

TARRANT REGIONAL WATER DISTRICT



WATER SUPPLY FLOOD CONTROL WATER QUALITY RECREATION



TARRANT REGIONAL WATER DISTRICT



Flood Operations – West Fork Trinity May and June 2015

Alice Godbey

For National Hydrologic Warning Council October 2015

HISTORY & MISSION



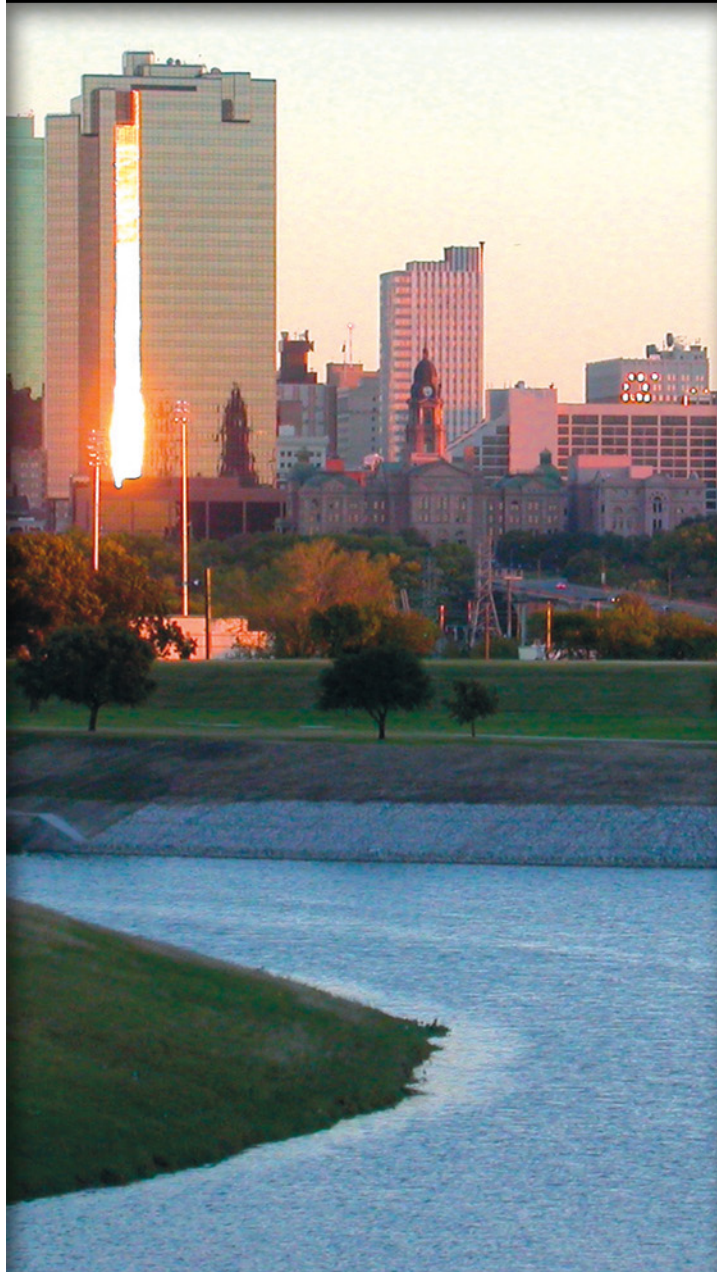
- Created in 1924 as a political subdivision of the State of Texas
- Two primary missions: Water supply and flood control
- District provides only raw, untreated surface water to its customers
- Facilities located in 8 North Central Texas counties

HISTORY & MISSION



- Four primary customers:
 - Arlington
 - Fort Worth
 - Mansfield
 - Trinity River Authority
(Bedford, Colleyville, Euless,
Grapevine, North Richland Hills)
- Water provider to more than 70 cities in 11 counties:
Denton, Ellis, Freestone,
Henderson, Jack, Johnson,
Kaufman, Navarro, Parker,
Tarrant, and Wise

WATER SUPPLIES



- Serve the water needs of 1.8 million people – population expected to double by 2060.
- Four reservoirs:
 - Lake Bridgeport
 - Eagle Mountain Lake
 - Cedar Creek Reservoir
 - Richland-Chambers Reservoir
- More than 80% of our water supplies comes from East Texas reservoirs – Richland-Chambers and Cedar Creek

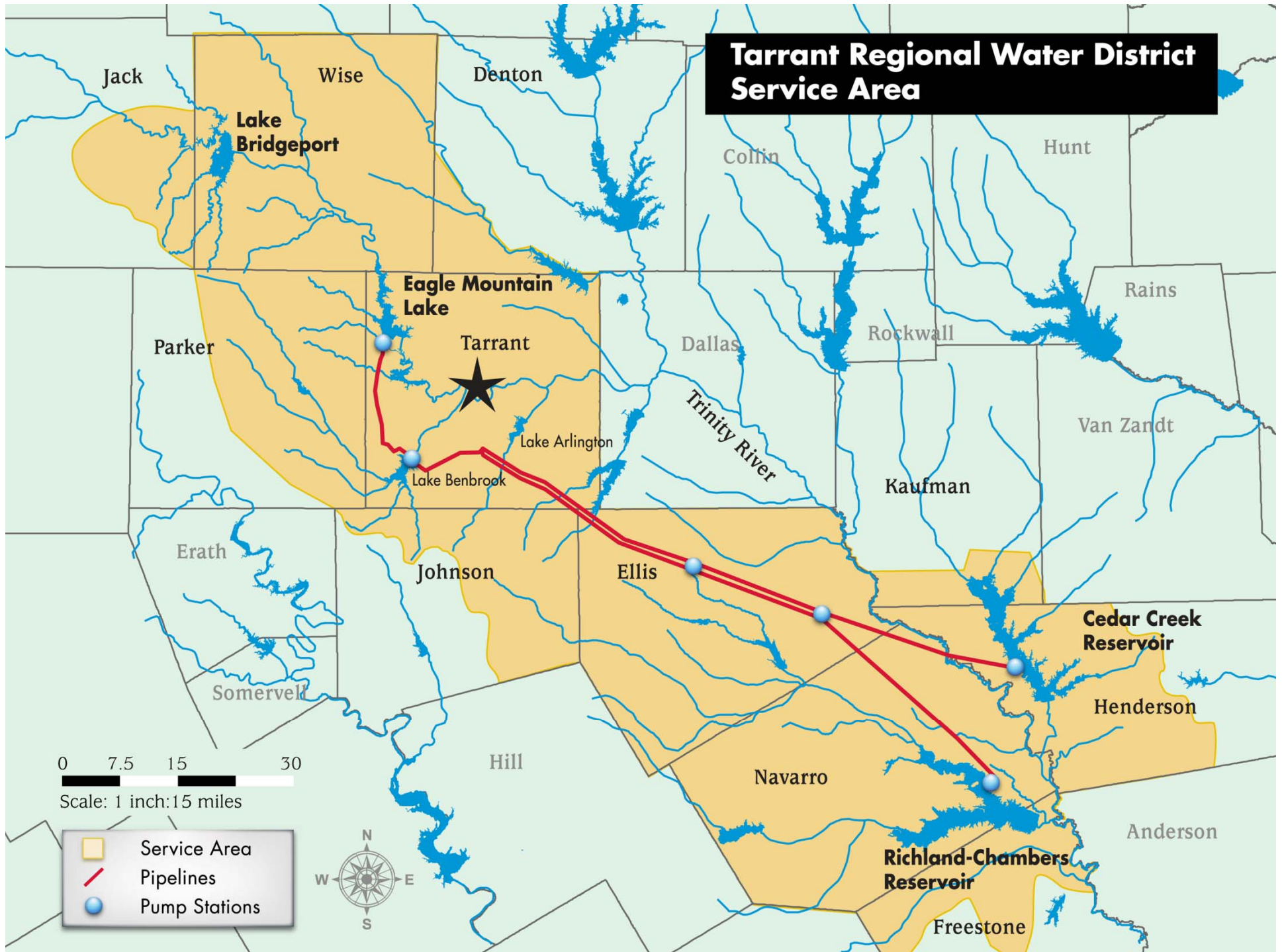
Flood Protection

1922 Flood

\$1.2 BILLION PROPERTY VALUE




Tarrant Regional Water District Service Area



[illegible]

RCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand),

West Fork Reservoirs as flood control

- 
- Bridgeport and Eagle Mountain were designed in the 1920's with flood control capabilities to protect downstream
 - Bridgeport has a flood easement up to 851 feet msl, 15 feet above the 836 feet msl conservation level
 - Bridgeport has about 325,000 acre feet of flood storage
 - Eagle Mountain has a flood easement up to 668 feet msl, 17 feet above the conservation level of 649.1
 - Eagle Mountain has about 156,000 acre feet of flood storage
 - Lake Worth has a flood easement of 6 feet, elevation 600 feet msl, a storage of about 24,000 acre feet

West Fork Flooding

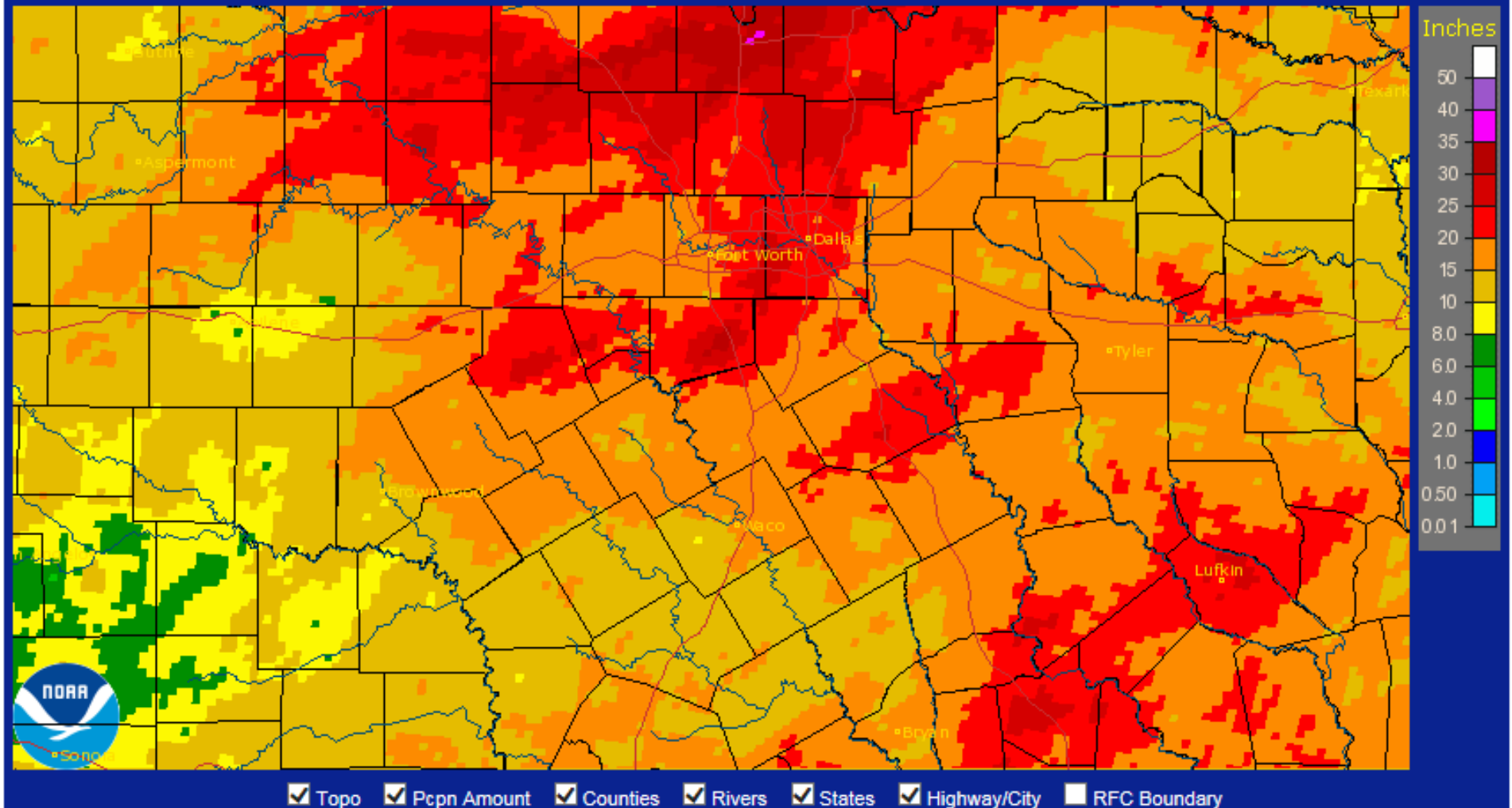
- Flood releases from the reservoirs are made considering:
 - Dam integrity
 - Public safety
 - Property damage
- The discharge works are designed to limit releases to protect the Fort Worth Floodway
- TRWD's flood easements did not give us the right to control building – there are hundreds of homes within the flood pool boundaries

The 2015 flooding

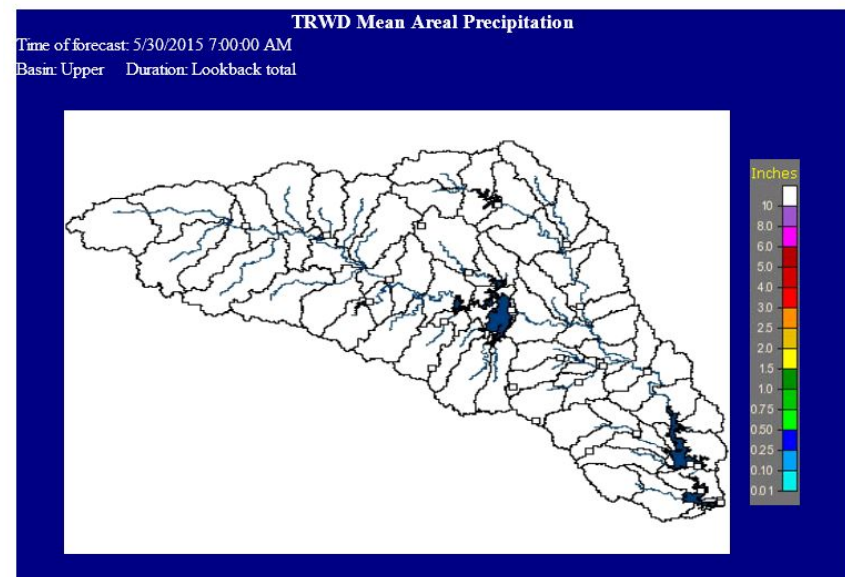
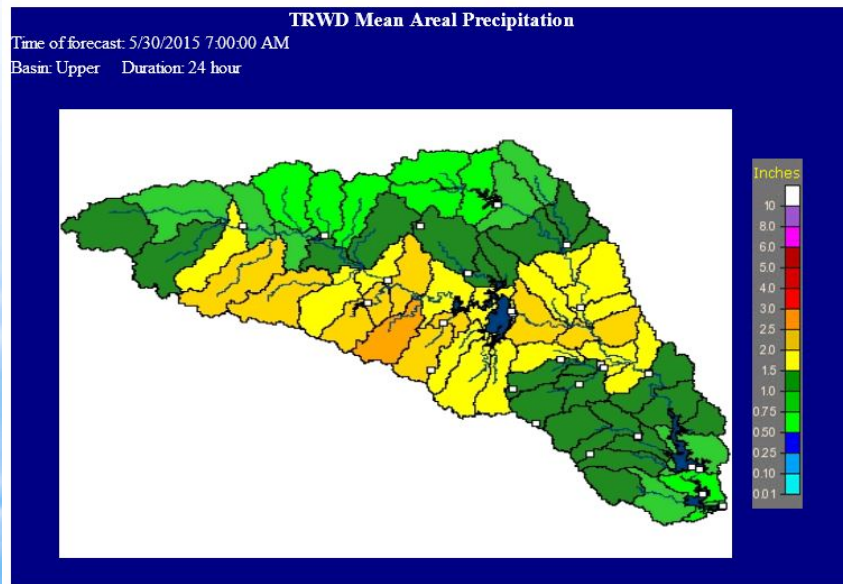
- Two distinct events
 - May rains
 - Tropical Storm Bill
- May was the wettest on record, recording 16.96 inches of rainfall
- This broke the record of 1982 by 3.3 inches
- Tropical storm Bill recorded 5 to 9 inches of rain in Wise and Jack Counties

