

Carson River Regional Watershed Floodplain Management Plan - 2018

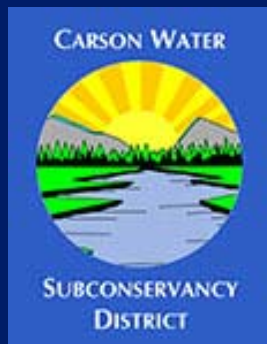
Deborah Neddenriep, CFM



2018 Carson River Watershed Forum

April 11, 2018

Carson City NV





Mottsville Lane, 1994 Genie Azad

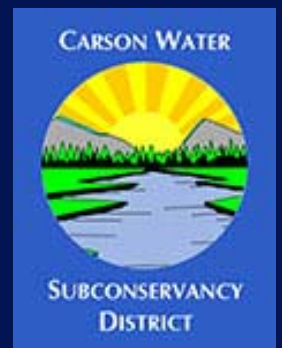


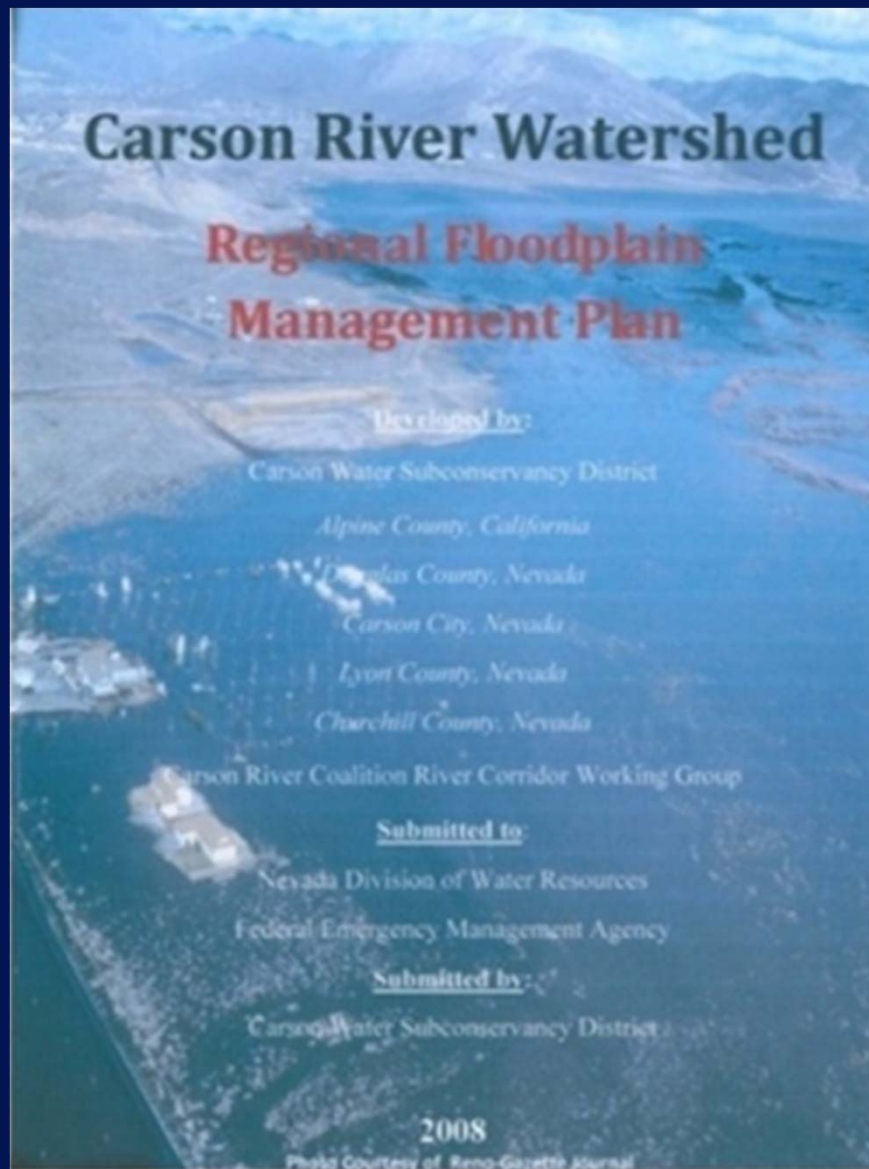


Photo: Wolf Productions, used by permission

