



GIS Basics for Floodplain Management

2009 Montana Floodplain Resource Seminar

Presenters:

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Mary Guokas, Floodplain Outreach Specialist, MT DNRC Helena

Thank you FEMA.



FEMA

DFIRM 101 Workshop *Demystifying a DFIRM*

April 17, 2009
Las Vegas, NV



Break for
Commercial
Announcement!



Brought to you by the National Flood Insurance Program (NFIP)



- Flood damage results when people build and live in floodplains.
- Floodwaters exert powerful forces.
- Unaltered floodplains perform vital natural functions.



The NFIP aims to reduce future flooding damage by:

Identifying risk with **flood maps**

Regulating floodplain development

Providing low-cost flood insurance to compliant communities.



Workshop Will Cover

FEMAs Map Modernization Process

Montana's Map Modernization Program

Navigating FEMAs Mapping Tools

Basic Features/Prices of GIS Programs

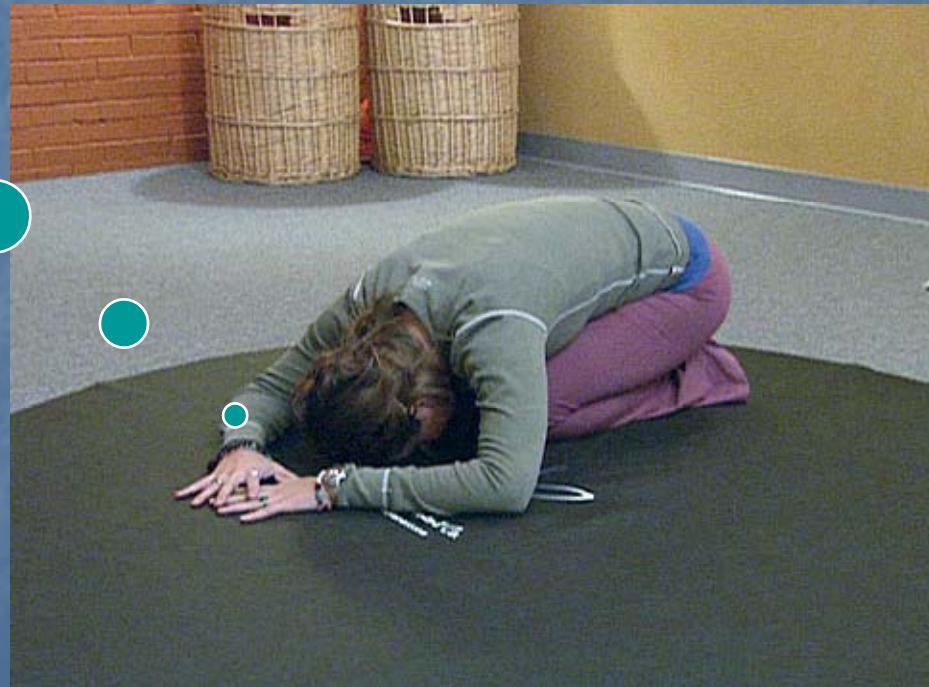
Montana's Natural Resources Information System

Using DFIRMs/Installing ArcExplorer



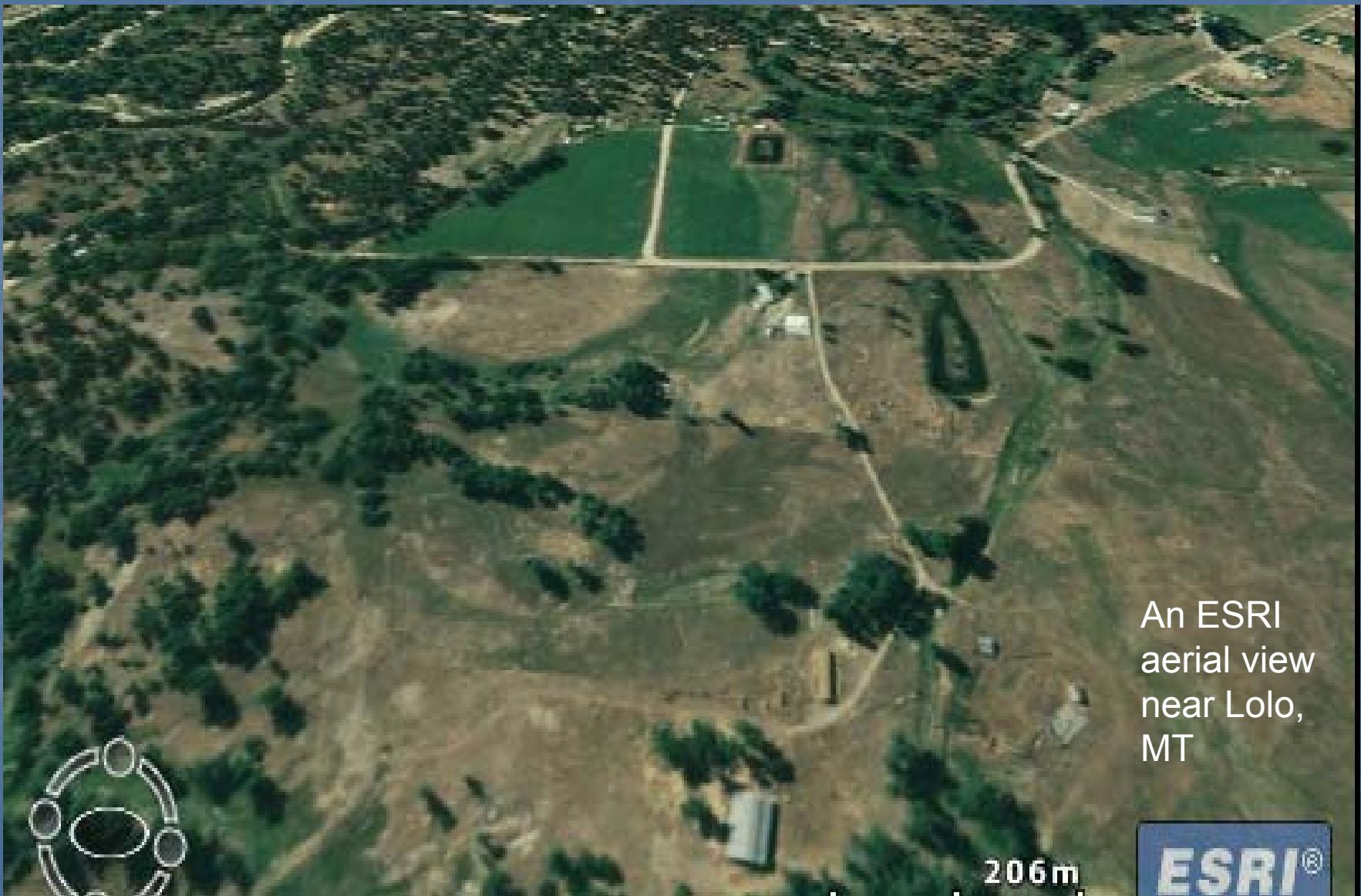
Purpose of Workshop

GIS & DFIRMs
are wonderful.





Where Might it Flood?



