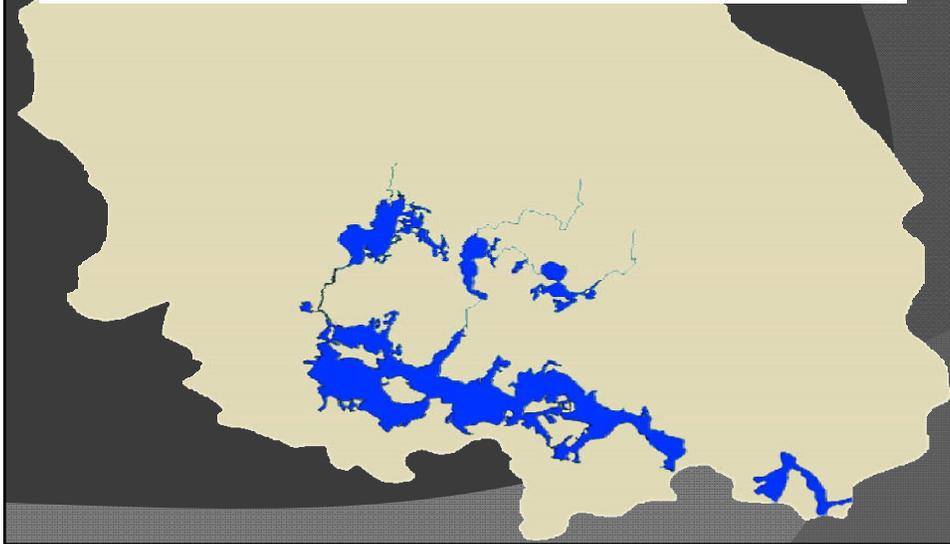


**Devils Lake Basin Briefing to ND  
Legislature Water Topics Overview  
Committee – June 14<sup>th</sup>, 2016**



**Presentation Summary**

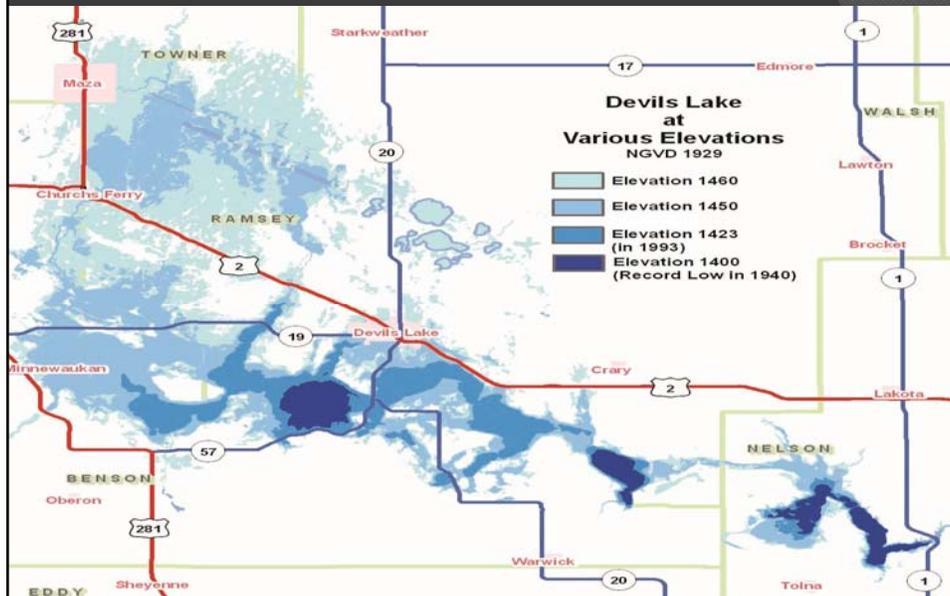
- Current Conditions & History of Devils Lake
- Impacts of Water Level Changes to Agriculture
- Importance of Outlet Operations
- Short & Long Term Goals
- Questions



