/medium and long-term needs





Preliminary Parking Concepts

- Main Lot
- Overflow Lot

Note: The concepts are shown by massing only. No architectural design theme has been applied yet.



Preliminary Parking Concepts - View



Hillside View

Boardwalk View

Surroundings



Sir Francis Drake Views

Approach

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LARKSPUR FERRY PROJECT
PARKING STRUCTURE CONCEPT REVIEW, 11-08/2021



Option 1 – Main Lot - Overview

Pro

- Close to terminal
- Architecture
- Outside BCDC line

Con

- Construction impact





Option 1 – Main Lot - Overview

VARIATIONS

Alternates of the same concept are possible and may include

- Elongated shape
- Single-level full floor plate.



Pro

- Close to terminal
- Architecture
- Outside BCDC line

Con

- Construction impact



Pro

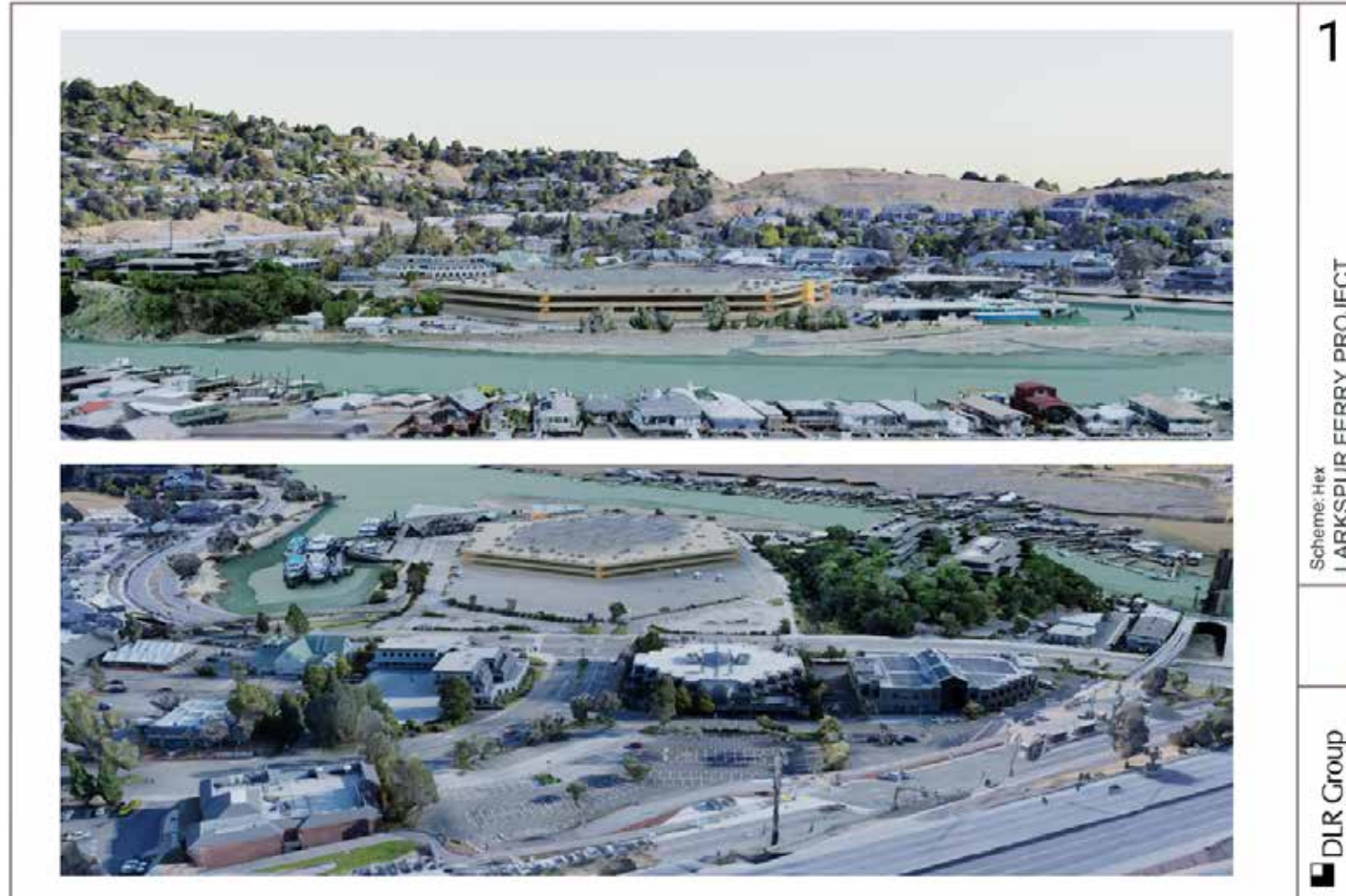
- Close to terminal
- Semi invisible (views)
- Flexible phasing
- Low cost