An ESRI
aerial view
near Lolo,
MT



206m

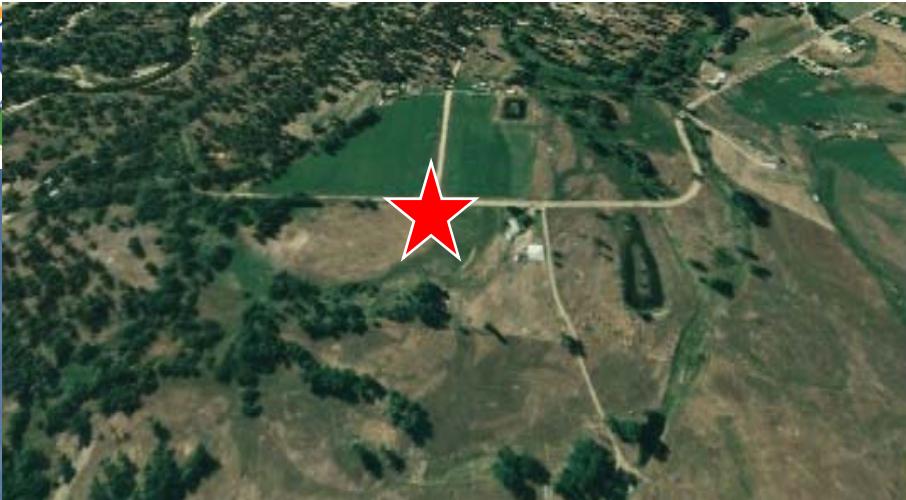
ESRI®



Answer:



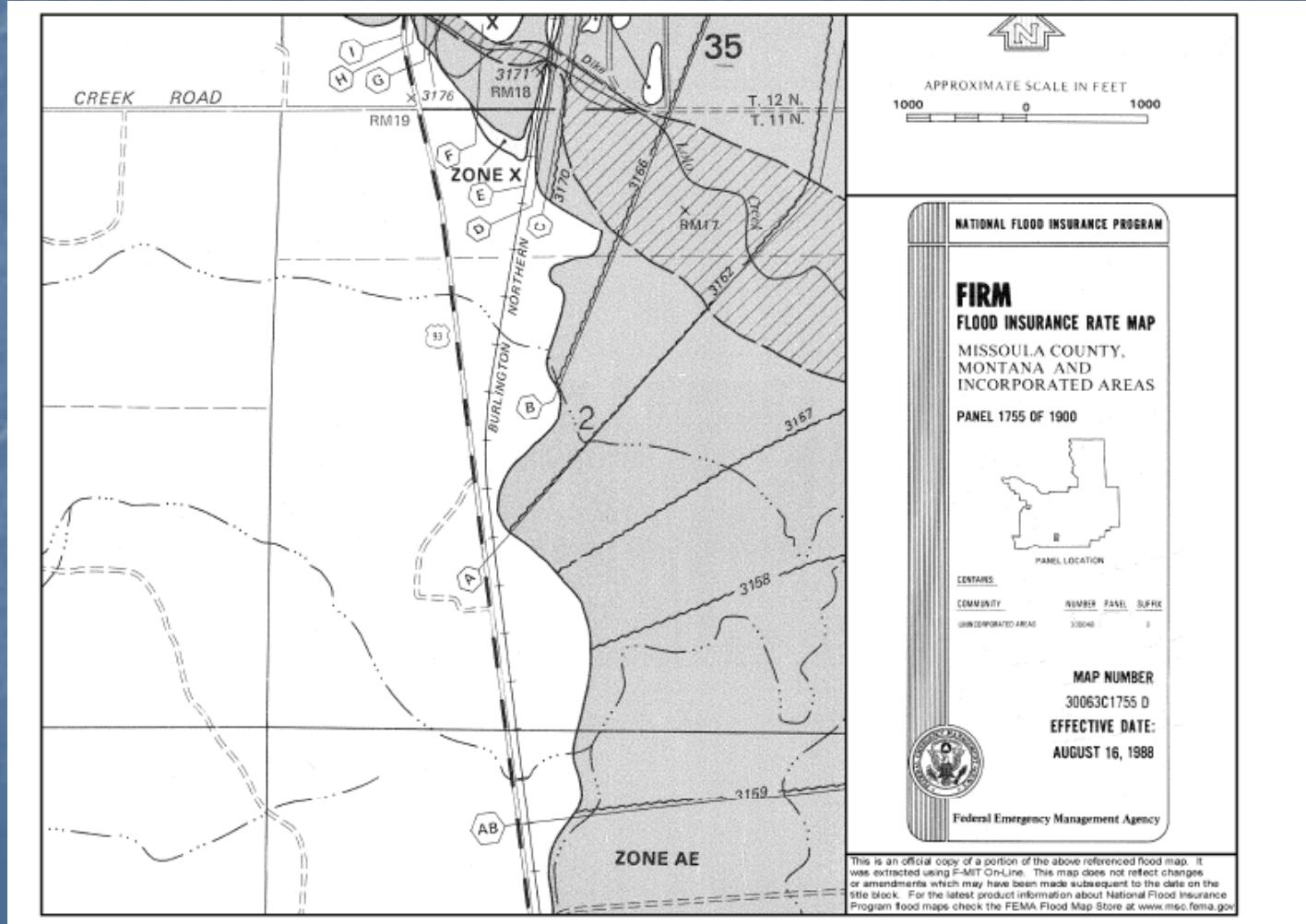
A Minor Flood Event Flood in similar location as previous slide.
May 20, 2008



Compare



“Where Might it Flood?”.

