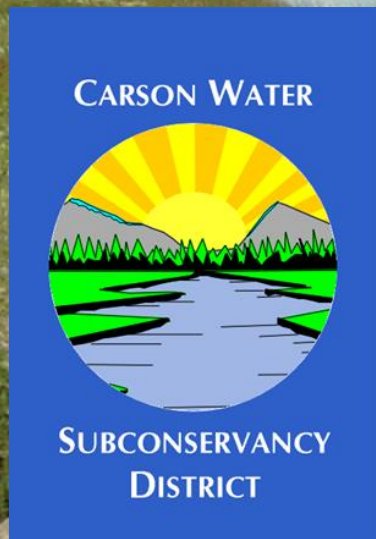


**LATE MATERIAL**

MEETING DATE 6-6-13

ITEM # 18

# Overview of Integrated Watershed Projects



**By:**  
**Edwin James & Brenda Hunt**  
**Carson Water Subconservancy**  
**District**

**Carson Valley**

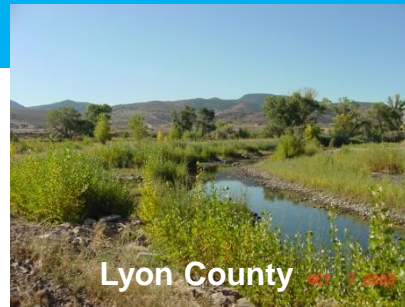




Storey County, NV



Carson Canyon-  
Carson City/Lyon County



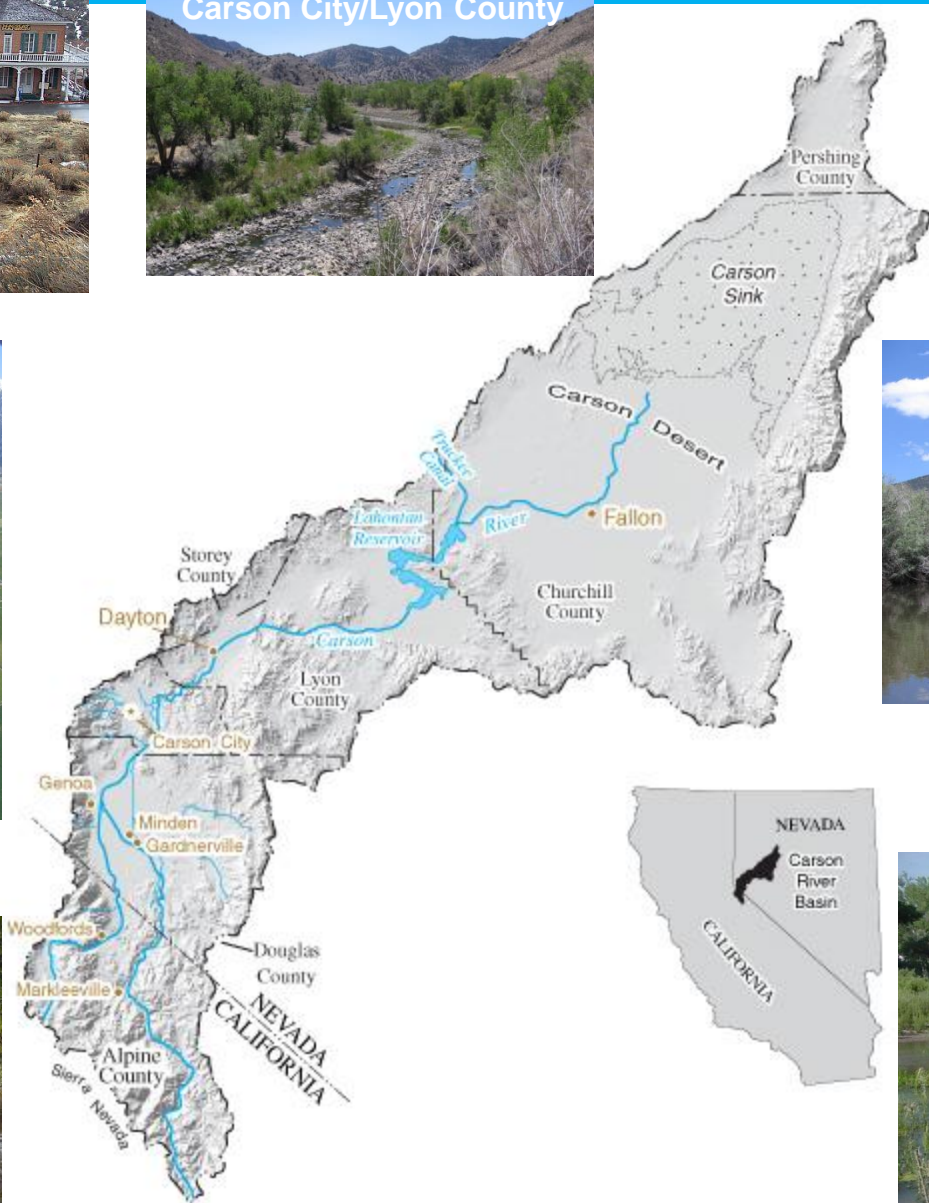
Lyon County



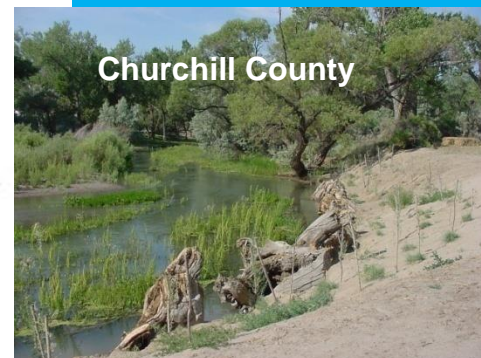
Douglas County, NV



Alpine County, CA



Carson City 06/19/2009 13:30

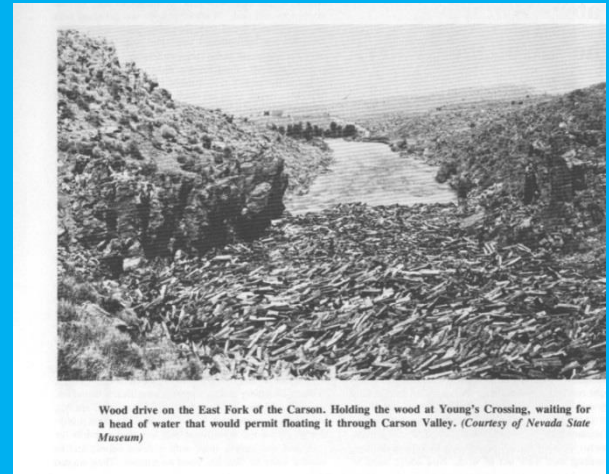


Churchill County

# Carson River Watershed



# Watershed Challenges



- Water supply
- Water quality
- Historic Impacts from logging and mining
- Erosion of soils/river banks





# Watershed Challenges



- Invasive Species
- Loss of Habitat