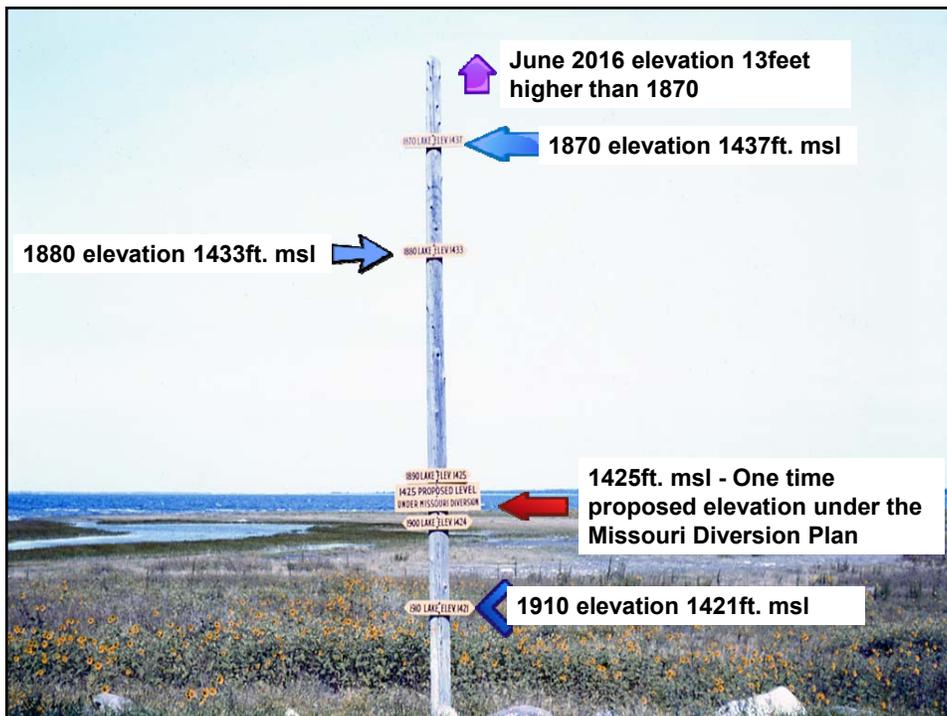
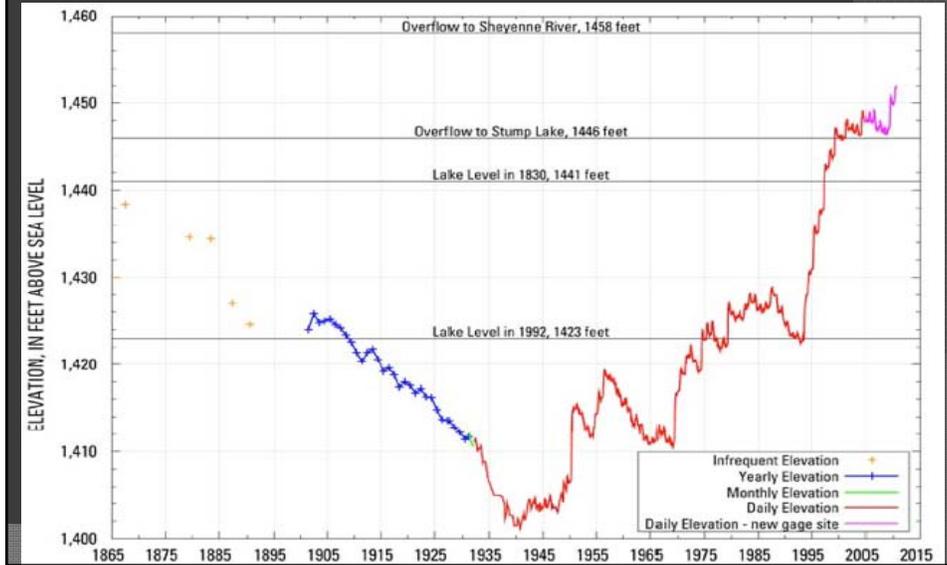
## Current Area Lake Levels

- Devils Lake – 1449.91msl
  - Area of Lake - 145,981 acres
  - Volume of Lake - 2.82 million acre feet
- Stump Lake – 1450.04msl
  - Area of Lake – 16,012 acres
  - Volume of Lake – 541,957 acre feet
- Morrison Lake – 1458.74msl
- Dry Lake – 1450.03msl

