

# Sediment Management Strategic Plan Task Force Meeting # 3

June 29, 2011



## Agenda

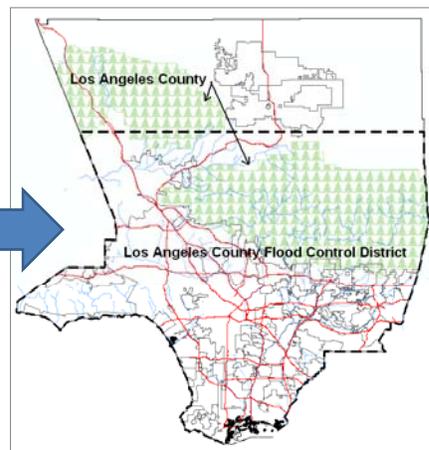
- Welcome & Follow-Up from Last Meeting
- Background on Sediment Processes
- Sediment Management Alternatives
- Alternatives Ranking Tool
- Feedback Received
- Tentative Ranking Results & Next Steps
- Discussion
- Wrap-Up

## The Past



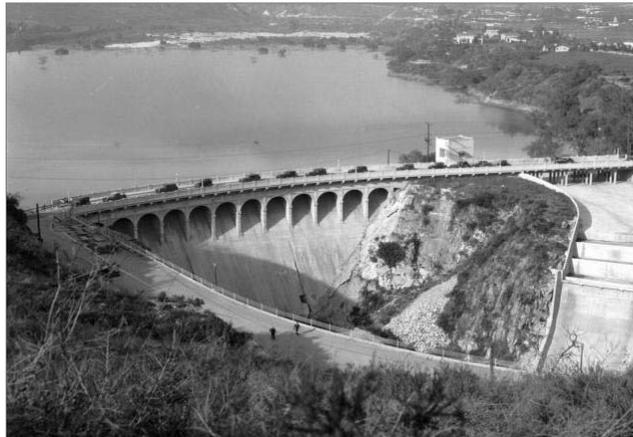
## Creation of the Flood Control District

LA River 1914

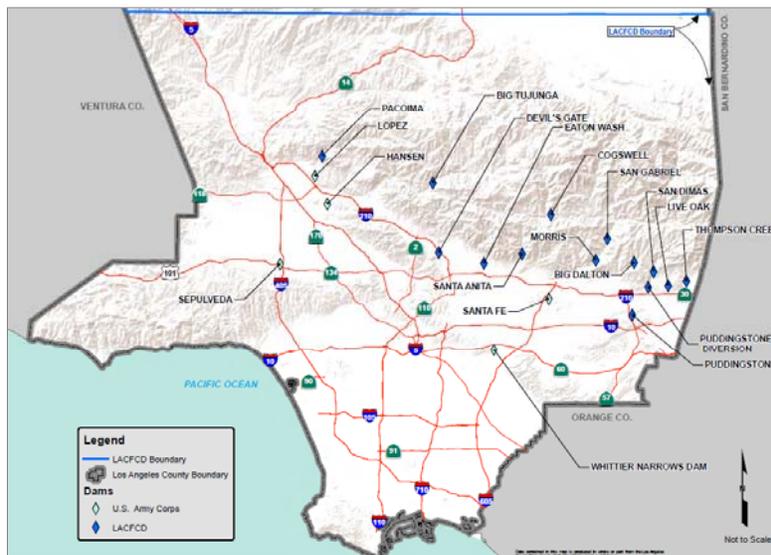


# Construction of Dams

## Devil's Gate: 1919-20

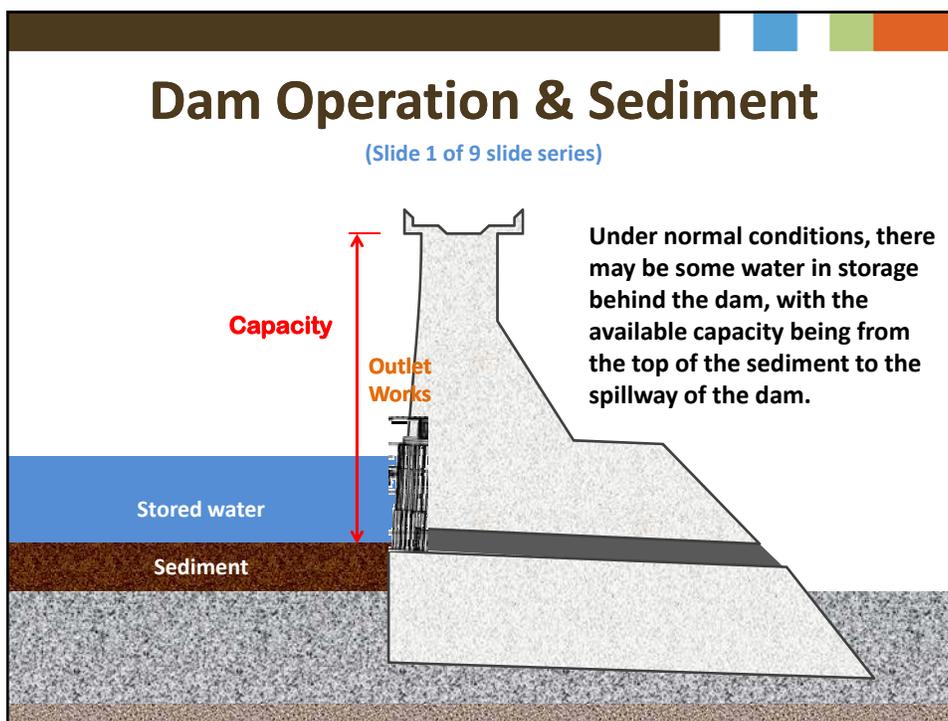


# Dams & Reservoirs



## Dam Operation & Sediment

(Slide 1 of 9 slide series)



