



# Rock Bay Remediation – Summary and Lessons Learned



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WODCON XXI

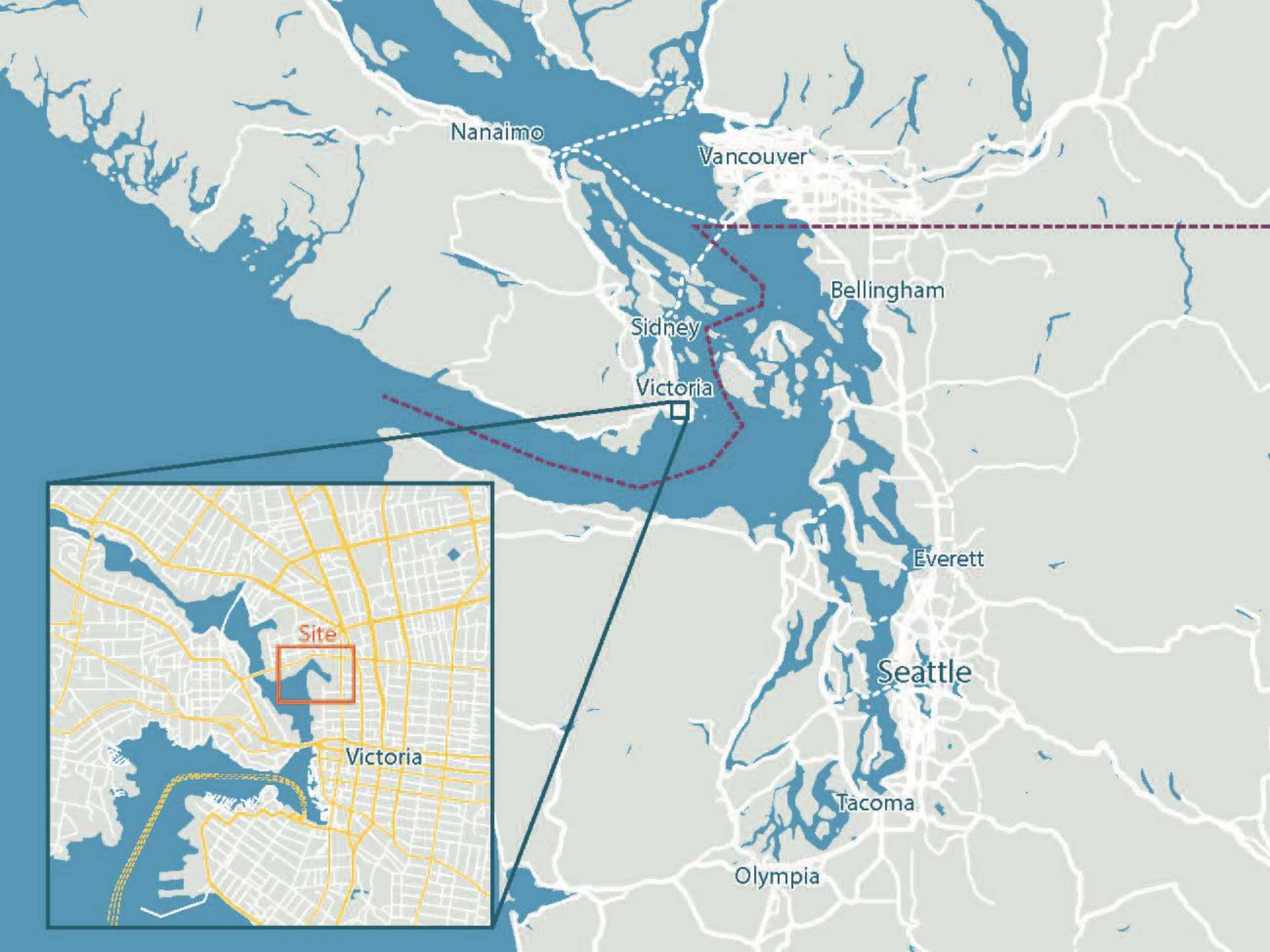
June 13-17, 2016

# Outline

- Project Overview
- Design-Build Approach
- Team Communication
- Change Management
- Quantity Tracking
- Lessons Learned



# Rock Bay Remediation Project Overview



# Overview: Stages of Work

## Stages

Stage 1	August 2004 to September 2005
Stage 2	September 2005 to August 2006
Barclay Point	September 2008 to October 2009
Stage 3	June 2014 to January 2016



