DREDGING THE MIGHTY FRASER RIVER

Port of Vancouver | Delta Community Office
November 28, 2017
FRPD > About Us
Fraser River Pile & Dredge (GP) Inc. (FRPD) is one of Canada's largest Marine & Infrastructure, Land Foundations and Dredging contractor.
● Marine Construction Capabilities for any size structure or facility on Canada’s West Coast
● 10 Marine Derricks to 350 Ton Craning Capacity
● 16 Cranes available for Land Foundation Projects up to 225 Ton Capacity
● Rock Drilling & Pile Socketing up to 1524 mm dia.
We are committed to providing to:

> **Our employees** with a safe and rewarding place of employment and opportunities for ongoing professional growth;

> **Our customers** with innovative and cost effective solutions through intelligent use of resources; and

> **Our communities** with sustainable and environmentally sound business practices.
Fraser River Maintenance Dredging Timeline

1900 – mid-1980’s
> Federal government responsible for maint. dredging

mid-1980’s
> FRPD begins maint. dredging (mid-1980’s – 1998)
> Administered by Public Works Canada (PWC) until mid-1980’s

1998
> Fraser River Port Authority (FRPA) now responsible for maint. dredging
> FRPA puts out RFP for maint. dredging

1999 – 2010
> FRPD awarded 10 year maint. dredging contract (1999 – 2009)
> 2006: FRPD awarded contract extension
> 2008: Port amalgamation to

2010 – Current
> 2010: VFPA puts out RFP internationally
> 2011: FRPD awarded 10 year maint. dredging contract (2012 – 2022)
The Vancouver Fraser Port Authority (VFPA) is responsible for providing safe & unimpeded access for vessels to terminals at the Port of Vancouver. Ensuring appropriate water depth is a primary component to this safe access and often requires dredging - the removal of sediment - from the Fraser River seabed. VFPA mandates that this dredging must be economically, environmentally and socially sustainable.
Dredging > Why?

**Freshet***
*freshet: the flood of a river from heavy rain or melted snow*

> The Fraser River freshet typically occurs between May and July of each year

> The increased flow rates transport sediments down the river

> This sediment transport process is what creates “infill”
Dredging >
Why?

The Fraser River requires annual dredging because of the continuous run-off of the river and the silt that is deposited from upstream as it nears the sea.
Dredging > Why?

Safe Navigation

> The Fraser River deep sea shipping channel is vital to the Canadian economy
> This supports the Port’s mandate to facilitate marine trade
> Provides access to river terminals such as Fraser Surrey Docks and Annacis Auto Terminals
Dredging > Why?
Flood Protection

- Without dredging, the lower reaches of the river bottom would rise and therefore require higher dykes.
- The 200 year flood level predictions are based on the assumption that the dredging program continues.
- Upriver of Port Mann Bridge the river is managed by dykes.
- Downriver of the Port Mann Bridge the river is managed by dykes, training structures and dredging.
Dredging > Where?
Survey Program

> CCG through PWGSC runs their survey program which monitors the channel conditions

> FRPD also conducts hydrographic surveys to monitor channel condition and determine dredging priorities

> Both parties implement the latest survey/positioning technology available to produce the most accurate data for use in the setup of vessel traffic and in dredging priorities
Prior to dredging all activities require approvals

Applications categorized from A to D

For material to be disposed at sea, the material requires chemical and physical testing and a DAS permit
Dredging > How?
Equipment:

Dredging requires intensive capital investment in equipment. FRPD owns and operates 3 types of dredges which conduct dredging operations in the Fraser River.
Dredging Equipment
Trailing Suction Hopper

“FRPD 309”
> Built 1983
> Purchased 2012
> 4,500 m$^3$ capacity (450 dump trucks)
> Load in approx. 1 hour
> Either bottom dump of pump ashore to upland stockpile (1.5hrs)
> Discharge pipe diameter of 800mm
Dredging Equipment
Cutter Suction

“Sceptre Columbia”

- Pumps 1,500m³/hour (150 dump trucks per hr)
- Discharge pipe diameter 650mm
- Can deliver sand to 2 kilometers through pipeline
- Can either pump to upland stockpile or in-river disposal
Dredging Equipment

Clamshell

- Bucket sizes vary
- Places material in dump or flat scows
- Material is typically taken to DAS - Ocean Disposal
FRPD’s goal is to maximize beneficial use of dredged material in order to minimize ocean disposal.

The options for beneficial use are:
- Upland Placement – Construction Use
- Land Reclamation
- Environmental Habitat Creation
Dredging Materials Management
Upland Placement
Dredging Materials Management
Land Reclamation
Dredging Materials Management Environmental Habitat Creation
Questions >