**Capacity**

**Outlet Works**

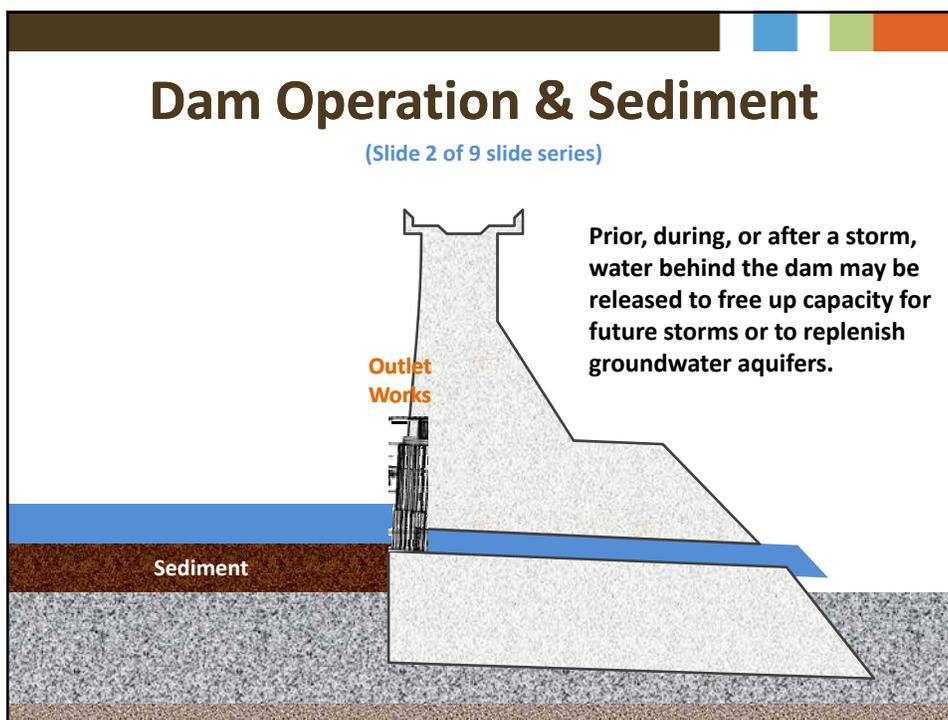
Stored water

Sediment

Under normal conditions, there may be some water in storage behind the dam, with the available capacity being from the top of the sediment to the spillway of the dam.

## Dam Operation & Sediment

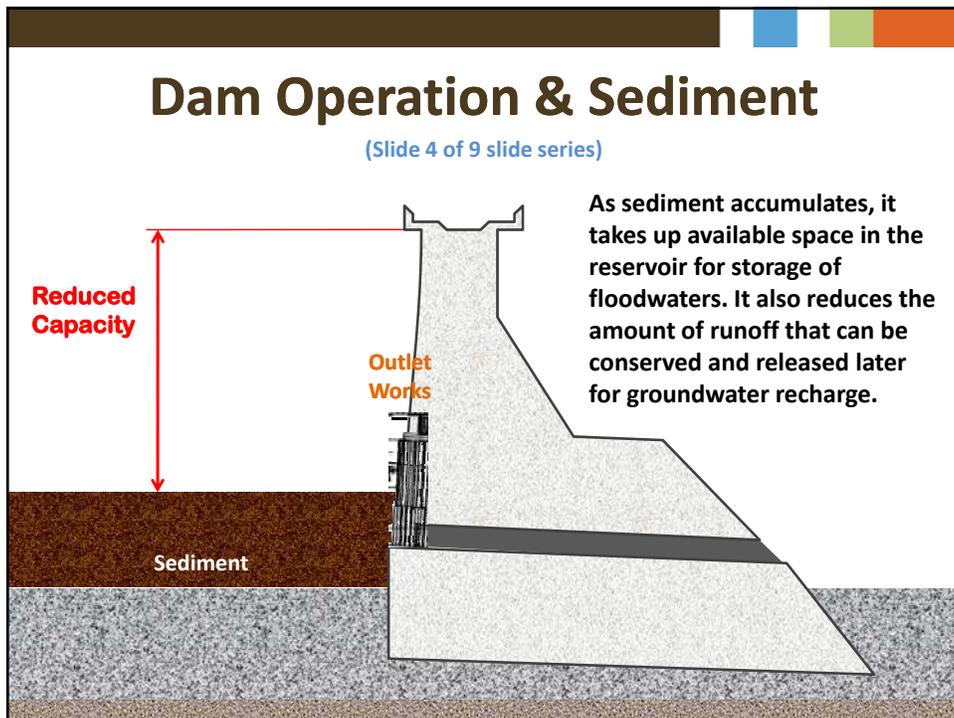
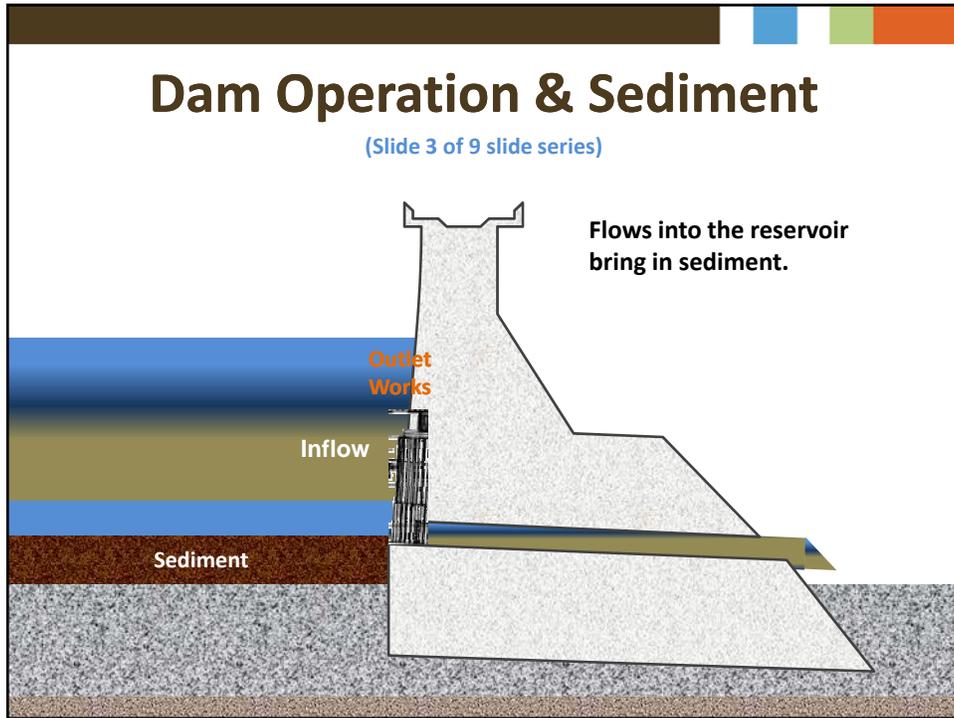
(Slide 2 of 9 slide series)

