

# Chatfield Reallocation Project Impacts

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# Chatfield State Park

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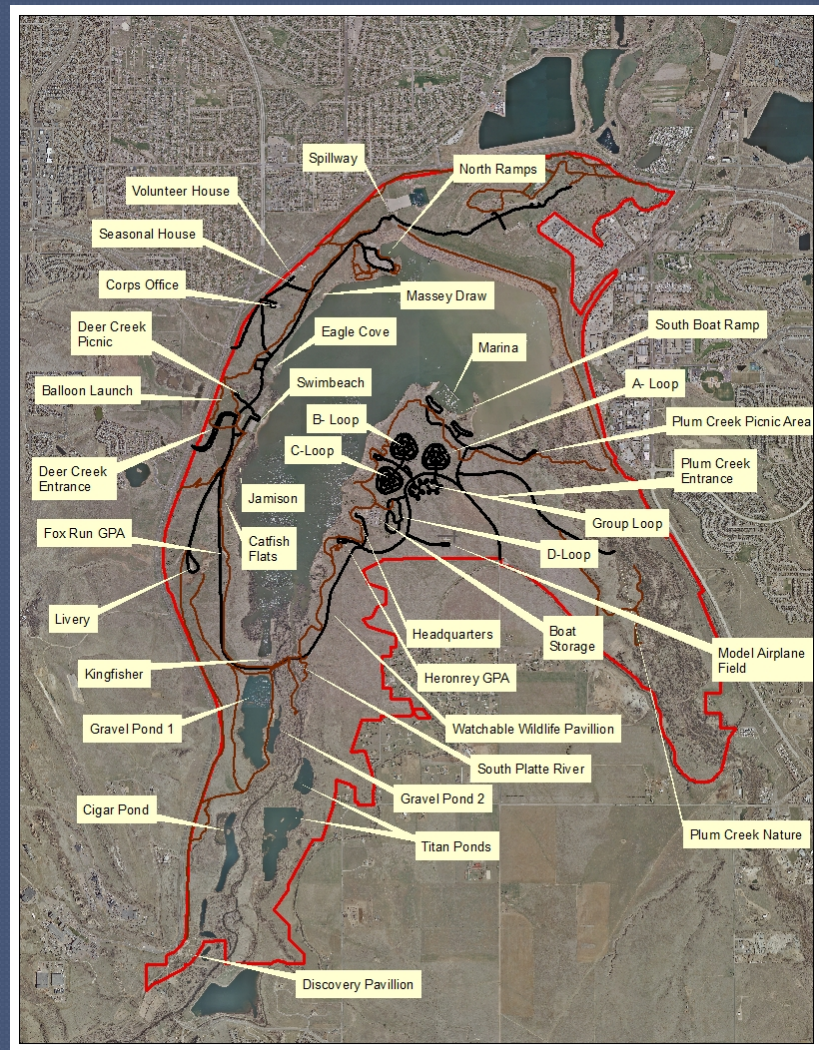
- ❖ Opened to the public in 1979
- ❖ It encompasses 3,768 acres of land
- ❖ The lake is 1,423 surface acres when full at elevation 5432
- ❖ All Land owned by the Army Corp of Engineers and leased to CPW. Current lease runs through 2028.
- ❖ Current visitation is approximately 1.6 million annually.
- ❖ Revenue collected is 2.2 million per year.



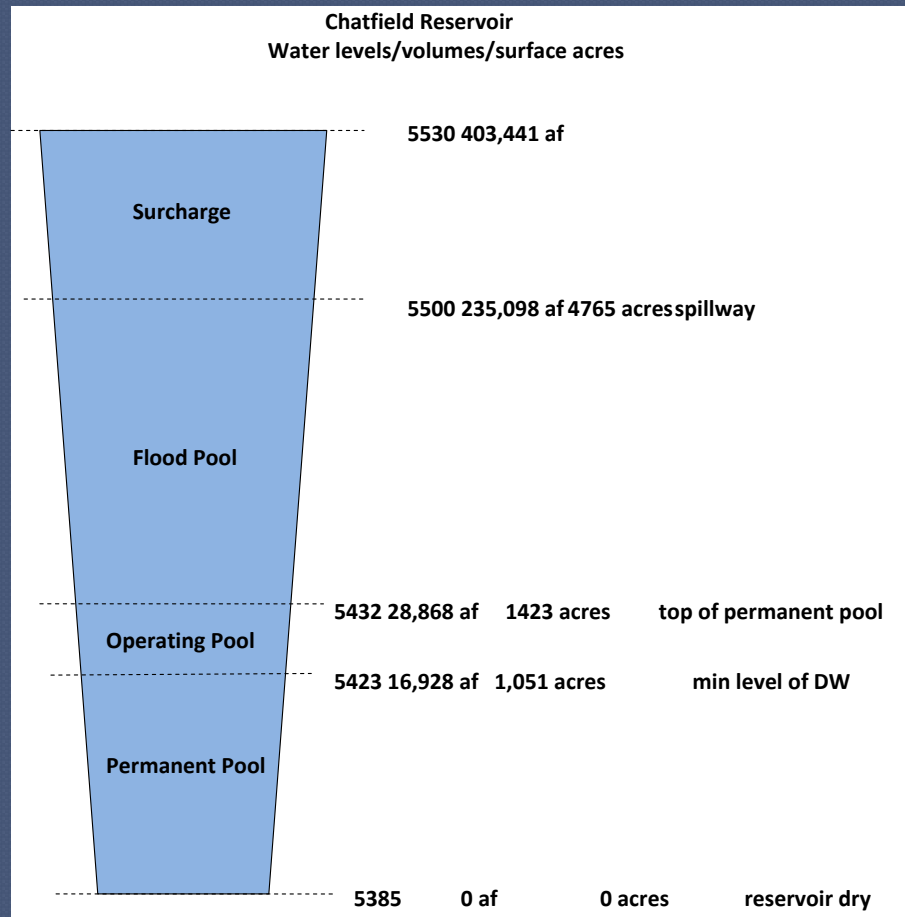


# Current Facilities

2 Entrance Stations  
2 boat Ramps(10 lanes)  
1 Marina  
197 Campsites  
10 Group Camping Sites  
139 Picnic sites  
6 Group Picnic Areas  
1 Livery  
1 Balloon Launch  
1 Dog Off-Leash Area  
(69 acres)  
1 Model Airplane Field  
1 Swim Beach  
33 Miles of paved roads  
26 Miles of trails



# Chatfield Water Operations





# Denver Water 1979 Agreement

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- ❖ **1975** Chatfield Reservoir constructed pursuant to Flood Control Act of 1950 for flood control and recreational purposes.
- ❖ **March 1979** USA and State enter into contract regarding operation of Chatfield
- ❖ **April 1979** State and Denver Water enter into contract “1979 agreement” whereby Denver has certain rights to store in Chatfield, and certain obligations to replace evaporation
- ❖ **1980** Wet year, Chatfield Reservoir filled for first time

# Denver Water 1979 Agreement

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- ❖ Allows for storage and usage between 15,849 acre-feet (elevation 5423 feet) and the upper limit of 26,634 acre-feet (elevation 5432 feet)
- ❖ Reservoir shall be operated as nearly as practicable to allow for 20,000 acre-feet (elevation 5,426.94) in storage between May 1st – August 31<sup>st</sup> of each year for recreational purposes.
- ❖ Denver recognizes the importance of the 20,000 acre-feet to recreation at Chatfield and will use its best efforts to operate at the minimal level during these months.

