



COLORADO
Water Conservation Board
Department of Natural Resources

Colorado Hazard Mapping Program – Larimer County Open House: Estes Park Area

*660 Community Drive
Estes Park, CO
Estes Park Recreation Center
May 30, 2018, 5:00 PM*



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Introduction



NOTE: The governor signed this measure on 5/1/2015.



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Introduction



2013 floods
changed risk



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Introduction



State identified communities needed support identifying new risk



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Introduction



NOTE: The governor signed this measure on 5/1/2015.

An Act

- Initiated Colorado Hazard Mapping Program (CHAMP)
- Studied flood affected streams in Northeast CO



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Introduction



1. Help protect life, health, and safety
2. Promote resilient communities



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Why is this important?

- Updated Risk Information
 - Flood events can have a devastating effect
 - Mapped flood risk is not static
- Community Participates in National Flood Insurance Program
 - Building requirements
 - Insurance requirements



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Outline



Introduction to CHAMP and
Flood Hazard Mapping



Roles and Methods



Results, Timeline and
Resources



Acknowledgements &
Discussion



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What is the NFIP?



Voluntary Program

Allows homeowners to buy insurance based on Zones and be eligible for federal assistance



Federal Program

- Overseen by FEMA and Partners
- Managed by Communities
- Enforced by lenders

Engineers determine risk

- Used to determine requirements
- Allows discount for less risk



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What are Flood Insurance Rate Maps?