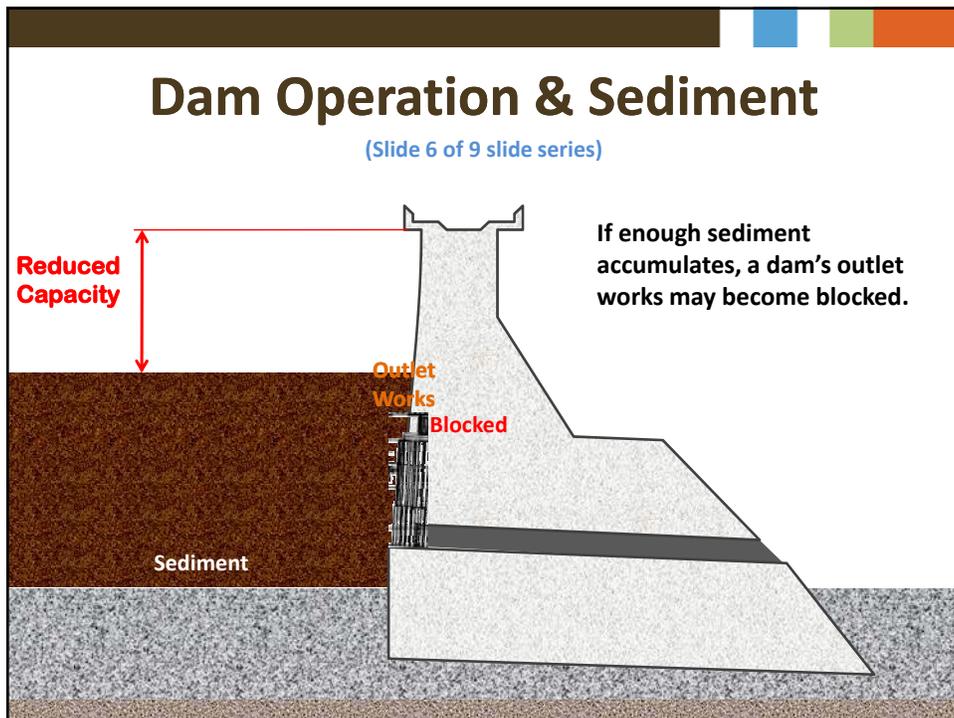
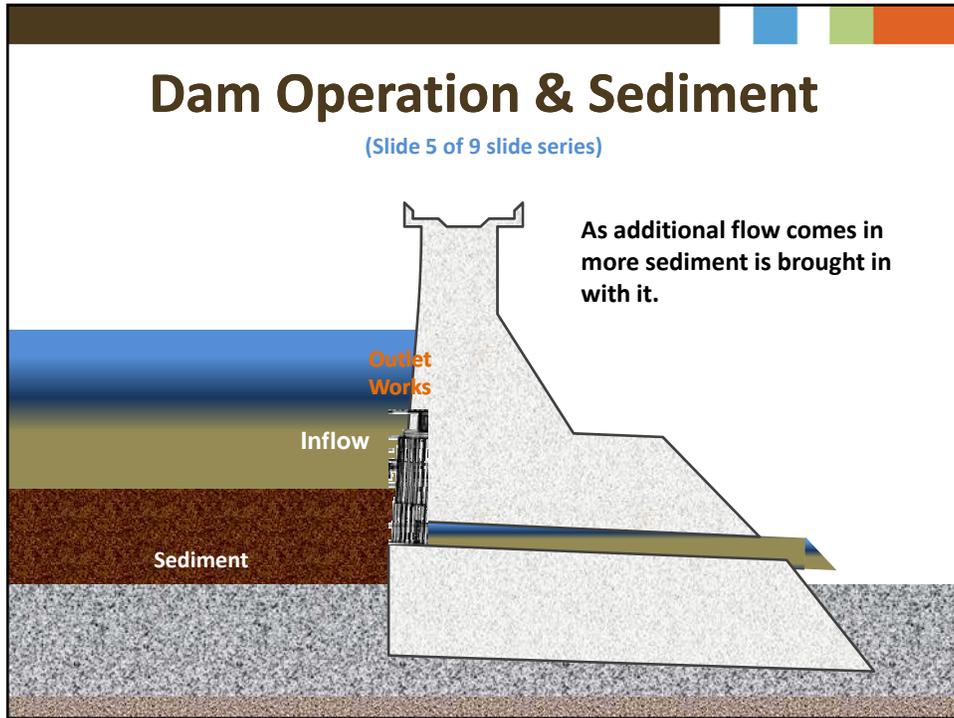


