

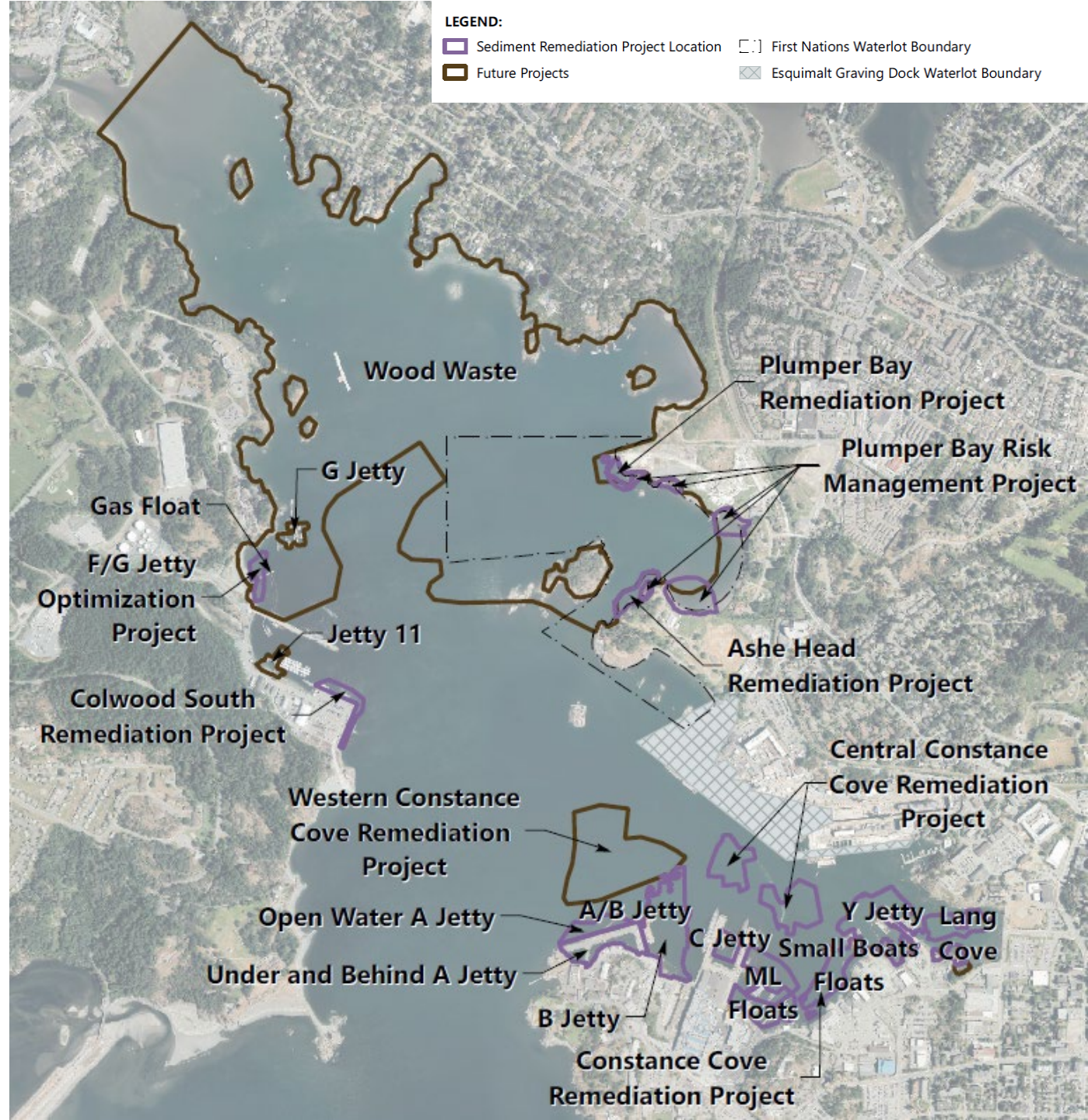
Operational Considerations for Implementing a Harbour-Wide Remedy in an Active Naval Harbour

