Compton Creek and Dominguez Channel Flood Risk Mitigation Alternatives Study

ADVISORY COMMITTEE MEETING NO. 3

SEPTEMBER 30, 2013
Introductions

- Name
- Agency / Group / Organization
I. Background
II. Alternative Study Analysis
III. Potential Solutions
   • Compton Creek
   • Dominguez Channel
IV. Next steps
V. Input from Advisory Committee
VI. Questions and Answers
I. Background
FEMA Guidelines Update

Levee Analysis and Mapping Procedures for Non-accredited Levees

Congressional Briefing
July 2013

http://www.fema.gov/final-levee-analysis-and-mapping-approach
I. Background
Alternatives Study Purpose

PRIMARY OBJECTIVE
❖ Identify projects for levees to meet FEMA freeboard requirements

GOAL
❖ Identify solutions that mitigate channel deficiencies, address flood zones, and incorporate multi-use beneficial components where possible
## I. Background

### Potential Losses

<table>
<thead>
<tr>
<th>Area</th>
<th>Estimated Annual Flood Insurance Cost (Parcels Within the Flood Zone)</th>
<th>Potential Loss (Hazus)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compton Creek</strong></td>
<td>(3,617 Parcels Within the Flood Zone)</td>
<td>$6.1 Million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$413 Million</td>
</tr>
<tr>
<td><strong>Dominguez Channel</strong></td>
<td>(6,773 Parcels Within the Flood Zone)</td>
<td>$12 Million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$572 Million</td>
</tr>
</tbody>
</table>
I. Background
Alternatives Study Process

1. Adjust Alternatives Study based on FEMA’s new levee guidelines
2. Further develop the Alternatives Study
3. **Share Alternative Study Analysis and Draft Potential Solutions with the Advisory Committee**
4. Share Draft Potential Solutions with the Community
5. Finalize the Alternatives Study
II. Alternative Study Analysis

- Summary Table
  - Compilation of alternative study analysis data

- Data Used for Optimization of Solutions
  - Construction phasing and constraints
  - Environmental permits and constraints
  - Multi-use opportunities and cost analysis
II. Alternative Study Analysis

Construction Phasing and Constraints
- Time frame/phasing
- Utilities
- Adjacent property uses
- Traffic/truck routes
II. Alternative Study Analysis

Environmental Permits and Constraints
- Regulatory permits
- Environmental impacts
- Phase I site analysis (site history)
II. Alternative Study Analysis

Multi-Use Opportunities and Cost Analysis

❖ Potential multi-use opportunities
  • Channel enhancement with multi-use
  • Detention/Retention projects with multi-use

❖ Cost Analysis
  • ‘No Project’ cost – damages
  • Project cost – improvements
III. Potential Solutions

- Each Potential Solution meets the FEMA minimum levee freeboard requirements

- Potential multi-use enhancements are identified, but not essential for certifying levees
III. Potential Solutions: Compton Creek

Flow Mitigation at Los Angeles River

- **WSE = 51.37 feet**
- **Total Volume = 17,032 acre-feet**
- **WSE = 45.46 feet**

Flow, cfs vs. Time, minutes

- Q100
- 85,000 cfs
III. Potential Solutions: Compton Creek
Flow Mitigation at Los Angeles River

- Needed storage capacity = 17,032 acre-feet
- Estimated Cost: $6.59 billion

- Existing LACFCD spreading grounds facilities = 21,442 acre-feet
  - Rio Hondo Coastal Spreading Grounds
    - Storage capacity = 3,694 acre-feet
    - Area = 570 acres
  - Requires a basin over 4.5x the size of Rio Hondo Coastal Spreading Grounds
III. Potential Solutions: Compton Creek

Constraint: Downstream Water Surface Elevation at Confluence with the Los Angeles River

- Parapet Wall
- Detention/Retention Basins with Parapet Walls
- Parcel Level Flood Detention with Parapet Walls
III. Potential Solutions: Compton Creek

