Creating a Digital Flood Prone Area Coverage
for Southeast Michigan

Documentation

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Flood Prone Area Coverage Disclaimer

The flood prone areas have been delineated through use of readily available sources, with varying levels of detail. Therefore, this data should only be used for general analysis and display.

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Purpose

For the purpose of the Regional Development Forecast (RDF), it is necessary to create a flood prone area coverage that will assist in determining the maximum allowable density in such areas.

Sources

The major sources used for determining flood prone areas was the United States Geological Survey (USGS) Maps of Flood Prone Areas; seventy percent of the coverage was created using these maps. The flood-prone areas depicted represent the 100 year flood, and other sources used also reflected flood-prone areas of the same magnitude. Those other sources included various township master plans, county maps and publications, and Federal Emergency Management Agency (FEMA) flood boundary maps. However, a slight amount of interpolation was employed by SEMCOG staff using USGS topographic maps to fill in small areas were information was too general or unavailable. In these cases, elevation was used as an indicator of potential flood-prone areas.

Method

Southeast Michigan is covered by 116 USGS quadrangles, some partial and some full. Staff acquired 71 of the 116 quads needed. These maps were on loan to SEMCOG from USGS. These quads have flood-prone areas delineated with thick black lines to show the polygons which are considered flood-prone areas.

The following are quads received from USGS by County:

Livingston County

Byron	Fenton*	Kent Lake*	Linden	Pinckney*

Macomb County

Adair*	Almont*	Goodells*	Grosse Pt.	Memphis*
Mt Clemens East	Mt Clemens West	New Baltimore*	New Haven	Richmond
Romeo*	Utica*	Warren*		

Monroe County

Blissfield	Carleton*	Deerfield	Dundee	Erie
Flatrock*	Macon*	Maybee*	Milan*	Monroe
Rockwood*	Stony Point	Sylvania	Toledo	

Oakland County

Almont*	Birmingham	Clarkston	Davisburg	Fenton*
Kent Lake*	Milford	Northville*	Pontiac North	Pontiac S.
Rochester	Romeo*	Utica*	Walled Lake	Warren

St. Clair Shores

Algonac	Adair*	Avoca	Brockway	Goodells*
Jeddo	Lakeport	Marine City	Memphis*	New Balt.*
Port Huron	Rattle Run	Roseburg	Ruby	Smiths Creek
St. Clair	Yale			

Washtenaw County

Ann Arbor East	Ann Arbor West	Dexter	Manchester	Macon*
Maybee*	Milan*	Pinckney*	Saline	Tecumseh North
Ypsilanti East*				

Wayne County

Belleville	Belle Isle	Carleton*	Dearborn	Detroit
Flat Rock*	Grosse Pointe*	HighLand Park	Inkster	Maybee*
Northville*	Rockwood*	Wayne	Wyandotte	Ypsilanti East*

* Denotes the quad covers more than one county.

Various arc macro language (amls) were used to create the flood-prone area coverage. The most difficult part of the digitizing process is transferring data from USGS quad sheets to township coverage. Even with a number of background coverages, it is still difficult to be completely accurate.

Digitizing the flood-prone areas was performed using the 'heads-up' digitizing method. A printed source of flood-prone areas is interpreted and digitized using landmarks such as roads, railroads, lakes, rivers, drainage basins and governmental boundaries.

In the polygon attribute table (pat), there is an item called FLD. If the FLD is equal to 1 it is in a flood-prone area, and if it is equal to 2 it is not within a flood-prone area.

Flood-prone Coverage Attribute Fields

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALT NAME	INDEXED
1	AREA	4	12	F	3		-
5	PERIMETER	4	12	F	3		-
9	LIVFP#	4	5	B	-		-
13	LIVFP-ID	4	5	B	-		-
17	FLD	3	3	I	-		-

Intent

Because the digitizing method employed a certain amount of interpolation, the flood-prone area coverage is not intended to be considered a completely accurate coverage, but **rather an indicator of potential flood-prone areas.**

Wayne County - Of the twenty USGS flood-prone area quadrangles required to encompass Wayne County, sixteen were acquired by SEMCOG and used to create 80% of the flood-prone area coverage. The remaining 20% were determined using USGS topographic maps.

Oakland County - Twenty-five USGS flood-prone area quadrangles are needed to complete flood-prone areas in Oakland County. Seventeen were supplied to SEMCOG, representing 68% of the county's area. The remaining 32% were determined using the map "*Natural Resource Features and Hydrologic Areas*", supplied by Oakland County Planning Division. USGS topographic maps were used to enhance the information supplied by Oakland County.

Macomb County - A total of seventeen flood-prone area quadrangles are required to create a complete coverage for Macomb County. SEMCOG was able to acquire 14 of those representing 82% of the total area involved. The remaining 18% were determined using a combination of Master Plans from Macomb and Armada Townships, a generalized zoning map with flood-prone areas shaded by Macomb Planning Department and USGS topographic maps.

Washtenaw County - Twenty-two quadrangles are necessary to complete the flood-prone areas for Washtenaw County. Thirteen quadrangles, representing 59% of the county were used. The remaining 41% were determined using a flood-prone area mylar overlay provided by the Washtenaw Planning Department in combination with USGS topographic maps.

Monroe County - A total of twenty quadrangles were needed to complete Monroe County. SEMCOG was able to obtain fifteen USGS quads representing 80% of flood-prone areas in the county. The remaining 20% were determined using the 1985 Monroe County Comprehensive Plan Update, Natural Resources Component, Figure 5 "*Major Flood-prone Areas"* in conjunction with USGS topographic maps.

St. Clair County - Twenty-one quadrangles were required to complete St. Clair County. Eighteen USGS quads were available allowing 86% of the flood-prone areas to be created using the same source. The remaining 14% were determined using the Berlin Township Master Plan and USGS topological maps.

Livingston County - Twenty quadrangles are necessary to complete the flood-prone areas in Livingston County. Only six of these quads were available representing 30% of the coverage. Of the remaining 70%, approximately 20% were determined using FEMA flood boundary maps and a publication prepared by the United States Department of Agriculture Soil Conservation Service in Lansing entitled "Flood Plain Management Study, North Ore Creek". The remaining 50% were creating using USGS topological maps as the only source with elevation being the determining factor. Therefore, 50% of Livingston County flood-prone area coverage should be viewed with a certain amount of skepticism.