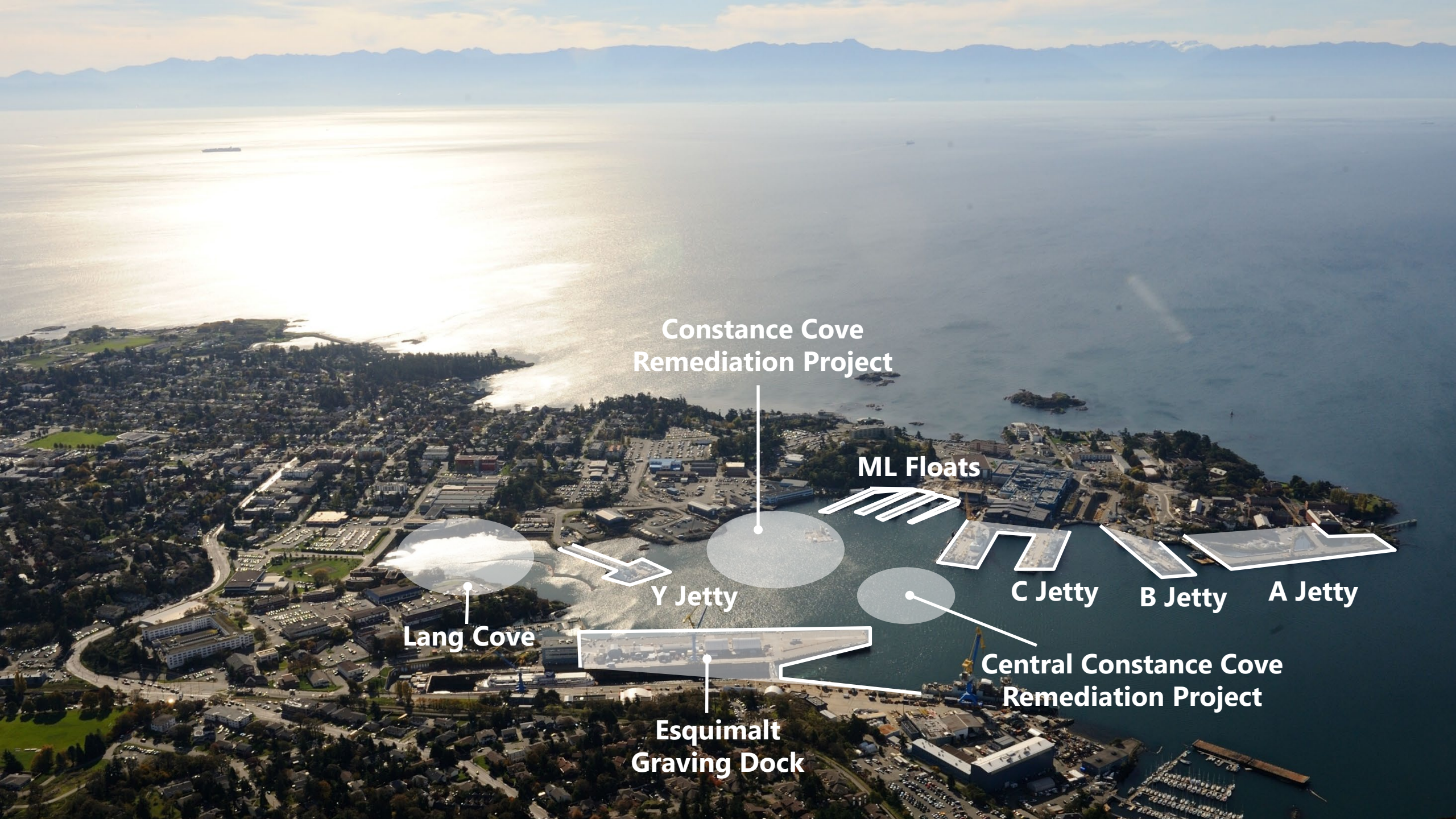
Presented by: Matt Woltman, PE, LEG, Anchor QEA
Collaborators: Michael Bodman, Department of National
Defence, Government of Canada; Shauna Davis, Defence
Construction Canada, Government of Canada



Welcome to Esquimalt Harbour!