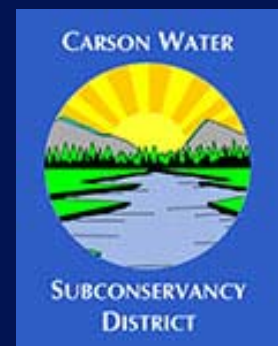


Photo: Laura Crain





- Regional Floodplain Management Plan: 2008
- Supplemental Update 2013
- Community Resilience
- FEMA funding eligibility
- Potential Flood Insurance



Carson River Regional Watershed Floodplain Management Plan - 2018

Geoff Brownell and Karin Peternel

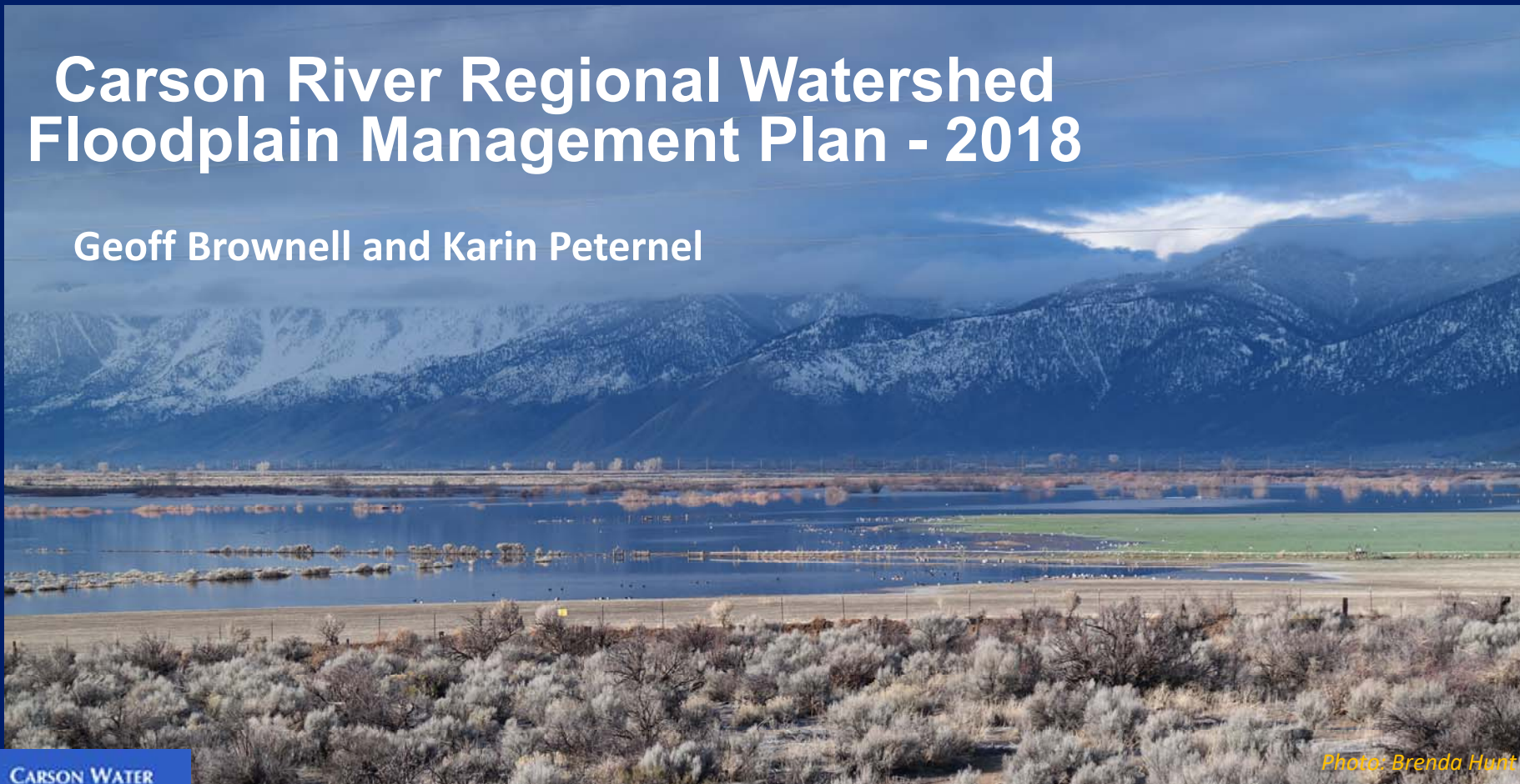
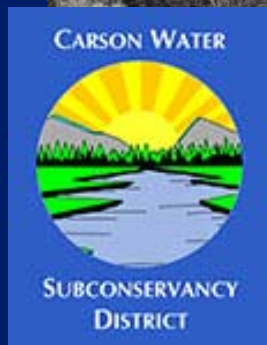