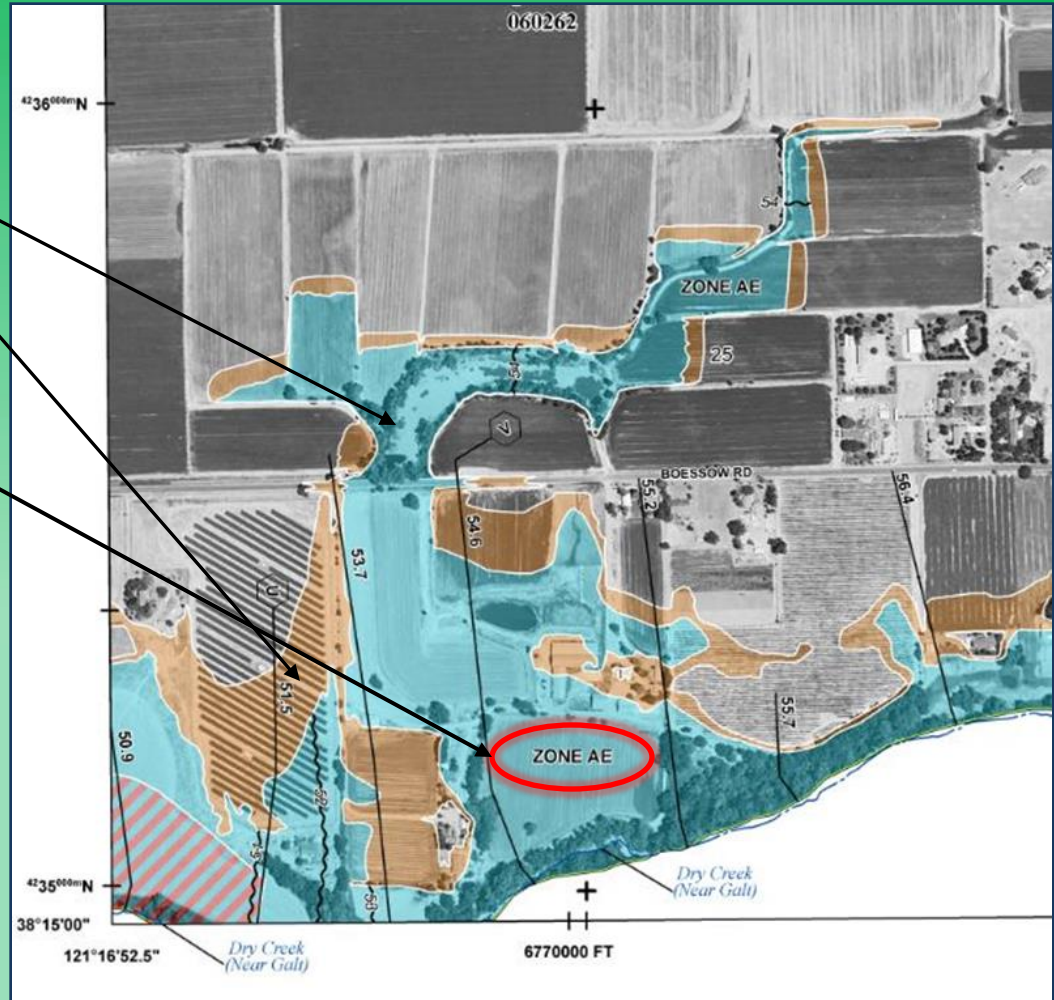
Show Flood Risk

-  1% Annual Chance Flood
-  0.2% Annual Chance Flood

Used to rate flood insurance

Available Online:

- FEMA Map Service Center (MSC)
- FEMA National Flood Hazard Layer (NFHL)



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Roles

CHAMP

Community Officials



- Administer NFIP
- Communicate Risk and Changes to it
- Manage Construction
- Flood Risk Adaptation
- Enforcement of Regulations
- Identification of changed risk

State (CWCB)



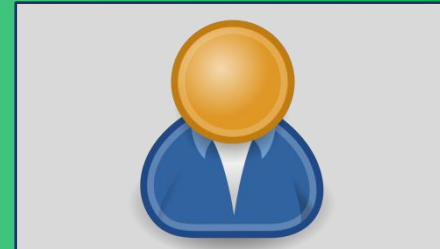
- Leading & funding this study
- Community Assistance
- FEMA Partner

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- Including new study on FIRMs
- Flood Risk Mapping
- NFIP

Private Stakeholders



- Work with community officials to update information



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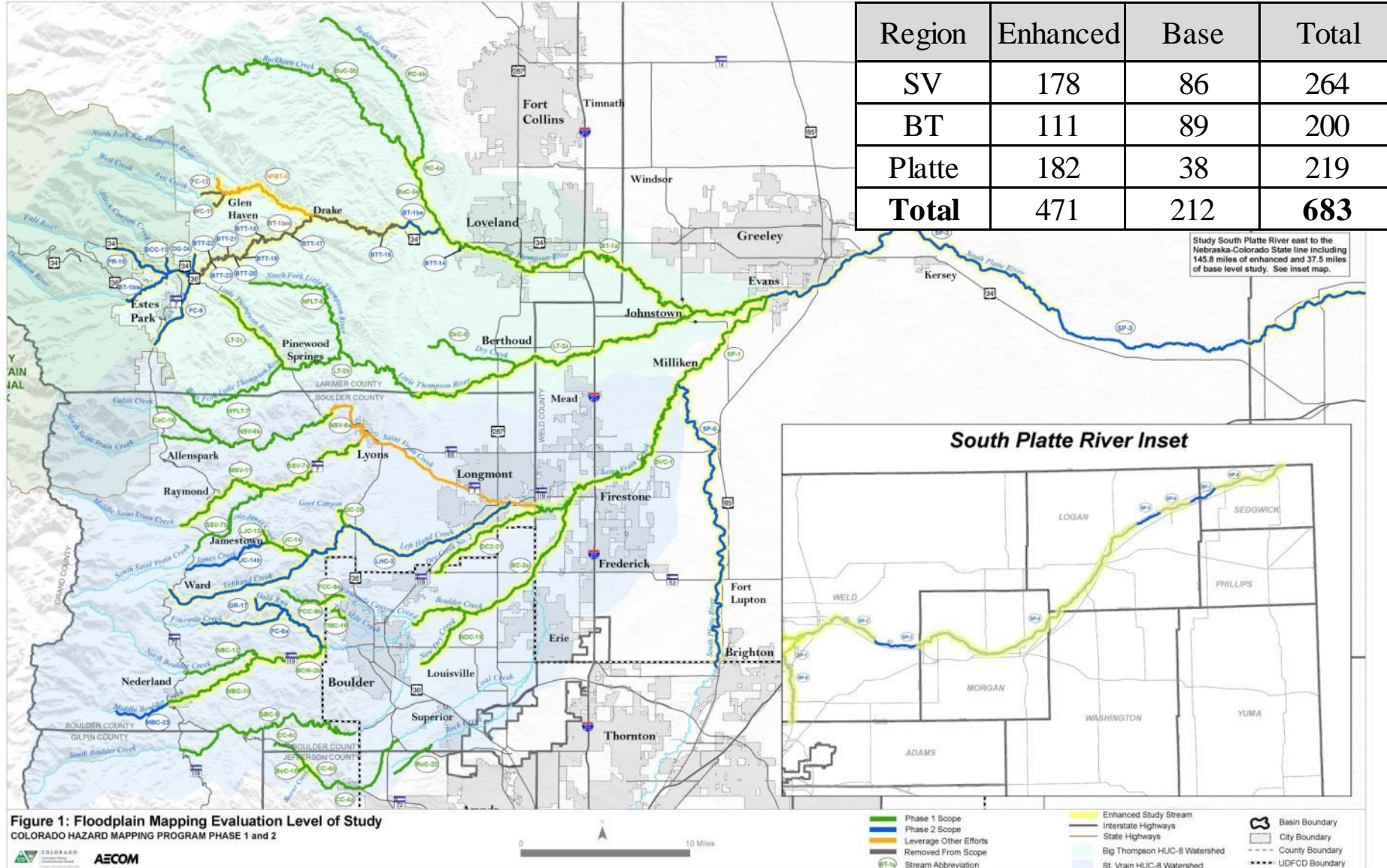
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Study Extents