- Pacific homeport of the Royal Canadian Navy
- Crown-owned harbour, including seabed





Constance Cove
Remediation Project

ML Floats

Lang Cove

Y Jetty

C Jetty

B Jetty

A Jetty

Esquimalt
Graving Dock

Central Constance Cove
Remediation Project

Sediment Remediation in an Active Naval Harbour—Strategies

CHALLENGE

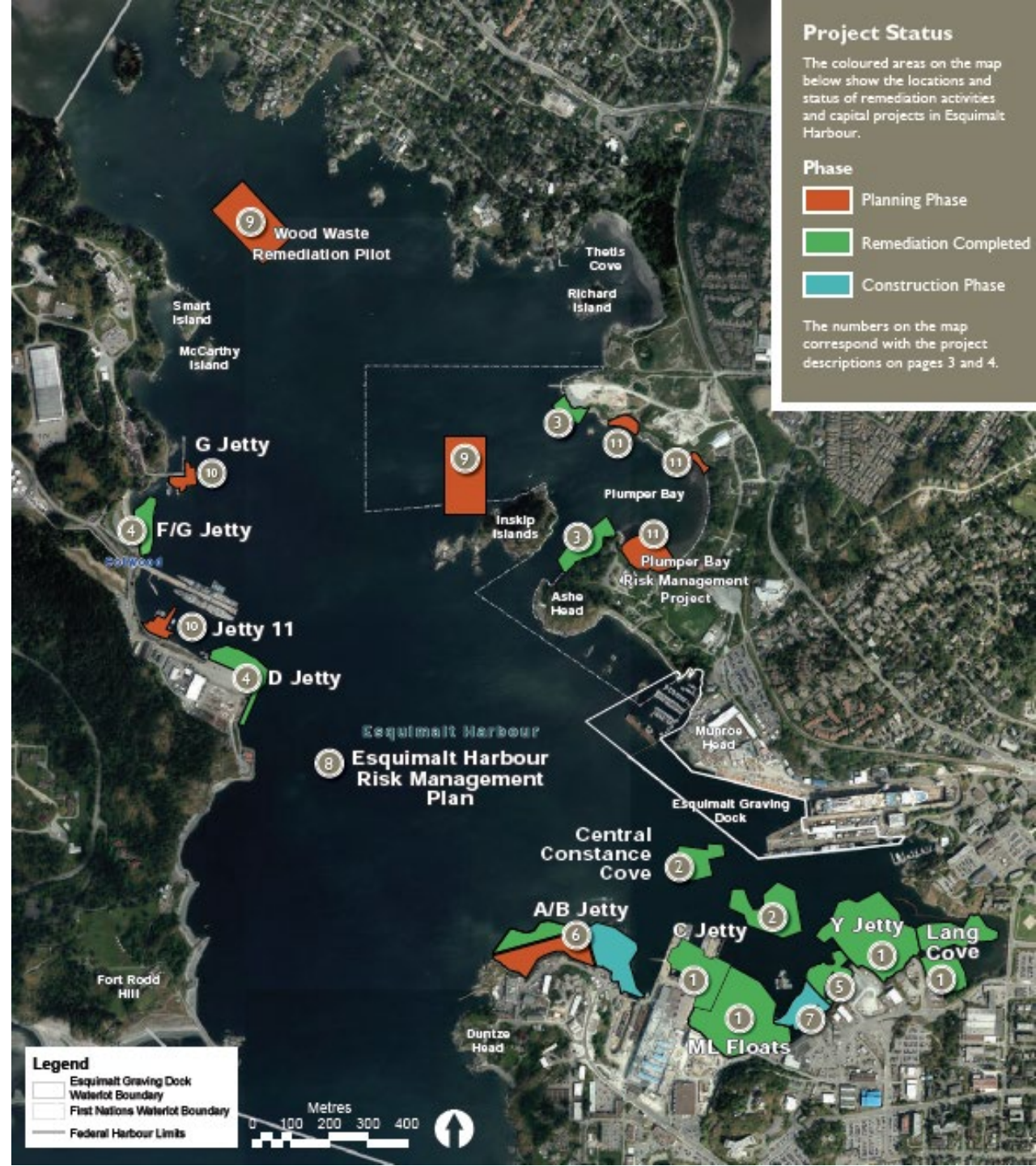
How to Work in an Active Harbour?