# Chatfield Reallocation Proposed Alternatives

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- ❖ **No Action New construction**

- ❖ Gravel pit and construction of a new reservoir

- ❖ **No Action NTGW/Gravel Pits**

- ❖ Reliance on Non –Tributary ground water and gravel pit storage

- ❖ **Reallocations for 20,600 AF Storage**

- ❖ 12 foot increase to 5444'

- ❖ **Reallocation for 7,700 AF Storage**

- ❖ 5 foot increase to 5437'
  - ❖ NTGW and gravel pit storage





# Downstream Project Participants

<i>Downstream Water Providers</i>			
<i>Entity</i>	<i>Purpose</i>	<i>AFT</i>	<i>%</i>
Unassigned	Unassigned	3,561	17.3
Central Colorado Water Conservancy District (CCWCD)	Agricultural	2,849	13.8
CWCB/CPW	Recreation	1,000	4.9
Denver Botanic Gardens at Chatfield	Recreation and Agriculture	40	0.2
Western Mutual Ditch Company	Agricultural	1,425	6.9

# Upstream Project Participants

<i>Upstream Water Providers</i>			
<i>Entity</i>	<i>Purpose</i>	<i>AFT</i>	<i>%</i>
Unassigned	Unassigned	564	2.7
Castle Pines Metropolitan District (MD)	Municipal and Industrial	785.6	3.8
Castle Pines North Metropolitan District (MD)	Municipal and Industrial	941.5	4.6
Town of Castle Rock	Municipal and Industrial	1013.1	4.9
Centennial Water and Sanitation District (WSD)	Municipal and Industrial	6434.9	31.2
Center of Colorado Water Conservancy District (WCD)	Municipal and Industrial	131.3	0.6
Colorado Water Conservation Board	Recreation	100	0.49
Mount Carbon Metropolitan District (MD)	Municipal and Industrial	400	1.9
South Metro Water Supply Authority (SMWSA) MD	Municipal and Industrial	1354.3	6.6



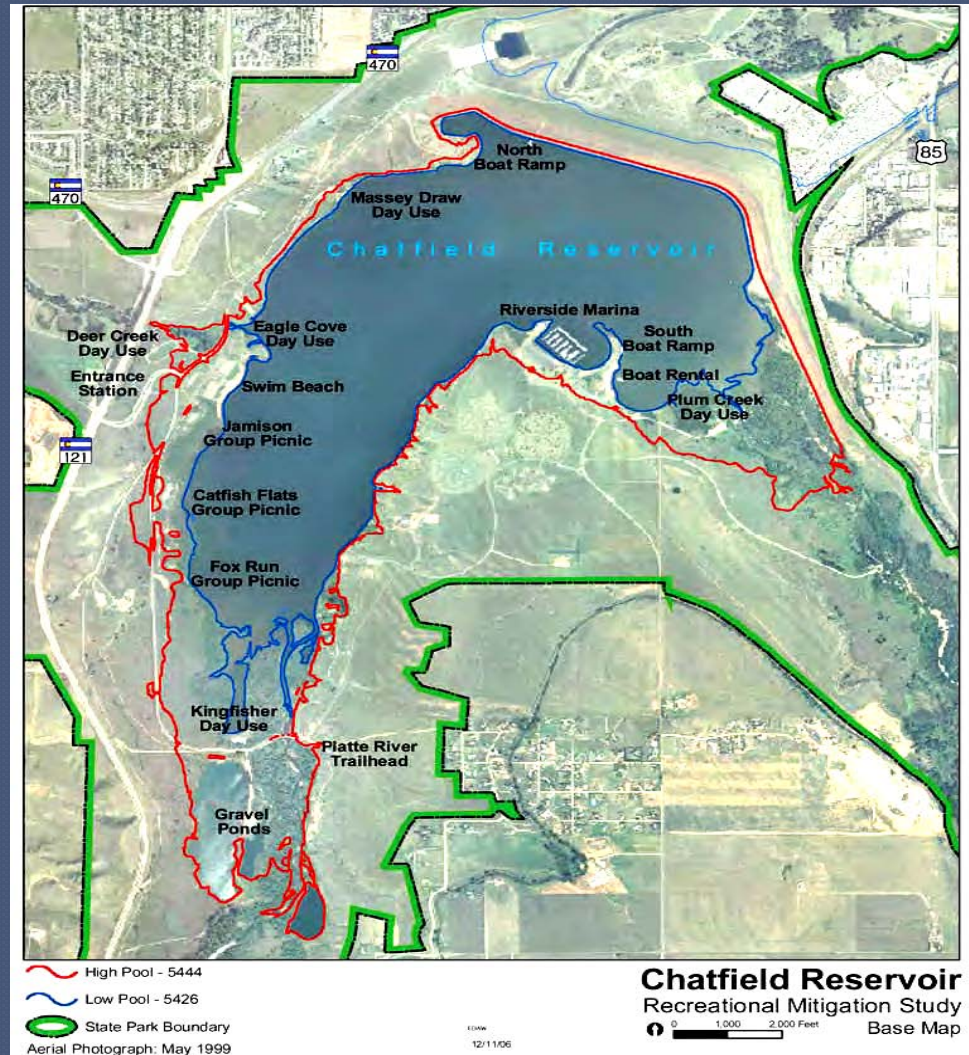
# Recreational Impacts





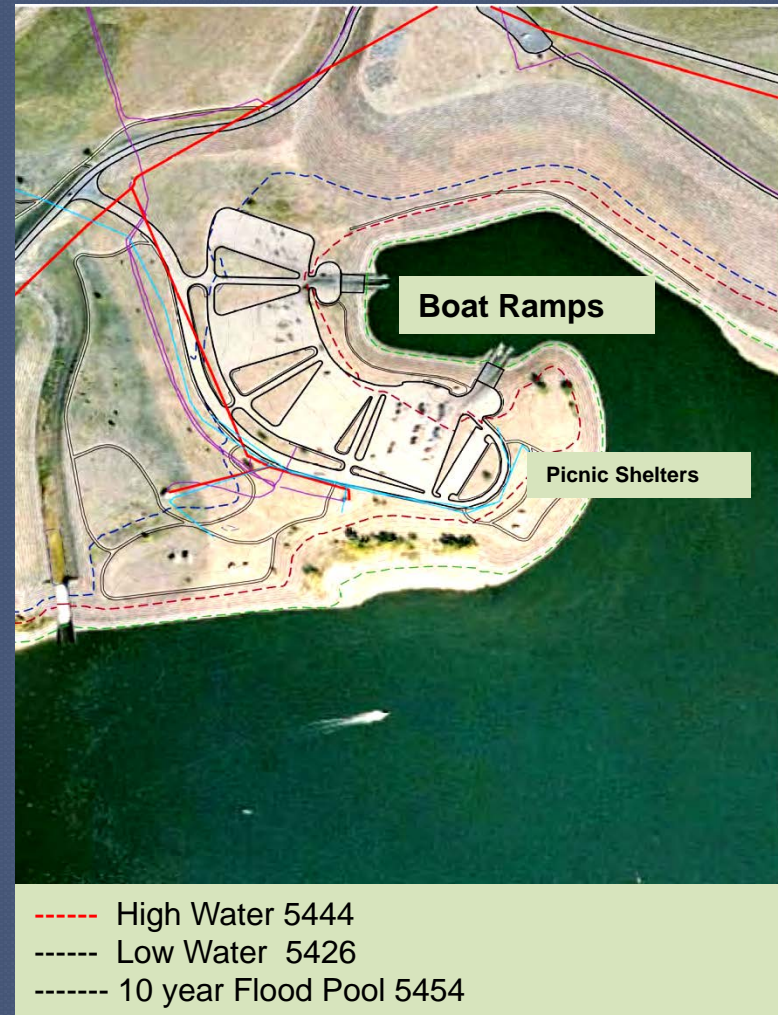
# Recreational Impacts Reallocated Water Level

Many of the existing recreational facilities, day use areas, associated infrastructure and 587 acres of recreational land will become unusable due to periodic inundation.