# Overview: The Plan



*Photograph credit: Heath Moffat Photography*

- Site preparation
- Cofferdam to seal off the bay
- Bypasses for 626 and 627 storm sewers
- Shoring along upland property lines
- Draining of the bay
- Excavation and transport of estimated 90,000 tonnes of material
- Treatment and disposal of contaminated soils
- Backfilling and shoreline restoration

# Overview: The Plan (cont.)



*Photograph credits: Heath Moffat Photography*

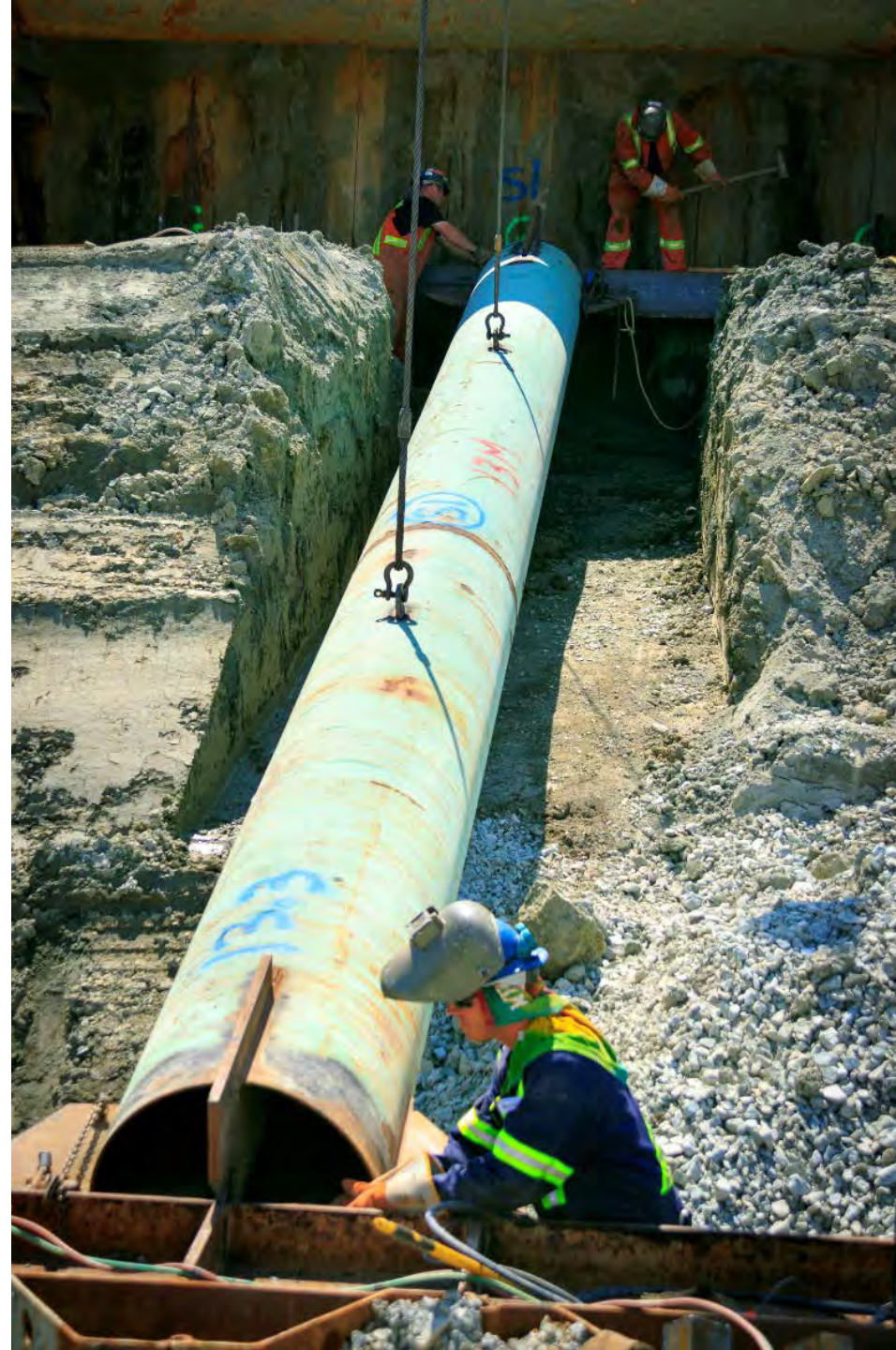
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# Design-Build Approach



# Design-Build Approach

- Risk management
- Cost control
- Allows contractors to use their creativity
- Allows innovative solutions balanced with practical engineering
- Quick response to project issues