- Planning
- Stakeholder coordination
- Contractual controls
- Adaptive management



Planning: Discrete Projects

- Manageable project size
- Sequencing by location
- Certainty on project timing
- Ability to use lessons learned



Planning: Operational Projects

- Combine sediment remediation with capital projects
- Align remediation and recapitalization goals



External Stakeholder Coordination

- Public communication
 - Numerous municipalities surrounding harbour
 - Website, social media, and public outreach sessions
- First Nations engagement
 - Within the Traditional territory of both the Songhees Nation and Esquimalt Nation
 - Reconciliation and building strong relationships
 - Indigenous benefits requirements in project bids



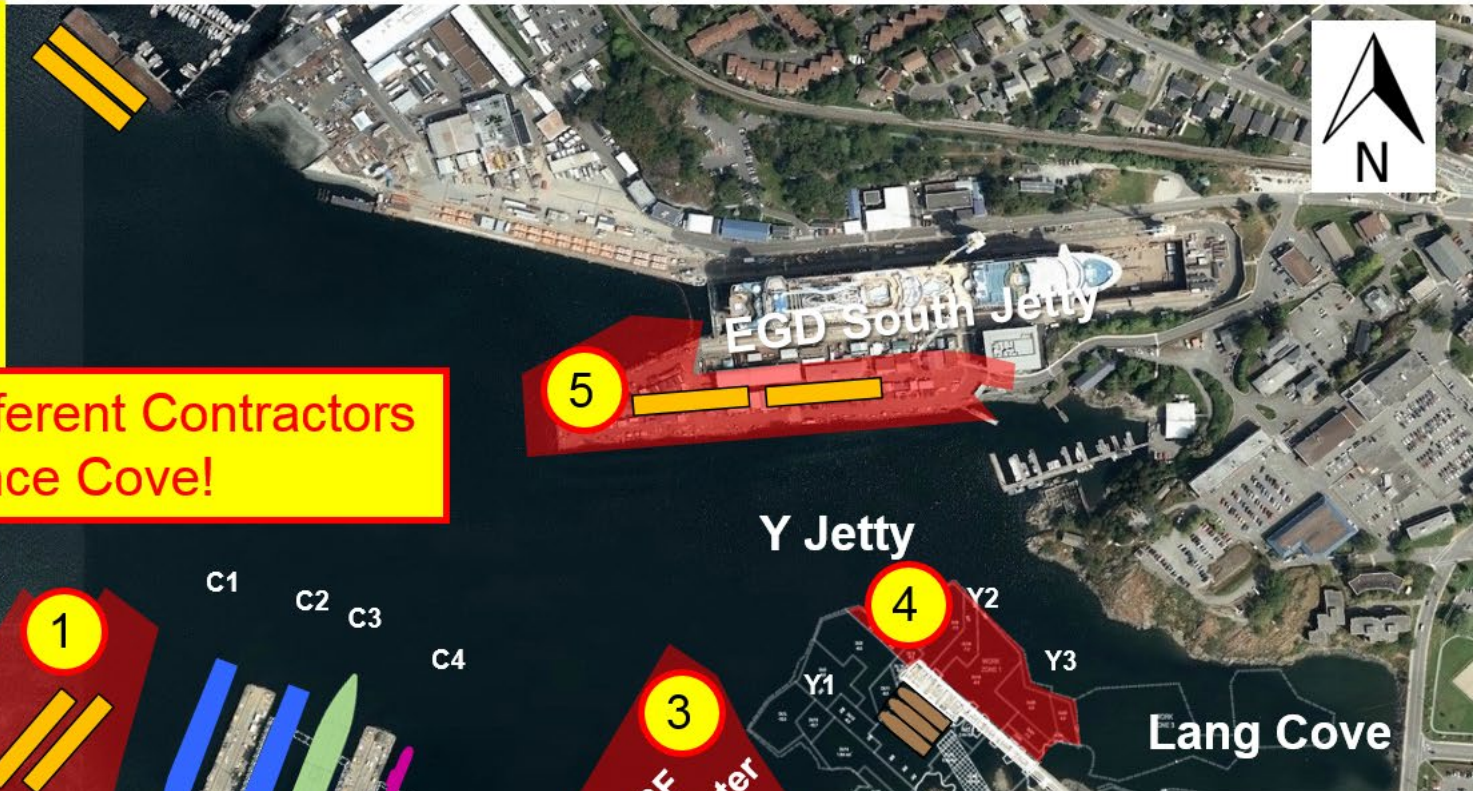
Internal Stakeholder Coordination

- Up to 8,000 personnel on site (military and civilian)
- Weekly brief to senior leadership
- Monthly harbour coordination meeting
- Quarterly harbour-wide stakeholder meeting