Rainfall- March 15-May 14

Fort Worth, TX (FWD): Yesterday's 60-Day Observed Precipitation
Valid at 6/14/2015 1200 UTC - Created 6/15/15 19:50 UTC



Rainfall- May 7-May 30



Max Rain for Period = 19.30

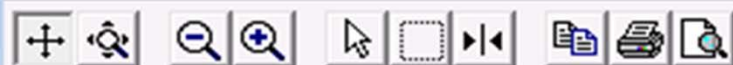
Min Rain for Period = 11.49

Approximate average = 15.8

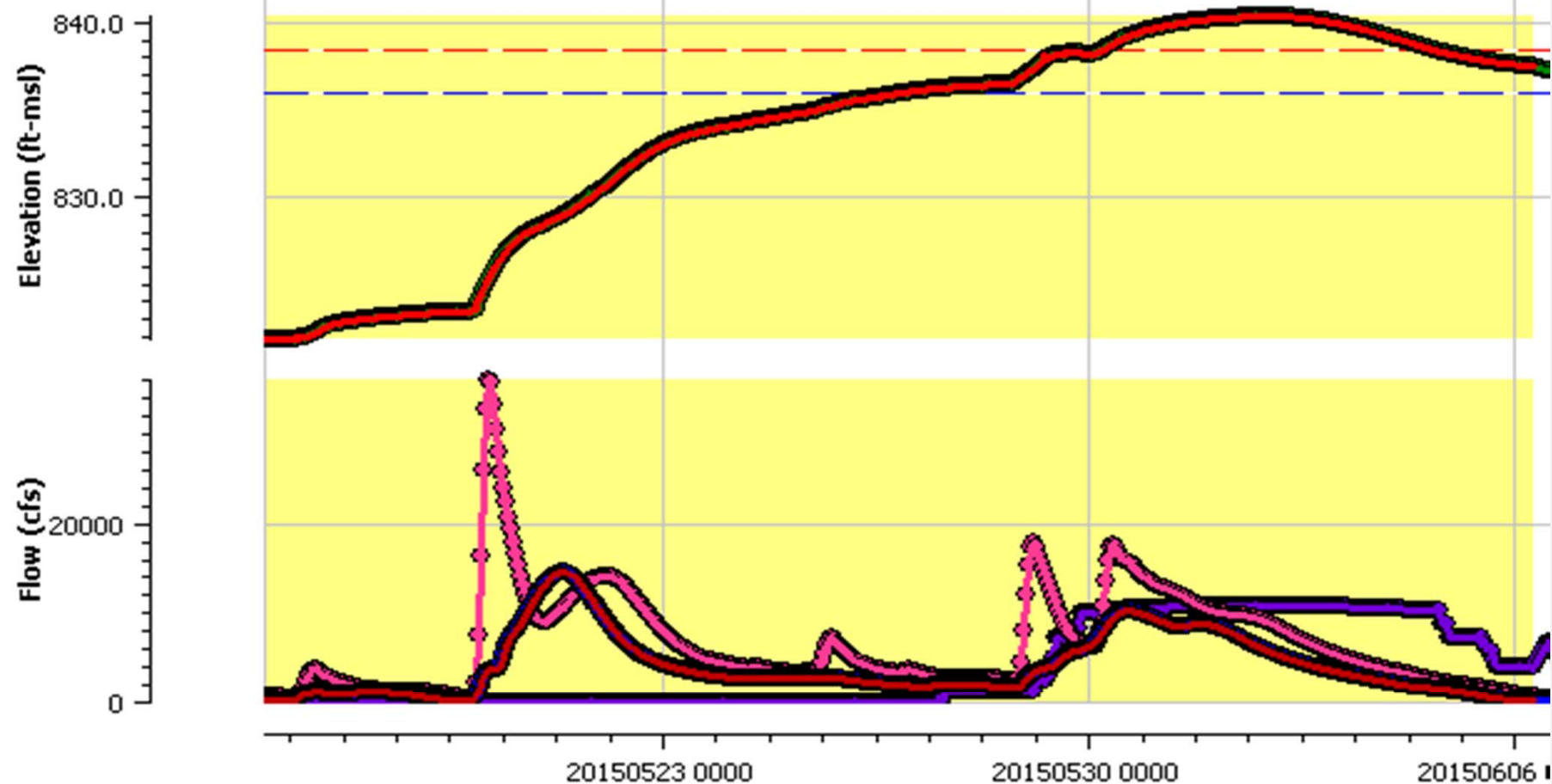
Normal May Rainfall = 5.25

OPS-Bridgeport Network

Plot



OPS-Bridgeport Network



- | | |
|---|---|
| — Lake Bridgeport Elev-Obs | —●— Jacksboro Flow-QPF |
| — Lake Bridgeport Elev | — Lake Bridgeport Inflow |
| —●— Lake Bridgeport Elev-QPF | —●— Lake Bridgeport Inflow-C |
| — Jacksboro Flow-Obs | — Lake Bridgeport Release |
| — Jacksboro Flow | —●— Lake Bridgeport Release-QPF |