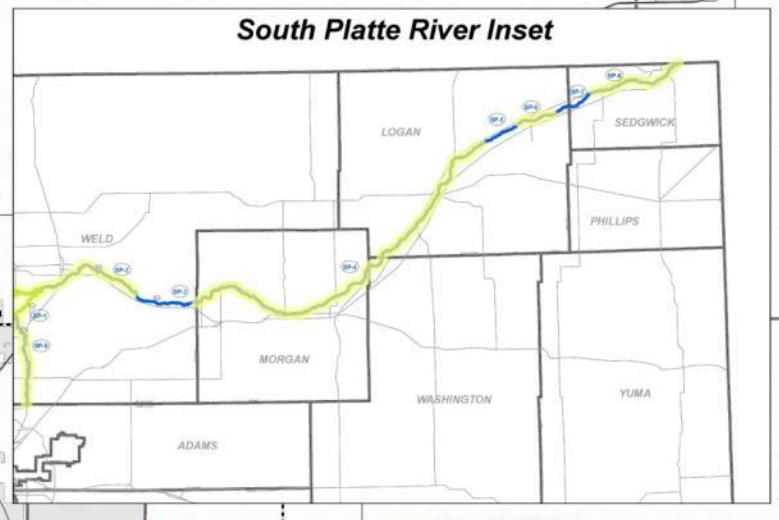
CHAMP Stream Mileage

Region	Enhanced	Base	Total
SV	178	86	264
BT	111	89	200
Platte	182	38	219
Total	471	212	683



Study South Platte River east to the Nebraska-Colorado State line including 145.8 miles of enhanced and 37.5 miles of base level study. See inset map.

South Platte River Inset



0 10 Miles

Do Results Depict Actual Flooding?

- Not mapping 2013 flood
 - Used info from 2013 flood to inform new study
- Actual floods can see different results every time
 - Dam breaks
 - Bridge and culvert clogging
 - Debris
- Models are based on conditions from topographic data and survey



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Study Details



Terrain



- Virtual Land Surface created from light detection and ranging (LiDAR)
- Represents a fixed point in time
- Some additional information in Glen Haven
- Date Collected: 2014 (USACE), 2013 (USGS) where needed
- Date Approved: 8/1/17



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Study Details



Terrain



Survey



- Enhanced models (Zone AE)
- Surface info not in topo data (i.e. culverts and bridges, submerged channel)
- Data in Glen Haven from others
- Date Collected: 2016/2017
- Date Approved: 1/11/2018
- Survey locations online



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Study Details



Terrain



Survey



Hydrology



- How much water? → Determined from rainfall, infiltration
- Not mapping 2013 flood
- Info from 2013 flood and others used along with historic rainfall, gage data, and land cover info completed under a separate effort
 - Some discharges increased, some decreased.
- Finalized by CDOT and CWCB and approved by FEMA (most areas)
- Finalized by Estes Park and approved by FEMA (in Estes Park) – discussed in separate public meetings
- Included in CWCB Hydrology Submittal
 - Approved 10/9/2017 (Estes Park)
 - Approved 9/6/2017 (Elsewhere)