## Historic Elevations of Devils Lake



# Long History of Varying Lake Levels



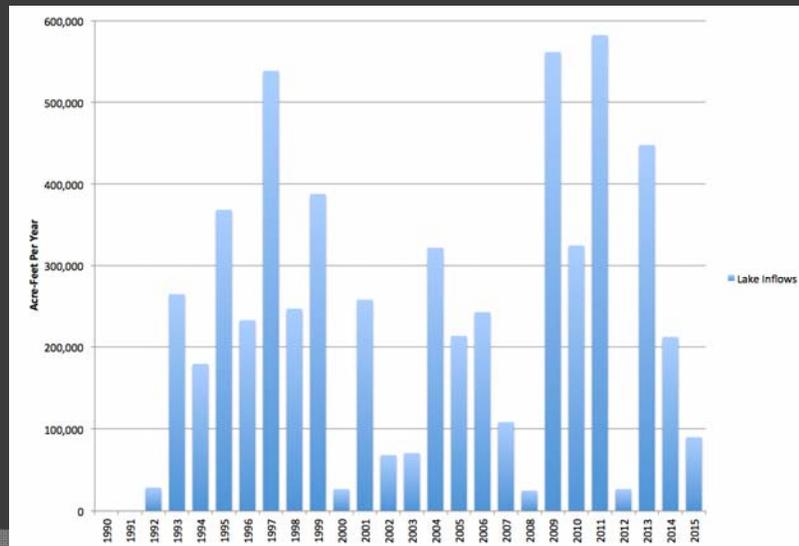


## ADDED PRECIP EQUATES TO MORE WATER IN THE BASIN

- Surface water in the Devils Lake Basin increased from 120sq miles or 3% of the Basin in 1991 to 819sq miles or 23% of the Basin at the peak in July, 2011.
- In other words what was once 76,800 acres turned into 524,160 acres under WATER!!

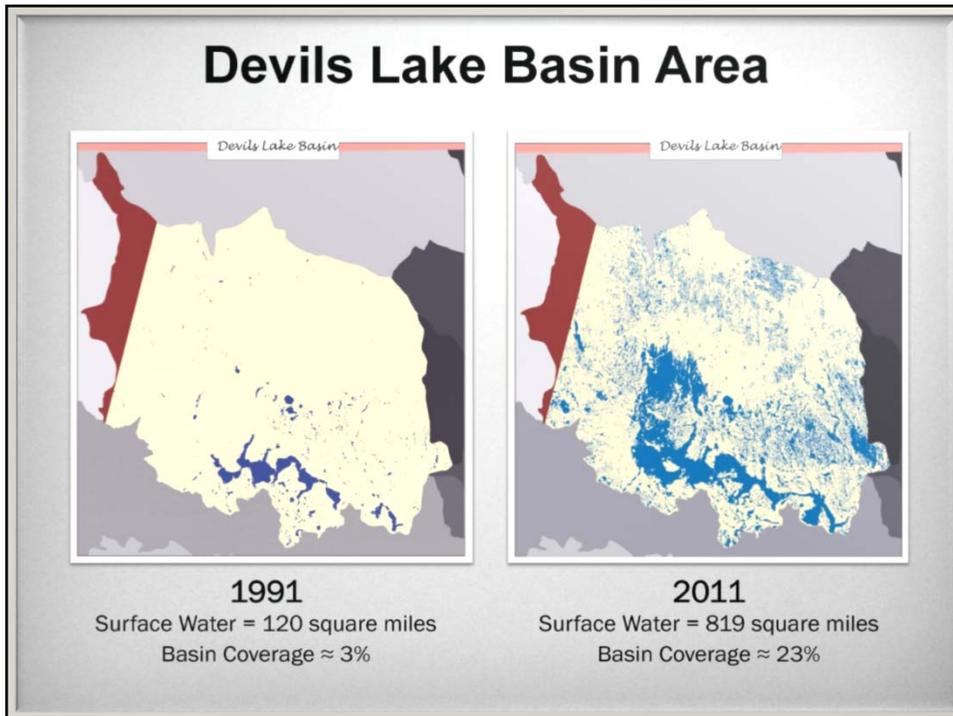
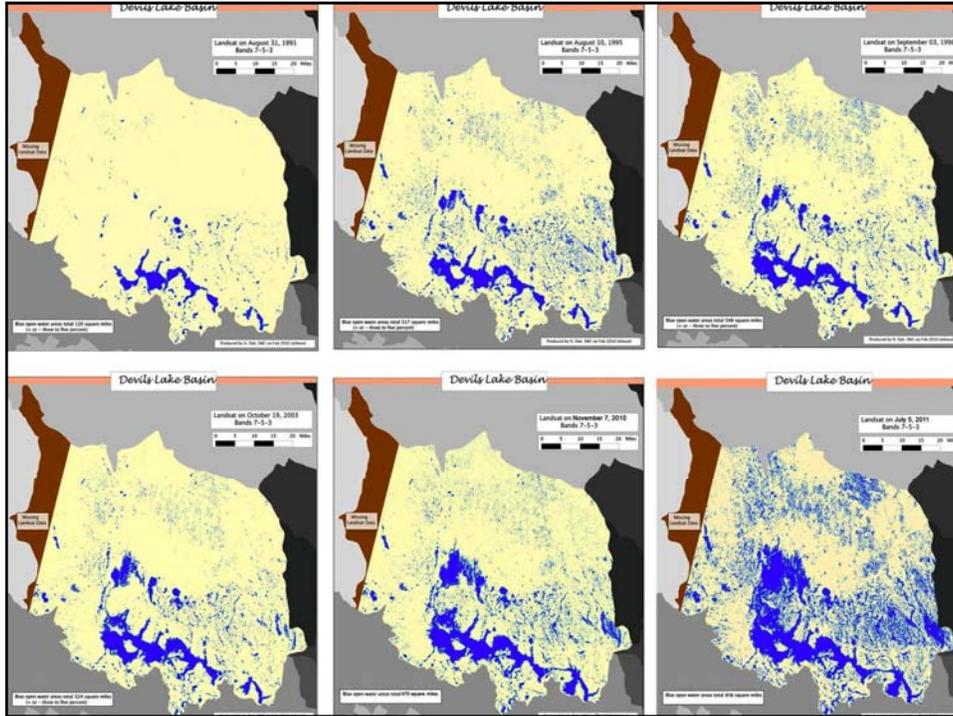