Photo: Brenda Hunt

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Overview of Presentation

- Why are we here?
- How are we here?
- What's new since 2008?
- Why do we care?
- Regional Floodplain Management Plan (RFMP)
- Updates to RFMP/Suggested Actions



Why are we here?

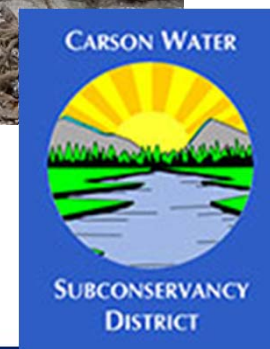
- FEMA requires update to FMP every 5 years (2008, 2013)
 - Identify new hazards
 - Identify hazard mitigation
 - Implementation strategies (6 categories)
 - FMP includes components necessary to receive funding

A floodplain management plan is a written description of the flood risks, and actions a community will take to address how to mitigate those flood hazards



How are we here?

- CWSD is a Cooperating Technical Partner (CTP) to FEMA
 - Collaboration provided by one over-arching group:
 - Hazards within the region are recognized, prioritized, addressed
 - Consistent messaging to jurisdictions and residents is effective through outreach and education.



How are we here?

- FEMA carries out flood hazard mitigation activities through the CTP program
 - Providing funding to local communities for actions
 - Flood hazard map revisions,
 - Flood hazard mitigation planning, and
 - Outreach and education