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Study Details



Terrain



Survey



Hydrology



Hydraulics



- Where water goes
- Used inputs to calculate water surface elevations (WSEL)
- 1D Models: Uses cross sections at specific interval
- 2D Models: Uses grid at specific interval
- Various EWP Projects and Larimer County incorporated
- Reviewed by County, Central Federal Lands and CDOT
- Date Completed: Currently Being Reviewed by FEMA



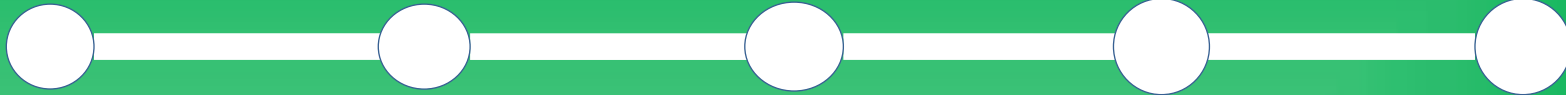
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Study Details



Terrain



Survey



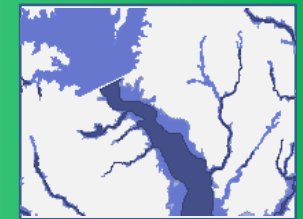
Hydrology



Hydraulics



Floodplains



- Results are mapped to fore ease of use
- Description of results
 - Zone AE
 - Cross Section
 - Base Flood Elevation (BFE)
 - Floodway

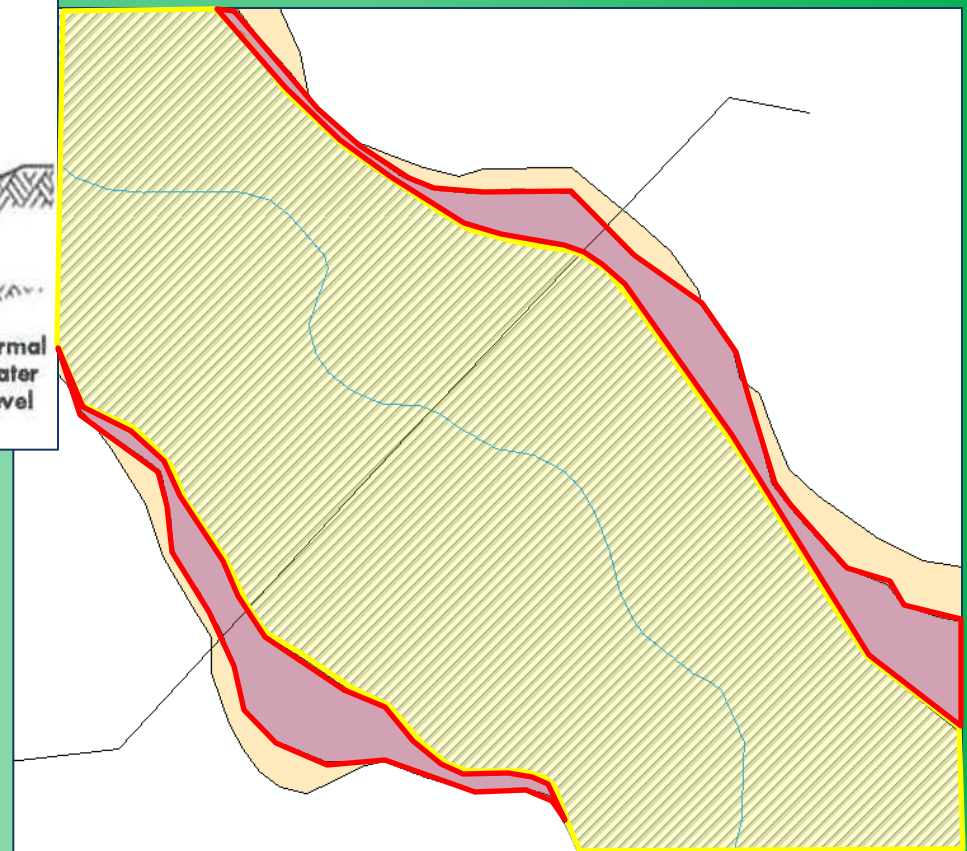
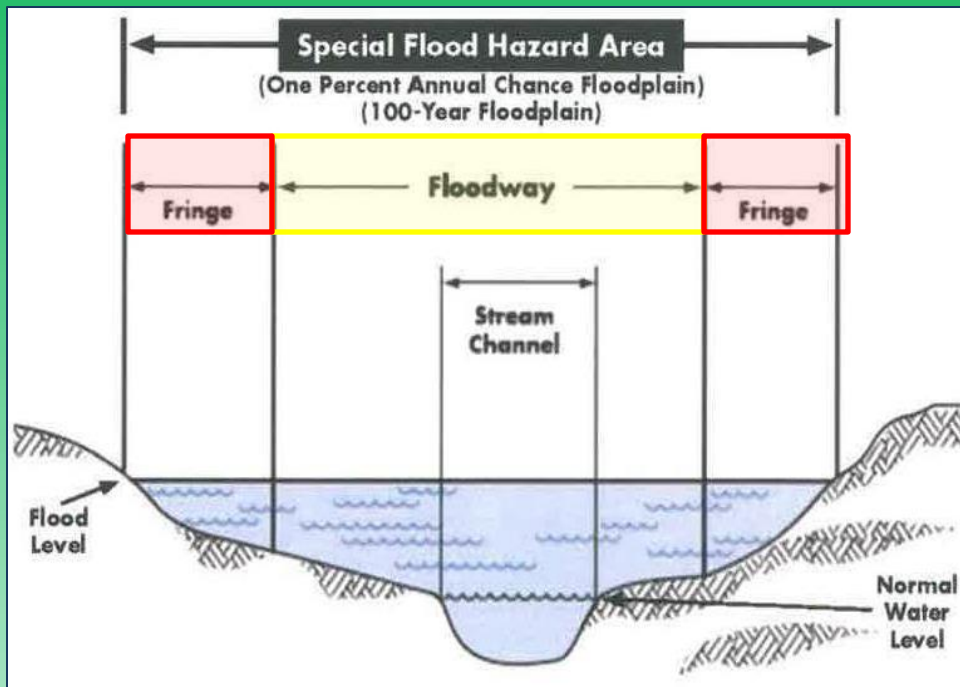