# Rock Bay Remediation Team Communication

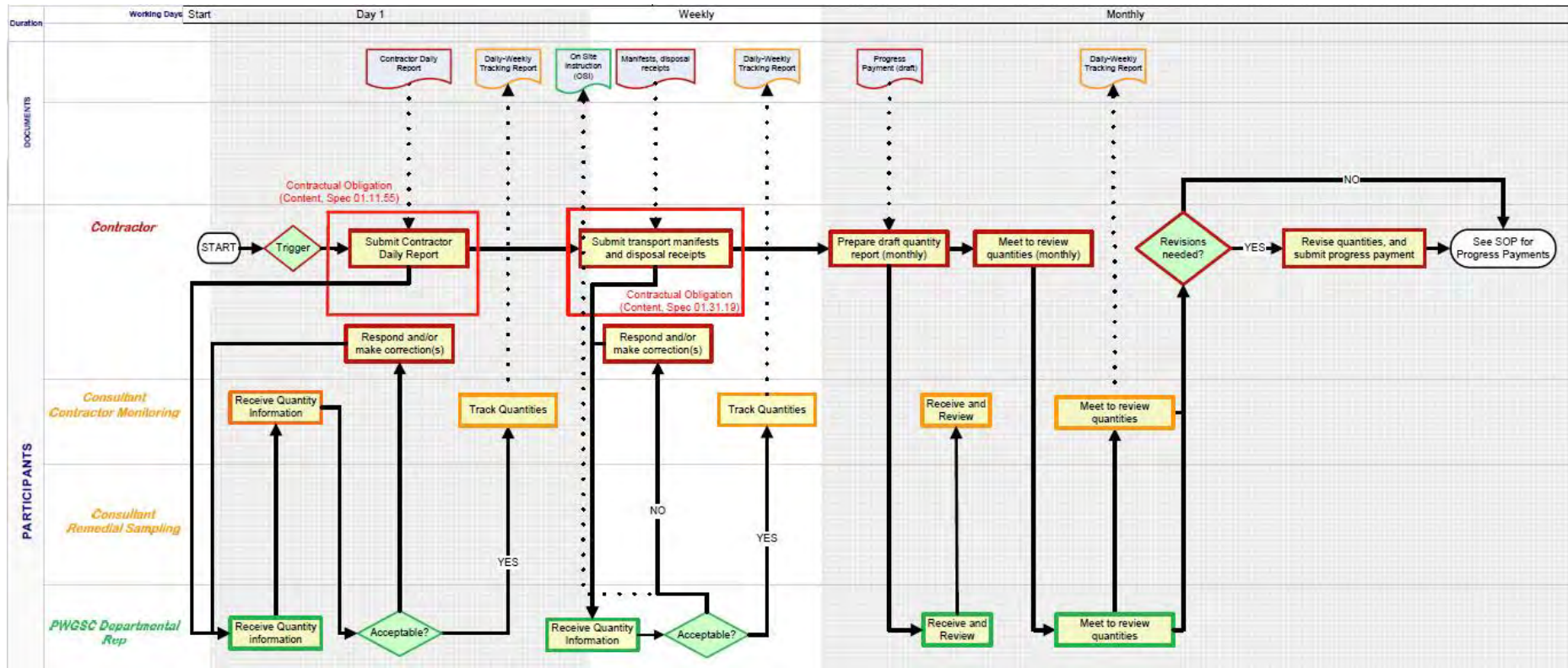
# Team Communication

- Form a strong owner's team
  - Multiple consultants
  - Joint project with TC and PWGSC
- Rock Bay 101
  - Project history
  - Team introduction
  - Project goals



# Team Communication (cont.)

- Standard Operating Procedures (SOPs)
  - Consistency in implementation
  - Allowed auditing for compliance
  - Adapted SOPs to real-world conditions