Bridgeport Before & After

May 11, 2015



June 1, 2015

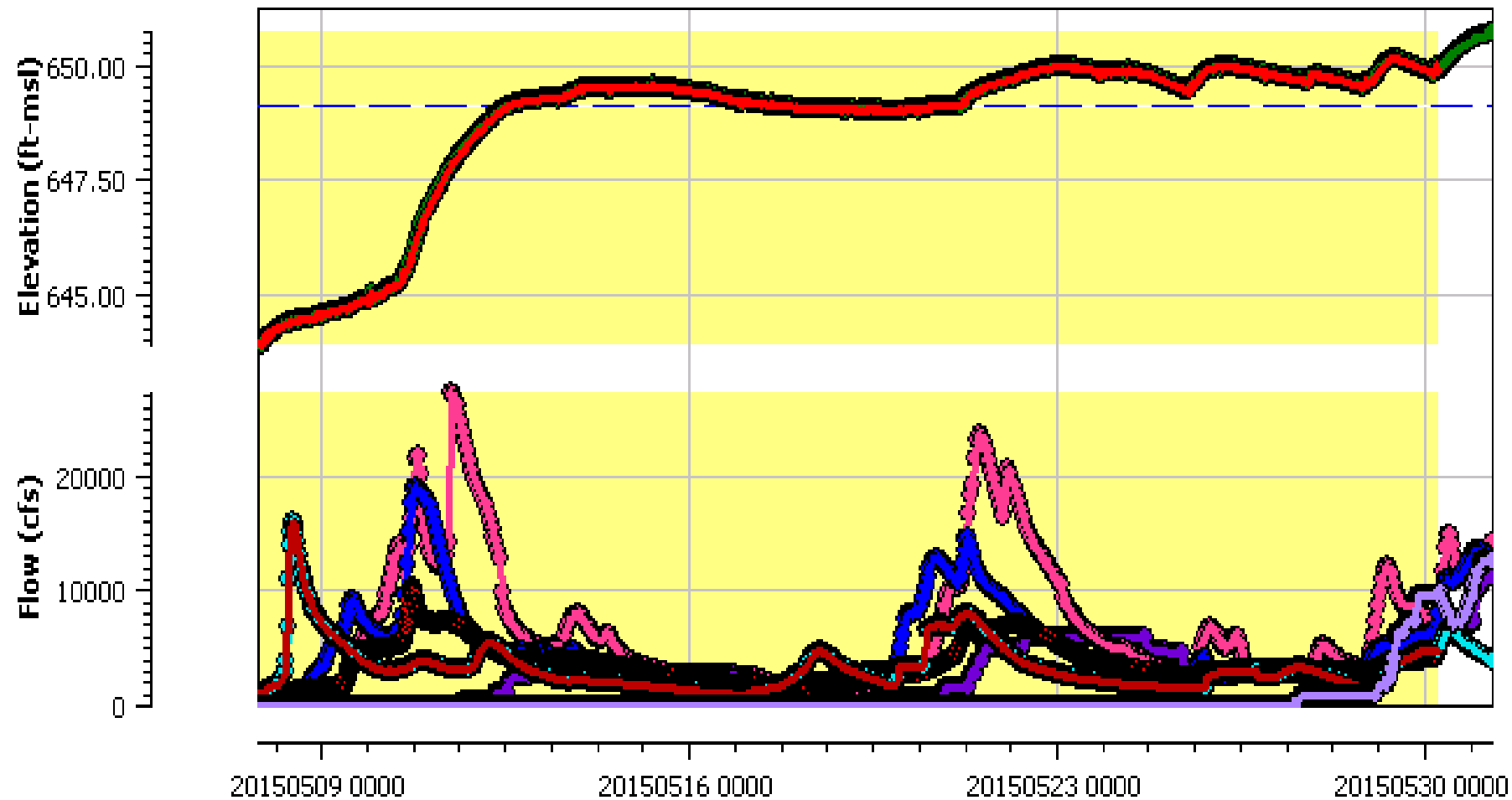
The May flood (through 6/13) - Bridgeport

- Bridgeport Conservation Storage = 366,236 acre feet
- **405,000 acre feet** of flow into the reservoir, about 110% of its conservation volume
- Stored 223,000 acre feet to reach conservation
- Maximum inflow was 38,500 cfs and outflow 10,900 cfs.
- Rose **4.4** feet **above** conservation, after starting **24** feet **below** conservation
- One home was flooded
- Several businesses were flooded downstream and 5 roads closed (pending new information)

Plot



OPS-Eagle Mountain Network

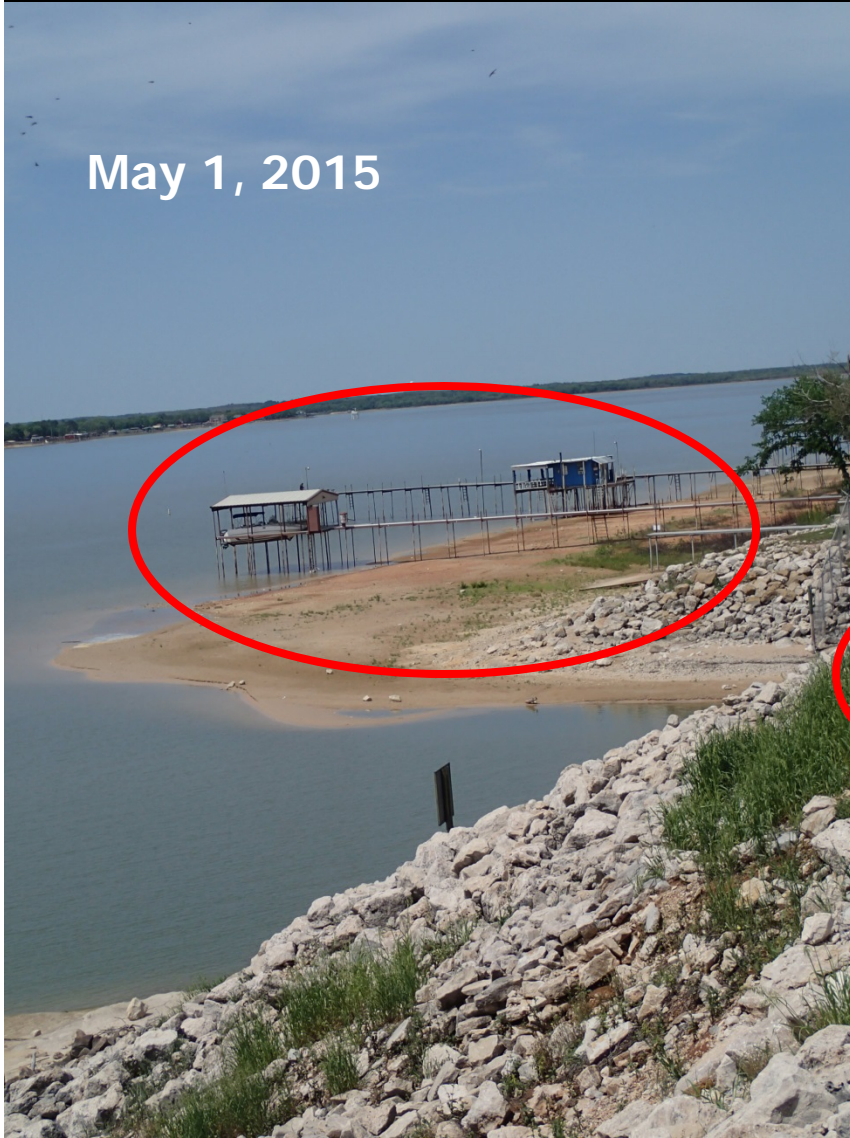


— Eagle Mtn Lake Elev-Obs

—● Boyd Flow-Obs

Eagle Mountain Before & After

May 1, 2015



June 1, 2015

The May Flood – Eagle Mountain

- Conservation Storage = 179,880 acre feet
- **393,000 acre feet** flowed into Eagle Mountain, 124% of the conservation volume
- Stored 51,300 acre feet to reach conservation
- Rose **2.4** feet **above** conservation, started **5** feet **below**
- One home was flooded

The May Flood – Lake Worth

- Conservation Storage = 33,495 acre feet
- **342,000 acre feet** inflow and stored 11,500 acre feet
- Rose **2.9** feet **above** conservation