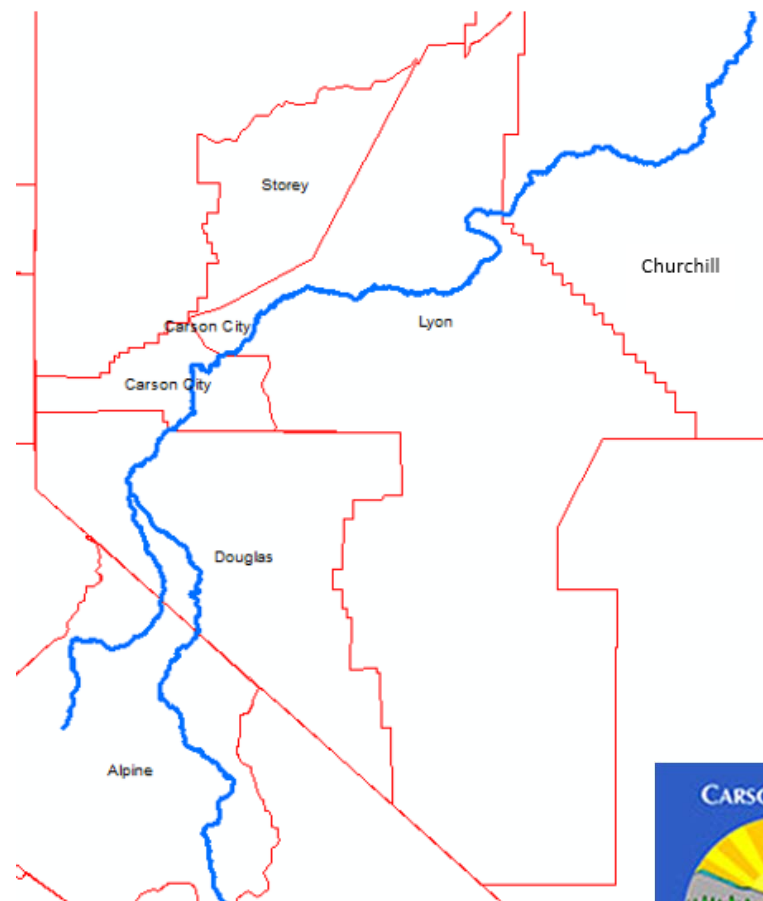
Photo: Courtney Walker



Regional Watershed Approach

Regional Plan allows for consistent approach to:

- Planning efforts
- Programs and projects
- Protect community members from flood hazards
- Conserve floodplain lands



What's new since 2008 RFMP?

- Identification of new flood hazards
 - Alluvial fan flooding
 - Long-term extended riverine flooding
- New types of solutions/actions
 - LID (Low impact development)
 - Stormwater Management actions
- Impediments to flood protection
 - No upstream storage
 - Structural solutions win in the end (sometimes)
- Positive outcomes
 - Floodplain protection is a priority
 - Maintain partnerships



Why is this important?

- Prevent/minimize economic losses
 - Individuals – property, home
 - Jurisdictions – damage to infrastructure
- Flood insurance available to local communities
 - Jurisdictions must perform actions to maintain discounted premiums
- Community Rating System (CRS)
 - Actions required by jurisdictions to maintain flood insurance premium reductions
- FUNDING – Maintain activities to continue to receive necessary funding for prevention and mitigation



Components of RFMP

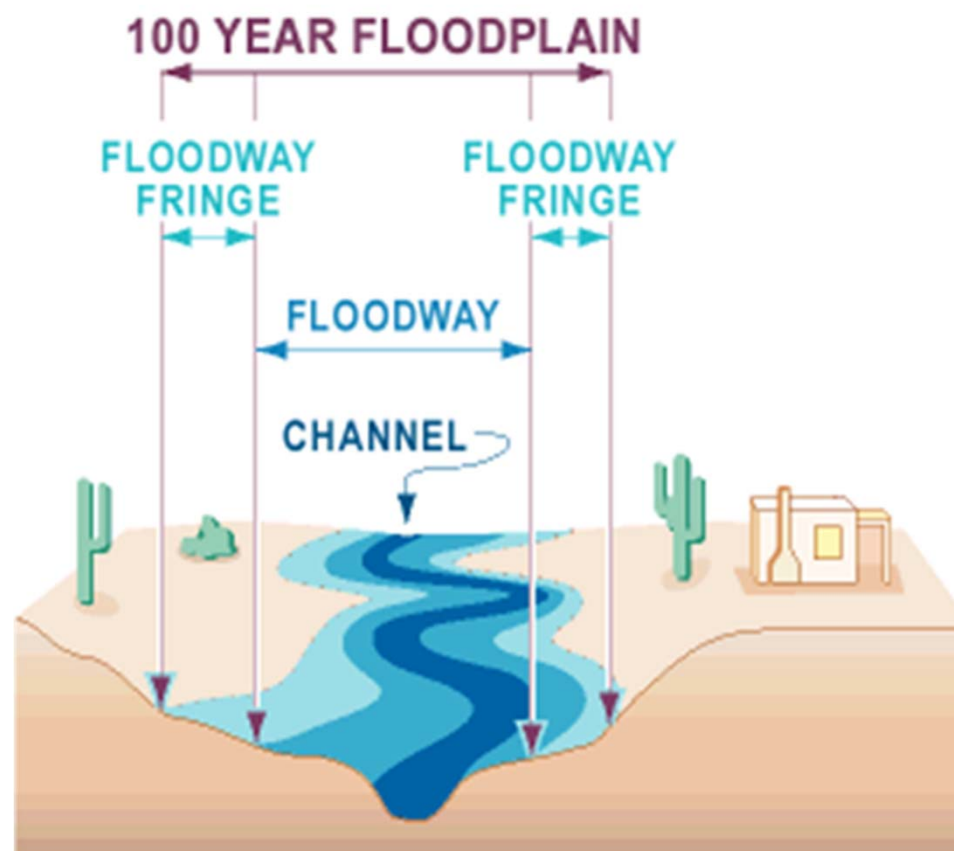
- Introduction
- Economic Impacts
- Floodplain 101
- Flood History and Risk Assessment
- Flood Risk Reduction Strategies
- Implementation
- Planning
- Emergency Response