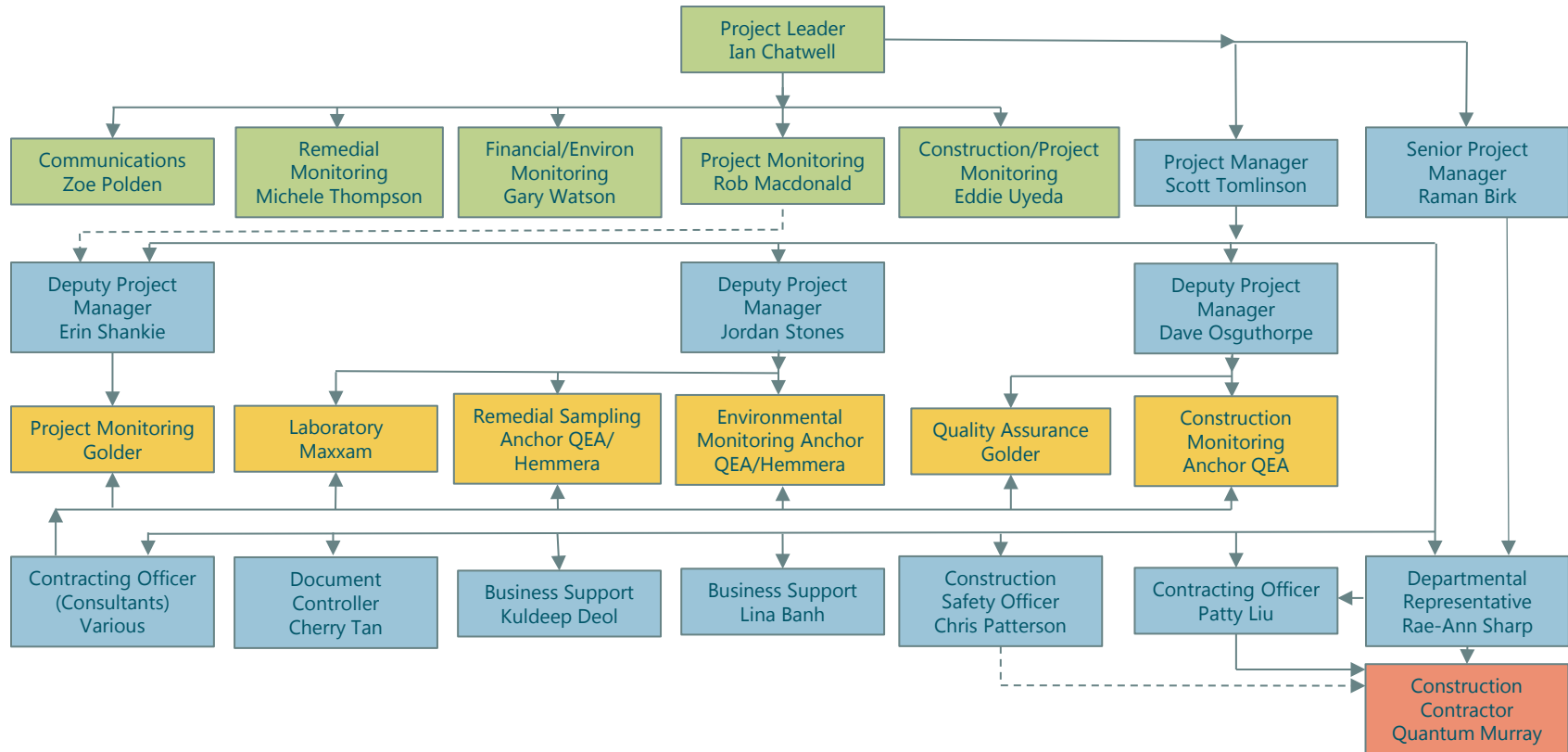


# Team Communication (cont.)

- Complex reporting structure
  - Multiple organizational charts
- Understanding roles and responsibilities
- Field presence
- Focus on communication