# Recreational Impacts North Boat Ramp

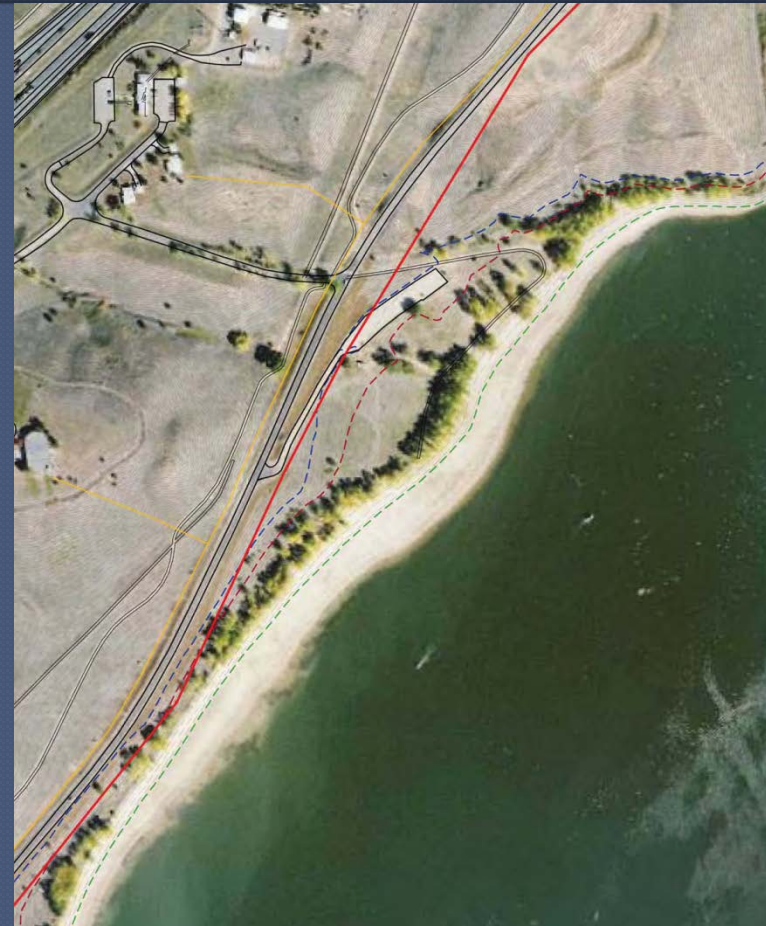
- ❖ Both Boat Ramps would be inundated
- ❖ Several Picnic Shelters
- ❖ Effect of new 10 year flood level





# Recreational Impacts Massey Draw

- ❖ Popular Day Use Area for Boaters
- ❖ 72 car parking lot
- ❖ Beach area along with Horse Shoe pits and volleyball court inundated
- ❖ Loss of Shade Trees below elevation 5439



----- High Water 5444  
----- Low Water 5426  
----- 10 year Flood Pool 5454

# Recreational Impacts

## Swim Beach & Deer Creek Entrance

- ❖ All facilities and infrastructure will need to be relocated to 5447
- ❖ Total of 414 Parking Spaces in 3 lots.
- ❖ Restrooms with showers
- ❖ Swimbeach office, first aid station and concession building
- ❖ Increased distance to water for visitors
- ❖ Crowding of visitors in a heavily used Day use area





# Recreational Impacts

## Catfish Flats & Fox Run Group Picnic

- ❖ All facilities would be inundated at 5444 and need to be redeveloped
- ❖ Restroom
- ❖ 192 parking spaces
- ❖ 3 Group picnic areas
- ❖ Bike trail
- ❖ Main Park Road
- ❖ All Trees would be affected



- High Water 5444
- Low Water 5426
- 10 year Flood Pool 5454



# Recreational Impacts

## King Fisher, Gravel Pond & South Platte River

- ❖ Popular fishing area
- ❖ High use area for special activities
- ❖ Loss of Mature Cottonwoods
- ❖ Loss of .7 miles of stream fishing
- ❖ Decreased wildlife viewing opportunities



- High Water 5444
- Low Water 5426
- 10 year Flood Pool 5454

# Recreational Impacts Marina and South Ramps

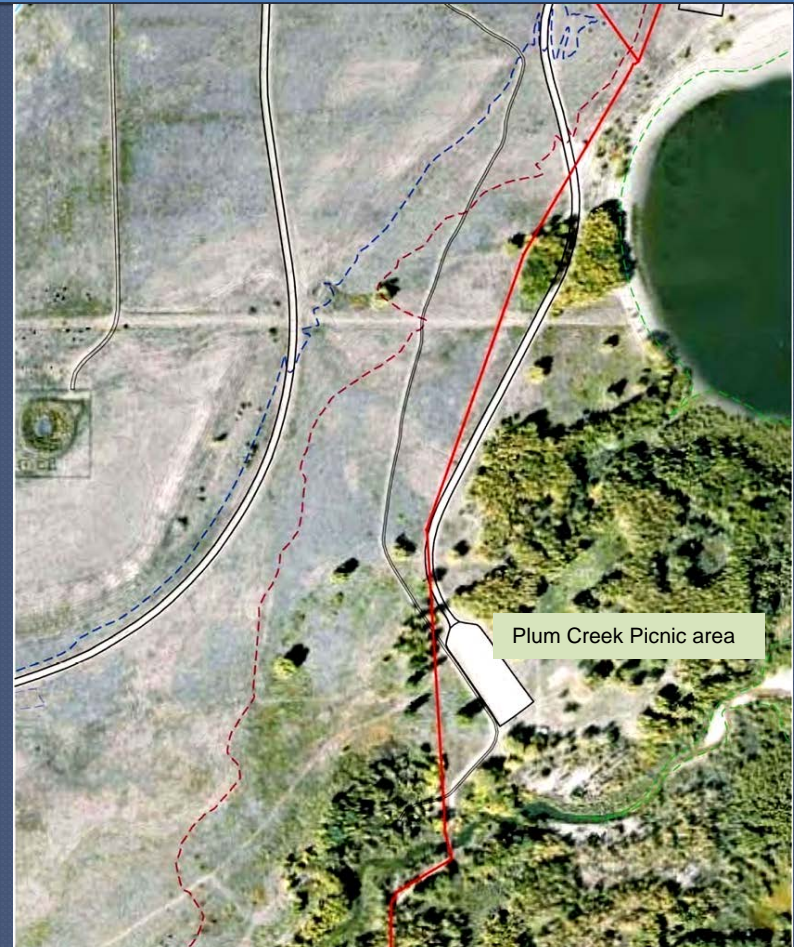
- ❖ Major use area
- ❖ Marina facilities, both on land and on water, will become unusable at their present location due to inundation and more significant water level fluctuations.
- ❖ Handicap fishing pier
- ❖ 2 Group picnic areas
- ❖ South boat ramp
- ❖ 2 restrooms





# Recreational Impacts Plum Creek

- ❖ Day use area
- ❖ All Facilities inundated and will need to be redeveloped
- ❖ Loss of recreational land
- ❖ Increased distance from facilities to shoreline.