Con

- Grazing BCDC line




Option 1 – Main Lot - Visual



1

Scheme: Hex
LARKSPUR FERRY PROJECT

 DLR Group
Architectural Engineering Planning Interiors



Option 1 – Main Lot - Views



1

Scheme: Hex
LARKSPUR FERRY PROJECT

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Architecture Engineering Planning Interiors



Option 2 – Overflow Lot - Overview

Pro

- Low visual impact
- Low construction impact
- Multi-modal

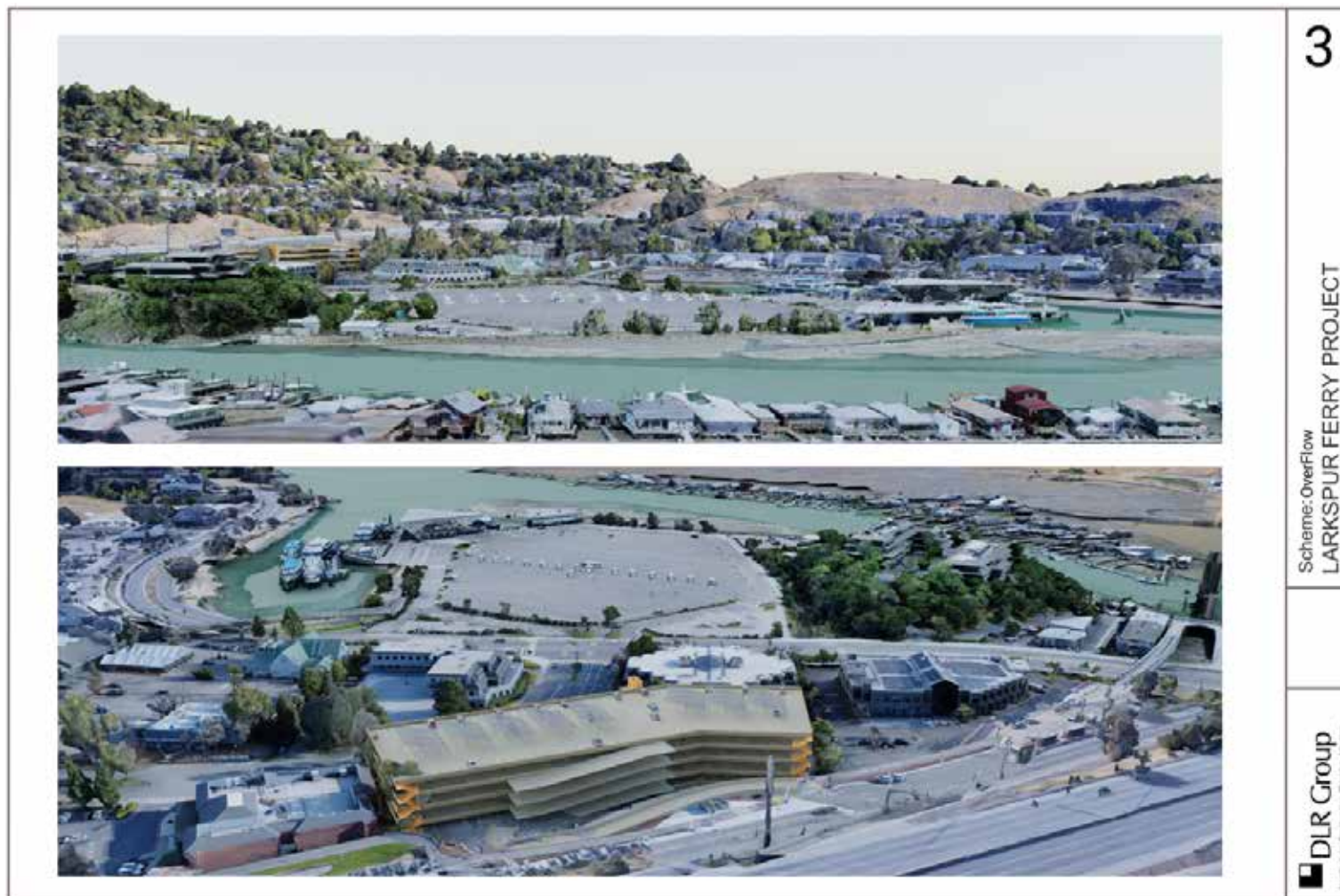
Con

- Limited capacity
- Walking distance






Option 2 – Overflow Lot - Visual



3

Scheme: Overflow
LARKSPUR FERRY PROJECT

 DLR Group
Architecture Engineering Planning Interiors



Option 2 – Overflow Lot - Views



3

Scheme: Overflow
LARKSPUR FERRY PROJECT

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Architectural Engineering Planning Interiors