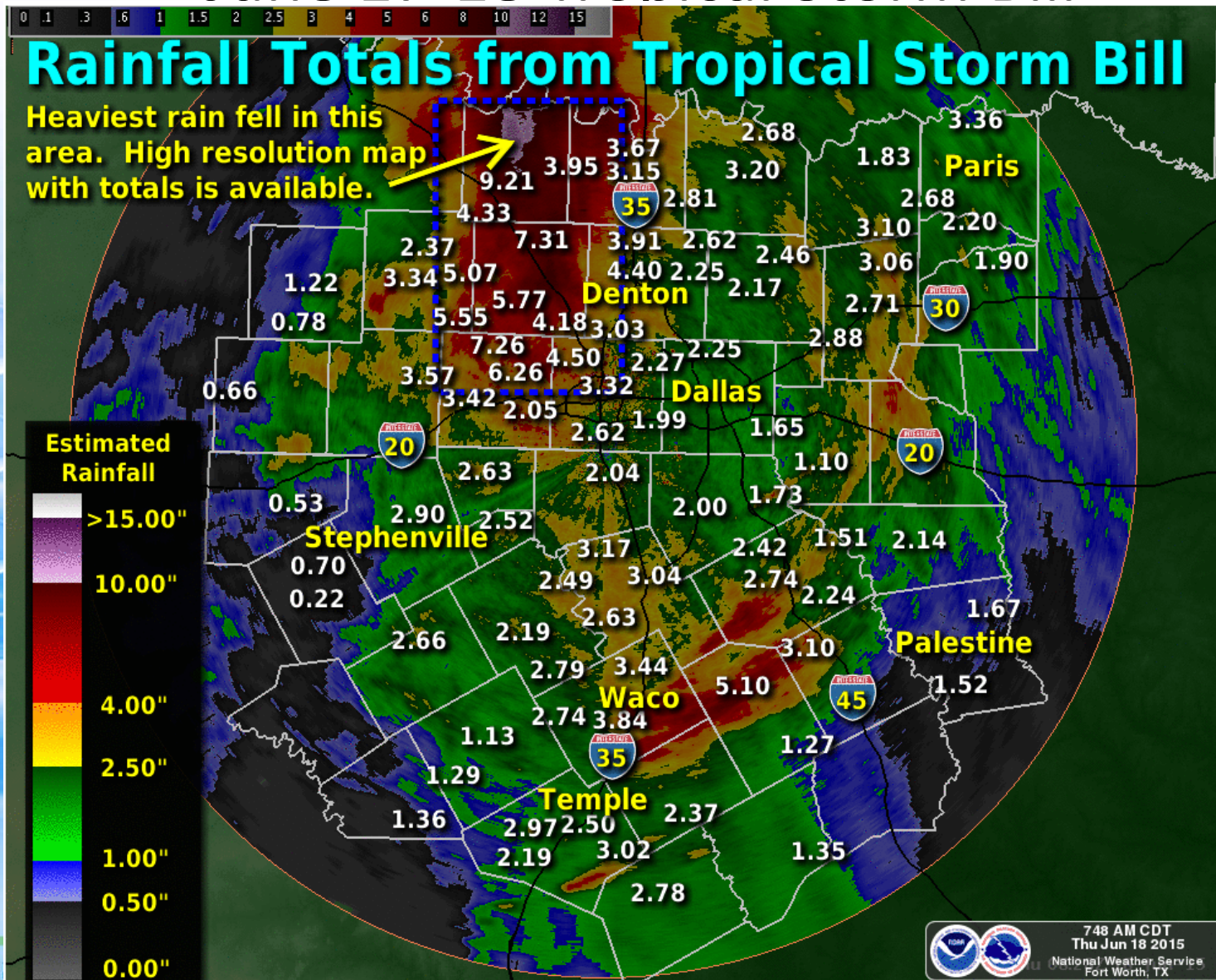
Flood Frequency – May storm

- Flows above Bridgeport, Trinity at Jacksboro, peaked at 14,600 cfs, a flow that would happen once about every 8 years
- Flow above Eagle Mountain on Big Sandy, peaked at 19,800 cfs, a frequency of once in about 20 years
- Flow above Eagle Mountain, Trinity River at Boyd, peaked at 11,200 cfs, a frequency of one in 6 years
- To fill from 64% to 100% in May had a chance of less than 1 in 100 years.
- The peak flows from the flood were not high, but the total volume of the storm was rare