Floodplain 101

- The level area bordering a river channel is known as the floodplain; the area that is naturally subject to flooding
- The floodway is a critical component of the floodplain
- Floodplains perform certain natural and beneficial functions
- Development within floodplains often occurs without consideration of the effects on floodplain function
- Land use that allows and encourages native vegetation to flourish is highly suitable for floodplains
- Floodplains are frequently defined in terms of the likelihood of being flooded in a given year



Types of Floods



Alluvial fan flooding

Photo: Brenda Hunt



Photo: Courtney Walker

Riverine flooding

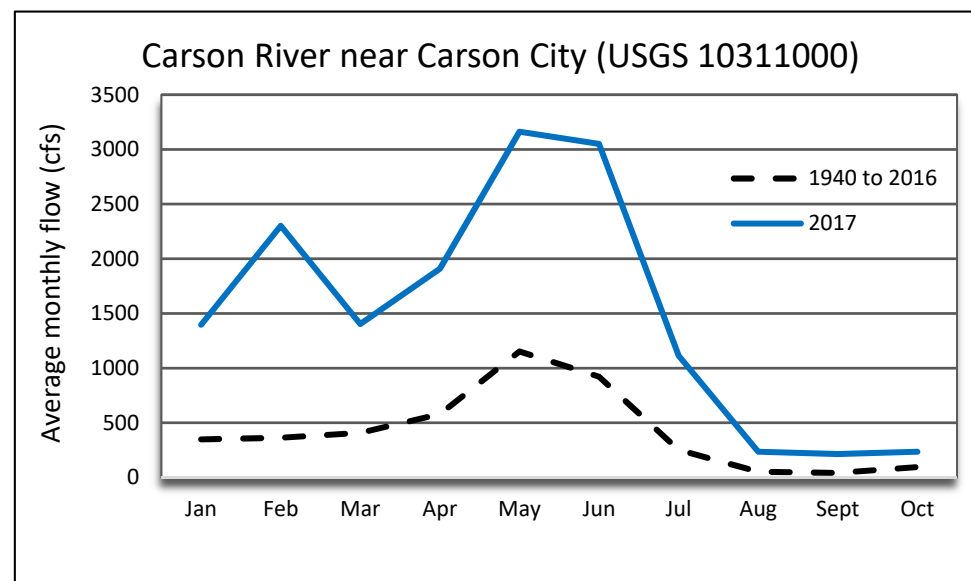


*Photo: Wolf Creek, Alpine County
Courtesy Alpine County*

Debris flows

Flood History and Risk Assessment

- 1997 Riverine flooding (rain on snow)
 - Washoe County \$686,000,000
 - All other local counties: \$29,076,372
- 2006 Riverine flooding (rain on snow)
- 2014/2015 Alluvial fan flooding (summertime cloudburst)
- 2016 Post-fire debris flows (cloudburst)
- 2017 Extended riverine flooding (record-breaking snow)



National Flood Insurance Program

Allows homeowners to purchase flood insurance

Community Rating System (CRS)