Parapet Walls

- 2-4 foot parapet walls along levee
  - Walls for freeboard purposes only
  - Potential opportunity for multi-use
III. Potential Solutions: Compton Creek
Parapet Walls

- 2.4 miles of channel improvements
- Implementation Time: 5-6 years
- Estimated Cost: $32.4 million
III. Potential Solutions: Compton Creek 
Detention/Retention Basins with Parapet Walls

- 11 project sites
  - Reduce 100-year peak channel flow by 4,430 cfs
  - Provide opportunities for multi-use benefits
- 2-3 parapet walls along levee
III. Potential Solutions: Compton Creek
Detention/Retention Basins with Parapet Walls

- 11 basin sites
- 2.4 miles of channel improvements
- Implementation Time: 8-10 years
- Estimated Cost: $400 million
  - Basins Cost: $370 million
  - Parapet Walls Cost: $30 million
III. Potential Solutions: Compton Creek
Parcel Level Flood Detention with Parapet Walls

- PLFD installed on each property
  - Reduce 100-year peak channel flow by 4,430 cfs
  - Runoff detained onsite
- 2-3 parapet walls along levee
III. Potential Solutions: Compton Creek
Parcel Level Flood Detention with Parapet Walls

- PLFD on every parcel
- 2.4 miles of channel improvements
- Implementation Time: Unknown
- Estimated Cost:
  - PLFD Cost: $4.668 billion
  - Parapet Walls Cost: $30 million
III. Potential Solutions: Compton Creek
Other Solutions Considered and Investigated

- Channel Geometry
- Dams
- Relief Drains
- Wetlands
### III. Potential Solutions: Compton Creek

#### Summary

<table>
<thead>
<tr>
<th>Solution</th>
<th>Years to Implement</th>
<th>Increased Capacity With:</th>
<th>Flow Reduction</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parapet Wall (PW)</td>
<td>5-6 years</td>
<td>2-4 Foot Vertical PW</td>
<td>--</td>
<td>$32.4 Million</td>
</tr>
<tr>
<td>Basin and PW</td>
<td>8-10 years</td>
<td>2-3 Foot Vertical PW</td>
<td>4,430 cfs</td>
<td>$400 Million</td>
</tr>
<tr>
<td>PLFD and PW</td>
<td>Unknown</td>
<td>2-3 Foot Vertical PW</td>
<td>4,430 cfs</td>
<td>$4.968 Billion</td>
</tr>
</tbody>
</table>

*PW: Parapet Wall*
III. Potential Solutions: Dominguez Channel

Constraint: Channel Capacity (mitigate 14,075 cfs)

- Parapet walls
- **Modified channel geometry**
- Detention/retention basins
- Detention/retention basins with Parapet Wallss
- Parcel level flood detention
- Parcel level flood detention with Parapet Wallss
- **Relief drain**
- **Relief drain with Parapet Wallss**
III. Potential Solutions: Dominguez Channel

Parapet Walls

- 6-8 foot parapet walls along levee
  - Potential opportunity for multi-use
  - Increased water surface elevation
  - Removal and replacement of 15 road bridges and 23 utility bridges
III. Potential Solutions: Dominguez Channel

Parapet Walls

- 8.5 miles of channel improvements
- Implementation Time: 6-8 Years
- Estimated Cost: $655 million
III. Potential Solutions: Dominguez Channel

Modified Channel Geometry

- 150 foot-wide rectangular section
  - Potential opportunity for multi-use
  - No increase water surface elevation
  - No removal or replacement of road and utility bridges
III. Potential Solutions: Dominguez Channel
Modified Channel Geometry

- 6.3 miles of channel improvements
- Implementation Time: 6-8 Years
- Estimated Cost: $513 million
III. Potential Solutions: Dominguez Channel
Detention/Retention Basins

- Minimum of 29 basins
  - Reduce 100-year peak channel flow by 14,075 cfs
  - Provide opportunities for multi-use benefits
III. Potential Solutions: Dominguez Channel
Detention/Retention Basins