# Team Communication (cont.)



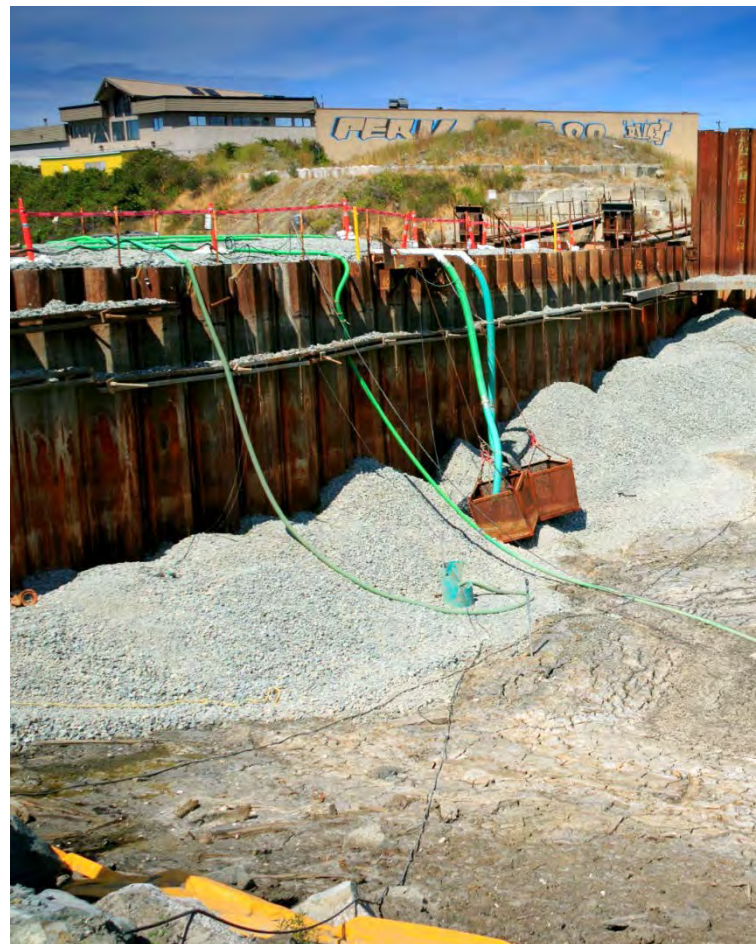
LEGEND		
Green = Transport Canada	Solid line = Line authorities (e.g., primary instructions)	Notes: Not a communications chart. Only major responsibilities listed. Primary reporting flows in opposite direction of arrows.
Blue = PWGSC	Dashed line = Functional support (e.g., secondary direction)	
Yellow = Consultant	Arrows = Flow of instructions/direction	
Red = Contractor		

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# Change Management

# Change Management

- Submittal review
- Requests for Information/  
on-site notifications
- Direction to contractor/  
on-site instructions
- Contractor responsible for  
means and methods on site
- Still allowed for changed  
conditions
- What constitutes a change







*Photograph credit: Heath Moffat Photography*



# Rock Bay Remediation

# Quantity Tracking

	<b>Material Description</b>	<b>Actual Quantity</b>
	Hazardous Waste (HW Hydrocarbons and CL+Metals)	18,000 tonnes
	Non-hazardous Contaminated Waste – Comingled (CL+Metals and CL+Hydrocarbons)	35,000 tonnes
	Non-hazardous Contaminated Waste – Non-treatable (CL+Metals)	26,000 tonnes
	Non-contaminated Waste (CL)	12,000 tonnes

Notes:

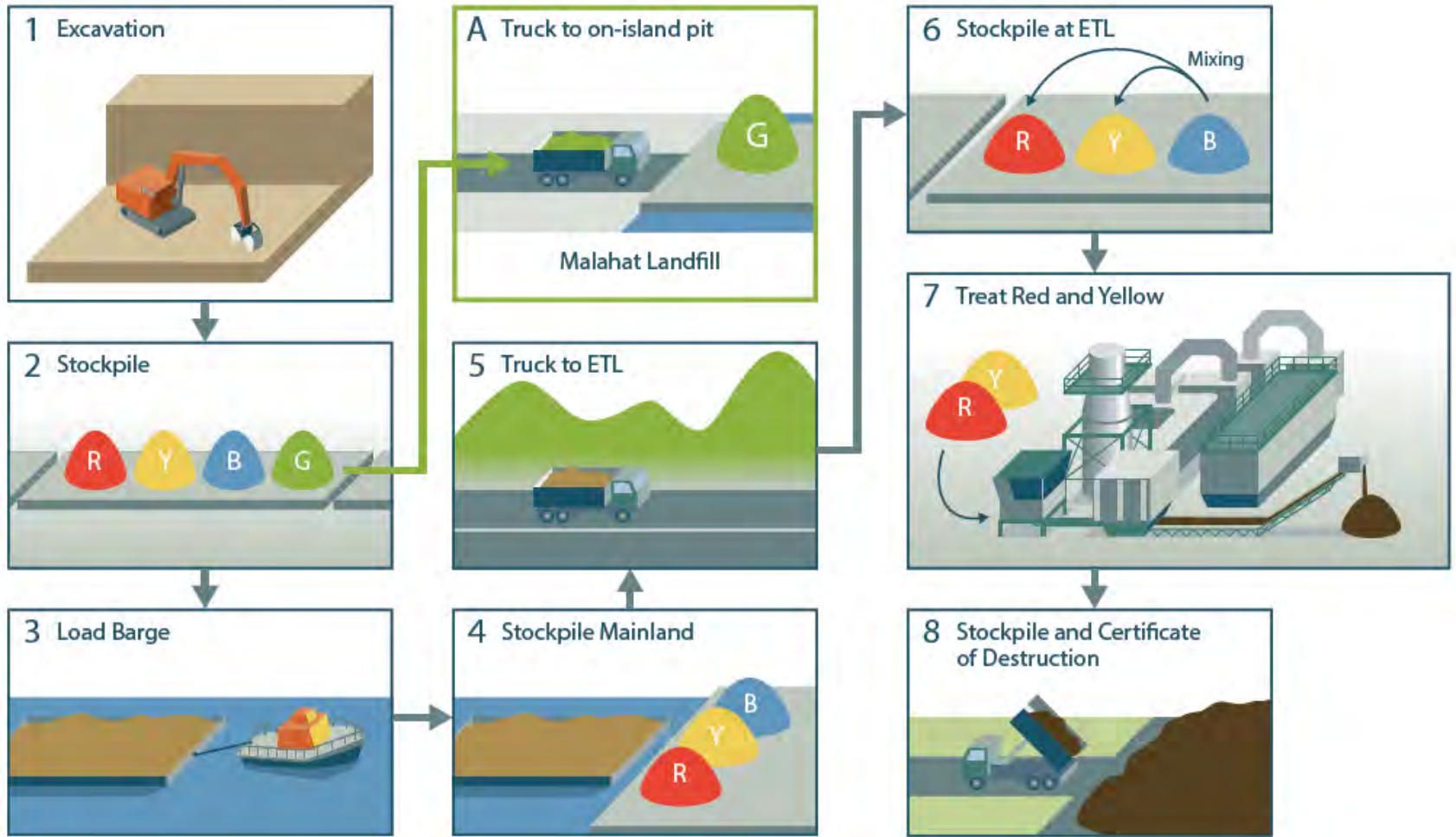
CL = Commercial Landfill or Disposal Facility