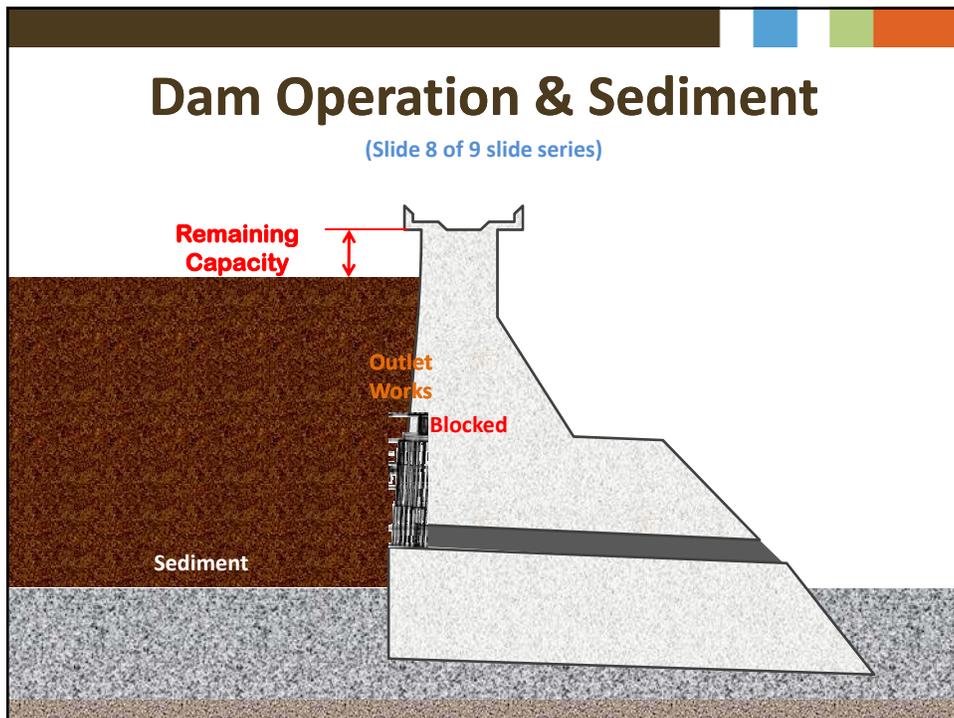
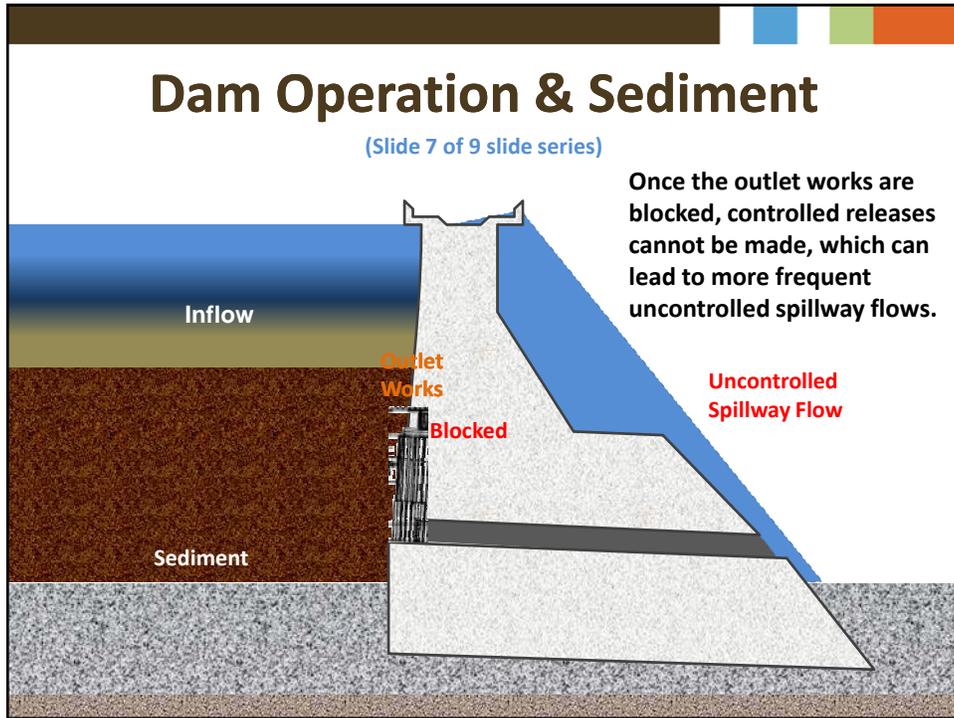
**Outlet Works**

Sediment

Prior, during, or after a storm, water behind the dam may be released to free up capacity for future storms or to replenish groundwater aquifers.

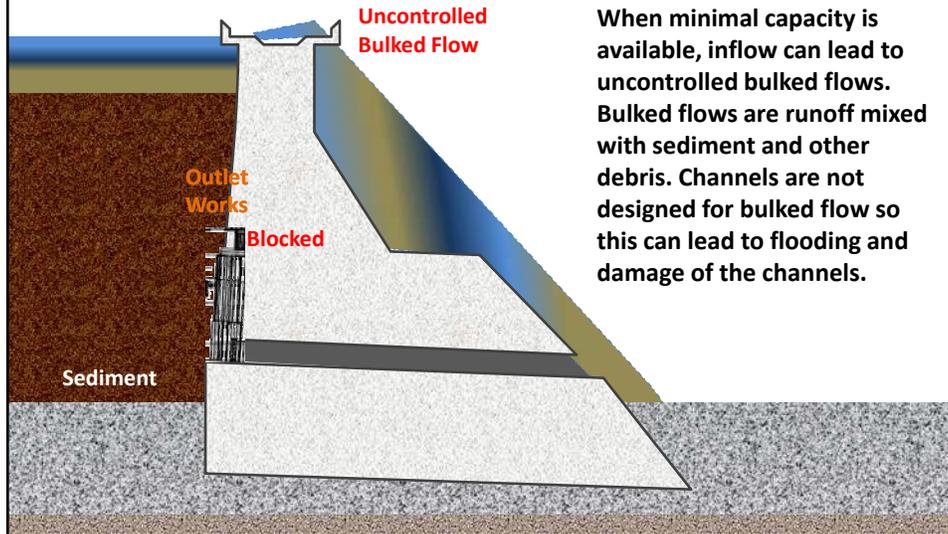






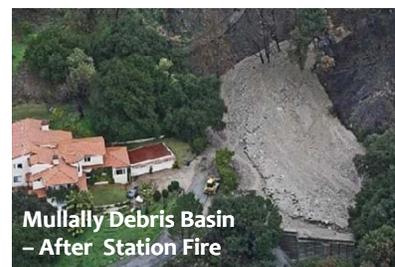
# Dam Operation & Sediment

(Slide 9 of 9 slide series)