# Watershed Challenges



- Flooding
- Loss of floodplain
- Urban Run-off
- Recreational Use/Access
- Limited Funding
- Overall education and awareness



# Carson River Coalition

- Formed in 1998
- Funding by CWSD & NDEP for Watershed Coordinator
- Critical element of watershed process
- Working Groups
  - Education
  - River Corridor
  - Invasive Species
- Regular meetings & forums, tours, conferences
- Email list



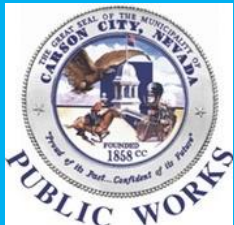
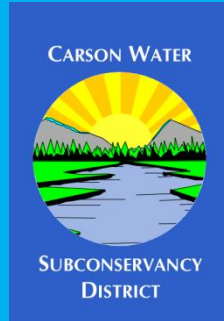
Purpose:

*“to form relationships so that problems, threats, and issues are addressed on a regional level in a spirit of communication and cooperation”*





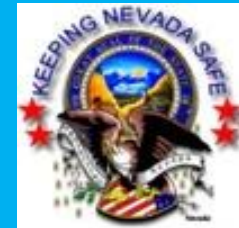
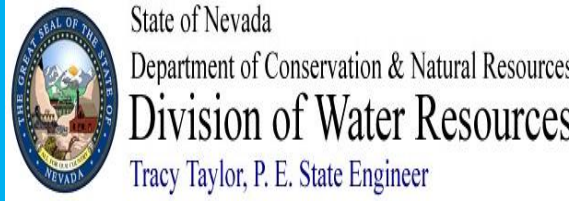
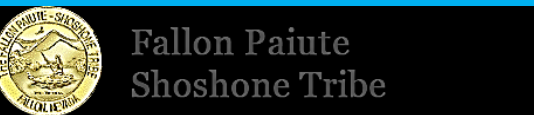
# Carson River Coalition



