

Portland Landslides 1996-1997

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Project Overview

- Locations of past slides
- Identify slope, soil type, and base rock at locations of slides
- Determine which combination of slope, soil type, and base rock are most often found at slide sites in Portland

Data Collection

- PSU Geology Department in conjunction with Metro – survey conducted 1997-1998
- RLIS
- USGS SoilMart SSURGO (we did not actually need it though)

Data Massage

- Projection
 - Converted the projection of PSU/Metro data from Nad 27 to NAD 83
- Then converted that data from NAD 83 projection to Nad 83 HARN

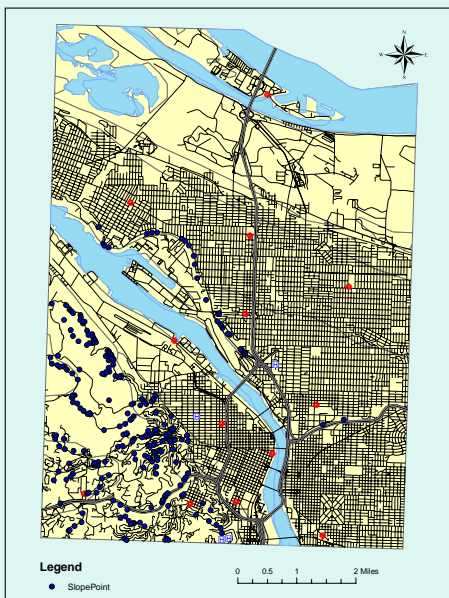
Data Added for orientation

- Street layer
 - Arterials
 - Freeways
 - Major roads
- Water bodies layer
- Hospitals
- Fire Stations

The Slope Factor

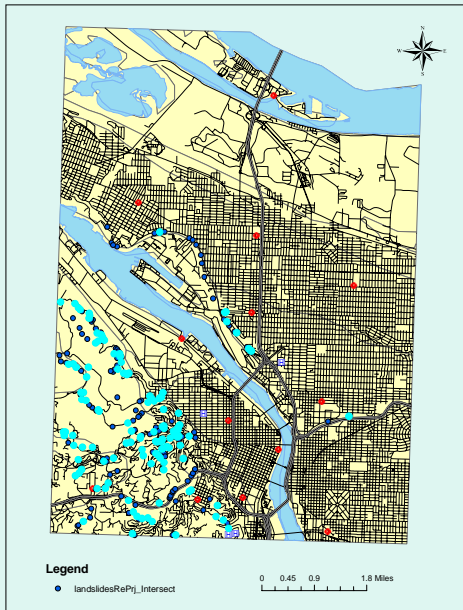
- 242 slides listed in our data occurred due to the storm of February 6-9, 1996

Locations of all 242 slides



- We identified the 124 slides that occurred on slopes between 35 degrees and 45 degrees. This represents 51% of the 242 slides in our data.