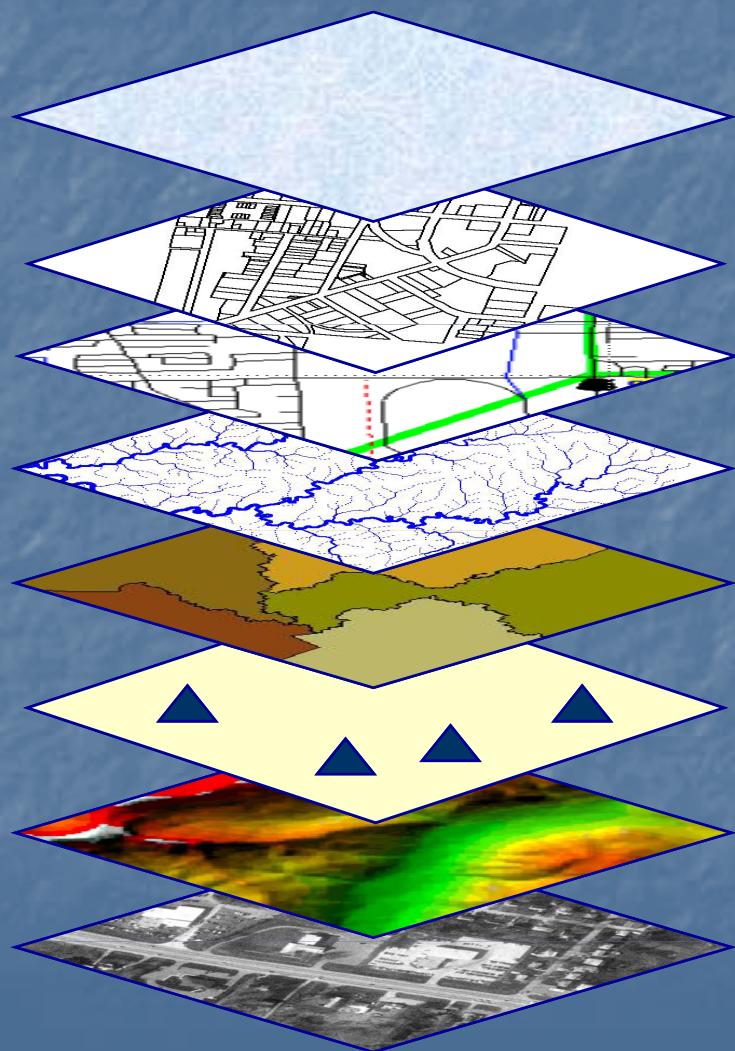






GIS has Layers

Digital Flood Insurance Rate Maps have Layers



Special Flood Hazard Areas

Political Areas

Transportation

Surface Waters

Boundaries

Geodetic Control

Elevation

Aerial Imagery

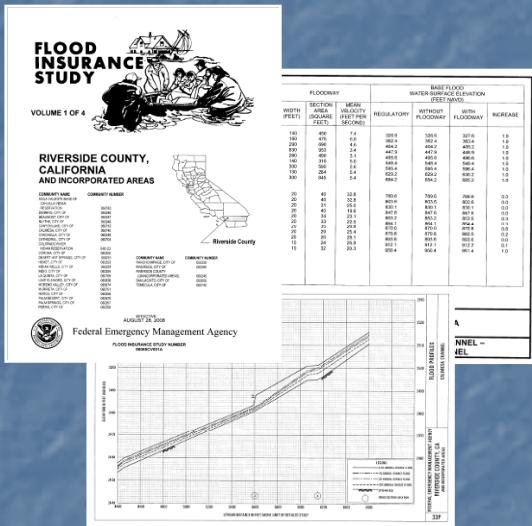


FEMA

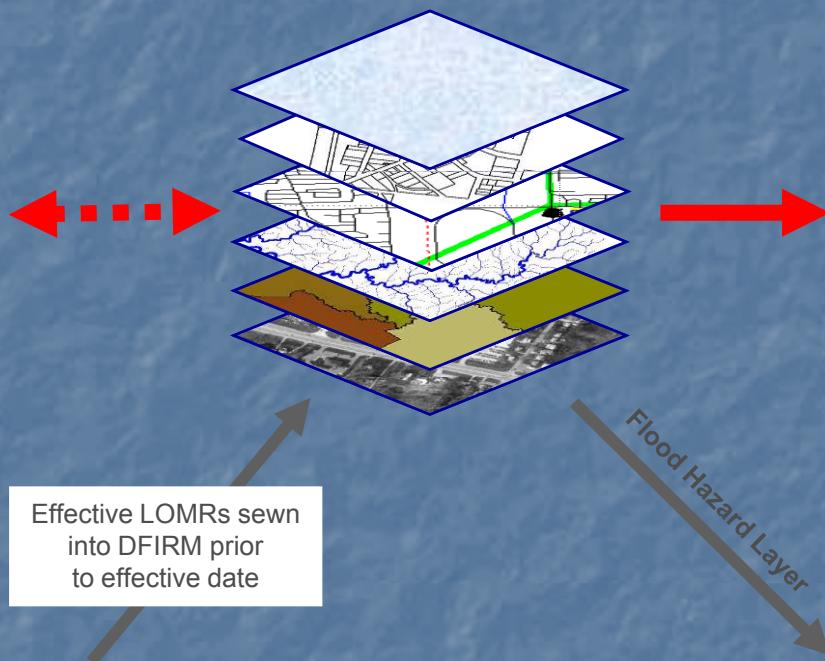


What is a DFIRM?

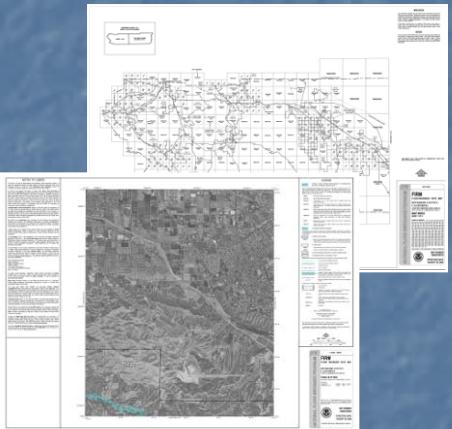
Flood Insurance Study (FIS)
Text/Report (digital & hard-copy)



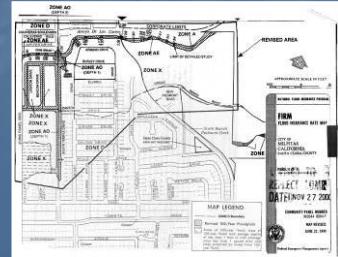
DFIRM
Database



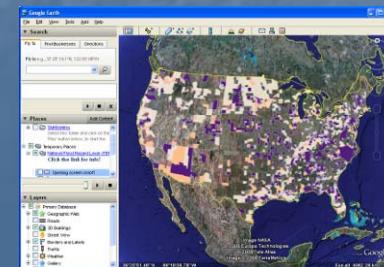
FIRM Panels
(digital & hard-copy)



Letters of
Map Revision
(LOMRs)



Future LOMRs
sewn into
NFHL daily



National
Flood
Hazard
Layer (NFHL)



Google Earth

File Edit View Tools Add Help

▼ Search

Fly To Find Businesses Directions

Fly to e.g., 94043

Kalispell, MT
 Kalispell, MT
 Helena, MT
 Kalispell, MT

▼ Places Add Content

Forbidden City, China
Reichstag, Germany
Google Campus, US
 National Flood Hazard Layer (FEM)
Click the folder name for info!
 Welcome! button on/off
 Status of Digital Flood Hazard Draws at high altitudes (see)

▼ Layers

Primary Database
Geographic Web
Roads
3D Buildings
Street View
 Borders and Labels
Traffic
Weather
Gallery

North Atlantic Ocean

© 2009 Tele Atlas
© 2009 Europa Technologies
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2009 TerraMetrics
57°56'24.20" N, 69°12'19.52" W
Elev alt. 3000.93 mi

start Inbox - Microsoft Ou... Windows Explorer DFIRM_GIS_Worksh... Copy of 2008 10 DF... Google Earth 2:58 PM

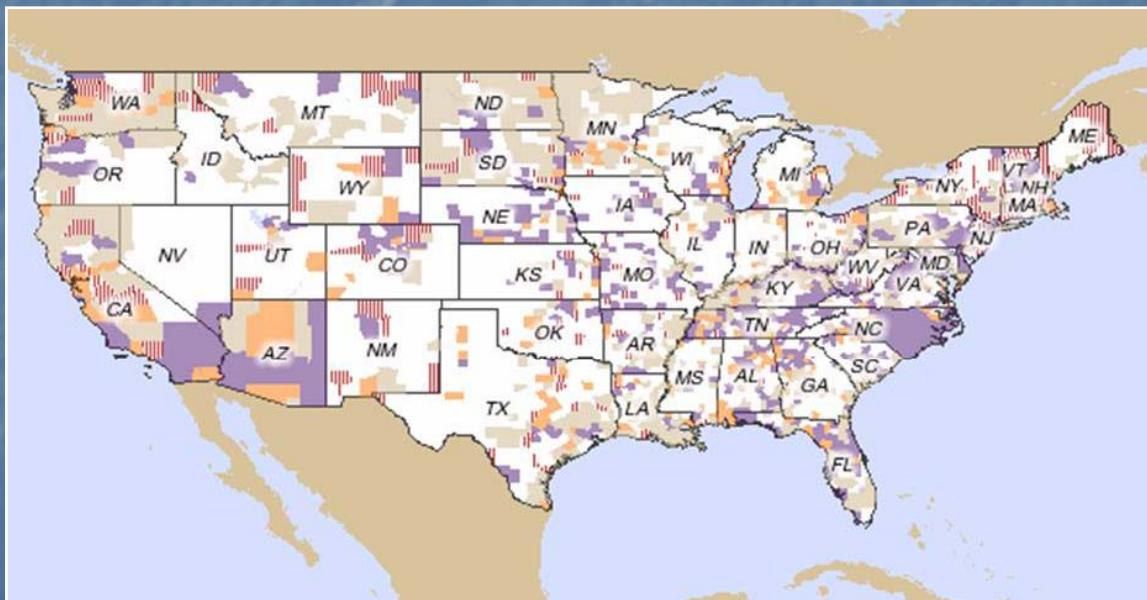


National Flood Hazard Layer (NFHL)

All effective digital flood hazard data for the entire U.S.