Private Citizens



Conservation Districts:  
Carson Valley  
Dayton Valley  
Lahontan  
Alpine





# Carson River Watershed

## Vision Statement



*To achieve healthy sustainable watersheds within the entire Carson River Basin; to achieve improved watershed conditions, so all lands and waterways (surface and underground) safely receive, store, and release clean water for the good of all peoples, environments and natural resources of the Carson River Basin; to achieve this vision through community led and private/public partnerships for implementation of local and basin wide plans and projects.*

# Carson River Coalition Guiding Principles

1. Manage the water's resources for economic sustainability, quality of life, and protection of private and public property rights.
2. Acknowledge and respect the watershed's natural processes in land use decisions.
3. Maintain or improve the quality of the water to support a variety of beneficial uses.
4. Protect the headwaters region as the system's principal water source.



Lost Lakes Headwaters West Fork



# Carson River Coalition Guiding Principles (cont'd)

5. Recognize and respect the interests of all stakeholders upstream and downstream by fostering collaborative and mutual respectful relationships.
6. Maintain the riverine and alluvial fan floodplains of the Carson River Watershed to accommodate flood events.
7. Protect and manage uplands, mountain ranges, wetlands, and riparian areas to enhance the quality of surface flow, groundwater recharge, and wildlife habitat.



Carson River @ Rolling A Ranch

# Carson River Coalition Guiding Principles (cont'd)

8. Promote conservation of water from all sectors of the community's water users for the benefit of municipal, industrial, agricultural, domestic, recreational, and natural resources.

9. Encourage management of growth that considers water quality and quantity, open space preservation, and maintenance of agriculture in floodplains.



TNC's Whit Hall @ River Fork Ranch

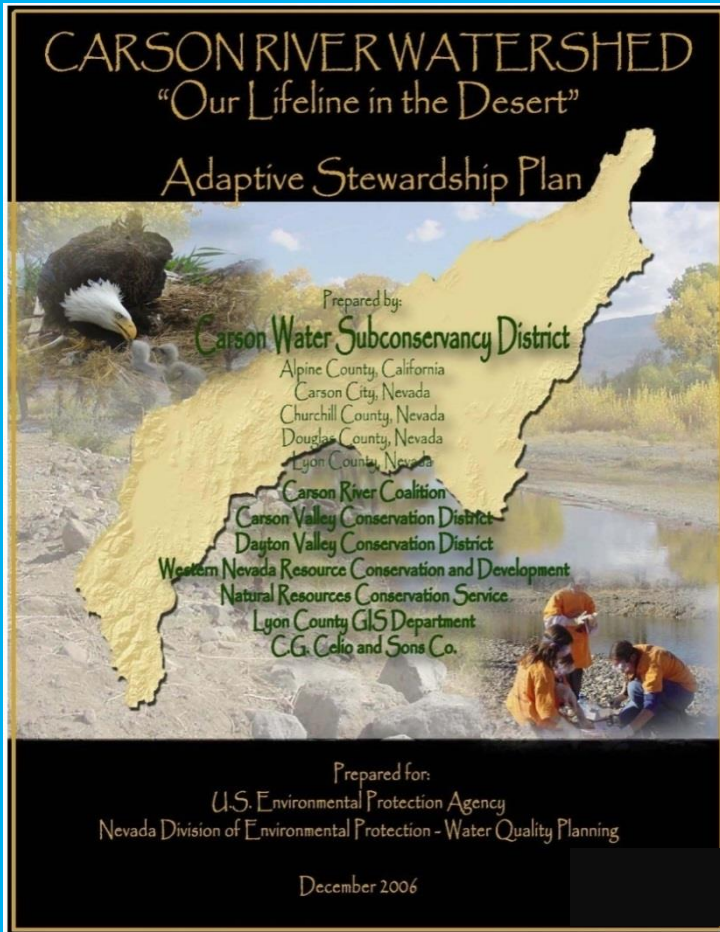
10. Protect and support opportunities for public recreational access to natural areas throughout the watershed – including the river corridor – where appropriate.

11. Promote understanding and awareness of watershed resources and issues through cooperative education efforts throughout the watershed.