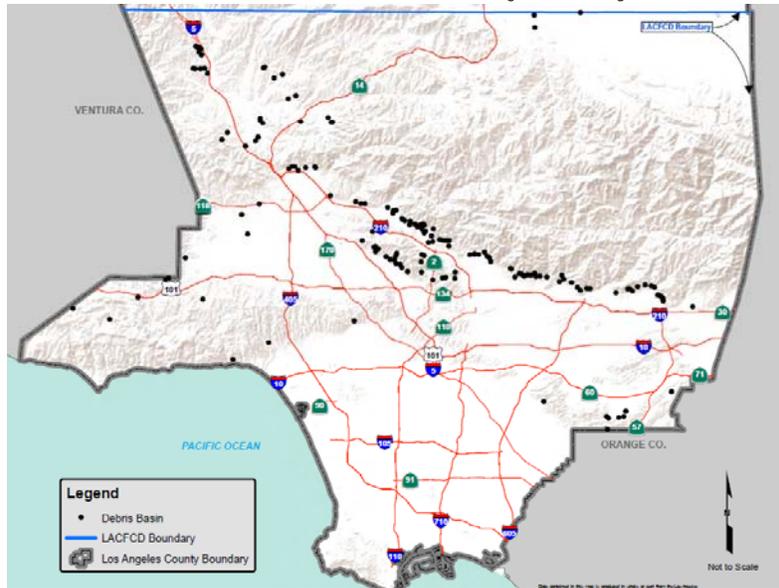


When minimal capacity is available, inflow can lead to uncontrolled bulked flows. Bulked flows are runoff mixed with sediment and other debris. Channels are not designed for bulked flow so this can lead to flooding and damage of the channels.

# Debris Basins



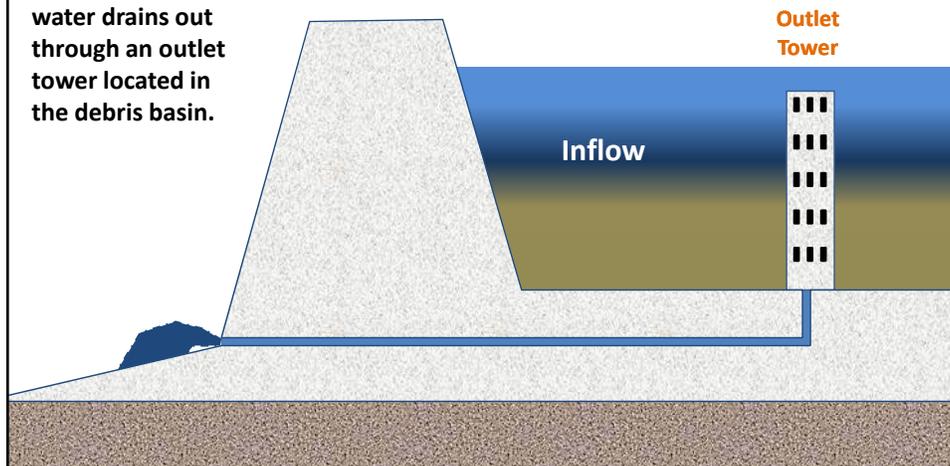
## Debris Basins (cont.)



## Debris Basin Operation

(Slide 1 of 5 slide series)

When flows come into a debris basin, the water drains out through an outlet tower located in the debris basin.



## Debris Basin Operation

(Slide 2 of 5 slide series)

After the water drains, sediment is left behind. Once sediment reaches a certain level, it is cleaned out. However, sediment may remain in storage if the required level is not reached or there is no time prior to the next storm.