## Inflows during current wet cycle



## Yearly High Lake Elevations & Inflows (acre feet)

- 1992 – 1422.66 – 28,500
- 1997 – 1442.97 – 538,400
- 2002 – 1447.43 – 68,210
- 2007 – 1447.95 – 108,400
- 2009 – 1450.73 – 590,100
- 2011 – 1454.40 – 595,000
- 2013 – 1453.96 – 420,000



# IMPACTS OF HIGH WATER ON AGRICULTURE



## ESTIMATED AGRICULTURAL ECONOMIC IMPACTS

- In 2010 & each year since NDSU Economist Dwight Aakre has compiled data and issued reports of Agricultural losses due to inundated farmland.
- In 2016 the estimated total impact on business activity in the region from both direct and indirect losses is at \$133.7 million.
- This loss of business activity ultimately is reflected in lost jobs in the region. Employment loss in 2016 is estimated at 109 jobs for the region.

## Economic Impacts from NDSU

- 2010 - \$83.6 million & 530 lost jobs
- 2011 - \$194.4 million & 1,150 lost jobs
- 2012 - \$180.1 million & 264 lost jobs
- 2013 - \$198 million & 267 lost jobs
- 2014 - \$209 million & 282 lost jobs
- 2015 - \$145.8 million & 179 lost jobs
- 2016 - \$133.7 million \$ 109 lost jobs
- TOTAL = \$1.144 BILLION in 7 years!



**Inundated farmland West of Garske, ND 15 miles N. of Devils Lake**



**Farmland near the small village of Penn, ND 14 miles NW of Devils Lake.**



# State Run Outlets

## West Devils Lake Outlet



## East Devils Lake Outlet



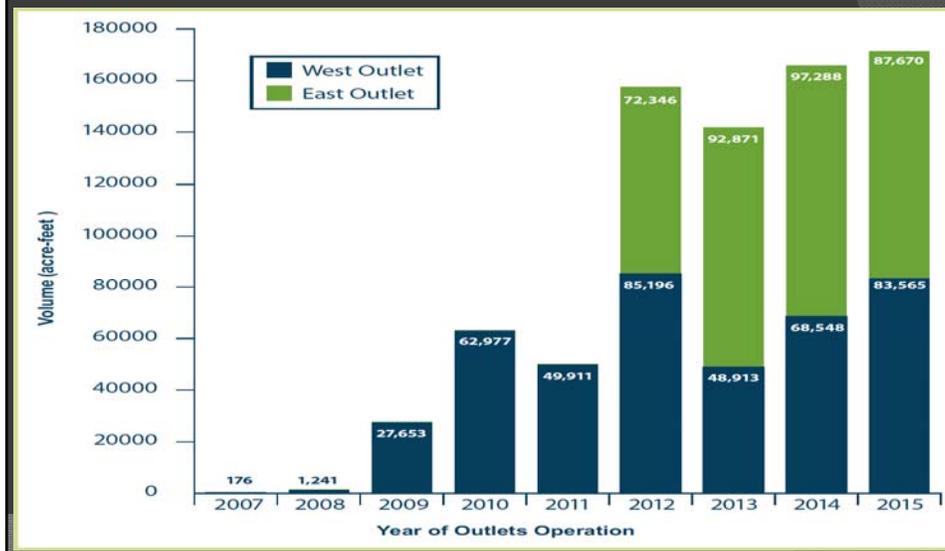
## Outlet capabilities

- West end outlet – completed in 2005, 100cfs increased to 250cfs in 2010, minimum elevation of 1445
- East end outlet – completed in 2012, 350cfs, minimum elevation of 1446