- Implementation Time: 10-12 years
- Estimated Cost: $1.972 billion
III. Potential Solutions: Dominguez Channel
Detention/Retention Basins with Parapet Walls

- Minimum of 25 basins
  - Reduce 100-year peak channel flow by 8,900 cfs
  - Provide multi-use and water quality benefits
- 3-4 foot parapet walls along levee
  - Increase channel capacity by 5,175 cfs
III. Potential Solutions: Dominguez Channel
Detention/Retention Basins with Parapet Walls

- 8.5 miles of channel improvements
- Implementation Time: 10-12 Years
- Estimated Cost: $1.298 billion
  - Basin Cost: $1.249 billion
  - Parapet Cost: $49 million
III. Potential Solutions: Dominguez Channel
Parcel Level Flood Detention

- PLFD installed on each property
  - Reduces 100-year peak channel flow by 14,075 cfs
  - Runoff detained on-site
- Implementation Time: Unknown
- Estimated Cost: $14.883 billion
III. Potential Solutions: Dominguez Channel
Parcel Level Flood Detention with Parapet Walls

- PLFD installed on each property
  - Reduce 100-year peak channel flow by 8,900 cfs
  - Runoff detailed onsite
- 3-4 foot parapet walls along levee
  - Increase channel capacity by 5,175 cfs
III. Potential Solutions: Dominguez Channel
Parcel Level Flood Detention with Parapet Walls

- 8.5 miles of channel improvements
- Implementation Time: Unknown
- Estimated Cost: $10.932 billion
  - PLFD Cost: $10.883 billion
  - Parapet Cost: $49 million
III. Potential Solutions: Dominguez Channel Relief Drain

- 37-foot diameter relief drain
  - Main Street (6.3 miles)
  - Divert 14,075 cfs
- Implementation Time: 8-12 Years
- Estimated Cost: $1.216 billion
III. Potential Solutions: Dominguez Channel

Relief Drain with Parapet Walls

- 26-foot diameter relief drain
  - Manhattan Beach Blvd (4.7 miles)
  - Redondo Beach Blvd (4.7 miles)
  - Diverts 8,900 cfs

- 8.5 miles of channel improvements
  - Increase channel capacity by 5,175 cfs
III. Potential Solutions: Dominguez Channel

Relief Drain with Parapet Walls

- 8.5 miles of channel improvements
- Implementation Time: 8-12 years
- Estimated Cost: $710 million
  - Relief Drain Cost: $661 million
  - Parapet Cost: $49 million
III. Potential Solutions: Dominguez Channel

Other Solutions Considered and Investigated

- Channel Modifications
  - Depth
  - Slope
- Dams
- Wetlands
### Existing Channel

<table>
<thead>
<tr>
<th></th>
<th>100-year Peak Flow</th>
<th>Necessary Reduction to Meet FEMA Title 44</th>
<th>Additional Levee Height Required</th>
<th>Constraint</th>
</tr>
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<tbody>
<tr>
<td><strong>100-year Peak Flow</strong></td>
<td>28,000 cfs</td>
<td>14,075 cfs</td>
<td>6-8 Feet</td>
<td>Channel Capacity</td>
</tr>
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### Summary

**III. Potential Solutions: Dominguez Channel**

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<th>Cost</th>
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</thead>
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<td>Parapet Wall (PW)</td>
<td>6-8 years</td>
<td>6-8 Feet Vertical PW</td>
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<td>$655 Million</td>
</tr>
<tr>
<td>Channel Geometry</td>
<td>6-8 years</td>
<td>150’ Rectangular Section</td>
<td>--</td>
<td>$513 Million</td>
</tr>
<tr>
<td>Basins</td>
<td>10-12 years</td>
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<td>Basins &amp; PW</td>
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IV. Next Steps

- Share draft potential solutions with community
- Finalize the Alternatives Study
V. Input from Advisory Committee

- Comments on schedules, project impacts, and costs
- Additional elements to the solutions
- Solution(s) you favor
VI. Questions and Answers
Contact Information

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