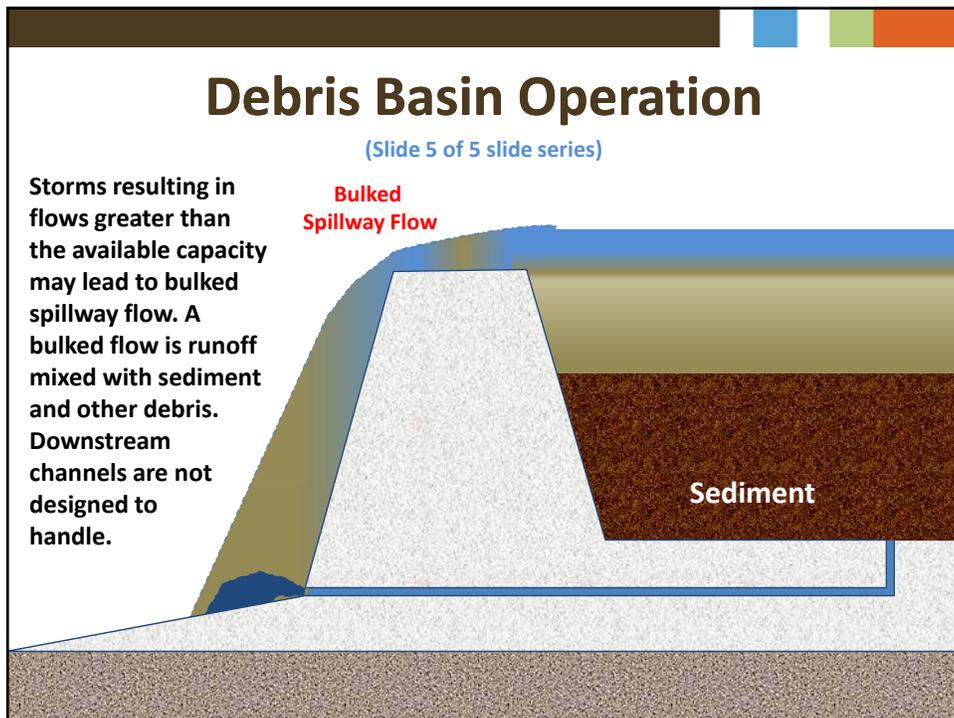
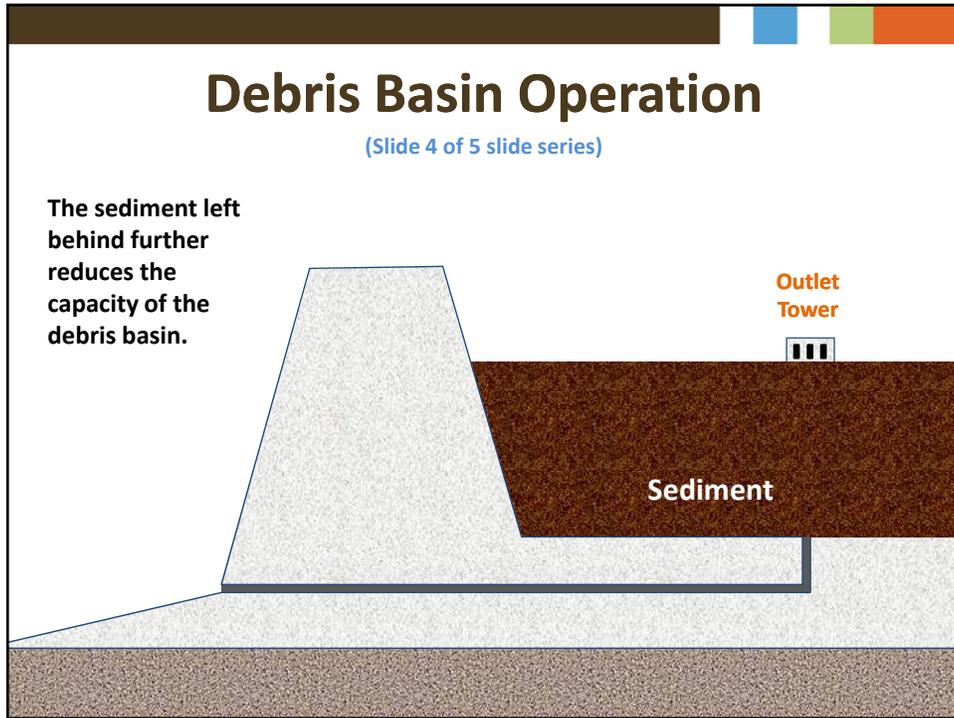
The diagram shows a cross-section of a debris basin. On the left, a concrete structure with a sloped top (spillway) is shown. To its right is a rectangular basin. The basin floor is covered with a layer of brown sediment. On the right side of the basin, there is a vertical structure labeled 'Outlet Tower' with several rectangular openings. The basin is situated on a concrete foundation, which is itself on a layer of earth.

## Debris Basin Operation

(Slide 3 of 5 slide series)

Normal operations allow incoming flow to drain both through the outlet tower and over the spillway as long as the flow remains free of sediment.

The diagram shows the same debris basin during normal operation. Blue water is flowing from the right into the basin, labeled 'Inflow'. The water level is high enough to flow over the spillway on the left, labeled 'Spillway Flow'. The water also flows through the outlet tower on the right. A layer of brown sediment is visible at the bottom of the basin, below the water level.





## Sediment Management Strategic Plan

- **Why?**
  - Sediment must be managed to maintain functionality of reservoirs, debris basins, and the system.
  - Large quantity of sediment needs to be managed.
  - Capacity at sediment placement sites is rapidly being diminished.

## Strategic Plan (cont.)

- **Goal**

Provide flood risk management and water conservation for the region while balancing environmental, social, and economic impacts.
- **What is being done?**
  - Analyzing numerous alternatives.
  - Considering social and environmental impacts along with other needs.

## Agenda

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- Background on Sediment Processes
- Sediment Management Alternatives
- Alternatives Ranking Tool
- Feedback Received
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## Sediment Management Alternatives

- Transportation alternatives
- Processing location alternatives
- Placement alternatives

## Transportation Alternatives

### Trucking



Standard, Low Emission,  
In Channels

### Cable Bucket System



## Transportation Alternatives (cont.)

### Conveyor system



## Transportation Alternatives (cont.)

### Sluicing



## Transportation Alternatives (cont.)

### Slurry Pipelines



### Rail



Truck to Existing, New

## Transportation Alternatives Summary

- **Trucking**
  - Standard
  - Low Emission
  - In Channels
- **Cable/Bucket Systems**
- **Conveyor Systems**
- **Sluicing**
- **Slurry Pipelines**
- **Rail Transport**
  - Truck to Existing Rail Network
  - New Rail Lines

## Processing for Beneficial Use



## Processing Location Alternatives

- Existing Processing Facility
- New Processing Facility
  - Industrial Area
  - Landfill
  - Near Residential Area
  - + Recoverable Habitat
  - + Sensitive Habitat
  - Remote Area
  - + Recoverable Habitat
  - + Sensitive Habitat
  - Active Sediment Placement Site (SPS)

