Delineating Geomorphic Landscape Units to assess sediment supply in the San Diego River Watershed

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Watershed Analysis/Mapping
- Watershed Characteristics and Processes
- Current Land Use and Stream Conditions
- Past Actions/Legacy Effects
- Proposed Future Actions/Changes in Land Use

Watershed Hydromodification Management
- Opportunities/Constraints
- Management Objectives
- Framework for Determining Site Control Requirements
- Valuation Method for Mitigation

New Development Site Analysis

Other Entities or Programs

New Development Site Controls and Mitigation Requirements
- On-site Actions
- Off-site Actions

Watershed Management Actions
- Stream Restoration
- Floodplain Management
- Flow and Sediment Management

Monitoring
Objectives

- Review of Original Geomorphic Landscape Units (GLUs) Approach
- Revised GLUs Approach
  - San Diego River Watershed
- Limitations
Original Approach to GLUs

• Classification of Slope, Geology and Land Cover

• Planning tool to predict effects of hydromodification based on sediment changes due to landscape alteration

• Rapid assessment technique that could inform management decisions
Escondido Creek Watershed
Escondido Creek Watershed

Relative Sediment Production Rates
- Low
- Medium
- High
Revised GLUs Approach

• Datasets:
  1. USGS 30 Meter elevation to derive slope
  2. CGS 1977 Jennings Geology
  3. SanGIS Current Land Use and Planned Land Use
San Diego River Watershed

- 433 Sq. Mile
- Second Largest
- Highest Population
Slope Classification

- 30 Meter Resolution
- Slope stability

Slope Class
- 0-10% (Low)
- 10-20% (Medium)
- >20% (High)
Geology Reclassification

- CGS
- 68 Original
- Grouped by geologic characteristic
Coarse-Competent Classification
Crystalline Classification
Land Use Classification

- General & Community Plans
- 90 Original
- 3 Reclassified
<table>
<thead>
<tr>
<th>Unique Landscape Units – Current Land Use</th>
</tr>
</thead>
</table>

- **Coarse-Competent; Developed; Low**
- **Coarse-Competent; Developed; Medium**
- **Coarse-Competent; Developed; High**
- **Coarse-Competent; Scrub/Shrub; Low**
- **Coarse-Competent; Scrub/Shrub; Medium**
- **Coarse-Competent; Scrub/Shrub; High**
- **Coarse-Weak; Agriculture; Low**
- **Coarse-Weak; Agriculture; Medium**
- **Coarse-Weak; Agriculture; High**
- **Coarse-Weak; Developed; Low**
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- **Crystalline; Agriculture; Low**
- **Crystalline; Agriculture; Medium**
- **Crystalline; Agriculture; High**
- **Crystalline; Developed; Low**
- **Crystalline; Developed; Medium**
- **Crystalline; Developed; High**
- **Crystalline; Scrub/Shrub; Low**
- **Crystalline; Scrub/Shrub; Medium**
- **Crystalline; Scrub/Shrub; High**
- **Fine-Competent; Agriculture; Low**
- **Fine-Competent; Developed; Low**
- **Fine-Competent; Developed; Medium**
- **Fine-Competent; Developed; High**
- **Fine-Competent; Scrub/Shrub; Low**
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Unique Landscape Units – Current Land Use

Crystalline; Scrub/Shrub; High
Crystalline; Scrub/Shrub; High
Crystalline; Scrub/Shrub; Low
Coarse-Competent; Scrub/Shrub; High
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<tr>
<th>Legend</th>
<th>Geology</th>
<th>Slope</th>
<th>Current 2012 Land Use</th>
<th>Relative Sediment Production</th>
<th>Potential 2050 Land Use</th>
<th>Difference in Percent</th>
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A predicted reduction in sediment could be used to identify areas of hydromodification.
Limitations

• Defined by the coarsest dataset – Jennings Geology

• Reclassification of Categories

• Assessment of relative sediment production rates
Summary

• Goal was to identify unique landscape units that could be used in a rapid assessment of the watershed

• 3 indicators of potential sediment production

• Predicted reduction in sediment could be used to identify areas of hydromodification and assist decision makers

• Dataset and Classification limitations
Questions?

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