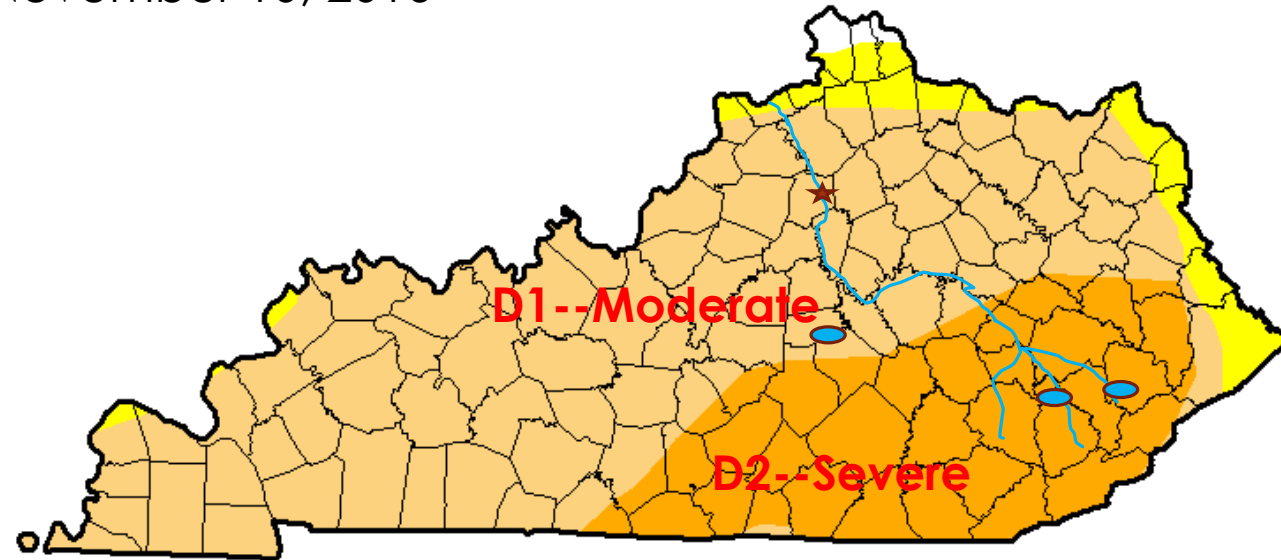


Kentucky Drought Status and Impact on FPB November 15, 2016



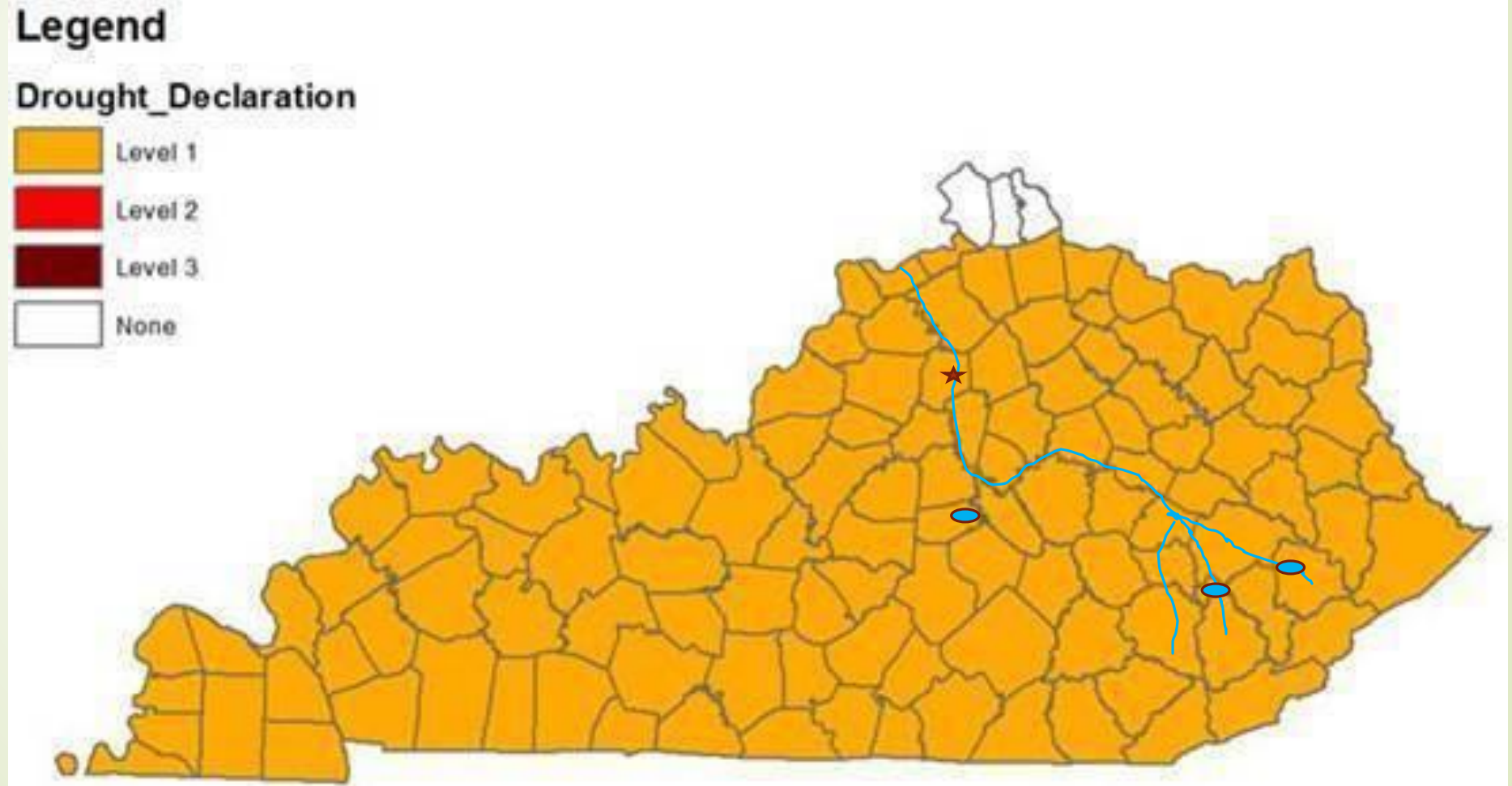
US Drought Monitor
November 10, 2016



Level 1 Drought

Declared November 10, 2016 by Energy/Environment & State Climatologist Office

- When 3 of 5 indicators meet trigger thresholds (rainfall, stream flows, DM, soil moisture, reservoir storage)
- Main impacts to-date: Agriculture, wild fires, stream flows