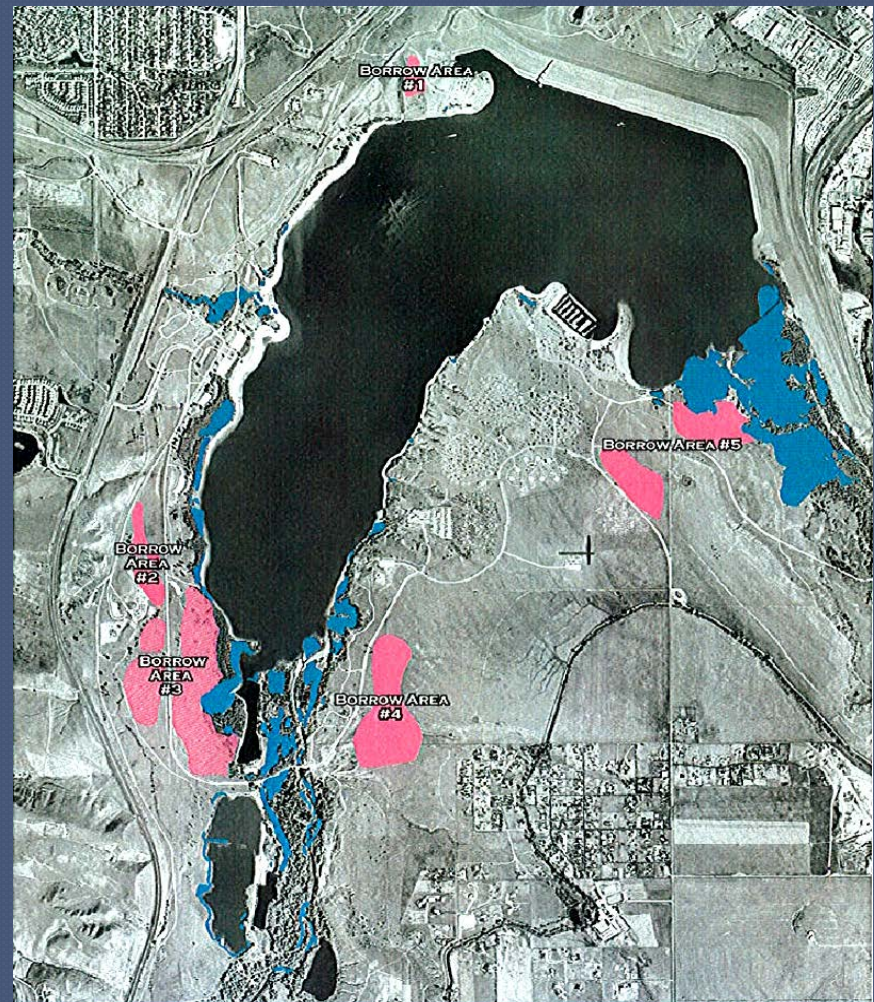
----- High Water 5444  
----- Low Water 5426  
----- 10 year Flood Pool 5454



# Recreational Impacts

## Borrow Pit Area Reclamation

- ❖ Total of 179 Acres of additional land will become unusable for recreational purposes if proposed borrow pit areas are too large or improperly restored.



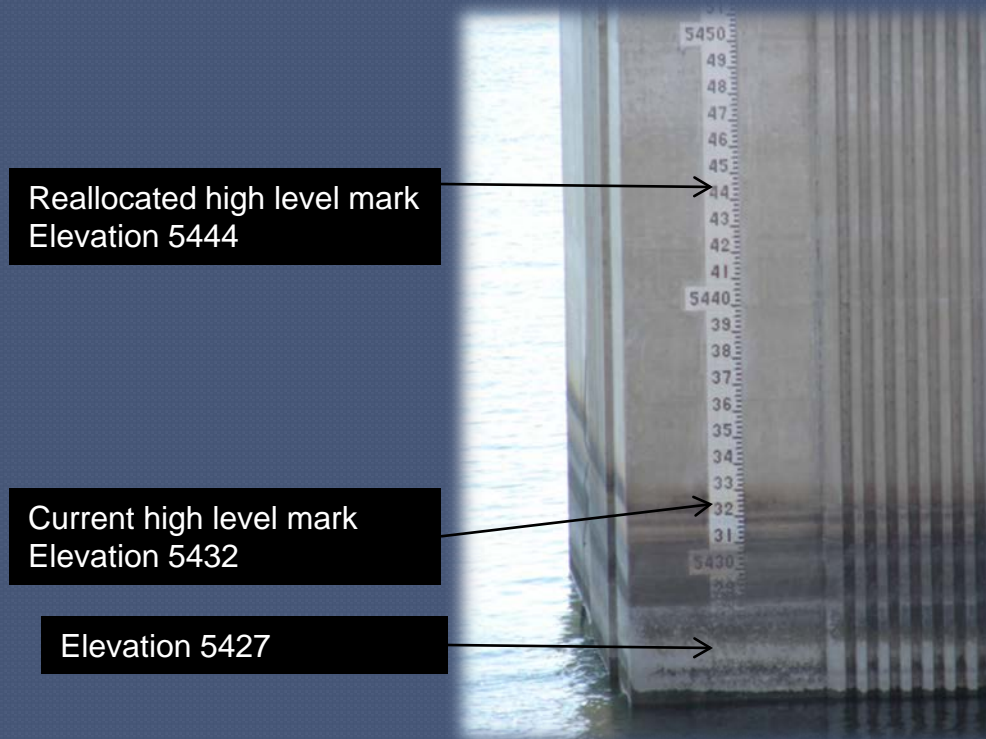
OVERALL BORROW AREA LOCATION MAP



# Recreational Impacts

## Increased Fluctuations

- ❖ Increase in reservoir fluctuations of up to 17ft vertical feet increasing the horizontal distance to the water from recreational facilities, shade trees and parking areas.



# Recreational Impacts

## Increased Distance from Facilities to waters edge



260 feet from elevation  
5432 to waters edge at  
5423.

At 5444 it would  
be over 600 ft

# Recreational Impacts

## Loss of Cottonwood Trees

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- ❖ Less wildlife habitat and natural shade for park visitors due to the Complete or significant loss of mature cottonwood trees located within the reallocated storage space.
- ❖ Up to 285 Acres of Cottonwood Trees removed



Existing



Simulation



# Recreational Impacts

## Increased Boating Hazards

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- ❖ The reallocated storage space is located at an elevation within Chatfield Reservoir with more gentle topography, creating shallow water levels with increased boating hazards. Consequently, no additional boatable acreage for motorized vessels is expected to be created within Chatfield Reservoir.



# Recreational Impacts

## Increased Shoreline Exposure

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- ❖ Increased shoreline exposure leading to creation of large mudflats, loss of existing wetlands and new weed proliferation due to more frequent and greater water level fluctuations.

# Recreational Impacts Increased Erosion

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# Recreational Impacts Future Flood Events

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- ❖ Many of the relocated recreational facilities will be more vulnerable to flood events and subject to additional temporary closures because they will be constructed within the 10 year floodplain in order to provide reasonable access to the reservoir at low water levels.