New DFIRM and LOMR data sewn in as they go effective

FEMA's online tools for viewing NFHL data always reflect the most current NFHL data



Flood Data

- [DFIRM Data Availability](#)
- Preliminary Maps Issued
- [Q3 Data Availability](#)
- [Partial DFIRM Data Availability](#)

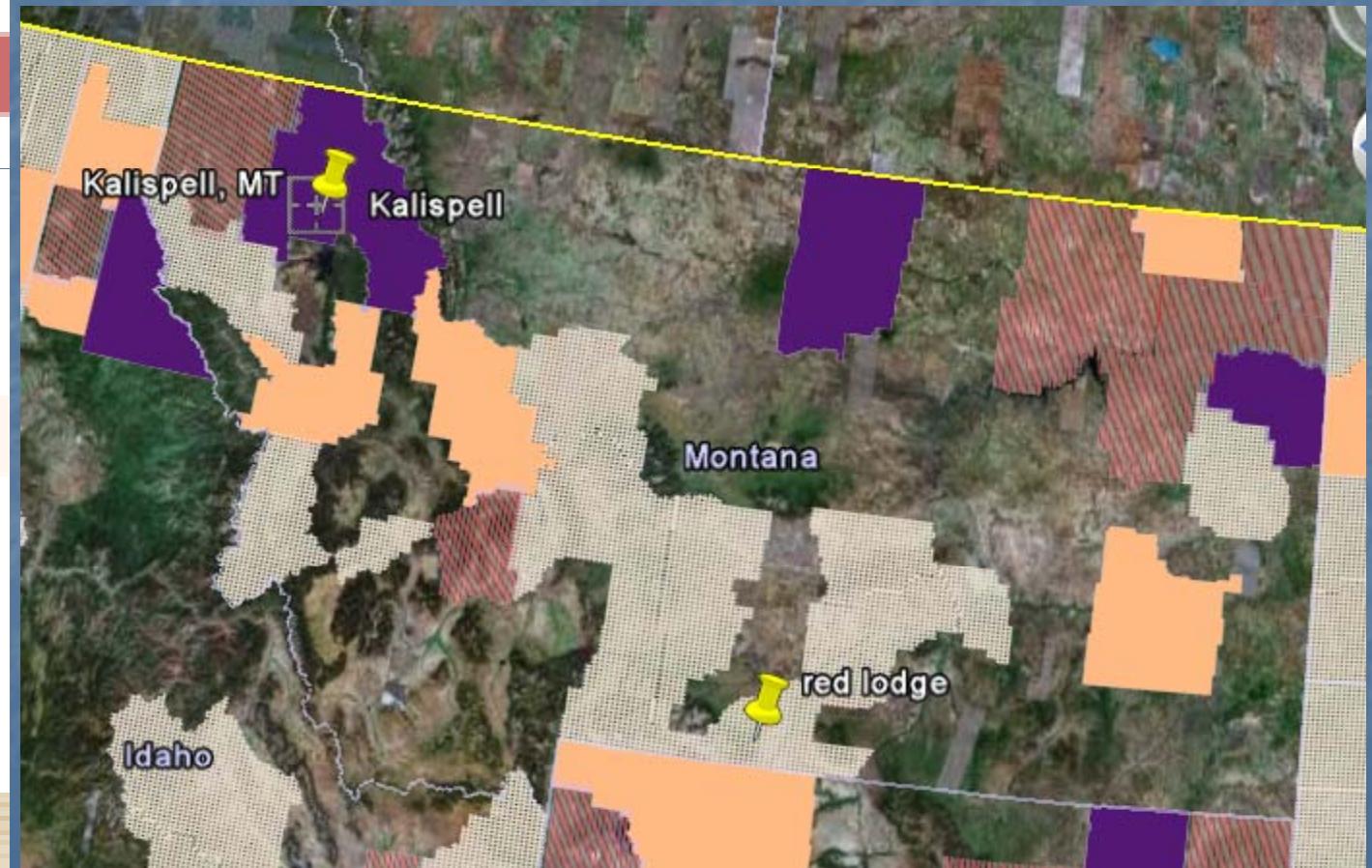