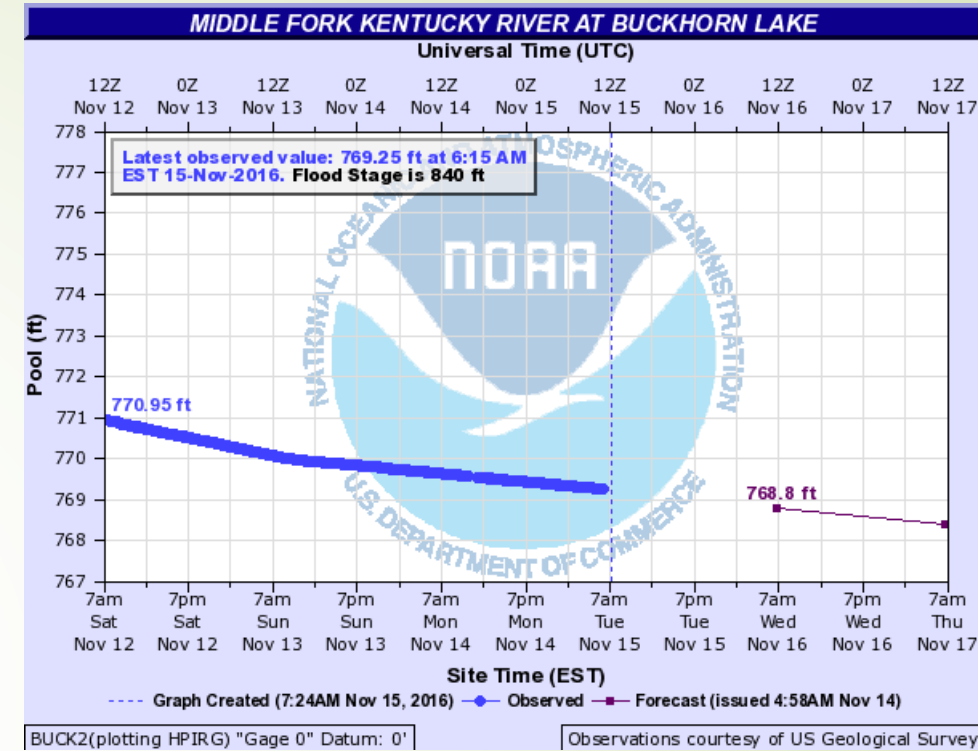
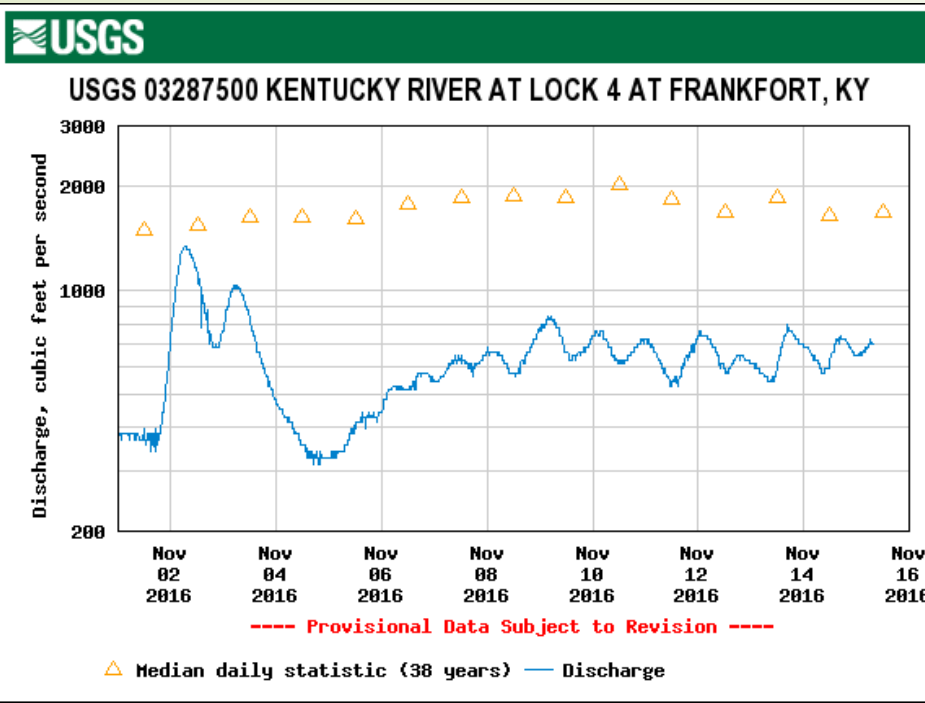
KY Drought Mitigation & Response Plan

- ▶ Developed by the KY Division of Water and the Drought Mitigation and Response Advisory Committee
 - ▶ Effective December 2008
- ▶ Coordinated effort by all applicable agencies and organizations lead by the Drought Mitigation Assessment Team
- ▶ 4 Drought Assessment Sub-Teams
 - ▶ Climate and Water Resources
 - ▶ Agriculture and Natural Resources
 - ▶ Drinking Water and Public Health
 - ▶ Drought and Water Emergency
- ▶ Drought Indicators: Precipitation, stream flows, Drought Monitor, reservoir storage, soil moisture; others include NOAA climatic outlook, Palmer Index, Climate Prediction Center
- ▶ 4 Drought Action Levels: Advisory, Levels I thru III
- ▶ Targeted Drought Declarations (Water Shortage Watch/Warning)
- ▶ Emergency Declarations (Local, state, Ag)

