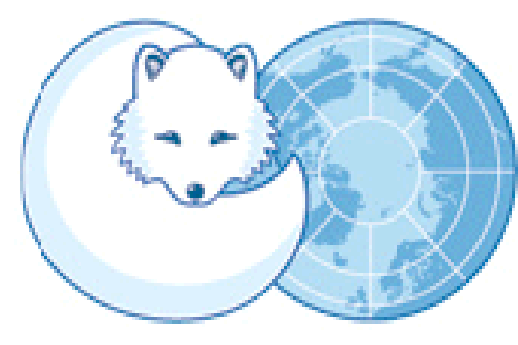


OIL SPILL WASTE GENERATION JOB AID for Decision Makers and Planners

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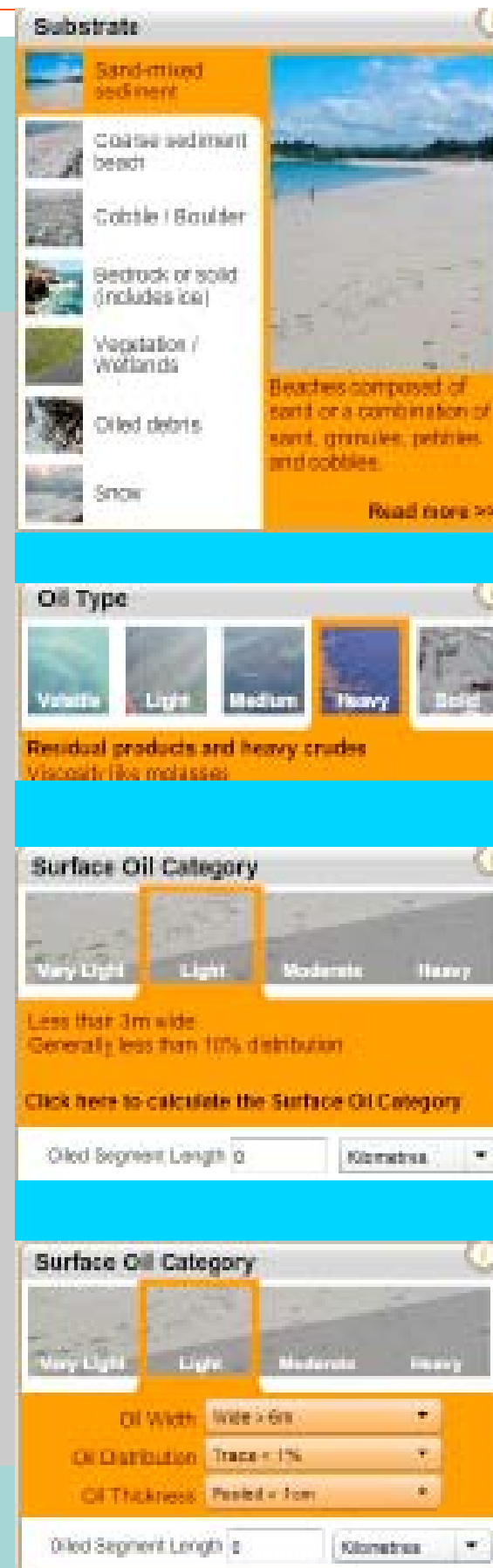
ARCTIC COUNCIL
NORWEGIAN CHAIRMANSHIP
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OBJECTIVE

- Develop an oil spill response waste generation Job Aid to assist decision makers understand the consequences of cleanup method and treatment end point selections.
- Not a predictive tool, but intended to illustrate the potential consequences of different options that may be appropriate for different shore types and oil types.



INPUT PARAMETERS

- Substrate Type (7)
- Oil Type (5)
- Surface Oil Category (4) or can Calculate Surface Oil Category
 - Width
 - Distribution (%)
 - Thickness
 - Length of oiled shoreline

ASSUMPTIONS

- Appropriateness of treatment option - substrate type
- Appropriateness of treatment option - oil type
- Volume of stranded oil calculated from Oiling Category and Oil Distribution
- Oil penetration into sediment, based on oil type and sediment type
- Volume of oiled sediment - penetration depth
- Depth of removal for manual versus mechanical treatment
- Estimated liquid recovery rates from washing
- Scale of effort for different treatment endpoints
- Operational waste volumes.