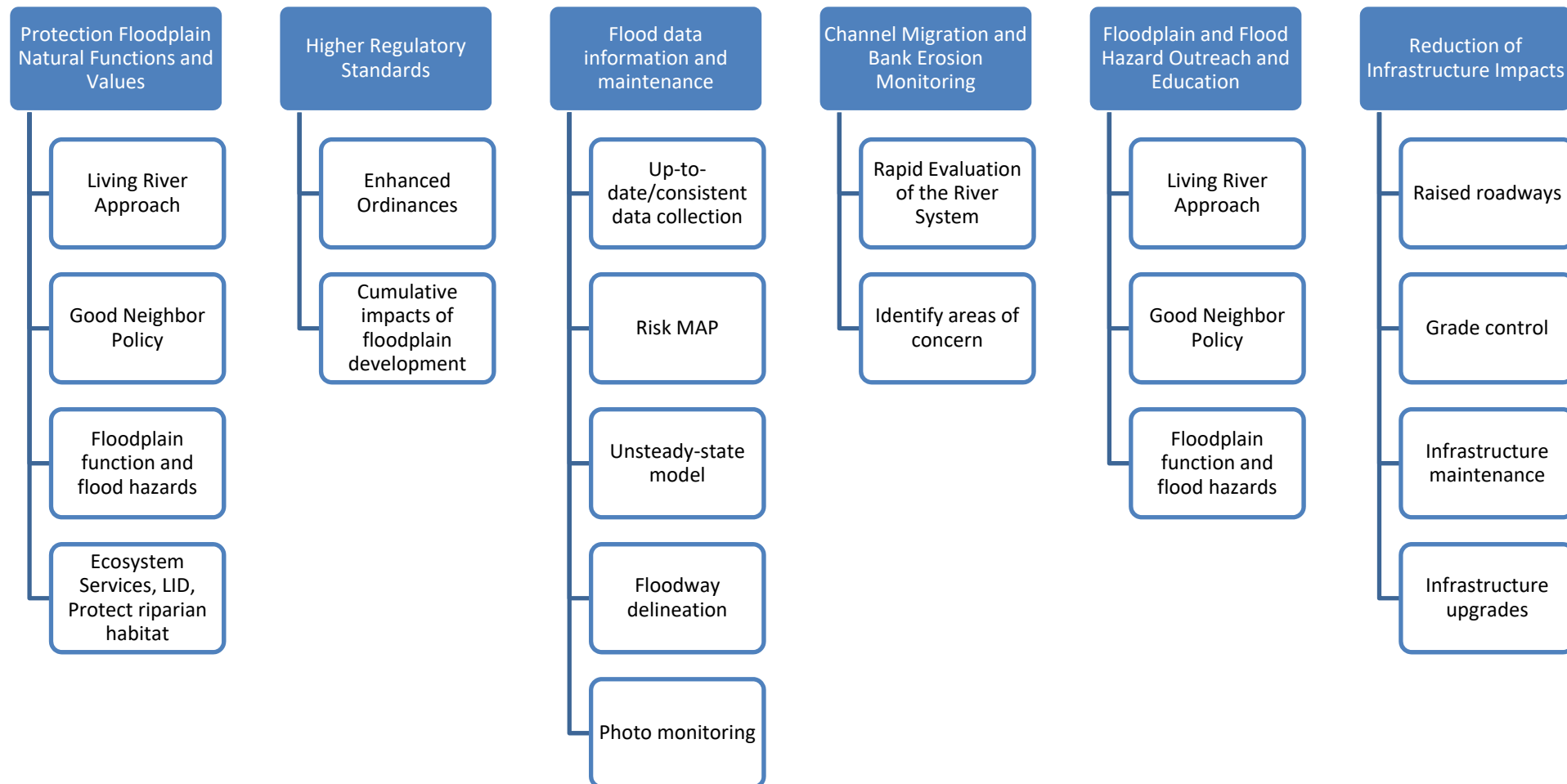
- Premium reduction as a result of community actions to reduce flood damages

Premium Reduction				
Credit Points	Class	SFHA	Non-SFHA	County
4,500 and above	1	45%	10%	
4,000 – 4,999	2	40%	10%	
3,500 – 3,999	3	35%	10%	
3,000 – 3,499	4	30%	10%	
2,500 – 2,999	5	25%	10%	
2,000 – 2,499	6	20%	10%	Douglas
1,500 – 1,999	7	15%	5%	
1,000 – 1,499	8	10%	5%	Carson City
500 - 999	9	5%	5%	
0 - 499	10	0	0	Lyon, Churchill