HW = Hazardous Waste

### Summary of Quantities

Excavated Soils	91,000 tonnes
Contaminated Soils	79,000 tonnes
Treated Soils	53,000 tonnes
Backfill Imported	76,500 tonnes

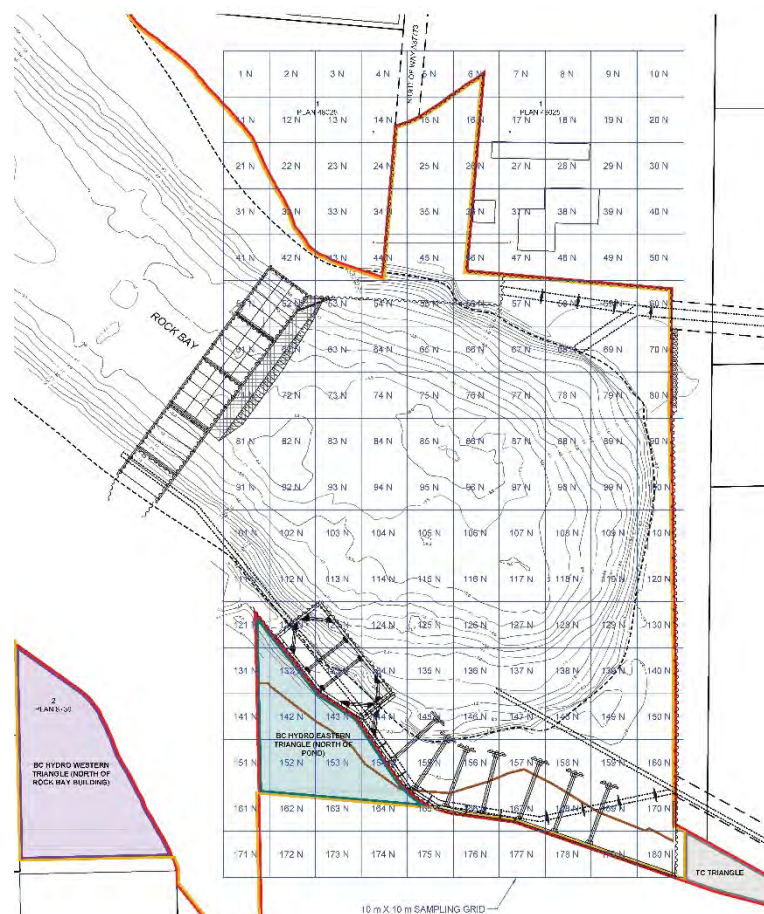
## Pre-classification of Materials



# Quantity Tracking

# Quantity Tracking

- Use of slice diagrams
- Work done in the dry
- Truck counting and estimating quantity of material for each truck
- Truck scales used to correlate tonnage