# Placement Alternatives

## Active SPSs



# Placement Alternatives (cont.)

## New SPS

FCD Property



Acquired Property



## Placement Alternatives (cont.)

### Quarry Pit



Operational, Retired 3<sup>rd</sup> Party

### Ocean Placement/ Beach Nourishment



## Placement Alternatives (cont.)

### Landfill Cover



## Placement Alternatives Summary

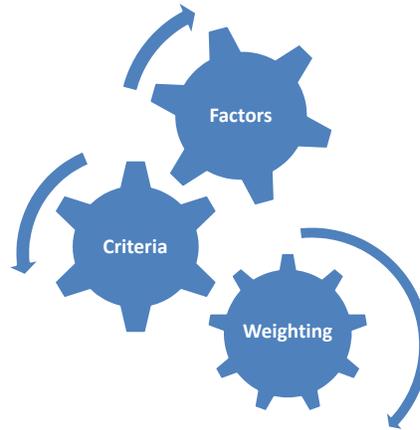
- **Continue Use of Active SPSs**
  - With Recoverable Habitat
  - With Sensitive Habitat
- **Develop New SPS on FCD Property**
  - Near Residential Area with Recoverable Habitat
  - Near Residential Area with Sensitive Habitat
  - In Remote Area with Recoverable Habitat
  - In Remote Area with Sensitive Habitat
- **Acquire Property & Develop New SPS**
  - Near Residential Area with Recoverable Habitat
  - Near Residential Area with Sensitive Habitat
  - In Industrial Area
  - In Remote Area with Recoverable Habitat
  - In Remote Area with Sensitive Habitat
- **Place at Existing Quarry Pit**
  - Operational Quarry
  - Retired Pit Owned by Third Party
- **Ocean Placement**
  - Use for Beach Nourishment
  - Offshore Placement
- **Use as Cover at Landfill**

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## Alternatives Ranking Tool

- Factors rated based on various criteria
- Factors rated 0 to 10, with 10 being best
- Weighted score calculated for each alternative



## Revised Evaluation Factors

- Environmental Factor
  - Social / Quality of Life Factor
  - Performance Factor
  - Implementability Factor
  - Cost Factor
- } Previously  
Technical Feasibility Factor

## Process

- Each of five factors has one or more criteria
- Maximum scores assigned to each criteria add to 10
  - Each Factor can range from 0 to 10, 10 being best
- Weighted factor scores yield alternative score
- Transportation alternatives, processing locations, and placement locations scored separately

## Environmental Factor

- Habitat, including connectivity (4 pts.)
- Water quality or quantity, incl. groundwater (3 pts.)
- Air quality & emissions (3 pts.)



## Criteria = Habitat

### EXAMPLE SCORES

Pts	Definition	Examples		
		Transportation (1-5 mi)	Processing Location	Placement Location
4	Effects on sensitive wildlife habitat and habitat corridors not expected	Trucking – completely confined to established roads and highways	Existing processing facility, or new facility in a landfill or industrial area	Quarry, landfill, or new SPS in an industrial area
3	Some potential adverse effects on sensitive species, can be mitigated	Trucking in Channels (2.5)	New facility, remote area w/ recoverable habitat	Areas w/recoverable habitat, beach nourishment
2	Substantial concerns but mitigation strategies are available	Cable/Bucket and Conveyor Systems, Sluicing		
1	Serious concerns that would require extensive mitigation	New Rail Lines		Offshore placement
0	High potential for unmitigable effects on special status species & habitat		New facility in areas w/ sensitive habitat	Continued use of active SPS w/ sensitive habitat

## Social / Quality of Life Factor

- Traffic & noise (5 pts.)
- Scenic/visual resources (3 pts.)
- Recreation (2 pts.)



## Criteria = Traffic & Noise

### EXAMPLE SCORES

Pts	Definition	Examples		
		Transportation (1-5 mi)	Processing Location	Placement Location
5	Traffic & noise avoided without mitigation	Slurry/Sluicing Systems		
4	Some levels of traffic and noise over limited distances or durations	Cable/Bucket & Conveyor Systems	Existing processing facility, landfill, or new facility in remote area	Ocean placement, quarry, new SPS in remote areas
3	Moderate levels of traffic & noise with some mitigation	Trucking in Channels		Continue use of active SPS
2	Exposure to high levels of traffic & noise over limited distances or durations	Standard Trucking		
1	Exposure to high levels of traffic & noise over longer distances or durations		New facility in remote area w/ sensitive habitat	
0	Extensive exposure of sensitive receptors to traffic & noise		New facilities near residential areas or with sensitive habitat	New SPS near residential areas

## Performance Factor

- Ability to Meet Peak (Emergency) Needs (5 pts.)
- Ability to Meet Long-Term Needs/Sustainability (5pts.)



## Implementability Factor

- Right-of-way (2 pts.)
- Technical certainty (2 pts.)
- Permitting complexity (2 pts.)
- Maintenance intensity (2 pts.)
- Consistency w/ surrounding land use (2 pts.)



## Cost Factor

- **Unit present value cost**
  - Initial cost & long-term operations costs
  - Single number in today's dollars
  - Dollars per cubic yard
- **Lowest unit cost scores a 10**
  - Others reduced proportionally



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## What We Heard/Changes Made

Comments Received	Changes Made
Include long-term sustainability beyond 20-yr planning horizon	Included in scoring of Performance Factor
Consider effects on wildlife corridors	Included within Environmental Factor
Include potential effect on groundwater recharge	Added in Environmental Factor/Water Criteria
Consider effects on existing recreation	Added new recreation criterion within Social Factor
Screen for environment first	Added ability to isolate & review environmental & social factors

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## Weights for Tentative Ranking

• Environmental Factor		50%
• Social / Quality of Life Factor		50%
• Performance Factor	} Previously Technical Feasibility	0%
• Implementability Factor		0%
• Cost Factor		0%
<b>Total of Weights</b>		<b>100%</b>

*Note: Performance, implementability, and cost will be considered as part of the next phase of analysis.*

## Transportation Alternatives

This tentative ranking is based on a 50% weight for the Environmental Factor, a 50% for the Social / Quality of Life Factor, and 0% for the remaining factors.