OUTPUT

- Treatment Tactic Options
 - preferred
 - for small amounts only
 - not applicable
- Calculated waste volume for each tactic
- Waste type and volume (m³%) for each tactic and for two treatment end points

Input							
Substrate:	Sand-mixed Sediment	Surface Oil Category:	Heavy	Oil Type:	Medium	Shoreline Length:	14.5 km
Results							
Bulk Removal			Reduce to Stain				
	m ² /m	Volume (m ³)	Operational Waste %	m ² /m	Volume (m ³)	Operational Waste %	
Preferred Options							
Natural Recovery	0	0	0	0	0	0	
In-situ Sediment Mixing and/or Relocation	0.001	14.5	50	0.001	14.5	50	
Washing and Recovery	0.07	1015	57.14	0.084	1218	47.62	
Mechanical Removal	0.9	13050	0.111	1.8	26100	0.111	
For Small Amounts Only							
Bioremediation	0.001	14.5	50	0.002	29	50	
Manual Removal	0.24	3480	8.33	0.36	5220	5.56	
Not Applicable							
In-situ Burning	--	--	--	--	--	--	

SPILL DATA Response Operations

RESPONSE	Length of Oiled Shoreline (m)	Volume of Waste Generated (m ³)	Waste Volume m ³ /km	Oil Width (m)	Waste Volume m ³ /m ²
T/B Bouchard B-155	14500	27000	1860	3	1.4 *
M/T Pennant	35000	6500	186	3	0.6
T/V Exxon Valdez	1770000	33000	19	6	0.1
T/V Erika	400000	21000	53	2	0.1
M/V Cosco Busan	100900	4200	42	2	0.08
M/V Server	39600	1300	33	1	0.03
M/V Rocknes	45000	640	14	1	0.01

Individual Shore Segments

RESPONSE	Length of Oiled Shoreline (m)	Volume of Waste Generated (m ³)	Waste Volume m ³ /km	Oil Width (m)	Waste Volume m ³ /m ²
T/V Arrow: Indian Cove	259	1046	4,039	3	12.1
M/V Seladang Ayu: SKN-11	710	1743	2,455	3	7.4
T/V Arrow: Black Duck Cove	1402	3410	2,432	3	7.3
M/V Seladang Ayu: HMP-11	440	756	1,718	3	5.2
T/V Arrow: Hadleyville	1372	3043	2,218	2	4.4
M/V Seladang Ayu: HMP-12	923	583	631	3	1.9
T/V Arrow: Arichat	1128	323	286	3	0.9
M/V Seladang Ayu: SKN-14	2000	421	210	3	0.6

KEY

End Points	Waste Types
Oil/Water	Oily Water
Bulk Removal	Oil/Snow Mixture
Reduce to Stain	Solids
	Operational