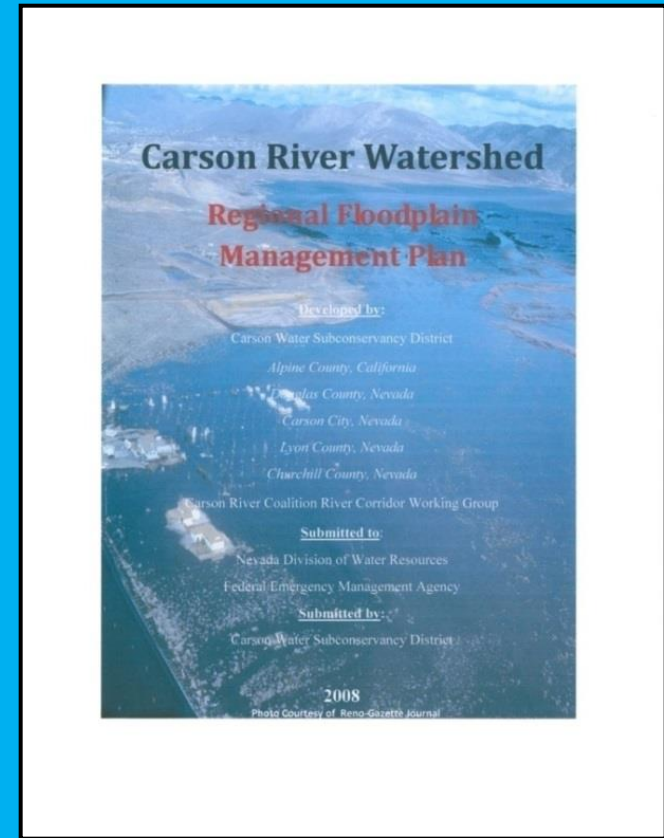


# Effective Planning and Implementation

- Implementation of the Stewardship and Floodplain Management Plans with our various stakeholders



**Meets EPA 319 criteria for watershed plans**



**Formally adopted in 2008 by all 5 counties along the Carson River**

# Stewardship Plan 101

- Comprehensive, Living Resource
- Overview of challenges
- Discuss long & short term strategies
- Link Guiding Principles to strategies
- Tracking mechanism for past, current & future project & programs
- Address Federal & State Mandates
  - 9 criteria elements of CWA Section 319 Program
  - **TMDL implementation document**

## Management Measures in Plan

- ❖ River Rehabilitation/Stabilization
- ❖ Floodplain Conservation
- ❖ Water Quantity
- ❖ Recreational Use and Management
- ❖ Outreach and Education
- ❖ Invasive Species Abatement
- ❖ Water Quality Monitoring and Assessment
- ❖ Overall Program Management