## 2015 Outlet Operations

Month In 2015	Volume West End	Volume East End	Volume Combined
---	Acre-Feet	Acre-Feet	Acre-Feet
April	3,559	0	3,559
May	9,268	2,233	11,500
June	9,775	13,388	23,163
July	12,594	21,092	33,686
August	13,877	18,067	31,943
September	15,239	18,076	33,315
October	15,216	12,427	27,643
November	4,038	2,387	6,425
<b>Totals</b>	<b>83,565</b>	<b>87,670</b>	<b>171,234</b>

# Total outlet output = 775,000



## What Is Gained By Operating the Outlets To Their Maximum Capacity

- Each foot of elevation difference equals between 9 & 10 thousand acres
- Difference between 1450 (current elevation) and lowest outlet capabilities (1446 East, 1445 West) about **35,000 acres**

## Economic Benefit of Increased Acres of Production

- For every foot of rise or fall the economic impacts are:
  - Direct impact of nearly \$3 million per year
  - Secondary impacts would add another \$7.9 million
- Total impact per foot, per year - \$10.8 million

## Need more reasons to operate the Outlets?



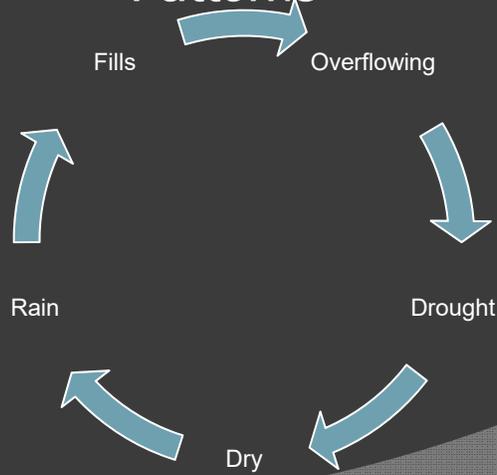
## Short & Long Term Needs?

- ◉ Continued, consistent operation of outlets when conditions allow
  - For the most part this is happening, operating the pumps is significant
- ◉ Road recovery plan for reclaimed roads
  - Counties & townships will need assistance in reclaiming roads that come out of the water (\$\$\$)
- ◉ Committee to study optimal lake elevation
  - A lot of different variables to consider
- ◉ Develop a lake stabilization plan
  - Is of the greatest importance, knowing an elevation range the development would be colossal

## Short & Long Term Needs Continued

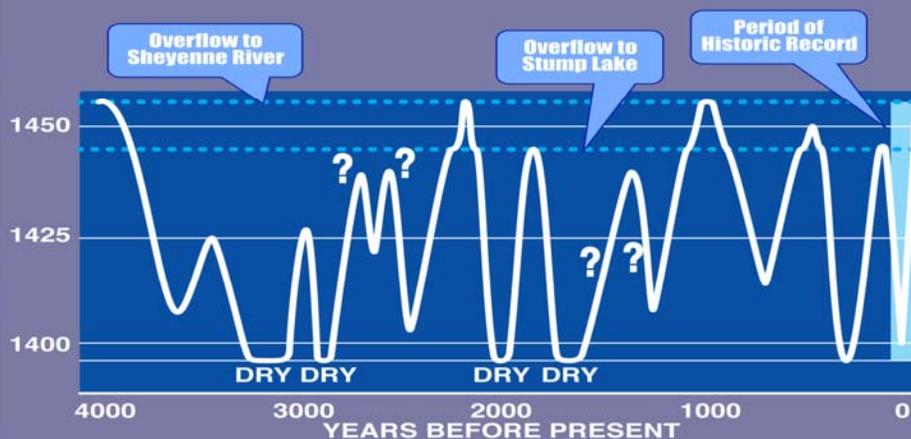
- ◉ Landowner compensation for inundated land
  - A lot of issues to be considered
    - ◉ At what lake elevation should land be compensated
    - ◉ Would it be mandatory or voluntary
    - ◉ What would the land be used for if the water receded
    - ◉ Current ownership of the land

# The Level of Devils Lake by Nature is Circuitous Based on Weather Patterns



How low or high can we go?  
The extremes of Mother Nature

## 4000 Years of Fluctuations





**THE END!**  
**Contact information: Email Jeff Frith  
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phone 701-662-7076**