Effective

Partial
Portion of
County
Effective

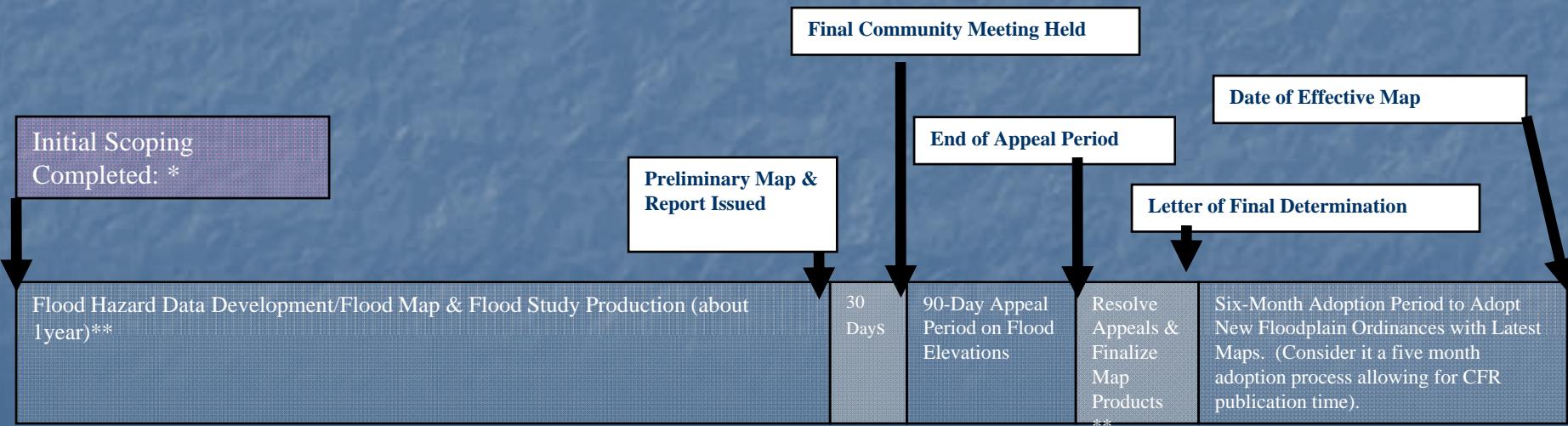
Preliminary
DFIRM

Q3 Data





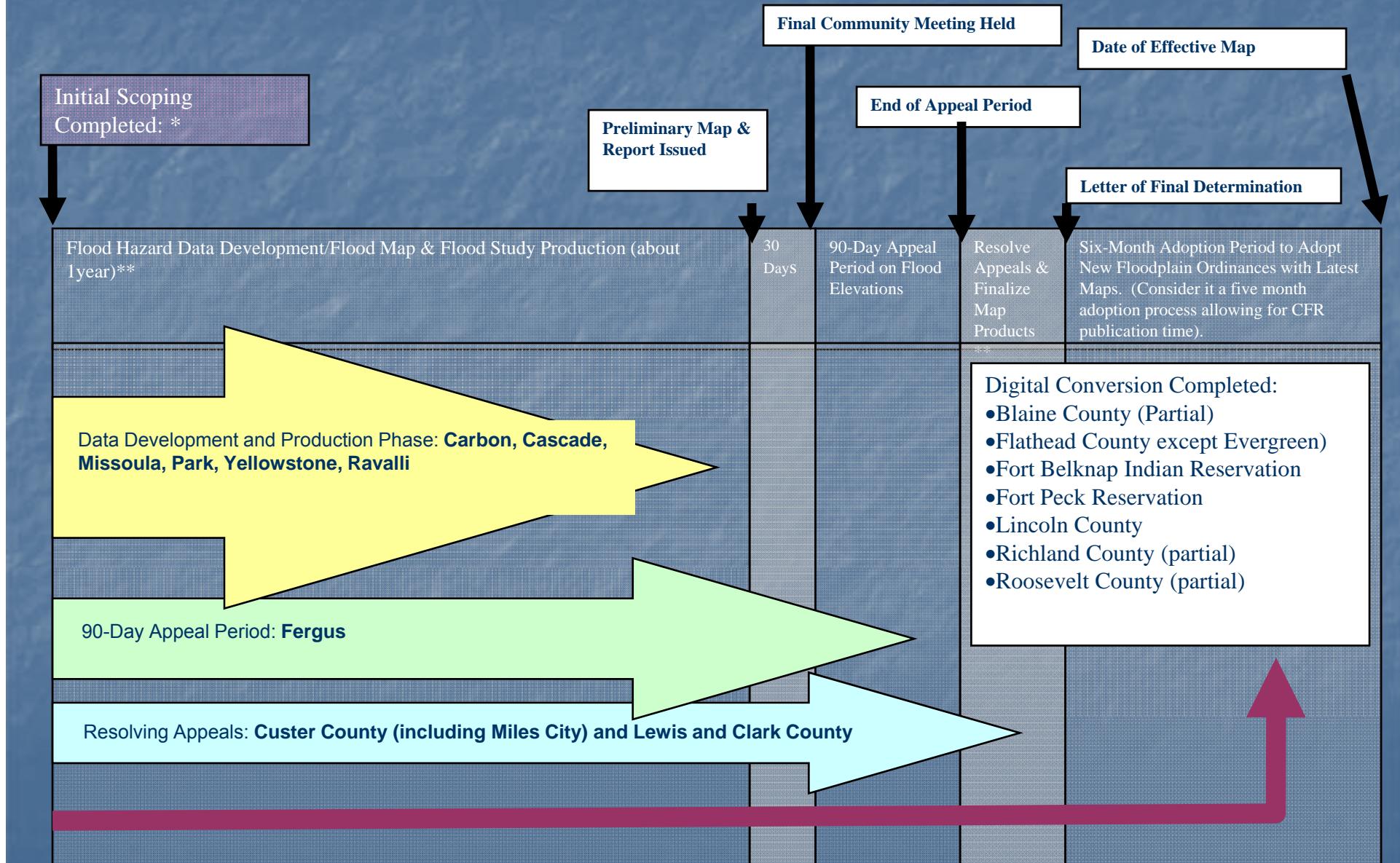
Simplified Timeline of Map Modernization Process





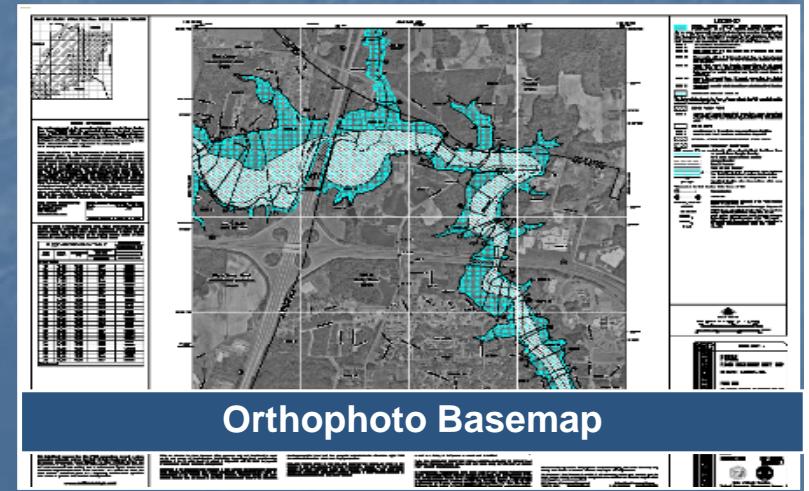
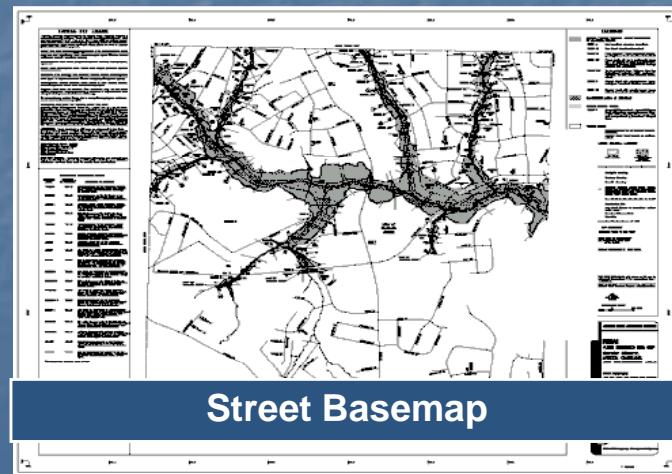
Montana Map Modernization Status