***Stewardship Plan is currently being updated***



# Regional Floodplain Management Plan

CARSON WATER



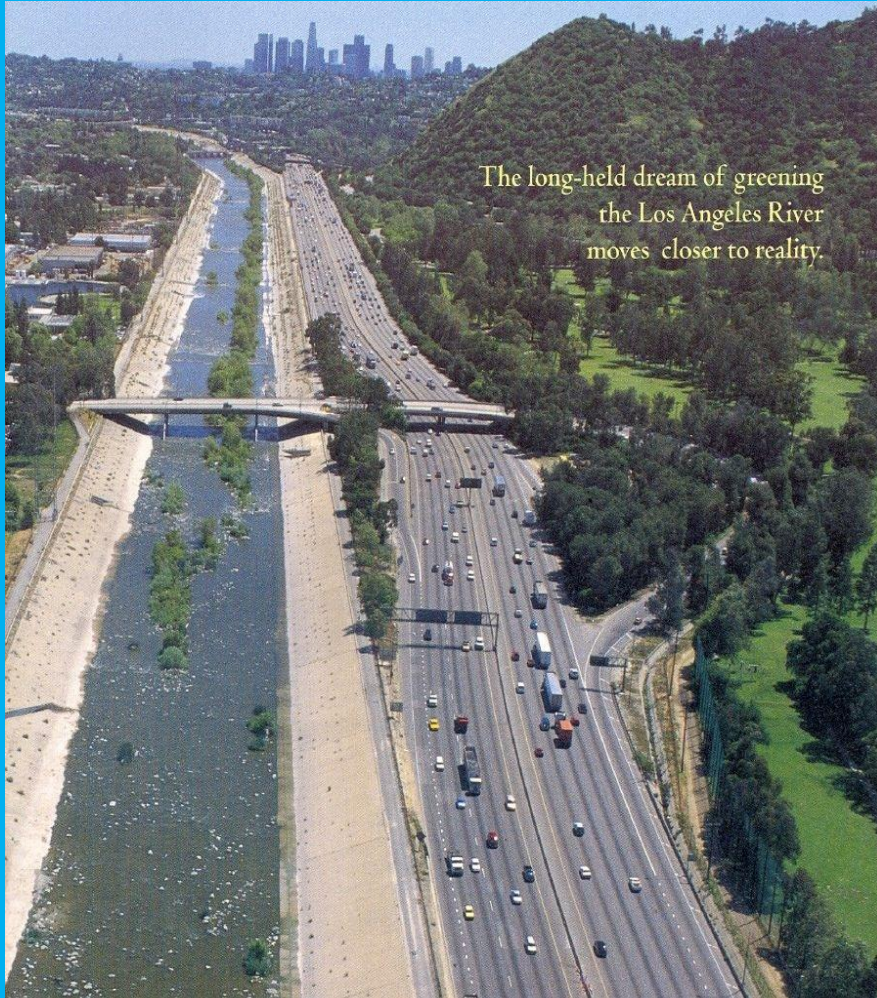
SUBCONSERVANCY  
DISTRICT

- **2004 Conference**
- **Developed through cooperative process**
  - **Carson River Coalition River Corridor Working Group**
- **Public Workshops**
- **Goal - Reduce Flooding Hazards by Protecting Floodplains**



# Floodplain Management Plan

## Alternative Futures for Carson River



The long-held dream of greening the Los Angeles River moves closer to reality.

--Western Water

Concrete flood channel, LA River



--John Warpeha

Carson River through lands owned by the Washoe Tribe of Nevada



# Floodplain Plan Components



- Suggested Actions Categories
  - Protect Floodplain Natural Functions & Values
  - Higher Regulatory Standards
  - Flood Data Information and Management
  - Channel Migration and Bank Erosion Monitoring
  - Floodplain & Flood Hazard Outreach and Education
  - Reduce Infrastructure Impacts

# Remapping The Carson River Floodplain

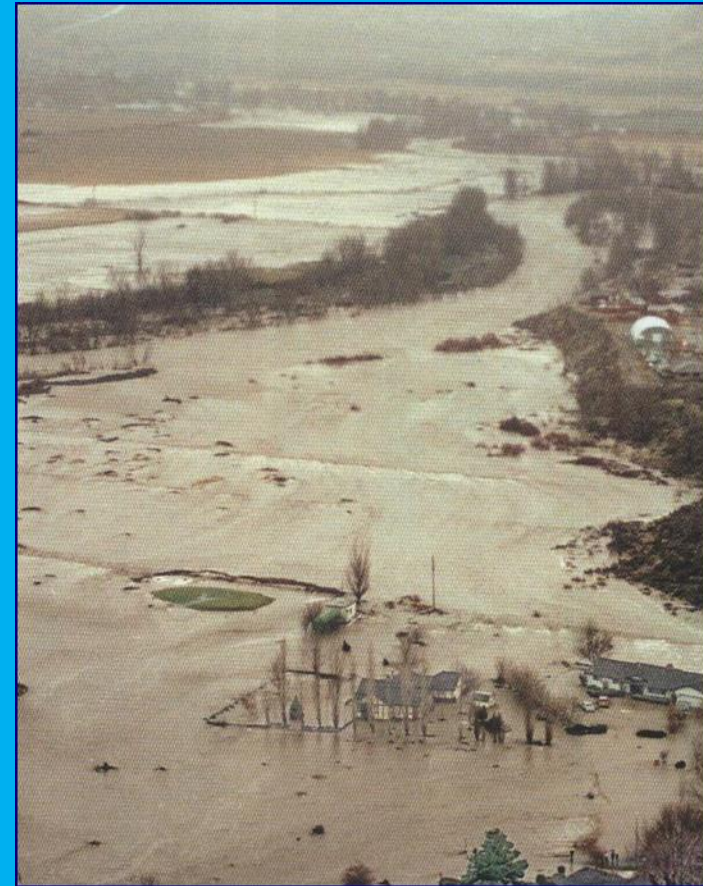


- **Objectives**
  - Detailed up-to-date Carson River floodplain mapping (Alpine, Douglas, Carson City and Lyon Counties)
  - Tool for assessing floodplain impacts
- **Funding provided by FEMA**
- **Unsteady Flow Model**
  - Hydrograph Modeling Input (time vs. flow)
- **Calibration Hydrograph**
  - 1997 Flood hydrograph