# Classification of Materials



*Photograph credit: Heath Moffat Photography*



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# Quantity Tracking

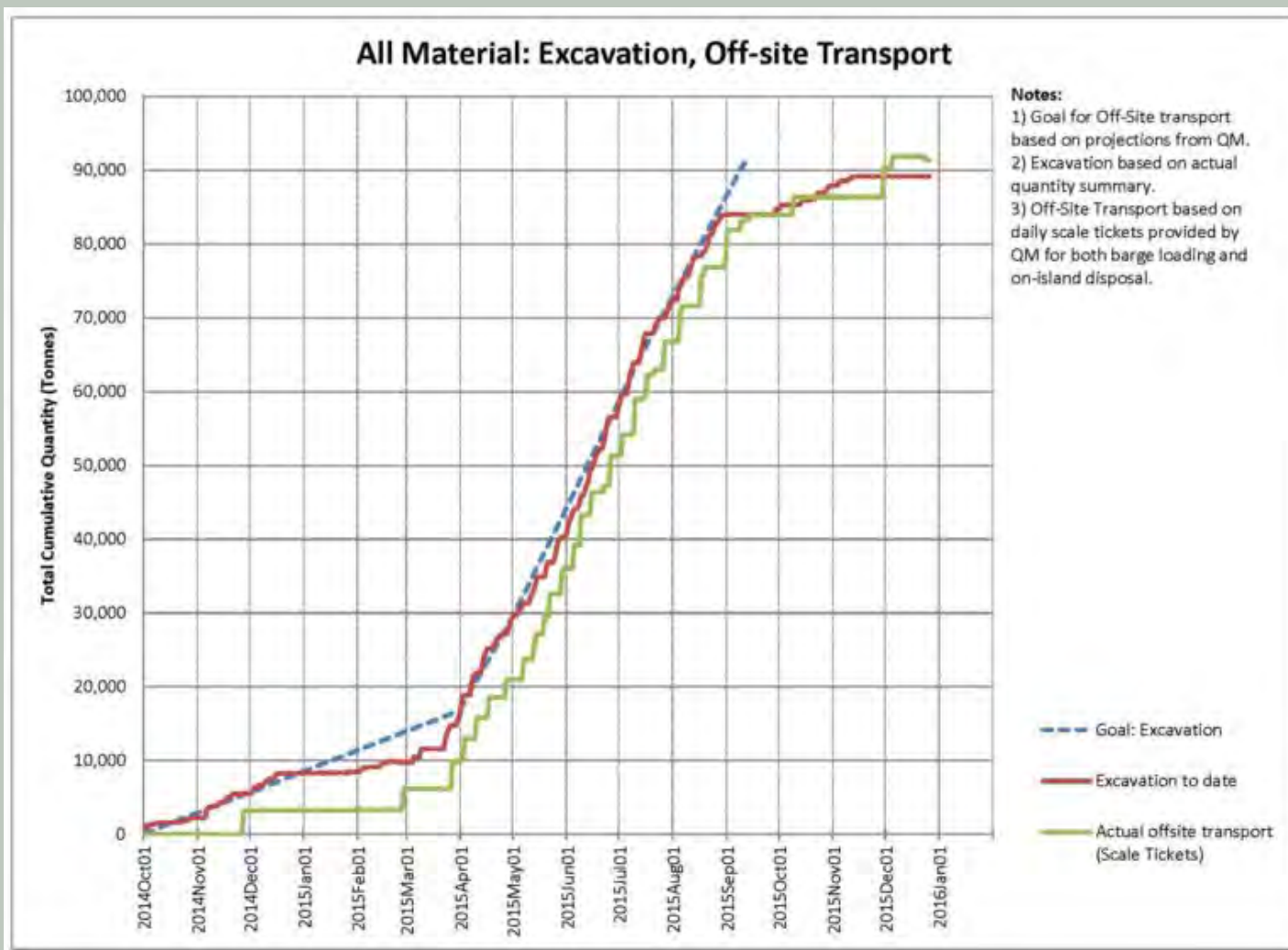
- Stockpile measurement
- Profiling of materials conducted at excavation and confirmed with post-excavation sampling
- Survey checks to verify limits
- Estimate quantity at completion