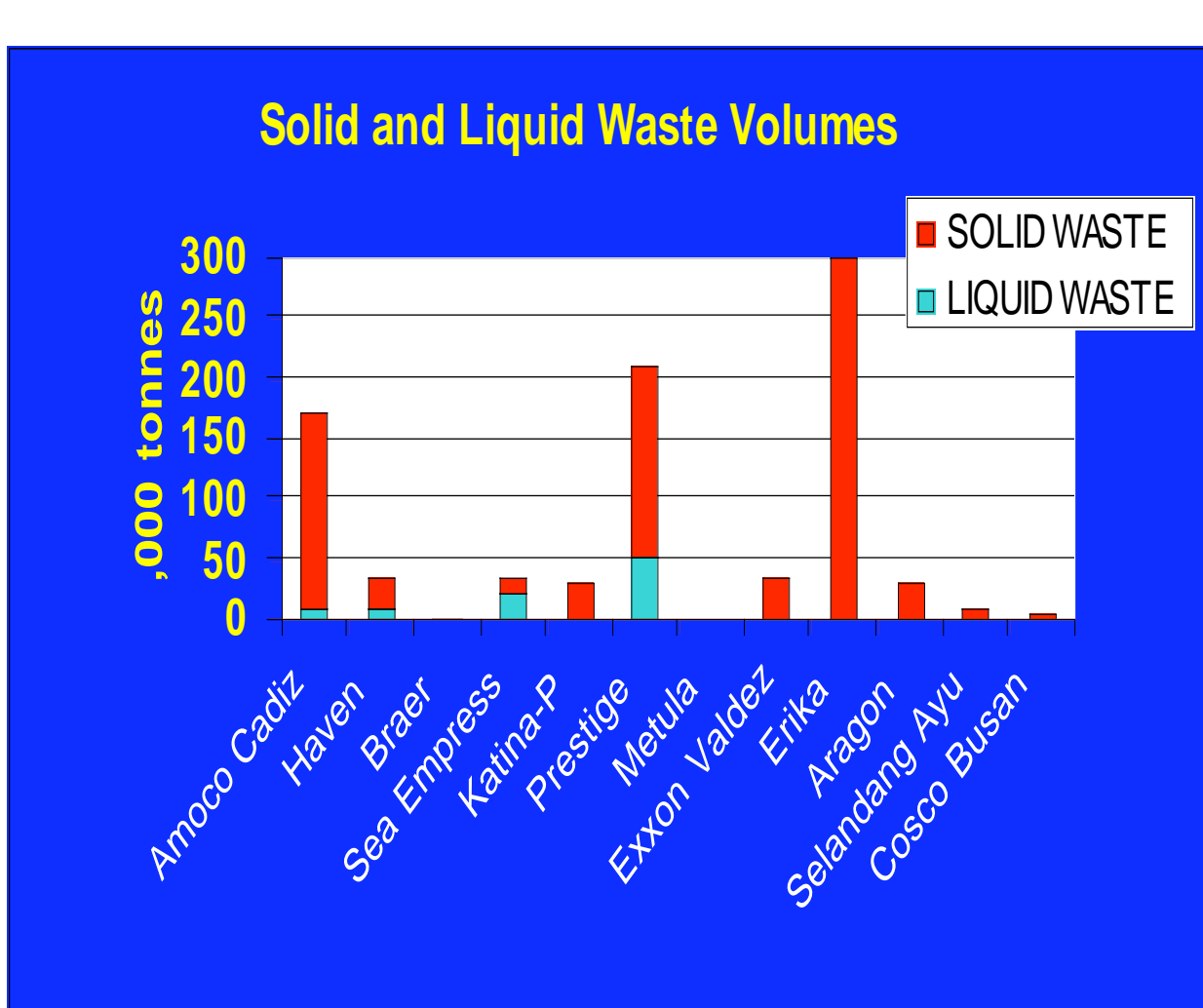
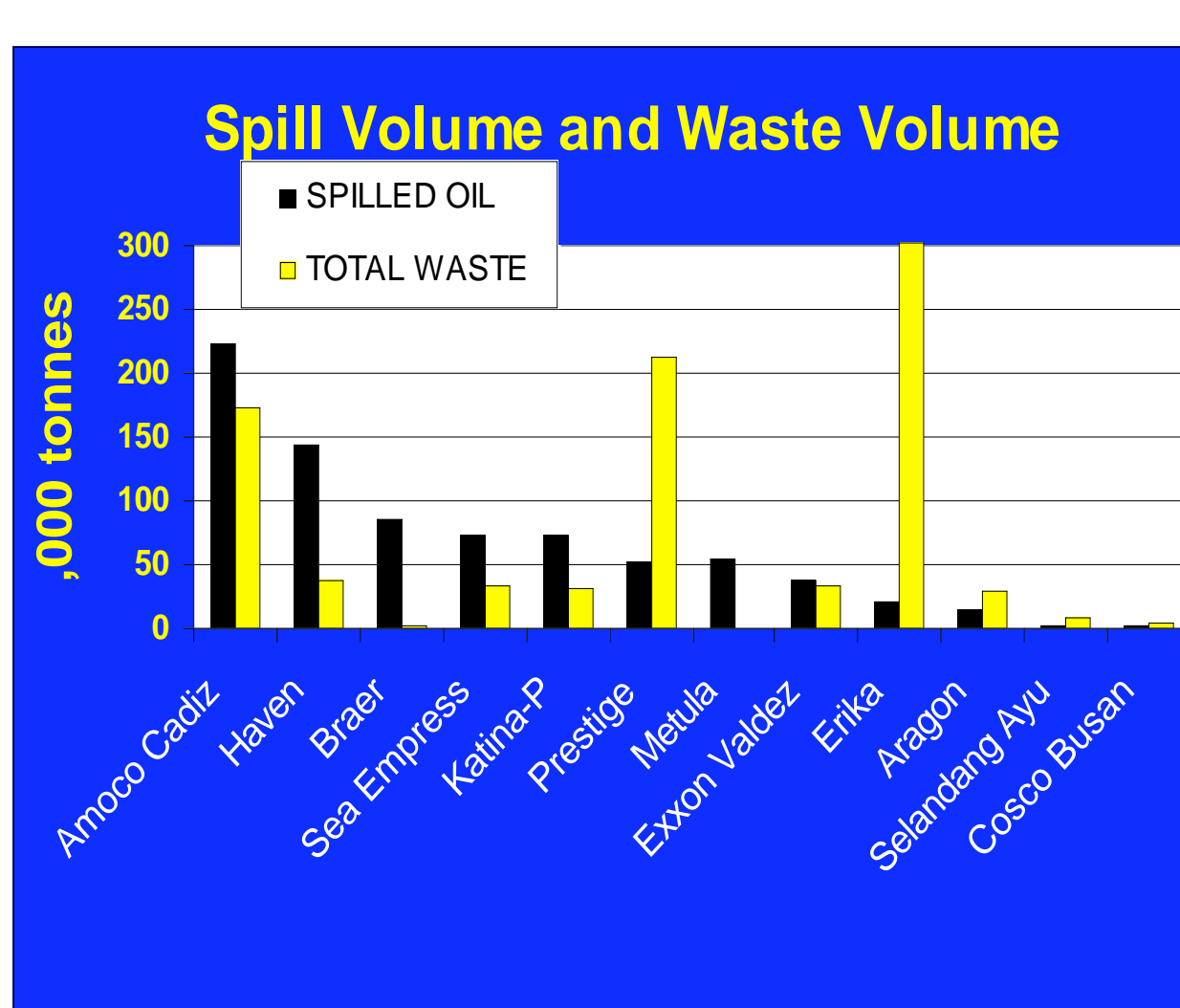
Very High	≥ 1.0 m ³ /m
High	0.1 to 0.99
Low	0.01 to 0.099
Very Low	< 0.01

SHORELINE WASTE

The amount of waste generated by shoreline cleanup is not directly related to the volume of spilled oil.

Waste volumes are primarily a function of the:

- treatment methods and the
- treatment end points selected by the decision makers in the spill management team.



Calculated versus Actual Spill Data

RESPONSE	Volume of Waste Generated (m ³ /km)	Oil Width (m)	Actual Waste Volume m ³ /km	Job Aid Waste Volume m ³ /m ²
T/V Arrow	4,000	3	1.3 – 4.0	1.8 – 4.5
M/V Seladang Ayu	2,500	1.5	3.5	1.8 – 4.5
T/B Bouchard B-155	1,860	3	1.9	1.8
M/V Cosco Busan	42	2	0.02	0.05 – 0.2
M/V Server	33	?	~0.03	0.05 – 0.2
T/V Exxon Valdez	19	>3	0.02	0.02 – 0.07

User's Guide

Waste Management Calculator



User's Guide