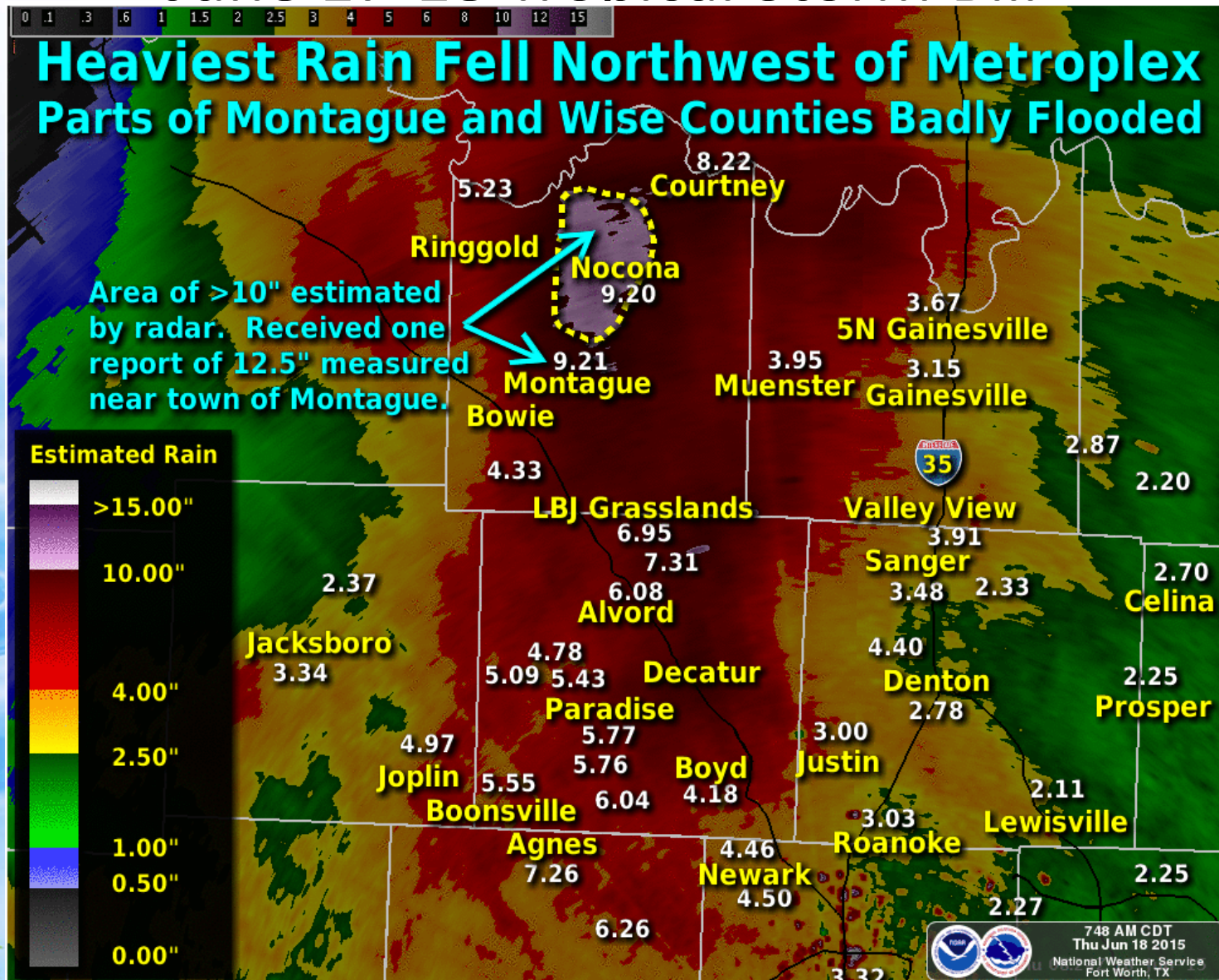
June 17-18 Tropical Storm Bill

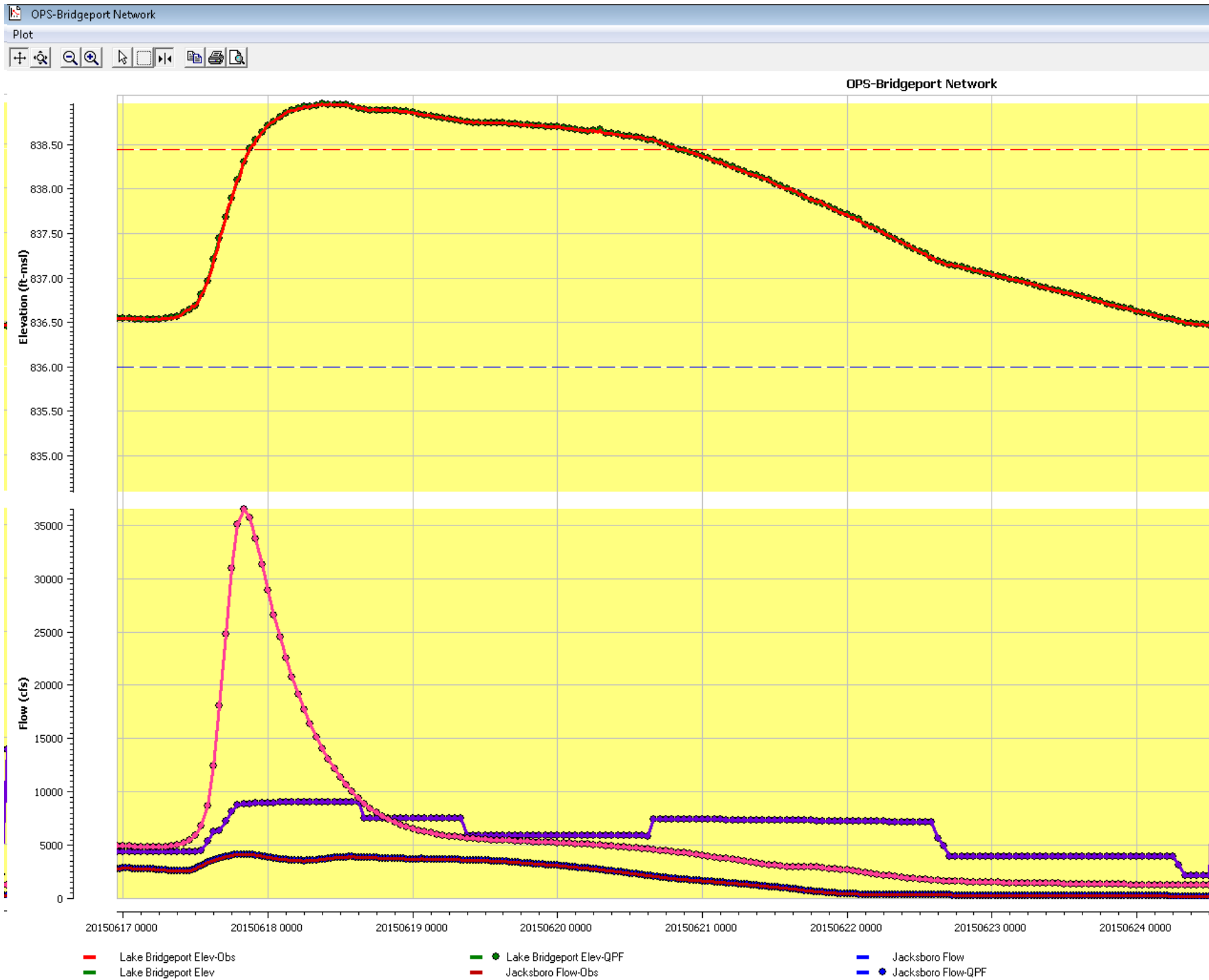
Rainfall Totals from Tropical Storm Bill

Heaviest rain fell in this area. High resolution map with totals is available.