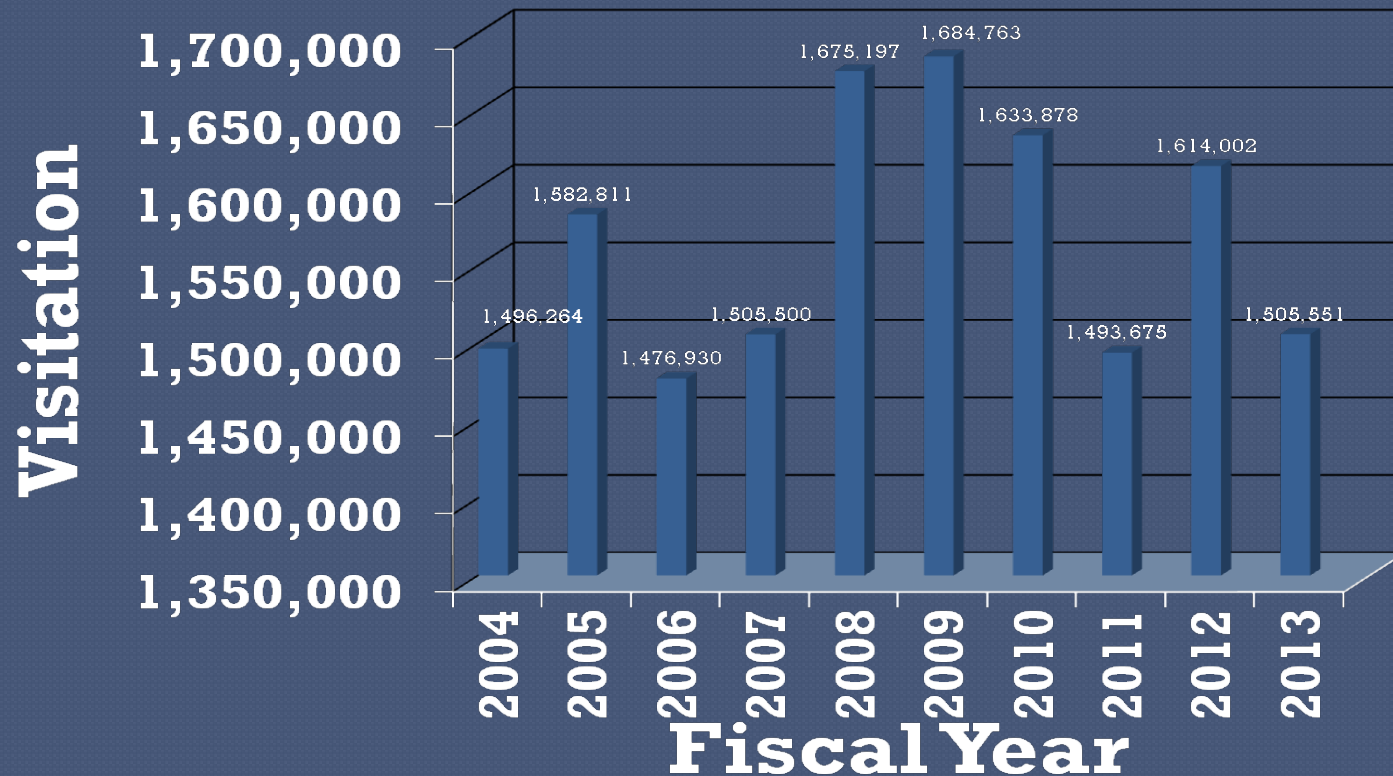
# Financial Impacts



# Financial Impacts

## Chatfield Visitation

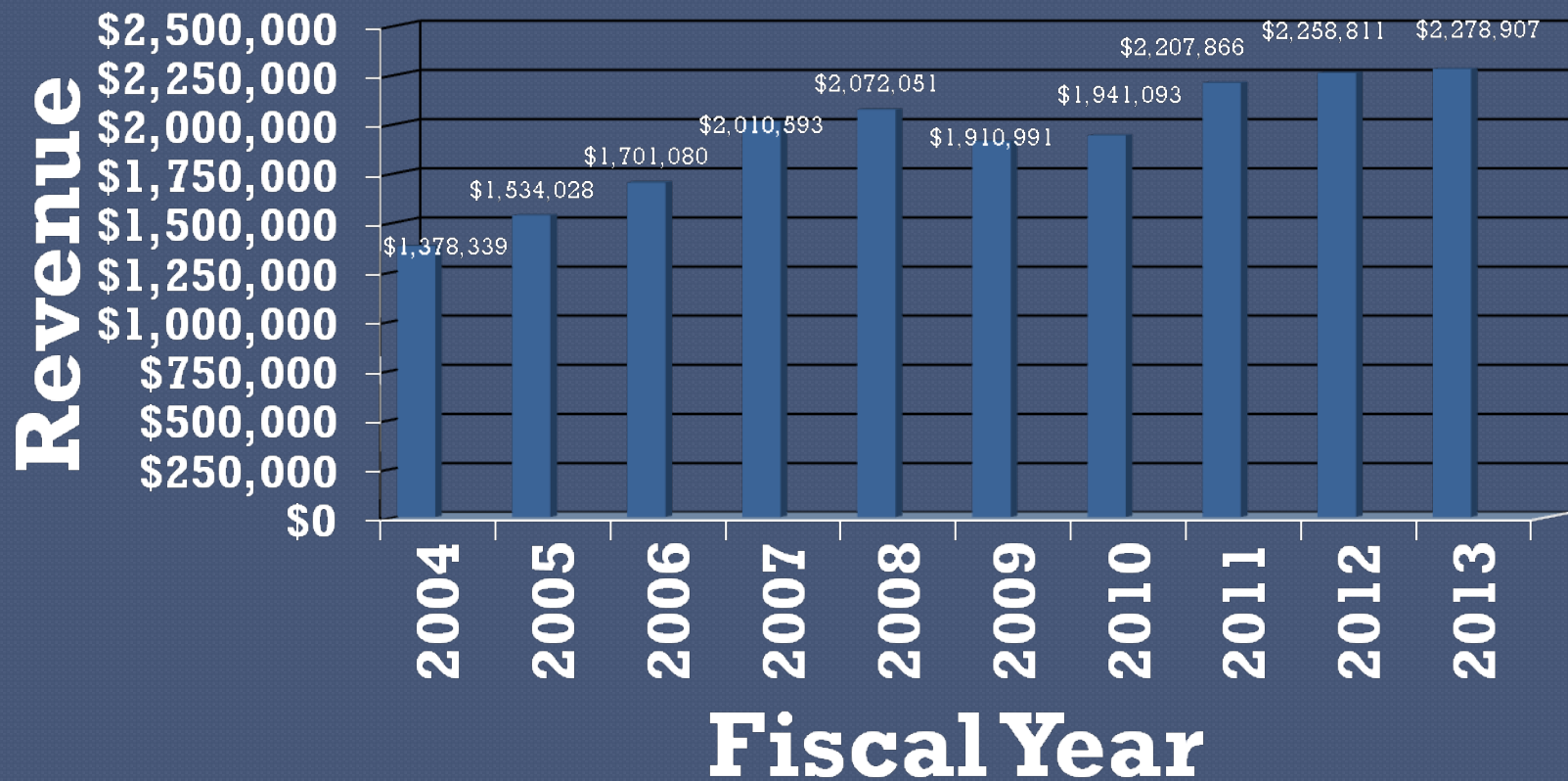
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# Financial Impacts

## Chatfield Revenue



# Financial Impacts

## Decreased Park Revenues

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- ❖ From lost visitation due to diminished recreational experience both during and post construction.



# Financial Impacts

## Increased Operational Costs

❖ Due to more frequent and larger water level fluctuations.