Photo: Tim Bardsley

Flood Risk Reduction and Floodplain Protection Strategies



Implementation of Strategies

Significant actions over last 10 years

'Model' Floodplain Ordinance

- Prepare for the adoption of new FIRMs
- Implementation of the Carson River Hydraulic Model
- Improvement of floodplain management programs and regulations

Watershed-wide Hydraulic Model

- Account for the cumulative impacts associated with floodplain development



Photo: Laura Crain

Implementation of Strategies

Significant actions over last 10 years

- Ongoing Outreach and Education
 - Annual Flood Awareness Week
 - Publications, brochures, maps, community activities
- Floodplain Protection
 - Purchase or regulation of land to protect floodplain function
- Flood Map Revisions
 - Carson City, Douglas County, Lyon County all have revised FIRM maps; delineated floodways, alluvial fan mapping (in portions)

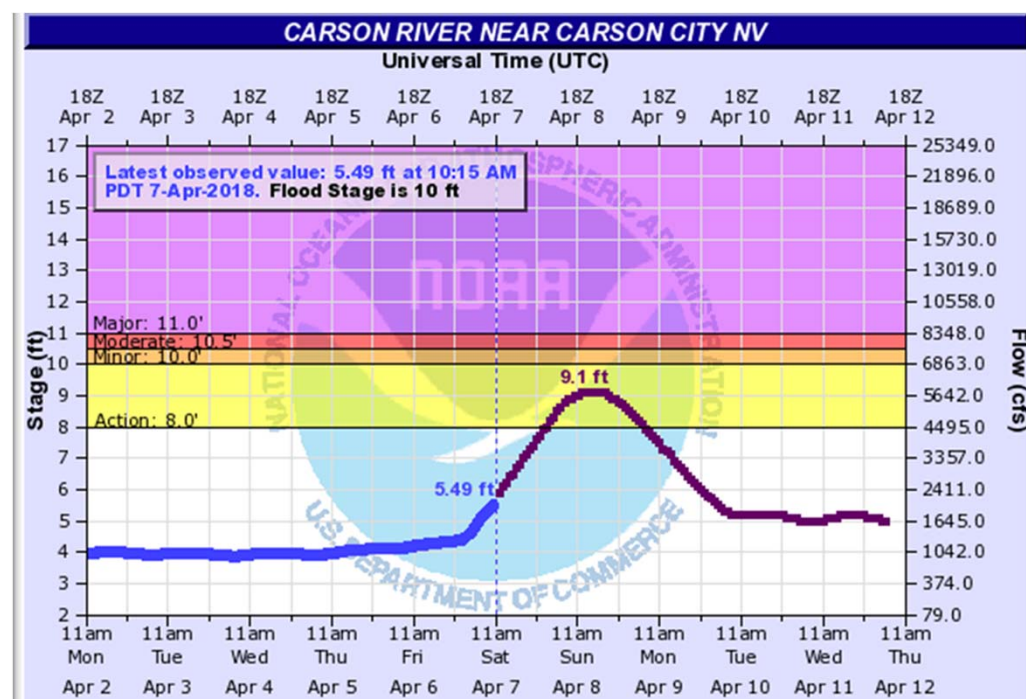


Photo: Flood Model, River Wranglers



New Strategies Identified

- Alluvial Fan Flooding
 - Area Drainage Master Plans (ADMP)
 - Build on USACE Study
- Upstream Storage
 - Do we still need to think about upstream storage, or can Lahontan Reservoir be managed similarly to 2017
- Flood Forecasting Tools



2017 – Biggest Year on Record

- Carson River near Fort Churchill
- 2017 Volume – 920,000 acre feet
 - Average - 269,000
- Biggest year on record



What's new?

- Risk assessment
 - Public and private infrastructure conveyance
- Post-disaster mitigation policies and procedures
- Future considerations and impacts to floodplains
 - 100-year versus 500-year floodplain





Photo: Debbie Neddenriep