Project Update: Willamette Valley Levee Inventory

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Who is doing the work?
DOGAMI, following previous work by the Department of Land Conservation and Development’s (DLCD) Coastal Management Program.

Who is funding the work?
This is primarily funded by the Geospatial Enterprise Office (FIT funds), with additional funding from U.S. Army Corps of Engineers Portland District.

What are the project objectives?
1) Use lidar to develop a Levee Centerlines layer.
2) Identify taxlots protected by levees using centerlines and floodplain maps to develop a Protected Areas layer.
3) Research existing and historic levee taxing districts to develop a Levee Districts layer based on taxlots.
4) Compile with existing datasets to produce a Statewide Levee Geodatabase. [See existing data on left from DLCD.]

What will it be used for?
Agencies will use it to help with levee maintenance, floodplain and channel migration mapping, and ecological restoration (i.e. levee removal).
Why prioritize watersheds?
We don’t know how many levees are out there until we look, so we don’t know how much work we can get done with the awarded funds.
What are levees?
We needed to develop criteria to help us identify levees versus other levee-like features. We got advice from the USGS and the Indiana Department of Natural Resources. We decided to classify features with high, medium, and low confidence. Any levee-like feature with some hydraulic influence was included. All must be at least 3 feet high on the landward side.

Where should we look?
We focused on areas in and around FEMA’s mapped floodplains. Some valleys do not have floodplains mapped, so we had to look at those too.

Can we automate it?
We investigated some approaches, but determined it would be most efficient to visually identify them using a cocktail of lidar derivatives (i.e. hillshade, slope, curvature).
Criteria

High Confidence
Continuous, flat crest and uniform slope. Includes obvious manmade levees, features in USACE’s National Levee Database, dams, and pond perimeters.
Medium Confidence
Somewhat fragmented, bumpy or notched. Includes plausible levees, some gravel pits, some roads/railroads protecting lagoons.
Low Confidence
Very fragmented, bumpy or notched. Includes questionable levees, and poorly maintained gravel pits and roads/railroads protecting lagoons.
Progress to Date

All levees have been identified in core watersheds
1,800 total features identified (1,200 high confidence, 250 medium confidence, 350 low confidence).

We’re researching levee districts
Visiting county courthouses to pull tax files. Have been to Marion, Lane, and Polk counties.

We expect to complete more than core watersheds
Yamhill and Tualatin watersheds would be up next.