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Floodways



- Implications of Floodway vs. Floodplain
- Floodways Still to be Calculated in Estes Park



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So... Am I at risk of flooding?

- Line on a map
- Best engineering data and judgment used
- Scientific process allows for changes
 - New information
 - Changed information

BUT

- You may still be at risk of flooding



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Can results be changed?

- Technical data
 - Survey or topographic data
 - New analysis
- Mechanism
 - Appeals on preliminary maps
 - Letter of Map Revision (LOMR) later
 - Letter of Map Amendment later
 - Will need elevation certificate



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What is the Confidence of Results?

- Survey accuracy – Within 5 cm @ 95% confidence level.
- Topographic data accuracy – Within 0.88' @ 95% confidence level
- Hydrology accuracy –
 - Varies based on input data (precipitation, etc.) and model
 - 1%+ recurrence interval
- Hydraulic accuracy – Product of input data
- Reviews
 - Multiple engineers
 - Community leaders
 - FEMA contractors



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Upcoming Project Milestones

Community
Leader
Reviews

Spring 2018



FEMA
Reviews

Fall 2018



Preliminary
FIRMs
Released

Spring 2019



Appeal
Period and
Resolution

Fall 2019



Effective
FIRMs
Released

2020



Larimer County

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Homeowner's Insurance

- Where flood risk changed
 - Requirements aren't new
 - Risk just updated
 - Increased in some areas, decreased in others
- Insurance required for federally backed mortgages in Special Flood Hazard Areas (SFHAs)
 - Zone A, AE, AH, AO
- Required for federal assistance after floods.
- New Zones go into effect with effective FIRMs, not before
- Grandfather information
- Banks can require anywhere
- Contact and main resources later



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Development Implications

- Changes Since Last FIRM (CSLF)
 - Requirements aren't new
 - Risk just updated
 - Increased in some areas, decreased in others
- Community ordinance specifies what is required.
- Different requirement in a floodway and a non-floodway.
- Community may adopt as best available data
 - Use the most restrictive of old and new until final
- Contact floodplain Administrator



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Other Resources



- Contacts (Shown on last slide)
 - Local Floodplain Administrator
 - State Study Leads
 - NFIP Representative
 - FEMA Area Representative
- Flood Smart
 - www.floodsmart.gov
 - (888) 379-9531
- CWCB Flood Page - cwc.state.co.us/water-management/flood/Pages/main.asp
- Website (next)