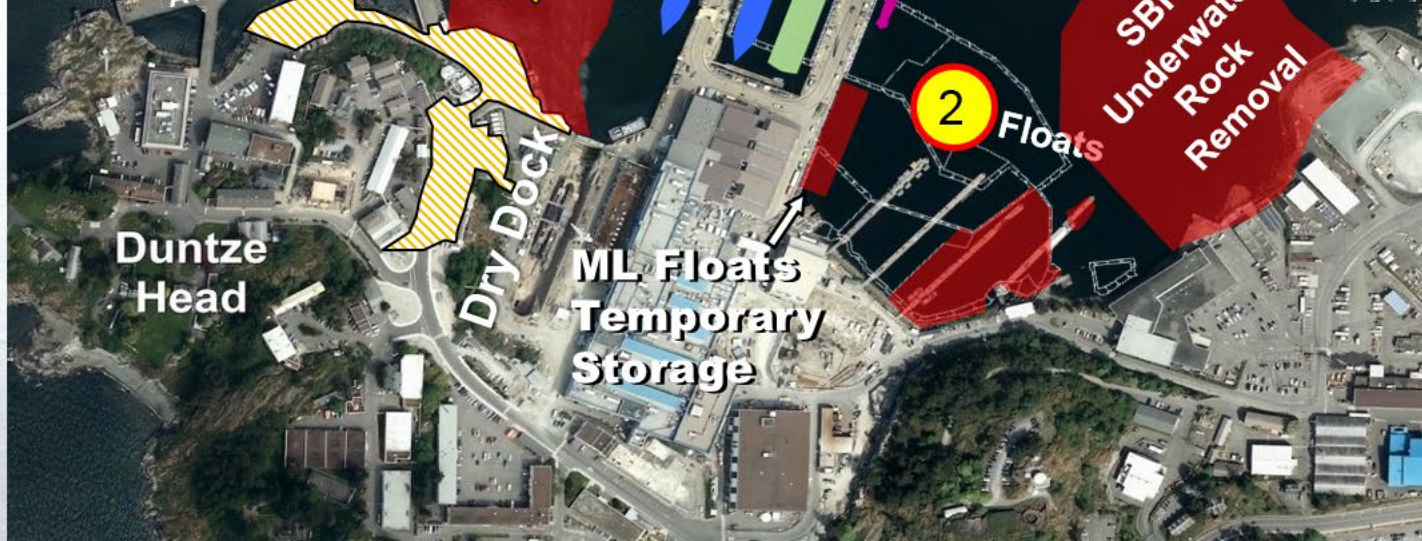




Potentially Five Different Contractors in Constance Cove!



Number of Ships Alongside	Jan				Feb			
	7	14	21	28	4	11	18	25
15								
14								
13								
12								
11								
10								
9								
8								
7								
6								
5								
4								
3								
2								
1								



Legend

- Berth Out of Service Due to Remediation /Construction
- Visitor
- Kingston / Orca Class
- Victoria Class
- Halifax Class SWP
- Halifax Class Esq Avail
- B-Jetty Contractor Area
- Contractor Barges





Contractual Controls

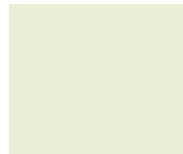
- Naval priority over contractor's work—maintain operational readiness
- Requirement to remain fixed in place during naval vessel movements
- Directed moves
- Paid standby time contingency