*Photograph credit: Heath Moffat Photography*

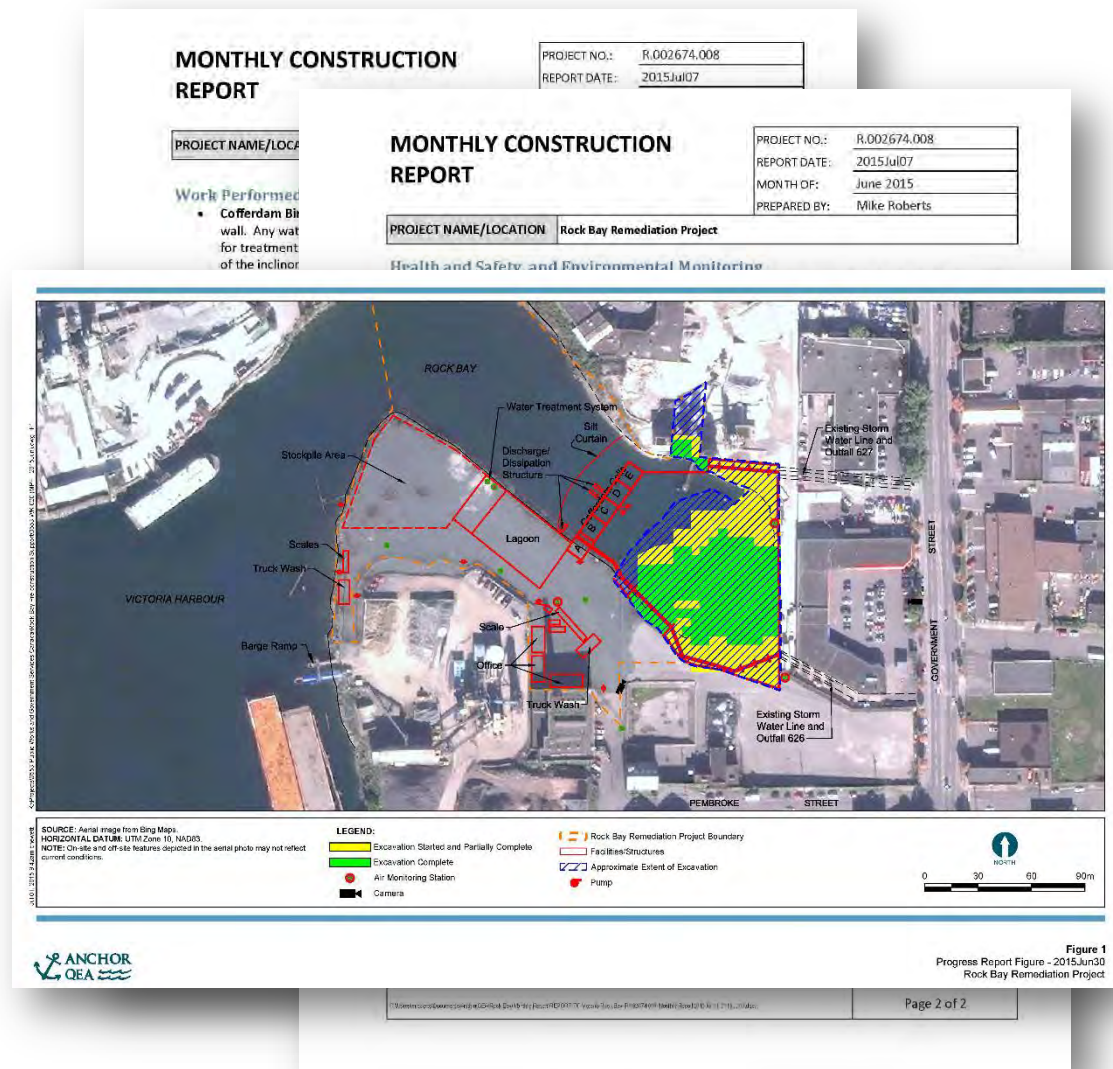


# Quantity Tracking (cont.)



# Reporting of Progress, Schedule, and Budget

- Schedule review
- Monthly earned value reporting
- Progress reporting
  - Daily report
  - Weekly reporting
  - Monthly reporting





# Rock Bay Remediation

# Lessons Learned

# Lessons Learned

- Design-build
  - Permitted flexibility and adaptability during construction
  - Needed strong requirement for work plans
  - Left means and methods up to the contractor
- Tracking quantities
  - Required all trucks to be weighed
  - Ensured clarity on measurement and payment
  - Provided progress surveys to verify progress and as-built of surface



# Questions

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