July, 2009





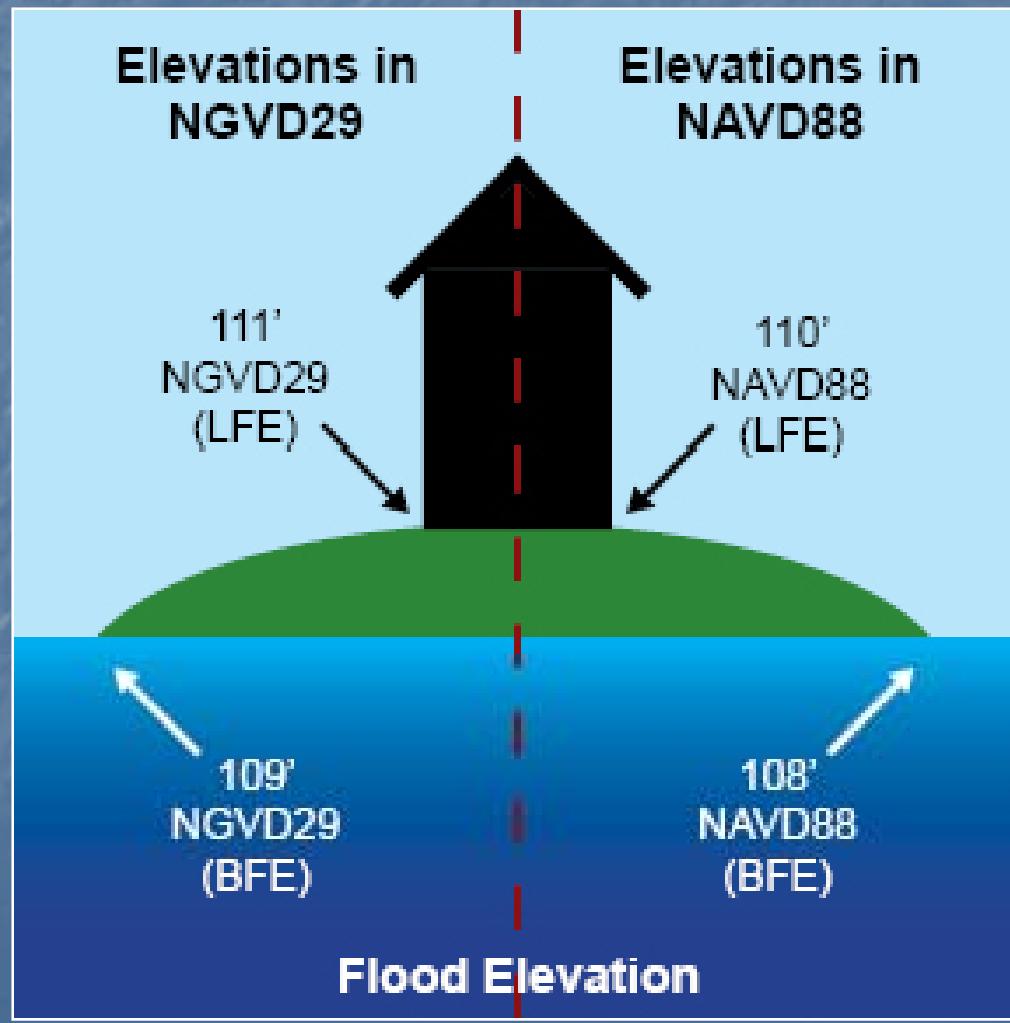
Map Modernization Sales Pitch





What's more modern?

1929 or 1988?





May Reflect New Studies
Reflect Certified or Provisionally
Accredited Levees
Incorporate Letters of Map Revision



No More Paper ...

Beginning on October 1, 2009 customers may order only digital flood hazard reports and data

No change is anticipated for the distribution of LOMCs

FEMA expects to save \$3 to \$5 million annually

(End of sales pitch, maybe).



<http://msc.fema.gov>

Distribution mechanism for

Current & Historic Flood Maps
(DFIRMs & FIRMs)
FIS Texts/Reports
DFIRM & NFHL Databases
Letters of Map Change (LOMC)
Letters of Map Amendment
(LOMAs)
Letters of Map Revision (LOMR)
Other Data and Documents

Download tools for viewing DFIRM/NFHL data

The screenshot shows the FEMA Map Service Center (MSC) homepage. The top navigation bar includes links for File, Edit, View, Favorites, Tools, and Help. Below the navigation is a toolbar with Back, Forward, Stop, Home, Search, Favorites, and Print buttons. The main content area features the FEMA logo and the "Map Service Center" title. A "Product Catalog" link is visible. On the left, there's a "Product Search by..." section with tabs for "Address" (selected) and "Map Panel ID". Under "Address", a dropdown menu shows "Flood Maps" selected. Below it, fields for Street, City, State, and Zip are present, along with a "Search by Street Address" button. To the right of the search form is a "New to the FEMA Map Service Center?" section listing categories like Homeowners/Renters, Real Estate/Flood Determination Agents, Insurance Agents, Engineers/Surveyors, and Federal/Exempt Customers. Further down are sections for "What are you looking for?", "More Information", and several boxes containing announcements about map revisions for St. Peters, Missouri; San Bernardino County, California; Grand Forks, North Dakota; and Sacramento, California. On the right side, there's a "Log On" panel with fields for User ID and Password, and links for "Forgot Password?", "Register", and "Why register?". Below the log-on panel are sections for "NFHL" (National Flood Hazard Layer), "Order NFHL GIS Datasets by state on DVD", "Use Web Map Service in your own GIS application", and "Use Web Map Service in Google Earth™". At the bottom right is a "FIRMette Tutorial" section with a link to learn how to create FIRMettes. The bottom of the page shows the URL <http://www.msc.fema.gov/webapp/wcs/stores/servlet/CategoryDisplay?catalogId=10001&storeId=10001&langId=-1>.



Product
Search/
Catalog

FIRMette –
Desktop
Download

MapViewer –
Desktop
Download

FEMA Map Service Center

Product Catalog | Map Search | Quick Order | Digital Post Office | Help

Product Search by...

Address Map Panel ID

1) Select a Product: Flood Maps

2) Enter an Address:
Street:
City:
State: Zip:
Search by Street Address

New to the FEMA Map Service Center?

- Homeowners/Renters
- Real Estate/Flood Determination Agents
- Insurance Agents
- Engineers/Surveyors
- Federal/Exempt Customers

What are you looking for?

- Flood Maps
- FIRMettes
- DFIRM Databases
- MapViewer - Web (DFIRM viewer)
- Documents, Publications & Forms

More Information

- How do I find the flood map for my area?
- What is a FIRMette?
- How do I find a LOMC?
- Definitions of FEMA Flood Zone Designations
- Product Information
- Price List
- How to Order
- Need Assistance?

Announcements

New Fees Beginning October 1, 2007

Please contact the MSC Customer Service Center by telephone at 1-800-358-9616 or by e-mail at FEMA-MSCservice@dhs.gov for questions or additional information.

Free Map Viewer

The Map Service Center now has version 2.2 of the F-MIT viewer available for download. This new version supports FIRMette creation for both two color and black and white maps. You can download it [here](#). (learn more)

Desktop DFIRM/NFHL Viewer

FEMA is developing a simple tool for viewing GIS flood data. A beta of this tool can be downloaded [here](#). (learn more)

Log On

User ID (email address):
Password:
Log on Clear
Forgot Password? Register
Why register?

NFHL

National Flood Hazard Layer ([learn more](#))

View the NFHL Online using MapViewer - Web

Order NFHL GIS Datasets by state on DVD

Use Web Map Service in your own GIS application

Use Web Map Service in Google Earth™

Got Comments?

DFIRM Database

San Bernardino County, California Letter of Map Revision Available
Case Number: 08-09-1595P
Effective date: August 29, 2008

City of St. Peters, City of St. Charles, St. Charles County, Missouri Letter of Map Revision Available
Case Number: 08-07-0068P
Effective date: October 30, 2008

San Bernardino County, California Letter of Map Revision Available
Case Number: 07-09-1957P
Effective date: November 19, 2007

City of Grand Forks, North Dakota Letter of Map Revision Available
Case Number: 07-08-0331P
Effective date: August 2, 2007

City of Sacramento, Sacramento County, California Letter of Map Revision Available
Case Number: 07-09-0266P

FIRMette Tutorial

Learn how to create FIRMettes. They're free!

Click here to learn how to create a FIRMette.

Login

National
Flood
Hazard
Layer
(NFHL)

FIRMette -
Web Tool



EDDIE: Express Document Delivery

A screenshot of the FEMA EDDIE login page. At the top, there's a dark blue header with the FEMA logo on the left and "Map Service Center" in the center. Below the header is a red navigation bar containing links: "Product Catalog", "Map Search", "Quick Order", "Digital Post Office", "EDDIE", "My Account", and "Help". To the right of the "EDDIE" link is a "Log off" button. On the far right of the page is a red circular logo with the word "EDDIE" in white. Two red circles highlight the "EDDIE" link in the menu and the "Log off" button.