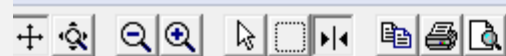
June 17-18 Tropical Storm Bill



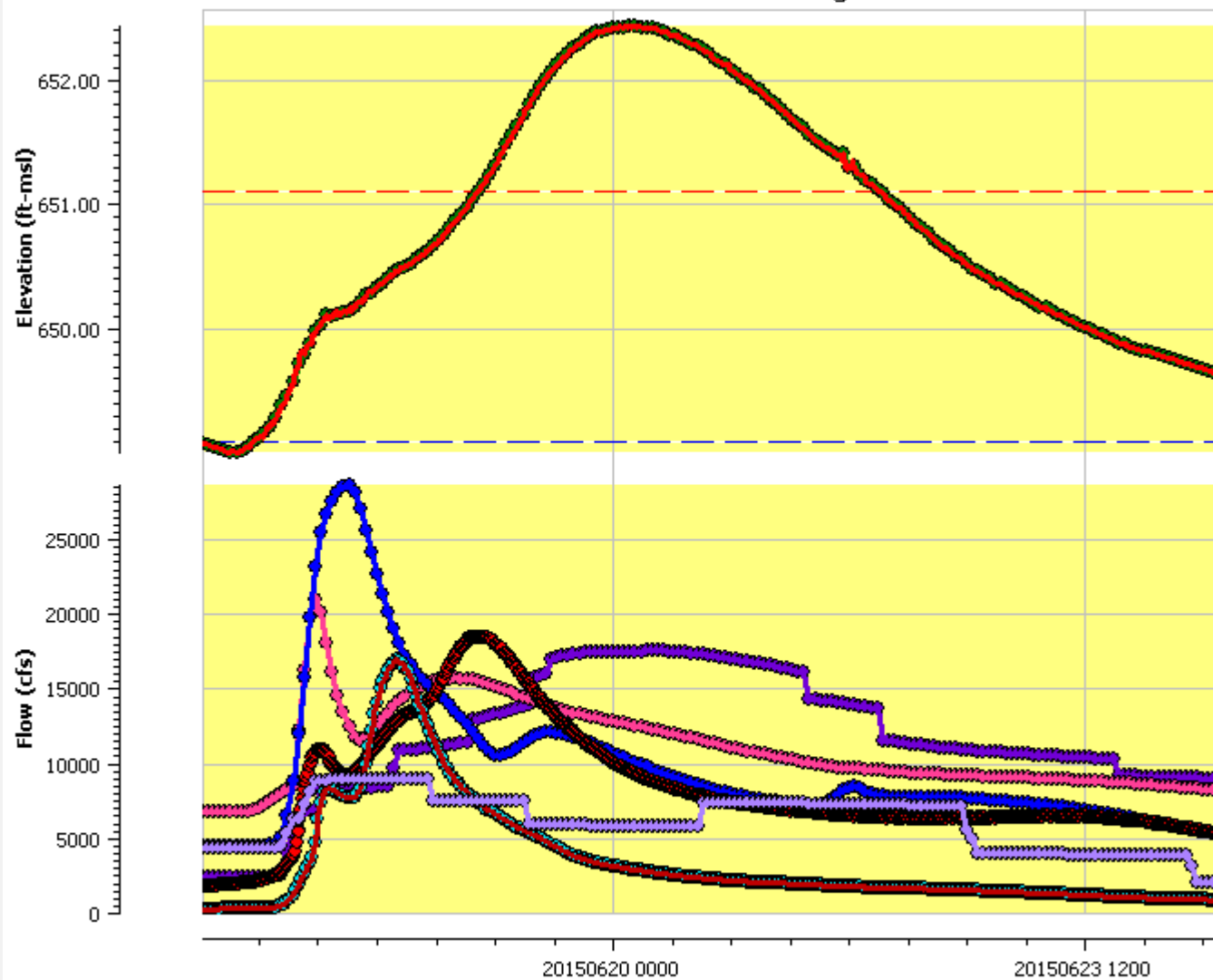


OPS-Eagle Mountain Network

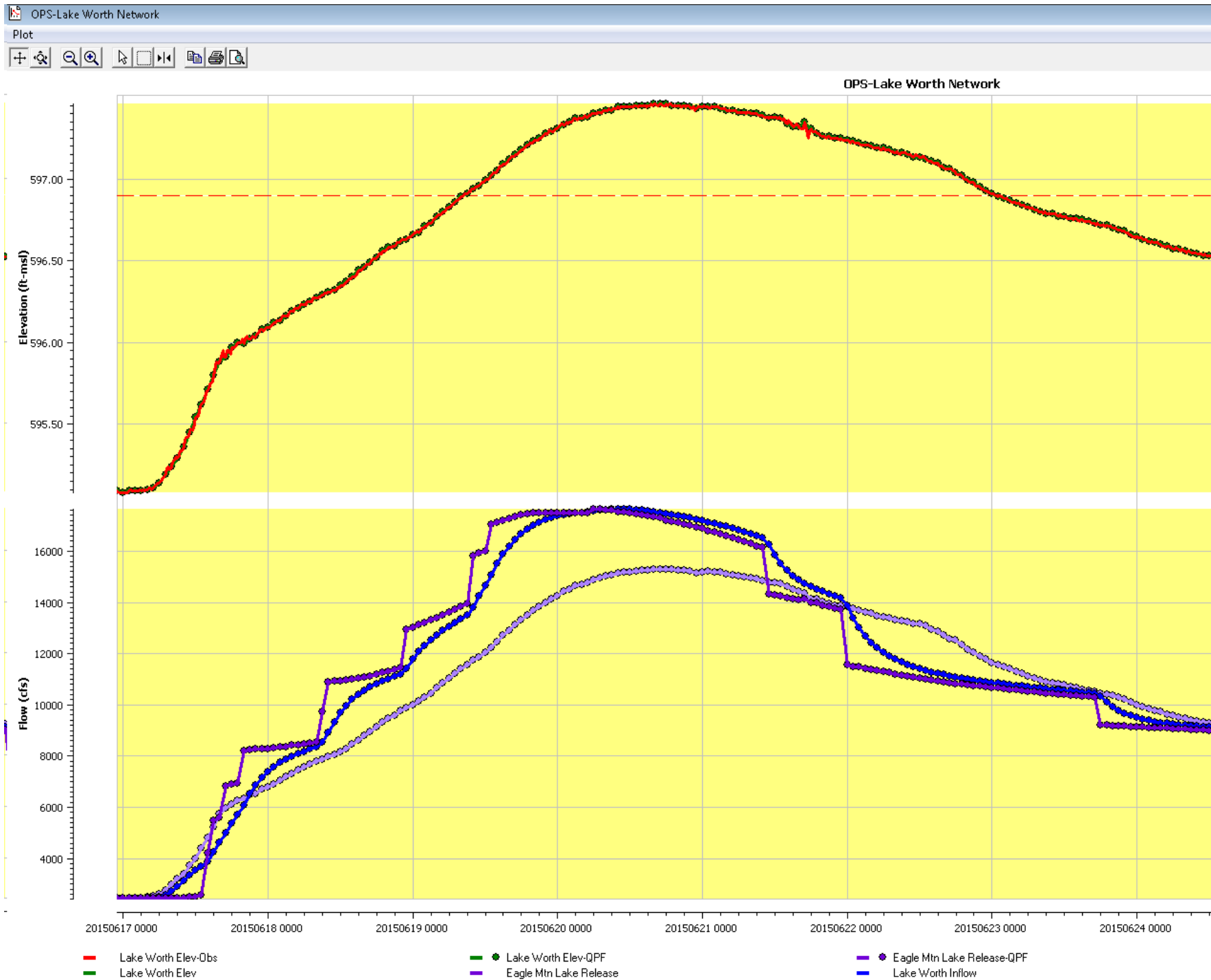
Plot



OPS-Eagle Mountain Network



- | | | |
|---|---|--|
| — Eagle Mtn Lake Elev-Obs | — Lake Bridgeport Release-QPF | ● Boyd Flow-Obs |
| — Eagle Mtn Lake Elev | — Big Sandy Flow-Obs | — Boyd Flow |
| ● Eagle Mtn Lake Elev-QPF | — Big Sandy Flow | ● Boyd Flow-QPF |
| — Lake Bridgeport Release | ● Big Sandy Flow-QPF | — Eagle Mtn Inflow |

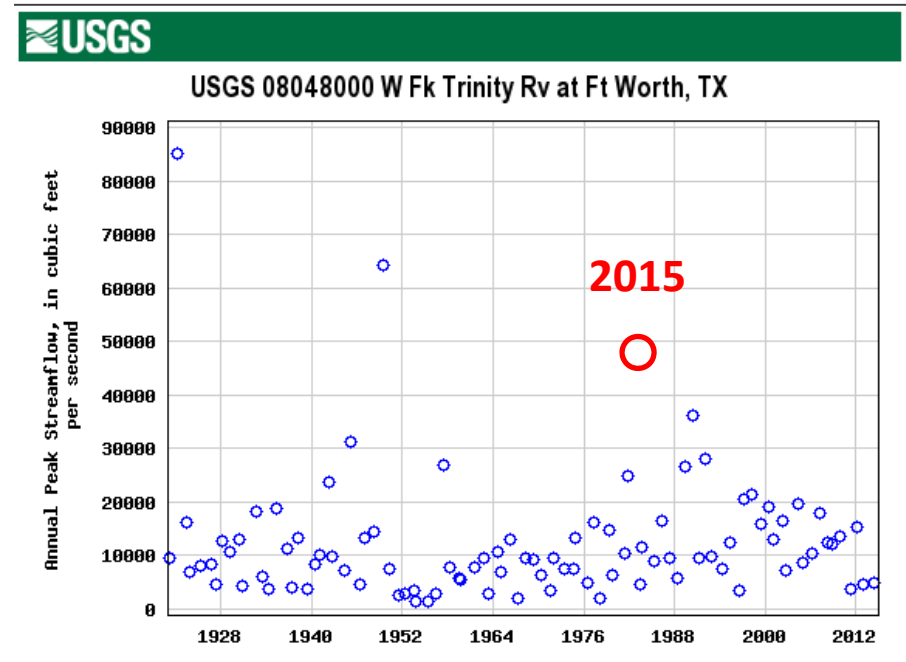
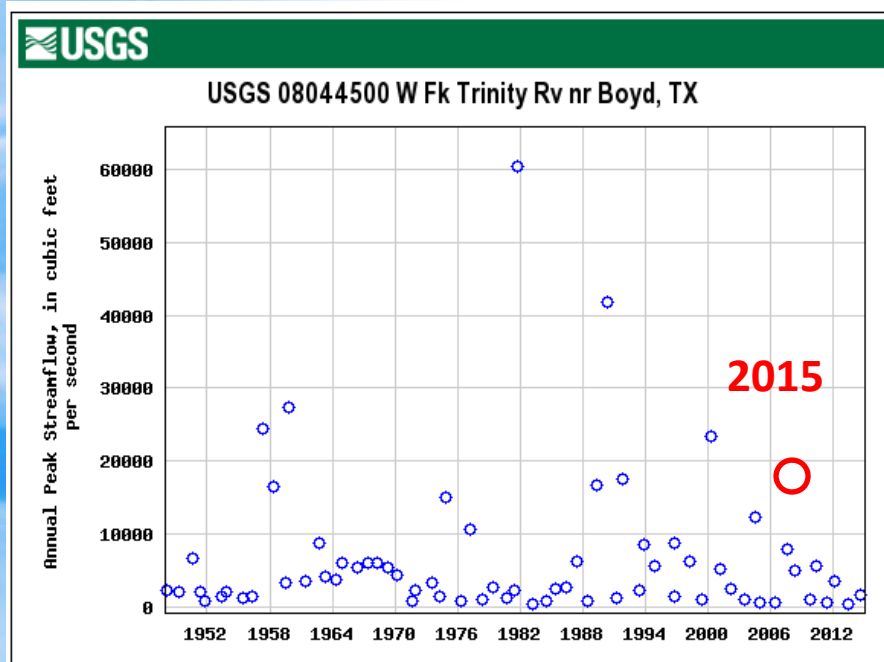