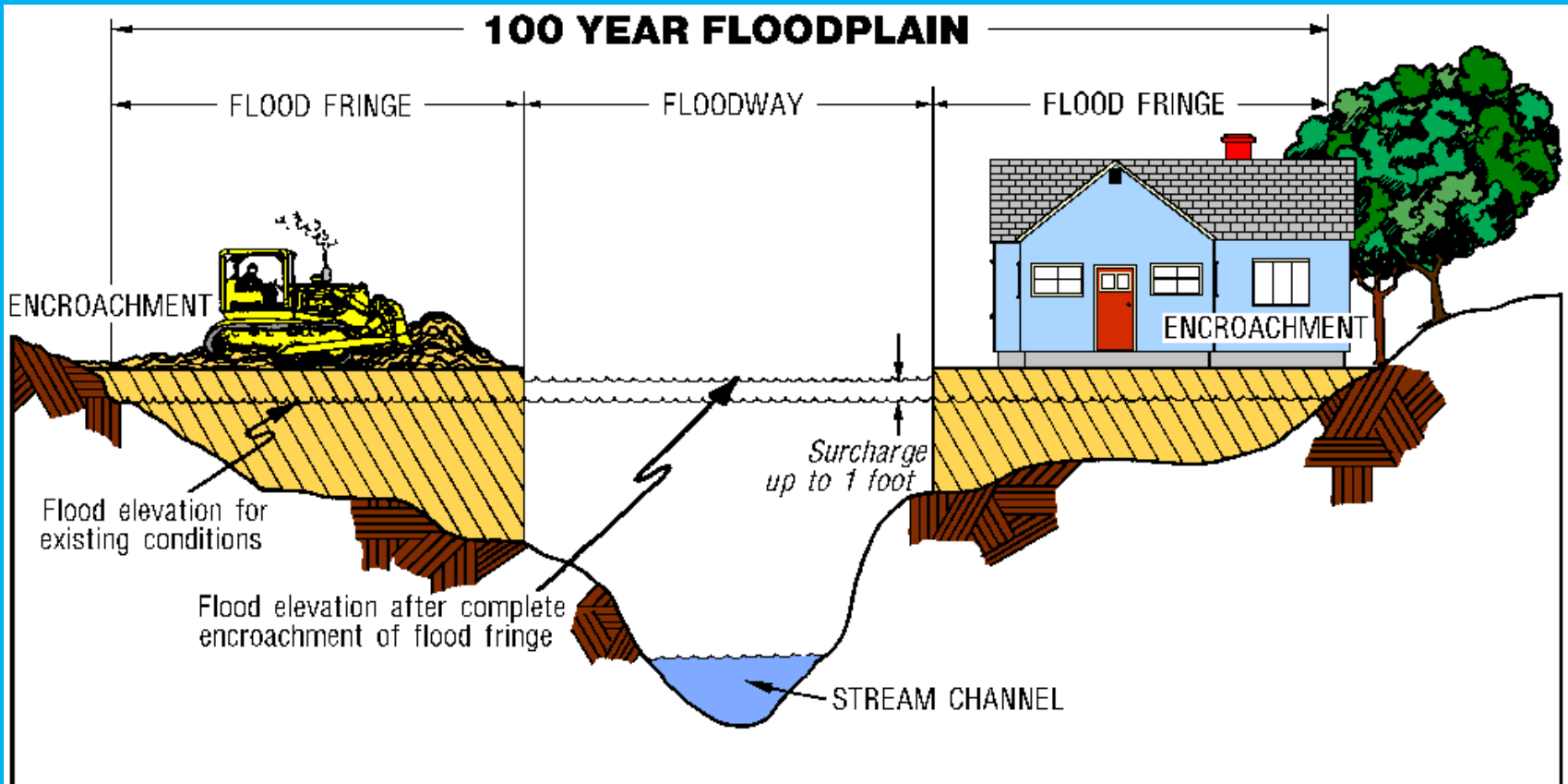
# New Floodplain Mapping Using Unsteady Flow Modeling

- **Unsteady flow**
  - Flow value changes in time
  - Accounts for overbank storage
  - Evaluate volume and peak flow effects of encroachments
  - Possible to analyze changes in peak flow along a river reach



# FEMA Floodway

- Encroachment on the 100-yr floodplain so that water surface rises 1ft (*federal standard*)





# Floodway Mapping



# Comprehensive Regional Management Plan

- Evaluate potential climate and runoff changes
- Develop a Regional Water Conservation Plan
- Evaluate current and future water demands/supplies for water purveyor in Carson River Watershed
- Project future regional infrastructure needs.





# Runoff Changes

## Monthly Streamflow – East Fork