### ❖ Staff Time

- ❖ Moving Docks
- ❖ Moving Buoys – marking hazards, shallow areas
- ❖ Trash Removal
- ❖ Debris Removal – increase in fluctuations

### ❖ Equipment & Supplies

- ❖ Additional Buoys
- ❖ Signs
- ❖ Vehicles
- ❖ Sand replacement
- ❖ Contracted labor





# Financial Impacts Concessionaires

## ❖ Chatfield Marina



## ❖ Chatfield Horse Stables



Loss of Visitation = Loss of Revenue

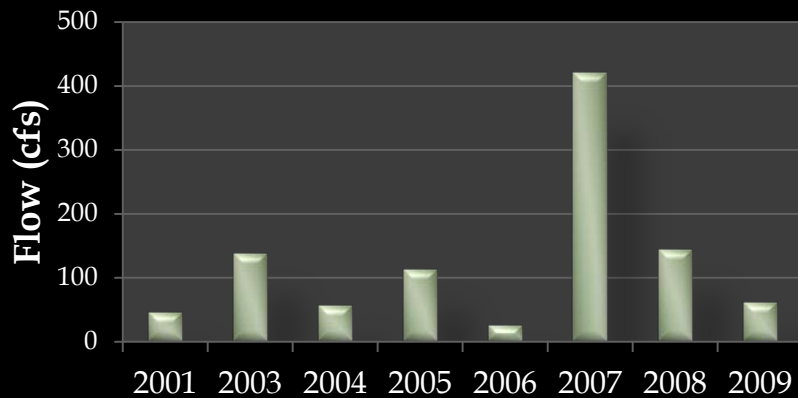
# Impacts to Fish and Wildlife In-Reservoir

## Fisheries- Walleye



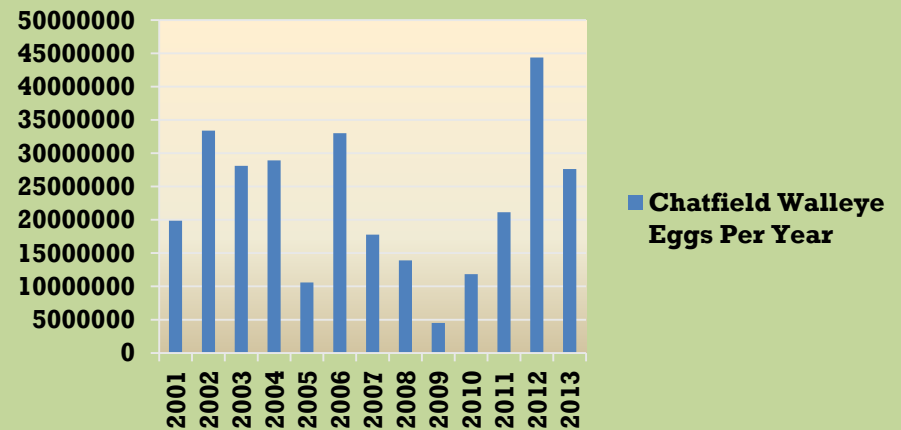
# Impacts to Fish and Wildlife In-Reservoir

Average March/April  
Outflows



## Higher Spring Reservoir Releases

Chatfield Walleye Eggs Per  
Year

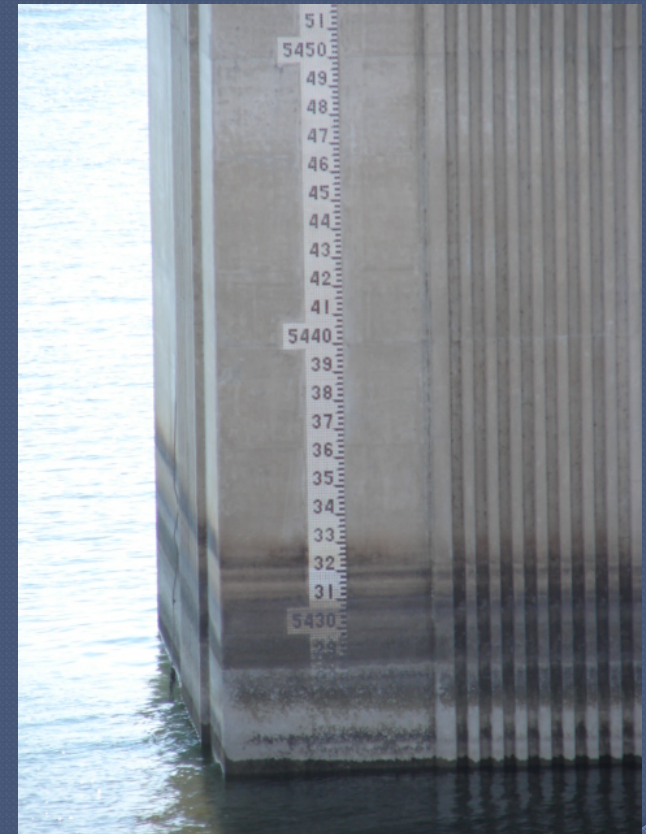




# Impacts to Fish and Wildlife In-Reservoir

## ❖ Fisheries – Smallmouth Bass

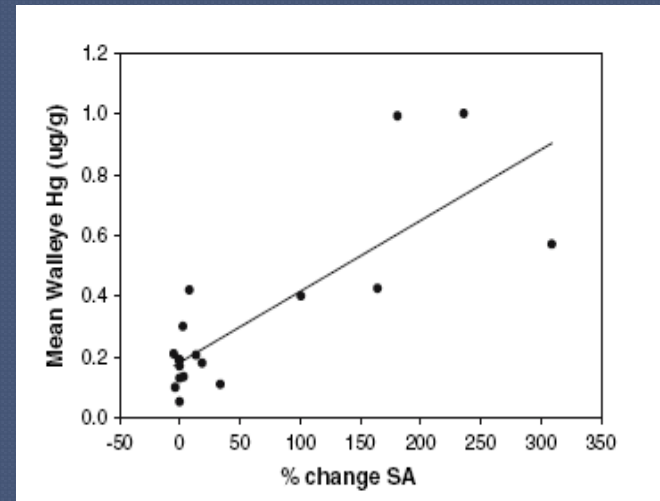
### ❖ Higher Reservoir Fluctuations – Disrupts Spawning & Recruitment



# Impacts to Fish and Wildlife In-Reservoir

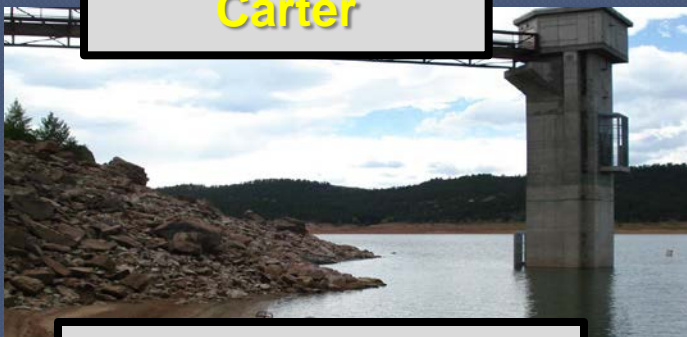
## ❖ Water Quality

- ❖ New Reservoir effect
- ❖ Potential Dissolved Oxygen changes
- ❖ Nutrients and sediment input changes
- ❖ Increase potential for ANS – Cigar pond
- ❖ Mercury levels in Fish