Preliminary Alternative Recap

Option 1 - Main Lot	Option 2 – Overflow Lot
Good ferry terminal access	Further pedestrian access
High Construction Impact	Low Construction Impact
	Multi-Modal

- Phased Implementation Approach
 - Mid- and Long-Range Parking Demand
 - Flexibility to meet future Ferry customer needs



Key Issues and Evaluation Criteria

- **Areas of Concern** (stakeholders)
 - Wake wash
 - Visual impacts
 - Traffic
- **Evaluation overview**
 - Sustainability & Climate Resiliency
 - Mobility & Accessibility
 - Community & Environment
 - Cost

VIEW OF THE PROJECT AREA - TRAFFIC IN THE VICINITY (U.S. Highway 101 INTERCHANGE AND ADJACENT)





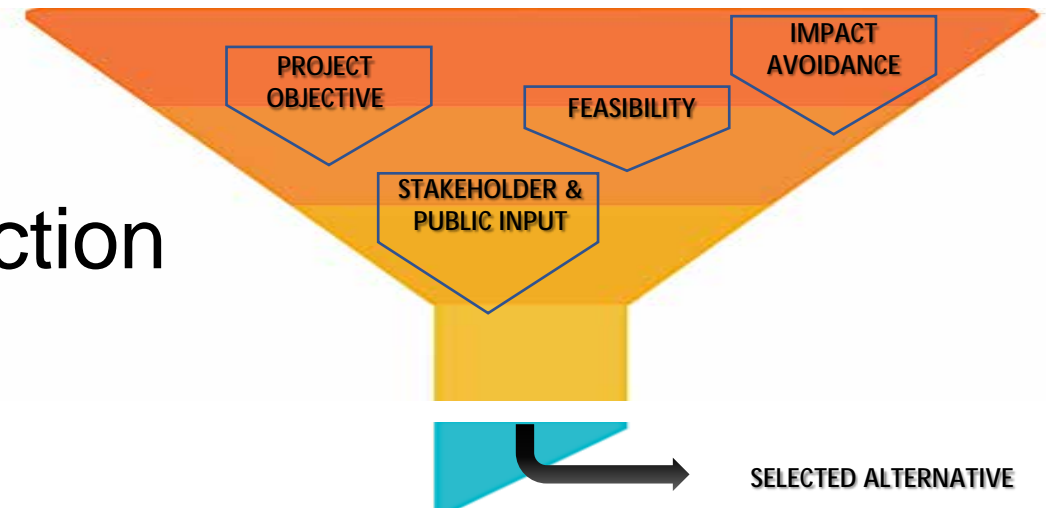
E. Future Phases

Preliminary Design and Environmental



Public Outreach & Alternative Evaluation

- Public input on preliminary design alternatives and water-side impacts
 - Q1 2024
- Alternative evaluation and selection
 - Q1-Q2 2024





CEQA and Tiered Environmental Document Approach

CEQA Process

Evaluation of the preferred alternative

- Air Quality and Greenhouse Gas Report
- Aquatic Resources Delineation Report
- Community Impact Assessment
- Cultural Resources Assessment
- Natural Environment Study
- Noise Study Report
- Vehicle Miles Traveled Analysis
- Visual Impact Analysis
- Wake and Shoreline Erosion Analysis

Environmental Strategy Approach – Tiered Document

- Programmatic environmental document for long-term horizon
- Project-level approval for immediate need
 - Short-, medium- and long-term horizons
- Addressing cumulative impacts allows tiering on original document at later stages