TS Bill Flood

- **Bridgeport** received 100,200 acre feet of inflow. Peak inflow was **41,360 cfs** and release 8,806 cfs
- Bridgeport rose 3 feet, and one home was flooded
- **Eagle Mountain** received 191,500 acre feet of inflow. Peak inflow was **24,800 cfs** and release 15,900 cfs
- Eagle Mountain rose 3.4 feet and 5 homes were flooded
- **Lake Worth** received 204,500 acre feet of inflow. Peak inflow was **23,600 cfs** and release 15,300 cfs
- Lake Worth rose 3.5 feet and two homes were flooded

The floods

- We have been in a very dry period and the floods seemed intense
- These floods were not unusually severe
- Historic events show we need to be prepared for much larger events



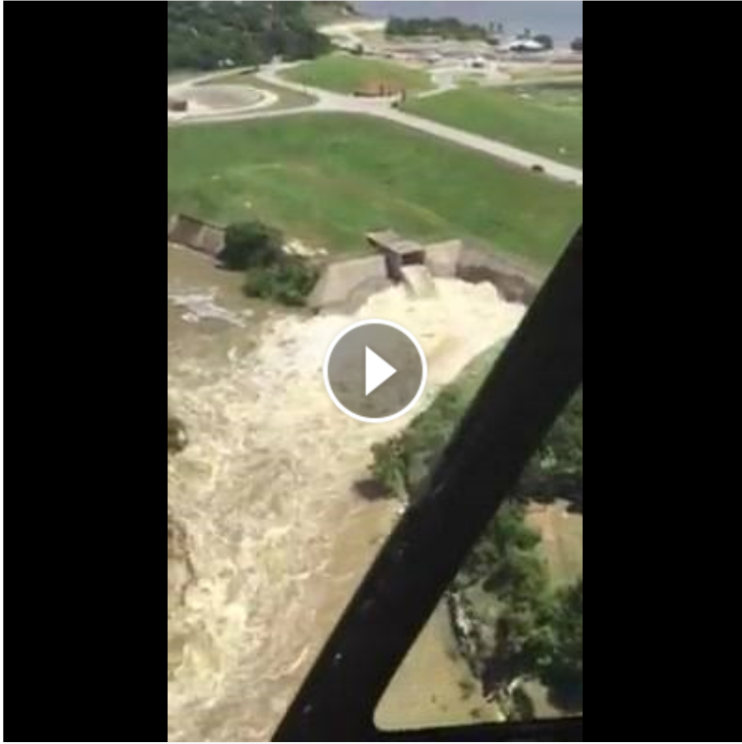
Media

ref=ts

TRWD - Tarrant Regional Wa...

Water District June 18

Discharge from the Eagle Mountain Spillway June 18, 2015



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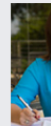
2012

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Update: Wednesday, June 17, 2015 at 6:00 a.m.

Wednesday, June 17, 2015

As of Wednesday, June 17, 2015 at 6:00 am - the following estimates are based on on-ground flow conditions barring further rainfall:

Lake Bridgeport

- Current elevation is 836.53 ft-msl (normal conservation pool = 836.00 ft-msl).
- Current discharge is 4393 cfs.
- The first habitable structure is at 838.4 ft-msl.
- Spillway gates open to 16 gate feet, the valve is closed.
- Lake Bridgeport is expected to be approximately 836.52 ft-msl by 12:00 p.m. this afternoon with a projected discharge of 4382 cfs.

Eagle Mountain Lake

- Current elevation is 649.02 ft-msl (normal conservation pool = 649.10 ft-msl).
- Current discharge is 2441 cfs.
- The first habitable structure is at 651.1 ft-msl.
- Spillway gates open to 10 gate feet, along with 2 valves at 100%.
- Eagle Mountain Lake is expected to be approximately 649.00 ft-msl by 12:00 p.m. this afternoon with a projected discharge of 2438.

Lake Worth

- Current elevation is 595.14 ft-msl (normal conservation pool = 594.00 ft-msl).
- Current discharge is 2617 cfs.

m/news/local/Flood-Threat-Dropping-on-Tarrant-County-Lakes-306048: Flood Threat Dropping on Ta...

Flood Threat Dropping on Tarrant County Lakes

Water District officials believe the water won't get much higher

By Chris Van Horne

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Residents and Tarrant Regional Water District officials have been carefully watching two Tarrant County lakes all week. (Published Wednesday, June 3, 2015)

Updated at 5:42 PM CDT on Wednesday, Jun 3, 2015

Residents and Tarrant Regional Water District officials have been carefully watching two Tarrant County lakes all week.



TRENDING STORIES

TX Official Won't Apologize for Muslim-Bombing Post

VIDEO Woman Robbed at Wal-Mart Warns Others

Dallas Cabaret Security Guard Detains Gunman

Balance



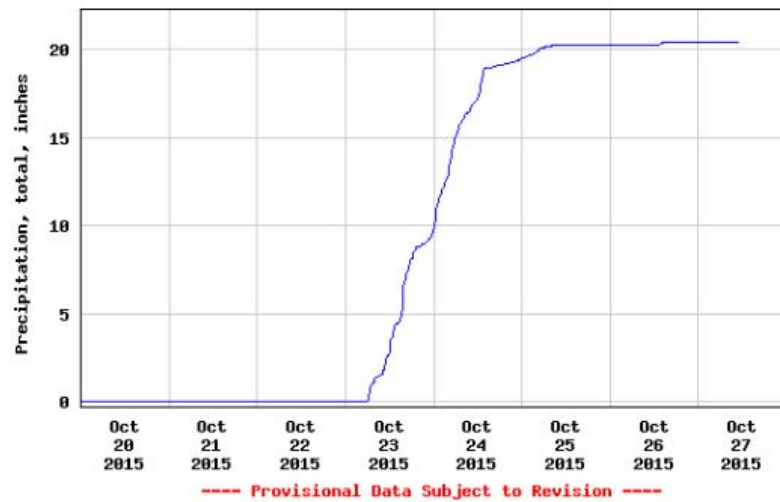
It Continues

October 2015 so far

Precipitation, total, inches

Most recent instantaneous value: 0.00 10-27-2015 10:45 CDT

USGS 08064550 Richland-Chambers Res nr Kerens, TX



USGS 08064550 Richland-Chambers Res nr Kerens, TX