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Website - Interactive Maps

The screenshot displays the 'Land Information Locator' web application interface. The browser address bar shows the URL: <https://maps1.larimer.org/gvh/?Viewer=LIL&run=Theme&theme=Flood%20Information>. The page title is 'LAND INFORMATION LOCATOR Larimer County IT, Enterprise GIS'. A search bar contains the text 'estes park'. The navigation menu includes 'Home', 'Tools', 'Measure', and 'Markup'. The main toolbar contains various icons for map interaction, including 'Layer List', 'Wind/Snowload', 'Land', 'Flood', 'Elections', 'Emissions', 'Clear Map', 'Identify', 'Initial View', 'Bookmarks', 'Previous Extent', 'Next Extent', 'Print', 'Export Share', 'Share', 'Tool Info', and 'Navigation Info Help'. The 'Layers' panel on the left is expanded to show 'Flood Information' and includes a 'Filter Layers...' section. The 'Flood' layer is checked, and the following layers are listed: MS4 Permit Area, Lidar Flood Data Index, Cross Sections, DRAFT - CHAMP, FEMA Map Panels, Local Flood Prone Areas, Flood Control Structures, 2017 FEMA Floodplains, Fort Collins Local Floodplain, and Growth Management Areas. The main map area displays an aerial view of a town with a prominent pink flood boundary overlay. At the bottom of the map, there is a 'Imagery' section with a timeline slider showing years 1999 and 2016, a scale bar (0 to 0.4 miles), and a north arrow.

Website Resources



Flyers, FAQs, Fact Sheets, Links

Frequently Asked Questions Portal change ▾

If you have a question not listed here, please [contact us](#).

Q: Is there a grant program that assists after a Federally Declared Disaster?

Yes, the purpose of the Hazard Mitigation Grant Program (HMGP) program is to help communities implement hazard mitigation measures from natural hazards.

Q: The CWCB supports watershed planning as well as projects designed to restore and protect watersheds. How is this accomplished?

The CWCB partners with numerous organizations to plan and undertake multi-objective projects designed to reduce flood hazards, and communication and prioritization are essential components of the CWCB's efforts. For more information on watershed protection, [click here](#).

Q: Are there any grants available now?

[Pre-Disaster Mitigation](#) grants provide funds on an annual basis for hazard mitigation planning and the implementation of mitigation projects after actual disaster declarations.

[Flood Mitigation Assistance](#) grants provide funds on an annual basis so that measures can be taken to reduce or eliminate risk of flooding.

Other grants can be found by going to [grants.gov](#).

The [Hazard Mitigation Assistance Home Page](#) can also help with additional information related to Hazard Mitigation assistance.

Q: Where can I get more information regarding flood insurance, grants, FEMA or programs and other resources?

The [CWCB Flood page](#) provides information on grants, local flood issues, and links to information on flood insurance.

Generic FEMA fact sheets page: <https://www.fema.gov/fact-sheets>

Fact sheet (generic) on the NFIP: https://www.fema.gov/pdf/media/factsheets/2011/mit_natl_flood_ins.pdf

Fact sheet (generic) on Mitigation Planning: https://www.fema.gov/pdf/media/factsheets/2011/mit_state_local_plan.pdf

External Resources Project Documents Floodplain Management

Search external resources	
Title ▲	
	Colorado Flood Decision Support System
	Colorado Flood Threat Bulletin
	CWCB Colorado Risk MAP
	CWCB Floodplain Management Page
	CWCB Website
	FEMA Fact Sheets
	FEMA Flood Map Service Center
	Flood Smart
	Mitigation Planning Fact Sheet
	NFIP Fact Sheet
	Planning for Hazards: Land Use Solutions for Colorado

Search documents		
Title	Date ▼	
Template Flood Hazard Community Notification Letter	09/02/2016	
CHAMP Survey TSDN - St Vrain	08/22/2016	
CHAMP Survey TSDN - Big Thompson	08/22/2016	
Fact Sheet on Flood Risk	08/15/2016	
July 2016 CHAMP Newsletter	07/22/2016	
Q3 Meeting Minutes	06/08/2016	
Risk MAP vs CHAMP Fact Sheet	05/24/2016	
Master St. Vrain Basin Map	05/24/2016	
Master Little Thompson Basin Map	05/24/2016	
Master Boulder Coal Creek Basin Map	05/24/2016	
Master Big Thompson Basin Map	05/24/2016	
Project Schedule and Study Incorporation Flow Chart	04/13/2016	
April 2016 CHAMP Newsletter	04/08/2016	
Proposed Hydrology Methods Map & Decision Tree	03/22/2016	
Selected Hydrology Exhibit - St Vrain HUC-8	02/04/2016	
Selected Hydrology Exhibit - Big Thompson HUC-8	02/04/2016	