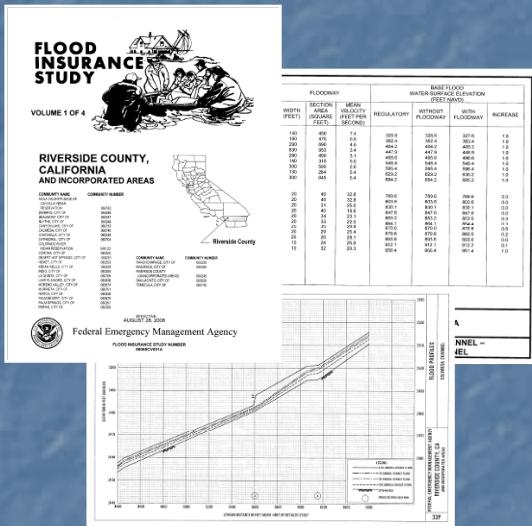
A screenshot of the search interface on the FEMA EDDIE site. On the left, there's a "Search by Item Id" input field with a "Go" button. Below it is a "Search by Region" section with a "Show FIPS/CID codes" link. Three dropdown menus are shown: "CALIFORNIA", "KERN COUNTY", and "All Communities". On the right, there's a sidebar with links: "Flood Insurance Rate Maps (FIRM)", "DFIRM Databases", "Flood Insurance Studies (FIS)", and "Letters Of Map Change (LOMC)".

For federal, state and local government employees
One account per community
Provides faster and easier access for download of
Flood Insurance Rate Maps (FIRM)
DFIRM Databases
Flood Insurance Studies (FIS)
Letters Of Map Change (LOMC)

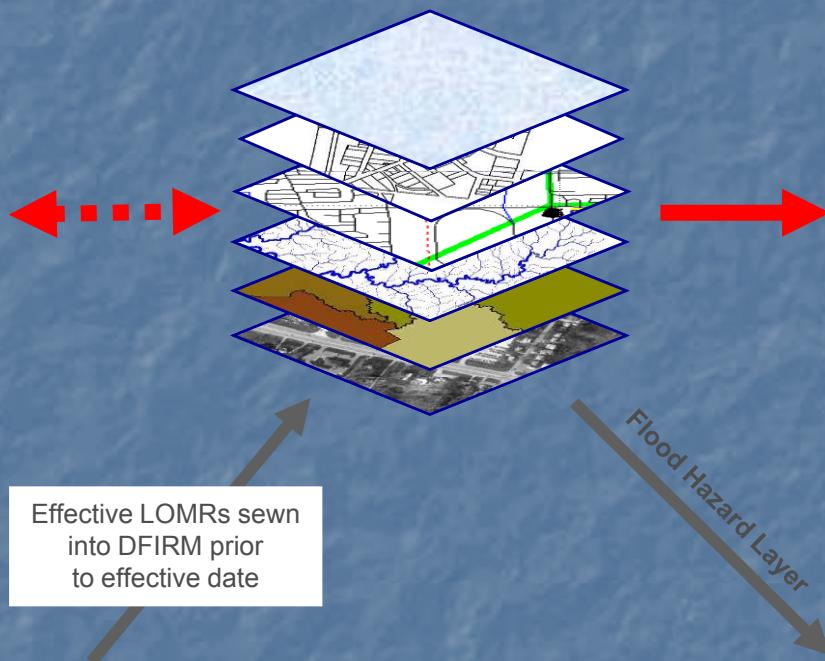


What is a DFIRM?

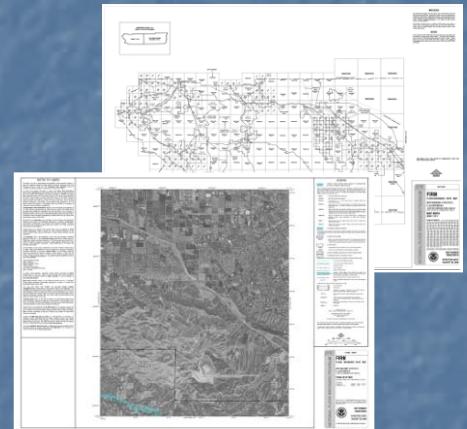
Flood Insurance Study (FIS)
Text/Report (digital & hard-copy)



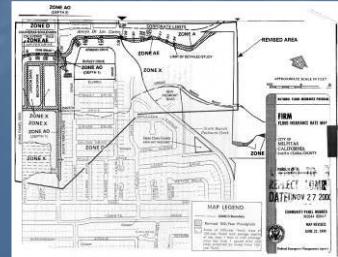
DFIRM
Database



FIRM Panels
(digital & hard-copy)



Letters of
Map Revision
(LOMRs)



Future LOMRs
sewn into
NFHL daily



National
Flood
Hazard
Layer (NFHL)



DFIRM Products

Products that don't change

Paper FIRM (Map)

FIRM Scan (Image of Map)

Viewed with *FIRMette* - Web and *FIRMette* - Desktop

DFIRM Database

Accessed with GIS software and *MapViewer* - Desktop

Product that changes (with map revisions)

National Flood Hazard Layer (NFHL)

MapViewer - Web, *MapViewer* - Desktop, WMS, Google Earth
KMZ

Available through the above tools or as a monthly statewide
shape file



DFIRM Database ➤ NFHL

Effective DFIRM databases are rolled into the NFHL

DFIRM database is a snapshot of the information on the printed map product

THE NFHL is updated continually with LOMRs

Updated NFHL GIS data are released monthly

NFHL GIS data are delivered on DVD

Order through the MSC

No charge for the data

NFHL is available by State

Order as many as you need



NFHL Web Map Services (WMS)

Web Map Services (WMS)

Google Earth Two KMZ files available

The image displays two side-by-side screenshots illustrating flood hazard data. The top screenshot shows the FEMA Mapping Information Platform's 'Flood Map Viewer' interface. It features a map of the United States with various states highlighted in different colors (purple, orange, yellow) representing different risk levels. On the left, there is a 'Geocoder' section with fields for Street Address, City, State, and ZIP Code, along with a 'Zoom Map' button. To the right is a 'Map Legend' containing numerous items such as 'Flood Data', 'DFIRM Data Availability', 'Preliminary Maps Issued', and 'Q3 Layers'. The bottom screenshot shows a Google Earth window zoomed into the 'CITY OF PITTSBURGH'. The map displays a complex network of red and yellow lines representing flood hazard zones, overlaid on satellite imagery of buildings and roads. A legend at the bottom of the Google Earth interface provides a key for these symbols, including 'High Risk Areas: A and V zones' and 'Moderate Risk Areas: Shaded X zone'. The overall theme is the availability of detailed flood hazard information through both web-based platforms and desktop software.