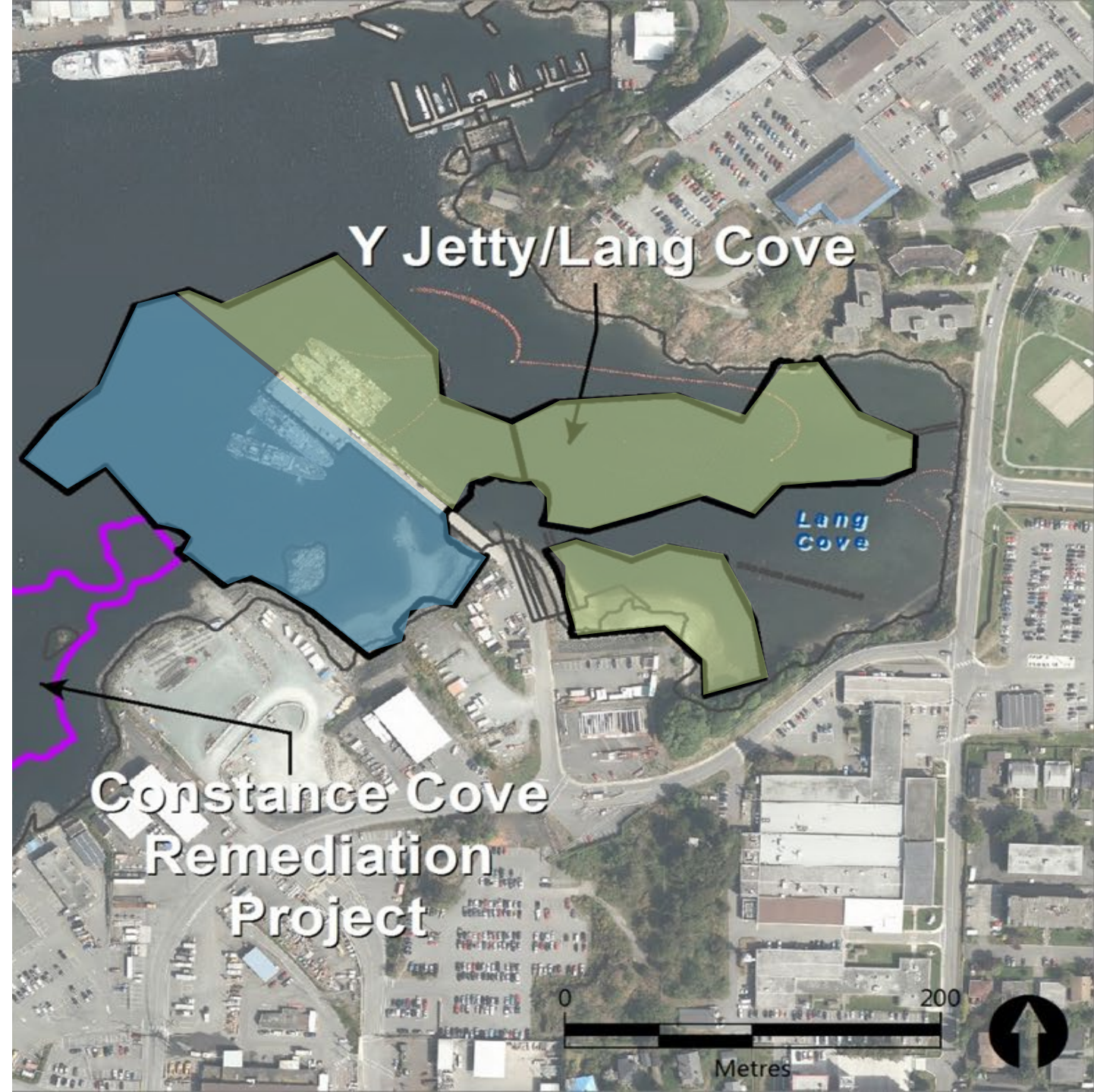
Y Jetty/Lang Cove Project Sequencing Requirements



Work Zone 1



Work Zone 2



Contractual Controls

- Structure protection
 - Offsets and requirements for fixing damage
- Vessel certification program
 - Special procedures for Harbour Control specification section
 - Compliance with national programs
 - Vessel/barge inspections
 - Owner-hired certified marine inspector



