# What Happens When All the Port Fills Are Full?



Matt Arms, Port of Long Beach Shelly Anghera, Anchor QEA

### Port Fills



# **Big Ship Ready**

Larger vessels = deeper drafts

Navigational safety



HANJI

## Big Ship Ready



## Need management solutions for the Port of Long Beach



# Need management solutions for the Port of Long Beach



Maintenance dredging could generate as much as 1 million cy in next 10 years

# Need management solutions for the region

Port received requests to take over 4.5 million cy from region in Phase I

#### Additional Pressures...

- Pressure to eliminate ocean disposal
- Salt content can limit local landfill disposal
- Regulatory requirements to manage contaminated sediments
- Regulatory pressure to assist region
- Economic pressure to improve port infrastructure and remain competitive

# What happens when all the Port fills are full?

I begin to loose sleep....

Management Type	Clean Sediment	Contaminated Sediment
<b>Beneficial Use</b>	Port fill Shallow water habitat Beach nourishment Capping material	Port fill Landfill daily cover CAD – Ecosystem Rest. Bottom layers of SWH
Temporary Storage	Upland CDF Aquatic CDF	Upland CDF
Treatment	Amendment for fines	Cement stabilization Sediment blending Sand separation
Disposal	Ocean	Upland CDF CAD Upland landfill
		Port of LONG BEACH

	Clean	Contaminated
Management Type	Sediment	Sediment
	Port fill	Port fill
<b>Popoficial LICO</b>	Shallow water habitat	Landfill daily cover
Deficicial Use	Beach nourishment	CAD – Ecosystem Rest.
	Capping material	Bottom layers of SWH
Temporary Storage	Upland CDF	Unland CDE
	Aquatic CDF	Opianu CDF
Treatment	Amendment for fines	Cement stabilization Sediment blending Sand separation
Disposal	Ocean	Upland CDF CAD Upland landfill
		Port of LONG BEACH

	Clean	Contaminated
Management Type	Sediment	Sediment
	Port fill	Port fill
<b>Bonoficial LICO</b>	Shallow water habitat	landfill daily cover
Deficicial Use	Beach nourishment	Grain size tem Rest.
	Capping material	Bottom layers of SWH
Temporary Storage	Upland CDF	Unland CDE
	Aquatic CDF	Opiand CDF
		Cement stabilization
Treatment	Amendment for fines Sediment blendir	Sediment blending
		Sand Separation
		Upland CDF
Disposal	Ocean CAD	CAD
		Upland landfill
		Port of LONG BEACH

	Clean	Contaminated
Management Type	Sediment	Sediment
	Port fill	Port fill
Ponoficial Llco	Shallow water habitat	Landfill daily cover
Denencial Use	Beach nourishment	Grain size tem Rest.
	Capping material	Bottom layers of SWH
Tomporony Storago	Upland CDF	Lipland CDF
Temporary Storage	Aquatic CDF	Upland CDF
Treatment	Amendment for fines	Cement stabilization Increases volume Sand separation
Disposal	Ocean	Upland CDF CAD Upland landfill
		Port of LONG BEACH

	Clean	Contaminated
Management Type	Sediment	Sediment
	Port fill	Port fill
<b>Bonoficial Usa</b>	Shallow water habitat	Londfill daily cover
Deficicial Use	Beach nourishment	Grain size tem Rest.
	Capping material	Bottom layers of SWH
Temporary Storage	Upland CDF	Upland CDE
	Aquatic CDF	Opiand CDF
Treatment	Amendment for fines	Cement stabilization Increases Volume
		Sand separation
Disposal	Ocean	Upland CDF Discouraged Upland landfill
		Port of LONG BEACH

	Clean	Contaminated
Management Type	Sediment	Sediment
	Port fill	Port fill
<b>Bonoficial Uso</b>	Shallow water habitat	Landfill daily cover
Deficicial USE	Beach nourishment	CAD – Ecosystem Rest.
	Capping material	Bottom layers of SWH
Temporary Storage	Upland CDF	Upland CDF
	Aquatic CDF	
Treatment	Amendment for fines	Cement stabilization Sediment blending Sand separation
Disposal	Ocean	Upland CDF CAD Upland landfill
		Port of LONG BEACH

	Clean	Contaminated
Management Type	Sediment	Sediment
<b>Beneficial Use</b>	Po Salt leachate Shallow v limited locally Beach nourishment	Port fill Landfill daily cover CAD – Ecosystem Rest.
Temporary Storage	Upland CDF Aquatic CDF	Upland CDF
Treatment	Amendment for fines	Cement stabilization Sediment blending Sand separation
Disposal	Ocean	Upland CDF CAD Upland landfill
		Port of LONG BEACH

	Clean	Contaminated
Management Type	Sediment	Sediment
<b>Beneficial Use</b>	Pc Salt leachate Shallow v limited locally Beach nourishment Capping material	Port fill Landfill daily cover CAD – Ecosystem Rest. Bottom layers of SWH
Temporary Storage	Upland CDF Aquatic CDF	Upland CDF
Treatment	No end user, residual contaminants	Cement stabilization Sediment blending Sand separation
Disposal	Ocean	Upland CDF CAD Upland landfill
		Port of LONG BEACH

	Clean	Contaminated
Management Type	Sediment	Sediment
<b>Beneficial Use</b>	Pc Salt leachate Shallow v limited locally Beach nourishment Capping material	Port fill Landfill daily cover CAD – Ecosystem Rest. Bottom layers of SWH
Temporary Storage	Upland CDF Aquatic CDF	Upland CDF
Treatment	Amendm Contaminants	Cement stabilization Sediment blending Sand separation
Disposal	O Salt leachate limited locally	Upland CDF CAD <del>Upland landfill</del>

# Long-term management solutions for port and region

- Maximize the benefits of fill site opportunities
  - Use temporary in water or upland storage for later beneficial use of clean material
- Develop long-term contaminated sediment options
  - Shallow water habitat
  - CAD with or without ecosystem restoration

# Temporary Storage

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# Shallow Water Habitat

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## Confined Aquatic Disposal – Ecosystem Restoration



#### **Confined Aquatic Disposal**

Example Hydraulic Dredging Routes

-Target Beach Nourishment Area

Example Hydraulic

## **Confined Aquatic Disposal**

Need management solutions for the Port of Long Beach and the region

- There is a regional need for new disposal alternatives
- Will require the use of all the tools in the toolbox
  - Open ocean disposal, shallow water habitat, CADs, NEIBP, and treatment when feasible
- Must be smart about how we manage contaminated versus uncontaminated sediment to maximize disposal opportunities

Port of LONG BEACH

Engage all stakeholders

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# Thank you