Slides on Slopes Between 35 and 45 Degrees



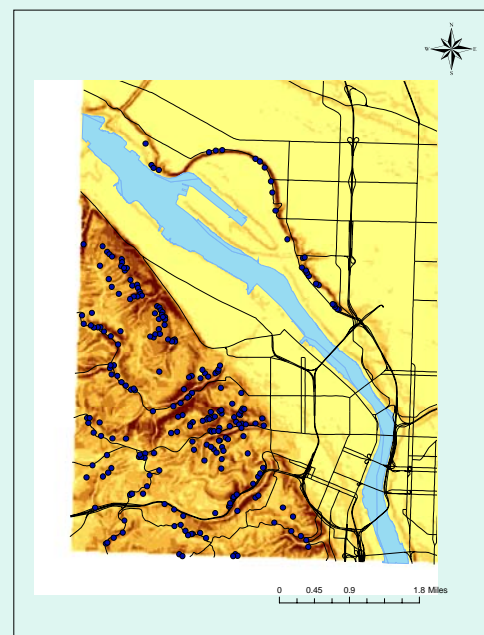
A Closer Look



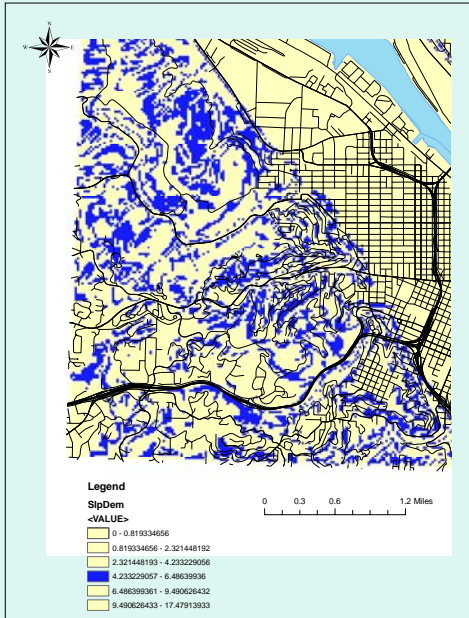
Data Discrepancies

- We identified all areas in our study region that have a slope between 35 degrees and 45 degrees.
 - We used the DEM and created slope layer.
 - DEM layer is average slope. Our data is measured slope at slide location.
 - We reclassified the DEM slope data into six categories to match the six slope categories of our slide data.

Slope Layer



We emphasized the category which corresponds to the 35-45 degree slopes



Further Considerations

- Soil type and base rock also play a role in landslide susceptibility.
 - Goble Silt Loam is the most common soil type associated with slide locations
 - Columbia River Basalt group and related flows

Rock Slope Soil	Cnt_U I D	COUNT
Columbia River Basalt Group and related flows45Goble Silt Loam	18	18
Columbia River Basalt Group and related flows35Goble Silt Loam	14	14
Columbia River Basalt Group and related flows35Goble-Urban Land Complex	9	9
Columbia River Basalt Group and related flows45Wauld Very Gravelly Loam	8	8
Lacustrine and fluvial sedimentary rocks45Haploxerolls, Steep	6	6
Columbia River Basalt Group and related flows35Wauld Very Gravelly Loam	4	4
Columbia River Basalt Group and related flows40Goble Silt Loam	4	4
Columbia River Basalt Group and related flows40Wauld Very Gravelly Loam	4	4
Columbia River Basalt Group and related flows45Haplumbrepts	4	4
Sedimentary rocks35Goble Silt Loam	4	4
Basalt and basaltic andesite45Wauld Very Gravelly Loam	3	3
Basalt45Cascade-Urban Land Complex	3	3
Columbia River Basalt Group and related flows40Goble-Urban Land Complex	3	3
Columbia River Basalt Group and related flows40Haplumbrepts	3	3
Basalt and basaltic andesite35Goble-Urban Land Complex	2	2
Basalt and basaltic andesite40Goble-Urban Land Complex	2	2
Basalt and basaltic andesite40Haplumbrepts	2	2
Basalt and basaltic andesite40Wauld Very Gravelly Loam	2	2
Basalt35Cascade Silt Loam	2	2
Basalt35Cascade-Urban Land Complex	2	2
Columbia River Basalt Group and related flows35Haplumbrepts	2	2
Columbia River Basalt Group and related flows40Cascade-Urban Land Complex	2	2
Columbia River Basalt Group and related flows45Cascade Silt Loam	2	2
Columbia River Basalt Group and related flows45Cascade-Urban Land Complex	2	2

Alluvial deposits35Haploxerolls, Steep	1	1
Basalt and basaltic andesite35Goble Silt Loam	1	1
Basalt and basaltic andesite35Haplumbrepts	1	1
Basalt and basaltic andesite35Wauld Very Gravelly Loam	1	1
Basalt and basaltic andesite45Goble-Urban Land Complex	1	1
Basalt and basaltic andesite45Haplumbrepts	1	1
Basalt45Cascade Silt Loam	1	1
Columbia River Basalt Group and related flows35Cascade Silt Loam	1	1
Columbia River Basalt Group and related flows35Cascade-Urban Land Complex	1	1
Columbia River Basalt Group and related flows39Wauld Very Gravelly Loam	1	1
Columbia River Basalt Group and related flows41Goble Silt Loam	1	1
Columbia River Basalt Group and related flows45Goble-Urban Land Complex	1	1
Glaciofluvial, lacustrine, and pediment sedimentary deposits45Haploxerolls, Steep	1	1
Lacustrine and fluvial sedimentary rocks40Haploxerolls, Steep	1	1
Sedimentary rocks35Cascade Silt Loam	1	1
Sedimentary rocks40Goble Silt Loam	1	1
Sedimentary rocks45Cascade Silt Loam	1	1