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Communication & Outreach

- General study information fact sheet available
- General NFIP/Insurance fact sheet available
- This presentation available

Twitter Feeds Click a feed name to view the feed

CWCB

Colorado FloodDSS

CO Flood Updates

CO Drought Response

CO Emergency Management

CO Department of Transportation

CO Dept of Local Affairs

ready.gov

FEMA Region 8

Tweets by @CWCB_DNR

 COWaterConservBoard Retweeted



ColoradoUnited @CoUnited

Part of the North Fork Restoration, Big Thompson is complete! bit.ly/2cm8w95 @WLRV @CWCB_DNR @COResilient



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CHAMP News!

This is the third Quarterly Newsletter for the Colorado Hazard Mapping Program (CHAMP), which provides updates following the quarterly meetings. Work on Phase I of CHAMP continues!

CWCB is adding additional stream miles to the CHAMP flood hazard mapping project by including the South Platte River, which will be studied from the Weld/Adams county boundary to the Nebraska state line.

Find the latest information on the project website: <http://coloradohazardmapping.com/hazardmapping/phaseOneFloodplainMapping>.

See you at the next Quarterly Meeting in September 2016!

For more information, please visit www.coloradohazardmapping.com!

Project Status Update

The CHAMP team is pressing forward with hydraulic analysis in the St. Vrain and Big Thompson HUC-8 watersheds. This summer, additional field survey will be collected in those watersheds and along the South Platte. Community representatives should have received a schedule for this survey. Please contact the project team if more information is needed.

This fall the project team expects to complete the LIDAR acquisition in Loveland as well as hydraulic analysis and floodplain mapping on the first round of streams. See the streams on the project map [here](#). Hydrology and the first round of survey data development are complete and undergoing FEMA quality reviews.

In addition to the flood hazard mapping project, CHAMP includes debris flow and erosion hazard mapping projects. Updates on these efforts were included in the third quarterly meeting on May 25, 2016. Presentation slides and materials from this meeting can be downloaded [here](#).

July 2016

New outreach and education materials have been posted on the website, such as the [Risk MAP versus CHAMP fact sheet](#). Basin maps for Big Thompson, Boulder/Coal Creek, and St. Vrain sub-watersheds are also available [here](#).

CWCB News

CONGRATS! Congratulations to Stephanie DiBettito on her new role as the Community Assistance Program Coordinator, taking over for Jamie Prochno, who has taken a position with the US Army Corps of Engineers in Omaha, NE. CWCB thanks Jamie for her years of service as the State CAP/NFIP Coordinator and wishes her luck in her new position with the Corps.

CRS WEBSITE. CWCB is pleased to announce that the Community Rating System (CRS) Website for Colorado Communities is now live! The CRS website is a "one-stop shop" for Colorado communities to access information and resources on the CRS. Check out the site today!

<http://coloradohazardmapping.com/crs#/home>

CONFERENCE PRESENTATIONS. Presentations on CHAMP and CWCB's other floodplain mapping projects were given at the Association of State Floodplain Managers (ASFPM) Annual Conference and are scheduled for the Colorado Association of Stormwater and Floodplain Managers (CASFM) Annual Conference.

ASFPM (June 20-24, 2016):

- Concurrent Session on LIDAR vs. IFSAR First Order Approximation Floodplain Mapping
- Concurrent Session on Regional Approaches to Forecasting Flood Risk
- Concurrent session on CWCB's Erosion/Fluvial Hazard Mapping efforts

CASFM (September 13-16, 2016):

- CHAMP – Creating Reliable, Post Flood Data for Colorado's Future, Thursday, September 15, 2016 at 2 PM.



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Conclusion



- Please Review Information and ask questions
- Data will be used for Flood Insurance Rate Maps
- Floodplains are not “Effective” until FIRMs are released
- Results show risk!



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Break Out for Discussions



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