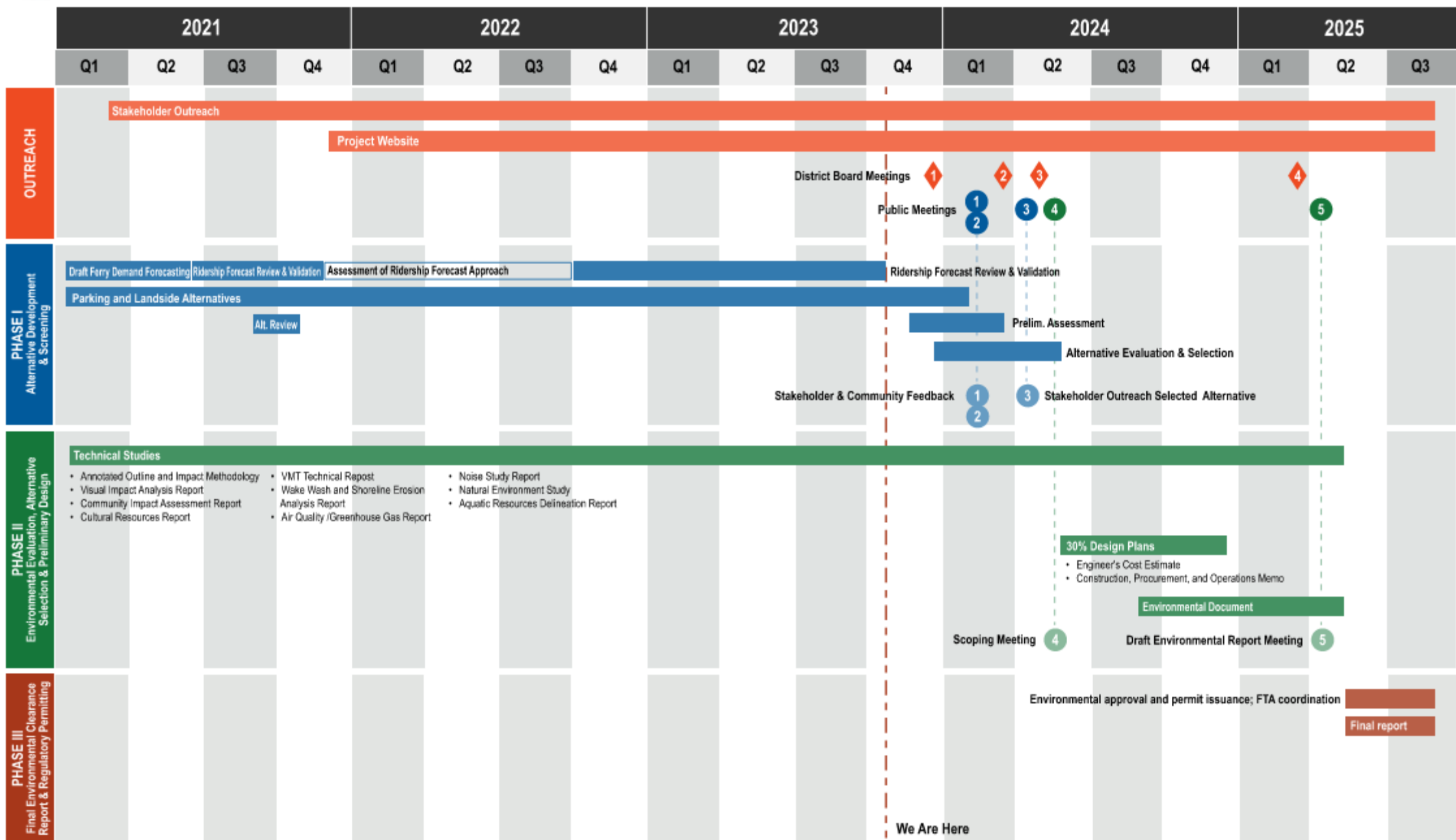


Project Completion

- **Environmental**
 - Environmental Document and CEQA Findings
- **Preliminary Design for Potential Expanded Parking Facilities**
 - 30% Preliminary Landside and Parking Structure Design Study
 - Geotechnical and Seismic Studies
 - Engineers Estimate of Probable Cost
 - Memorandum: Constructability, Procurement and Operations
- **Board Decision Point**
 - When and how to move forward with design and implementation



3. Schedule and Next Steps



We Are Here



Current and Upcoming Activities

- **Underway (2023 - early 2024)**
 - Parking Demand Forecast
 - Preliminary Parking Concept Updates
 - Preliminary Landside Access Scenarios
- **Upcoming Activities (2024 - 2025)**
 - Preliminary Evaluation of Parking Concept Alternatives
 - Stakeholder & Public Outreach – impacts to land-side and water
 - Parking Concept Re-evaluation and Selection
 - Incorporate stakeholder input > Select project alternative > Outreach to stakeholders and public re: selected alternative
 - CEQA Review and Preliminary Design Study