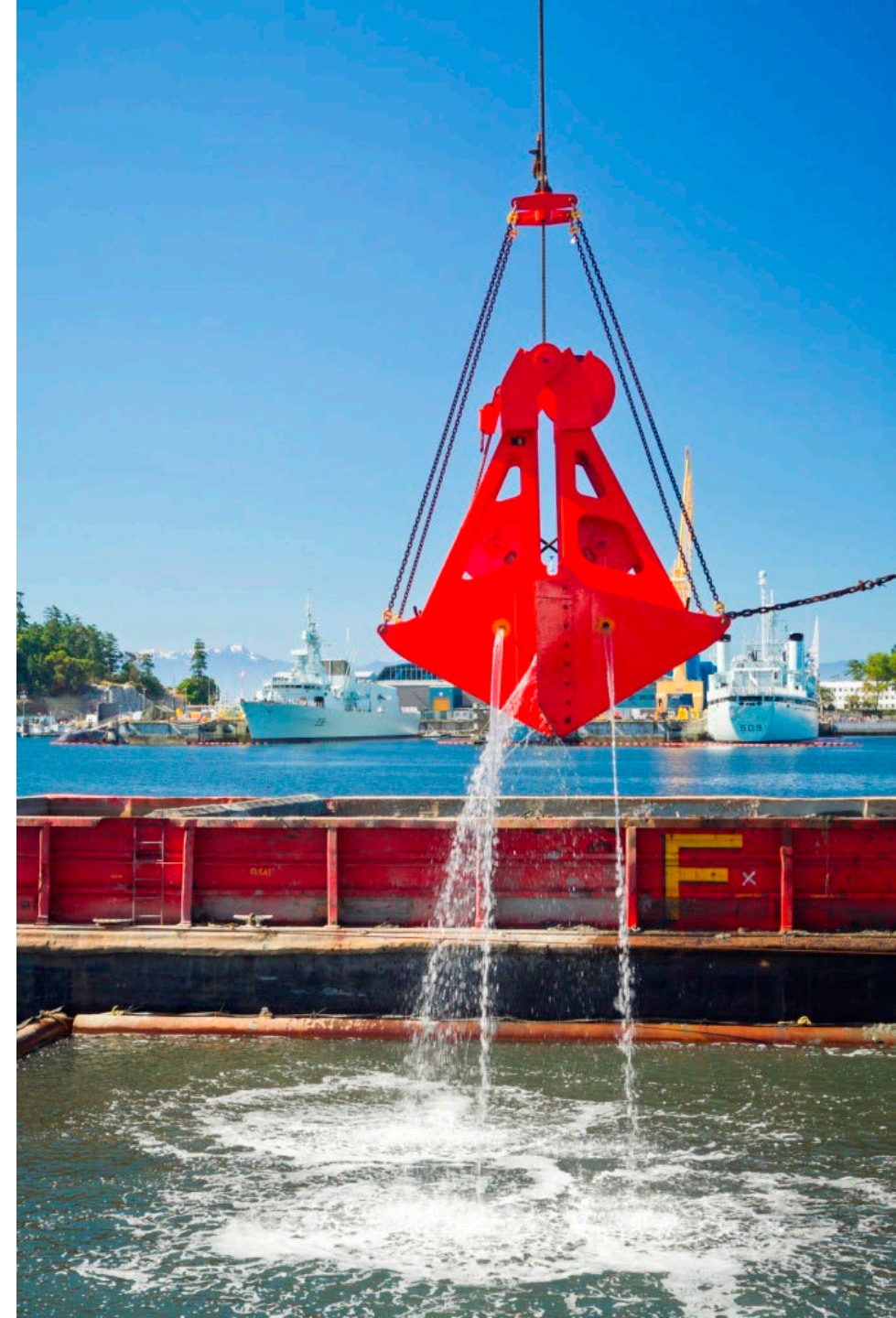
Adaptive Management

- Daily communications with King's Harbour Master for vessel movements
- Multiple rounds of post-dredge sampling/monitoring in active parts of harbour to account for propwash
- Site-specific Institutional Controls implemented after construction



Lessons Learned

- Organizational champion
 - Ability to coordinate multiple stakeholders
 - Respected within organization
- Planning and being realistic are key
- Communication is important!
- Incorporate lessons learned into
- Maintain flexibility during implementation
- Contractor equity; balancing risk through payment for uncertainty

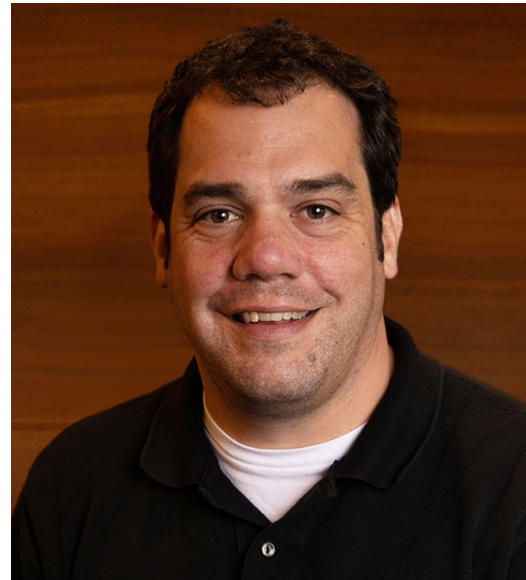


Summary

- Over 12 sediment remediation sites are complete to date
- Remedies include, dredging, capping and structure demo/reinstatement
- To date: 215,000 cubic meters (~300,000 cubic yards) of contaminated sediment removed!



THANK YOU



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