Selch et al. 2007

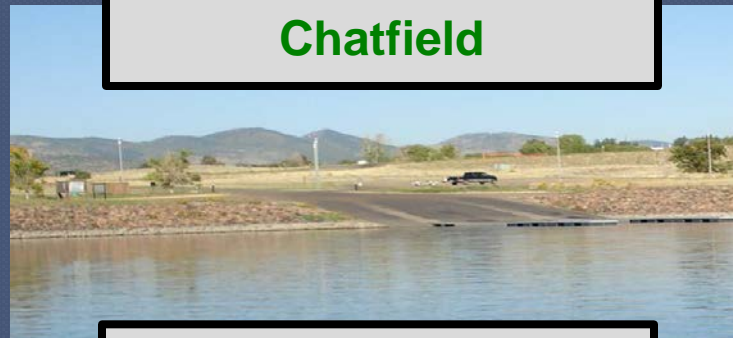
Carter



Horsetooth



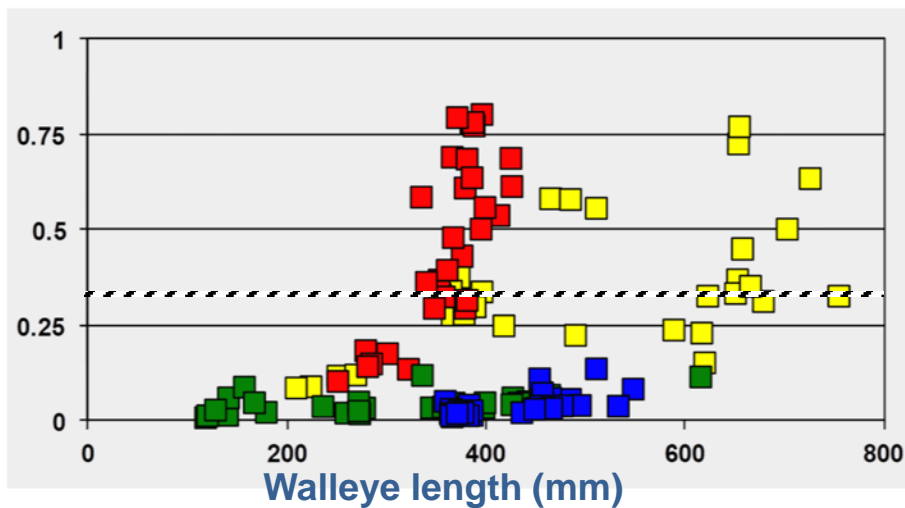
Chatfield



Union



Total Hg (ppm)



CDPHE Advisory (0.3 ppm)