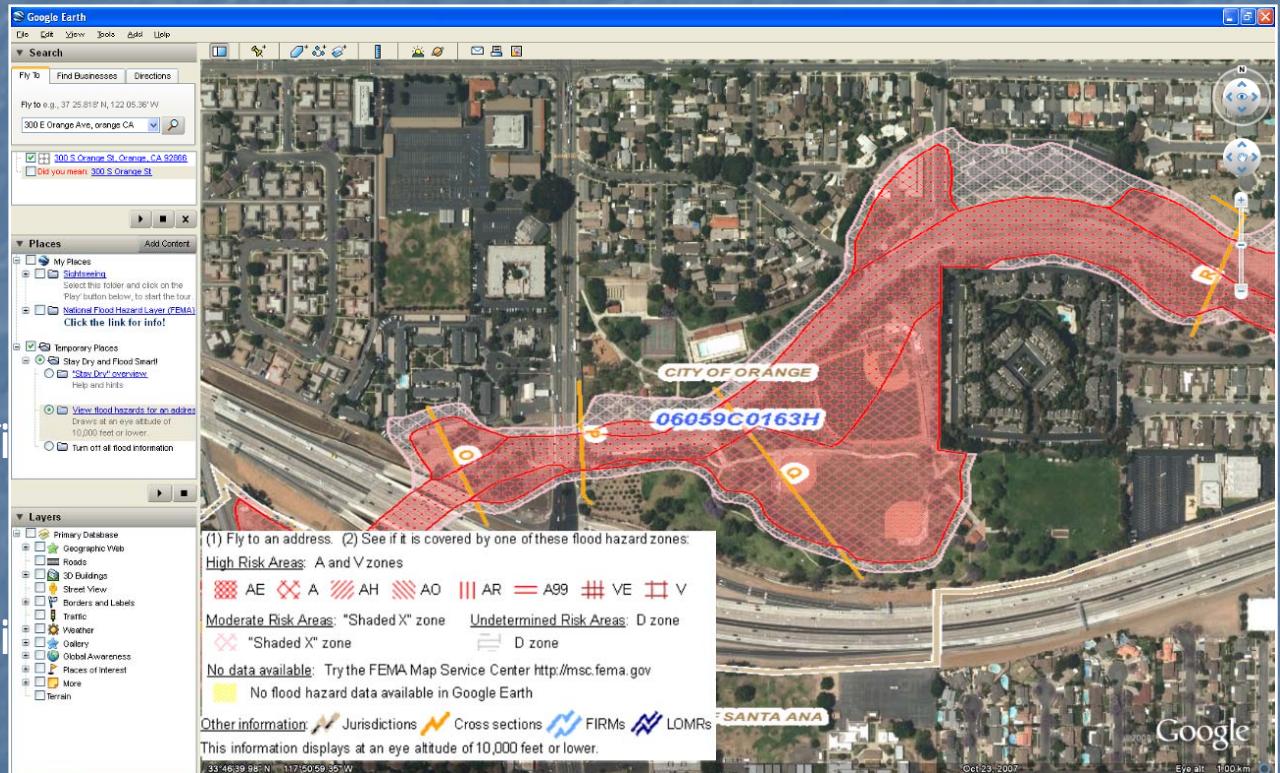
Stay Dry KMZ: the Basics

Stay Dry KMZ shows
SFHAs
LOMRs
FIRM Boundaries
Cross Sections
Jurisdictions

Can't reorder/hide specific layers

Basic floodplain information

Easy to understand





Google Earth NFHL Guidance

Start at the MSC

<http://msc.fema.gov>

NFHL

National Flood Hazard Layer ([learn more](#))

View the NFHL Online using **MapViewer - Web**

Order **NFHL GIS Datasets** by state on DVD

Use Web Map Service in your own GIS application

Use Web Map Service in Google Earth™

Got Comments?



FEMA: Mapping Information Platform: NOPAGETAB_NFHLKMZ - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <https://hazards.fema.gov/femaportal/wps/portal/NFHLWMSkmzdownload>

Mapping INFORMATION PLATFORM

FEMA

Log In | Need an Account? | FEMA Dictionary | MIP Help?

Home | Map Modernization | News & Events | **Tools & Links** | Map Viewer | MIP User Care

Public Reports

Home > Tools & Links

Using the National Flood Hazard Layer Web Map Service (WMS) in Google Earth™

 You must already have the Google Earth application installed on your computer to use these files. The starting point for obtaining the software is <http://earth.google.com>. Information about the system requirements needed for your computer to run the software is available through <http://search.google.com/support>. A user guide is available at <http://earth.google.com/userguide>.

FEMA offers two applications: "Stay Dry" and "FEMA NFHL." Each is described below, and each has its own .kmz file. For optimum performance, please do not open both, and do not have more than one copy of each, in Google Earth at the same time.

To use the .kmz files, first save them to your computer. Do this by right-clicking on a hyperlinked file name below, choosing "Save Target As" (Internet Explorer) or "Save Link As" (Firefox), changing the file name if you wish (**be sure that the file name has the extension .kmz**), and clicking on save.

After saving the file, double-click on the file on your computer. This action should start Google Earth and provide the opening view for the application.

If you plan to use mapped flood information displayed in Google Earth for official purposes, insure that imagery and other map information displayed with the flood data meet FEMA's standards for map accuracy.

Some Geographic Information System (GIS) software can import GIS data encoded in the kmz format used for these applications. This technology is unlikely to work with the kmz files provided below. If you are interested in using the NFHL in GIS software, use the NFHL GIS data or NFHL Web Map Service. Both are available through the MSC at <http://msc.fema.gov>.

FEMA anticipates future improvements to the .kmz files, so please revisit this page occasionally to obtain the latest version.

Stay Dry

"Stay Dry" is a focused application that provides basic flood hazard map information from FEMA's National Flood Hazard Layer for an address. It allows you to view flood hazard zones, cross sections and their labels, community names and boundaries, Flood Insurance Rate Map numbers and boundaries, and Letter of Map Revision case numbers and boundaries.

For best performance please delete or turn off previous versions of the "Stay Dry" or "FEMA NFHL" folders that you have loaded in Google Earth before using the new version of "Stay Dry."

Stay_Dry_v2.0.kmz

Exit Full Screen Exit Application Techniques

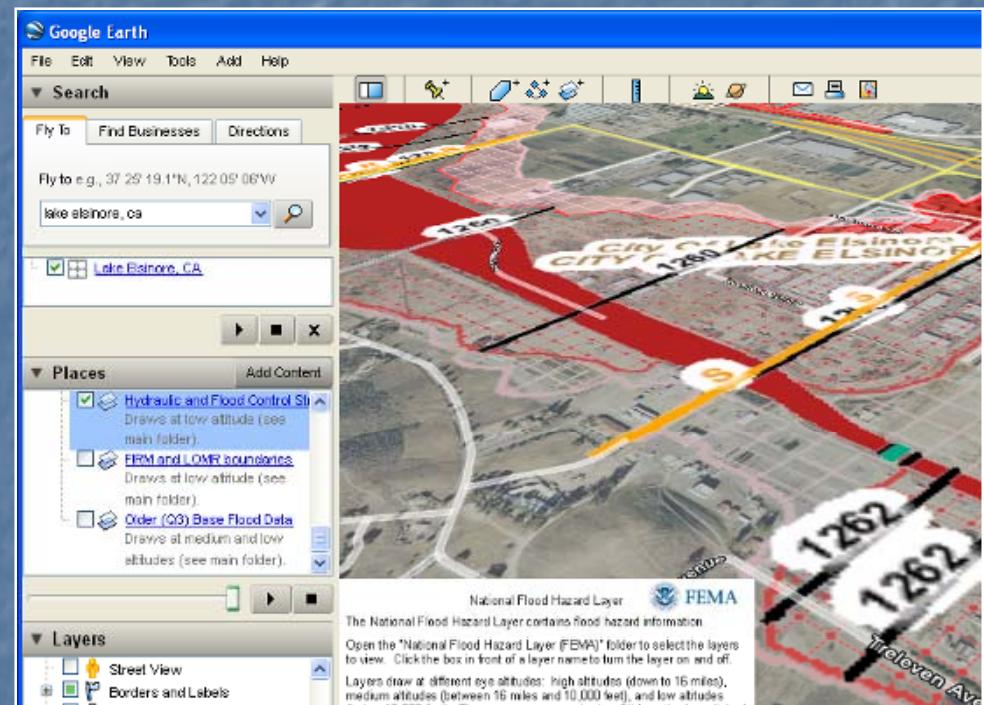


How to use Web Map Services

In Google Earth

Access either of the 2 KMZ files on the MSC web site

In your own GIS application or Arc Explorer—Take it away Todd
Guidance provided on MSC web site





Google Earth WMS's