Transportation Alternatives	Scores		Ranking	
	1-5 mi	1-5 mi	1-5 mi	1-5 mi
<b>Trucking</b>				
Standard Trucking	7.8	5		
Low Emission Trucking	8.0	2		
Trucking In Channels	6.8	7		
Cable/Bucket Systems	7.8	5		
Conveyor Systems	8.0	2		
<b>Slurry/Sluicing Systems</b>				
Sluicing in Existing Channels	8.0	2		
Slurry Pipelines	8.3	1		
<b>Rail Transport</b>				
Truck to Existing Rail Network				
New Rail Lines	5.3	8		

## Transportation Alternatives (cont.)

These tentative rankings are based on a 50% weight for the Environmental Factor, a 50% for the Social / Quality of Life Factor, and 0% for the remaining factors.

Transportation Alternatives	Scores			Rankings		
	1-5 mi	5-10 mi	10-20 mi	1-5 mi	5-10 mi	10-20 mi
<b>Trucking</b>						
Standard Trucking	7.8	7.5	7.5	5	3	3
Low Emission Trucking	8.0	8.0	7.8	2	1	2
Trucking In Channels	6.8	6.3	5.8	7	7	8
Cable/Bucket Systems	7.8	7.3	6.5	5	5	6
Conveyor Systems	8.0	7.3	6.3	2	5	7
<b>Slurry/Sluicing Systems</b>						
Sluicing in Existing Channels	8.0	7.5	7.0	2	3	5
Slurry Pipelines	8.3	8.0	7.5	1	1	3
<b>Rail Transport</b>						
Truck to Existing Rail Network			8.0			1
New Rail Lines	5.3	4.5	3.8	8	8	9

## Processing Location Alternatives

This tentative ranking is based on a 50% weight for the Environmental Factor, a 50% for the Social / Quality of Life Factor, and 0% for the remaining factors.

Processing Alternatives	Scores	Ranking
<b>Use Existing Processing Facility</b>	<b>9.0</b>	<b>1</b>
<b>Develop New Processing Facility</b>		
Near Residential Area with Recoverable Habitat	4.3	7
Near Residential Area with Sensitive Habitat	2.5	8
Industrial Area	8.0	3
Remote Area with Recoverable Habitat	9.0	1
Remote Area with Sensitive Habitat	5.8	6
Existing SPS	6.0	5
Landfill	8.0	3

## Placement Alternatives

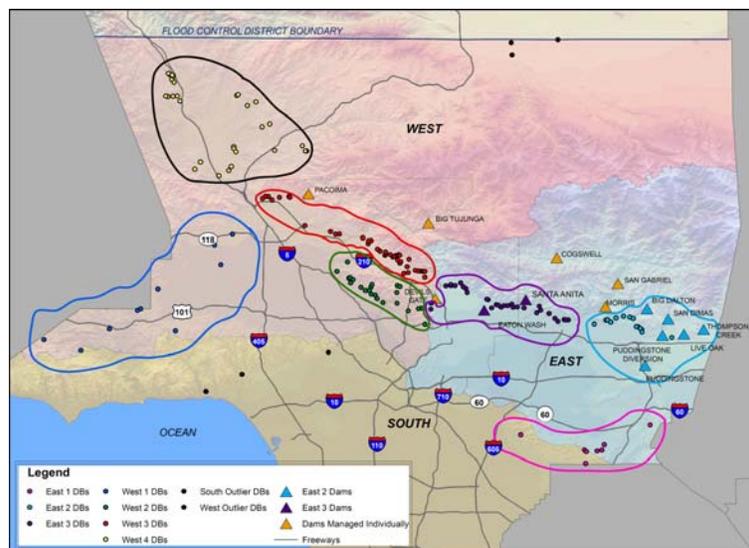
Placement Alternatives	Scores	Ranking
<b>Continue Use of Active SPSs</b>		
Location with Recoverable Habitat	7.3	8
Location with Sensitive Habitat	5.5	12
<b>Develop New SPS on FCD Land</b>		
Near Residential Area with Recoverable Habitat	4.3	13
Near Residential Area with Sensitive Habitat	2.5	15
Remote Area with Recoverable Habitat	8.5	5
Remote Area with Sensitive Habitat	6.8	10
<b>Acquire Property &amp; Develop New SPS</b>		
Near Residential Area with Recoverable Habitat	4.3	13
Near Residential Area with Sensitive Habitat	2.5	15
Industrial Area	9.0	2
Remote Area with Recoverable Habitat	8.5	5
Remote Area with Sensitive Habitat	6.8	10
<b>Place at Existing Quarry Pit</b>		
Operational Quarry	9.0	2
Retired Quarry Owned by Third Party	9.0	2
<b>Ocean Placement</b>		
Use for Beach Nourishment	7.5	7
Offshore Placement	7.3	8
Use as Cover at Landfill	9.3	1

This tentative ranking is based on a 50% weight for the Environmental Factor, a 50% for the Social / Quality of Life Factor, and 0% for the remaining factors.

## Next Steps

- Incorporate feedback from Task Force on ranking tool & results. Comments due July 14.
- Combine transportation alternatives with processing or placement locations for subregional groups of facilities.
- Analyze cost, performance, and implementability for the subregional solutions.

## Subregional Groups



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## Thank you

Please send your comments or questions  
about the Sediment Management Strategic Plan to  
[SedimentMgmtPlan@dpw.lacounty.gov](mailto:SedimentMgmtPlan@dpw.lacounty.gov)

For additional information about the Strategic Plan and  
information from previous meetings please visit  
[www.lasedimentmanagement.com](http://www.lasedimentmanagement.com)