# Impacts to Fish and Wildlife

## ❖ Terrestrial Wildlife Habitat Loss

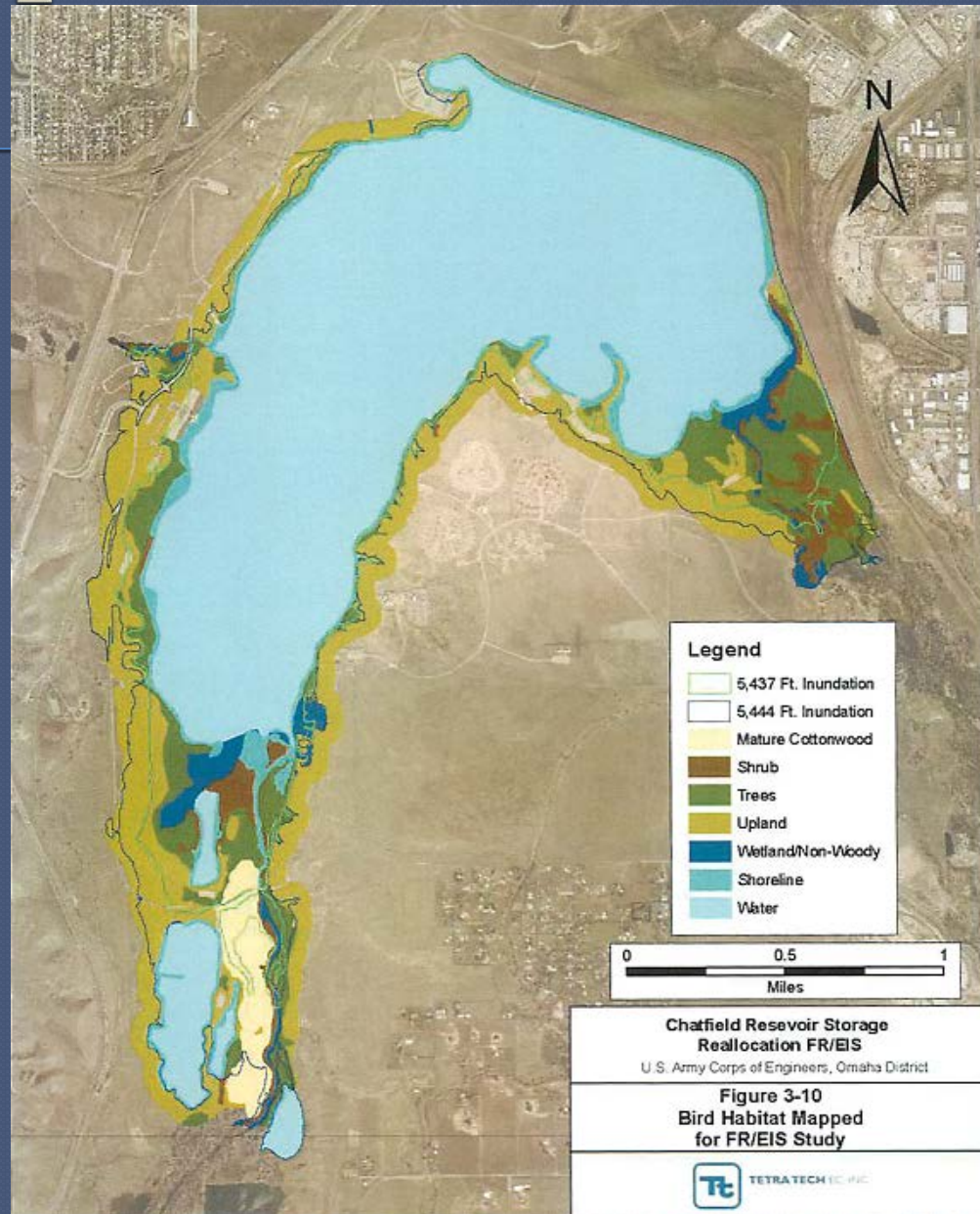
❖ 587 Acres – Inundation Zone

❖ 42 Acres of Mature Cottonwoods

❖ 159 Acres of Wetland habitat



# Impacts to Fish and Wildlife





# Impacts to Fish and Wildlife

## ❖ Terrestrial Wildlife Habitat Loss

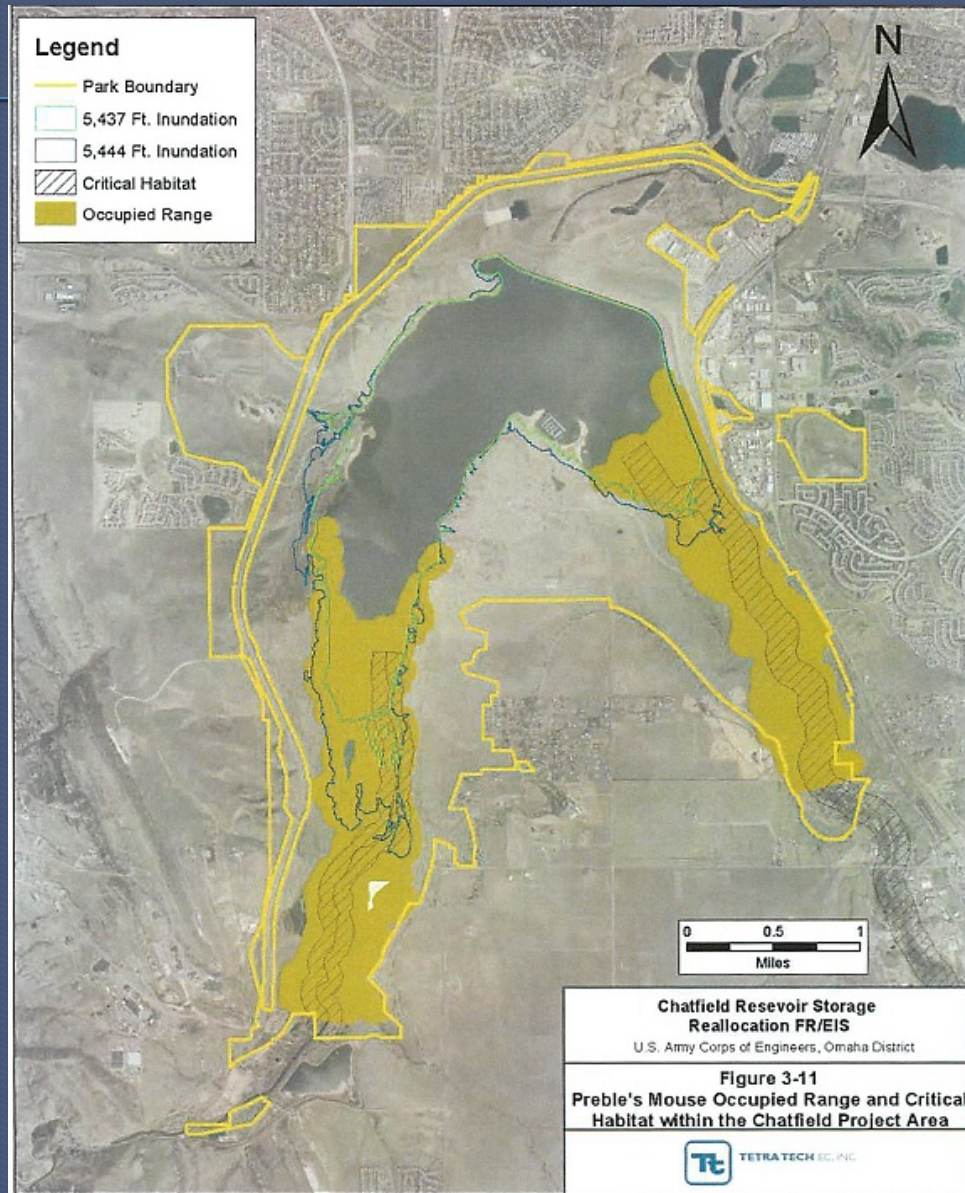
### ❖ Prebles Meadow Jumping Mouse

- ❖ 75 acres of Critical Habitat in Plum Creek
- ❖ 80 acres of Critical Habitat in the South Platte
- ❖ 298 Acres of non Critical Habitat





# Impacts to Fish and Wildlife



# Impacts to Fish and Wildlife Upstream of Chatfield

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- ❖ Loss of 0.7 miles of stream/ riparian habitat due to inundation
- ❖ Inundation of Deer and Plum Creek Habitat



# **Impacts to Fish and Wildlife Downstream of Chatfield**

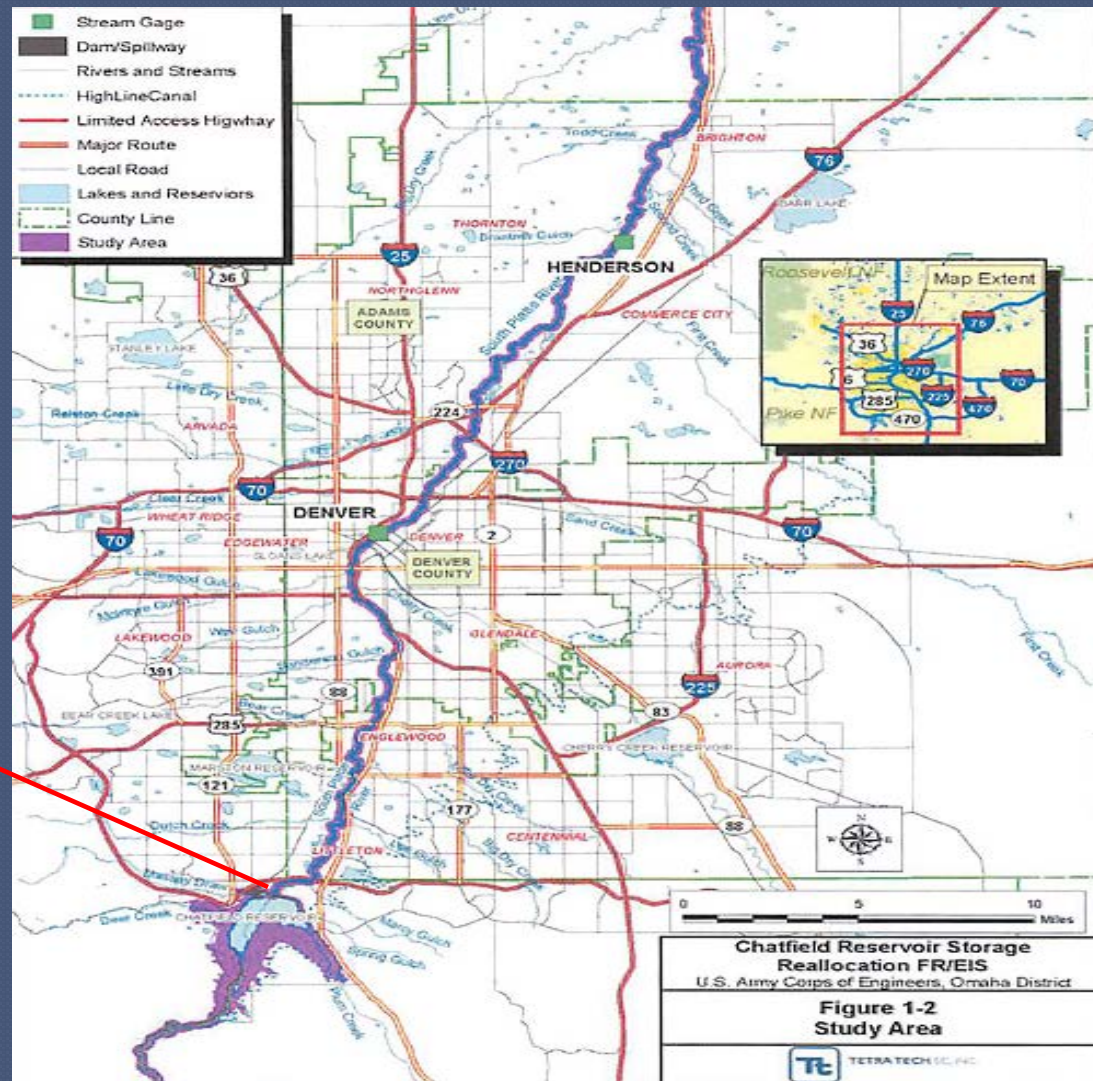
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- ❖ **Difficult to assess impacts due to Hydrology, Reservoir Operations and Water Rights**
- ❖ **Increased zero flow days in the Platte River**
- ❖ **Water Quality in downstream river**
- ❖ **Potential impacts to Chatfield Planting Base**



# Impacts to Fish and Wildlife Downstream of Chatfield

Chatfield Gage



# **Impacts to Fish and Wildlife Downstream of Chatfield**

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- ❖ **Increased Zero Flow Days (<1 cfs)**
  - ❖ **Zero Flow days currently occur without Reallocation (1-162 days per year)**
  - ❖ **Based on 1987- 2010 Reallocation would increase the number of Zero Flow days by an additional 70 days per year average (0 to 177 additional days per year)**

# **Impacts to Fish and Wildlife Downstream of Chatfield**

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## **❖ Water Quality**

- ❖ FEIS acknowledged downstream issue and have proposed bypass flows.**

## **❖ Chatfield Planting Base**

- ❖ Anticipated no impact if only Junior Water rights used.**



# Next Steps in Process

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- ❖ CPW / Participant meetings in progress
- ❖ **November 2013-** Reallocation  
Participants will present Mitigation Plans to the CPW Commission. (Starts 60 day review process for 37-60-122.2)
- ❖ **December 2013-** Staff review and Public input on Plan.
- ❖ **January 2014-** CPW Commission action on Plan