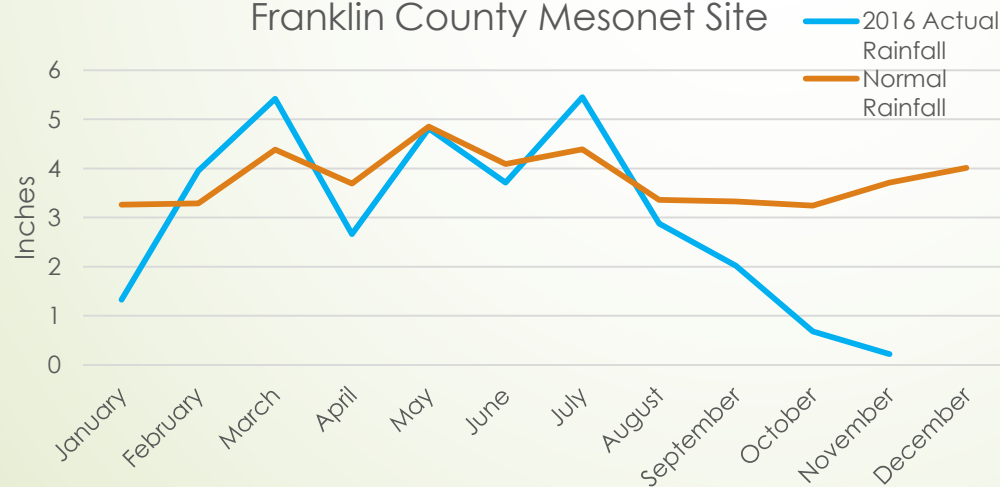
FPB Water Shortage Plan

- Prepared in collaboration with KY Division of Water
- Approved by FPB Board July 2012
- 5-Phased Program based on Triggers
 - Awareness Stage: KDOW announces **Water Shortage Watch** and flow at Lock #4 reaches 225 cfs (145 MGD) for 4 consecutive days—Voluntary conservation (Water Shortage Watch issued by EEC when water supply data indicates a potential for water shortages to develop—targeted drought declarations)
 - Advisory Stage: Flow at Lock #4 reaches 145 cfs (94 MGD) for 4 consecutive days and in collaboration with other indices/agencies—Voluntary conservation
 - Alert Stage: Flow at Lock #4 reaches 115 cfs (74 MGD) for 4 consecutive days and in collaboration with other indices/agencies—Voluntary conservation except non-essential use is restricted
 - Emergency Stage: Flow at Lock #4 reaches 55 cfs (35 MGD) for 4 consecutive days and in collaboration with other indices/agencies—Voluntary conservation for essential use, restricted for socially/economically important, banned for non-essential
 - Ration Stage: Flow to be determined—all uses restricted





Actual versus Normal Rainfall--2016
Franklin County Mesonet Site



Kentucky Drought Viewer: <http://watermaps.ky.gov/drought>



The screenshot shows the Kentucky Drought Viewer web application. The browser address bar displays the URL: <http://kygis.maps.arcgis.com/apps/webappviewer/index.html?id=05fa682131374b59b50>. The application title is "Kentucky Drought Viewer" with the subtitle "with Web AppBuilder for ArcGIS".

On the left side, there is a search bar with "World" entered and an "About" panel. The "About" panel contains the following text:

About

Drought Action Levels are determined using several triggers along with reports of drought impacts. Each level will increase the amount of involvement by state agencies as dictated by the Kentucky Drought Mitigation and Response Plan

Level 1 Drought: Signifies that the state has officially designated a prolonged dry period as a drought.

Level 2 Drought: Indicates that drought impacts, some severe, are being observed including:

Level 3 Drought: During this stage of drought it is expected that drought impacts will be widespread and severe and develop into emergencies if drought conditions are not abated.

Water Shortage Watch: Indicates a potential for water shortages to develop. The watch is intended to encourage increased awareness by water supply managers in an area and help local governments communicate the severity of a drought situation to affected customers.

Water Shortage Warning: Indicates that a critical water shortage is imminent. A warning may also be issued for an area in which one or more systems have entered the emergency phase of a local water shortage response plan.

The main map area shows a map of Kentucky with various counties labeled, including Henderson, Owensboro, Louisville, Frankfort, Lexington, Somerset, Hazard, Paducah, Hopkinsville, Bowling Green, and Morehead. The map is overlaid with a grid of orange diagonal lines, indicating a drought declaration. A legend on the right side of the map provides the following information:

Legend

Drought_Viewer

Water Shortage Treatment Plants

- Watch (Yellow circle)
- Warning (Purple circle)

Drought Declaration

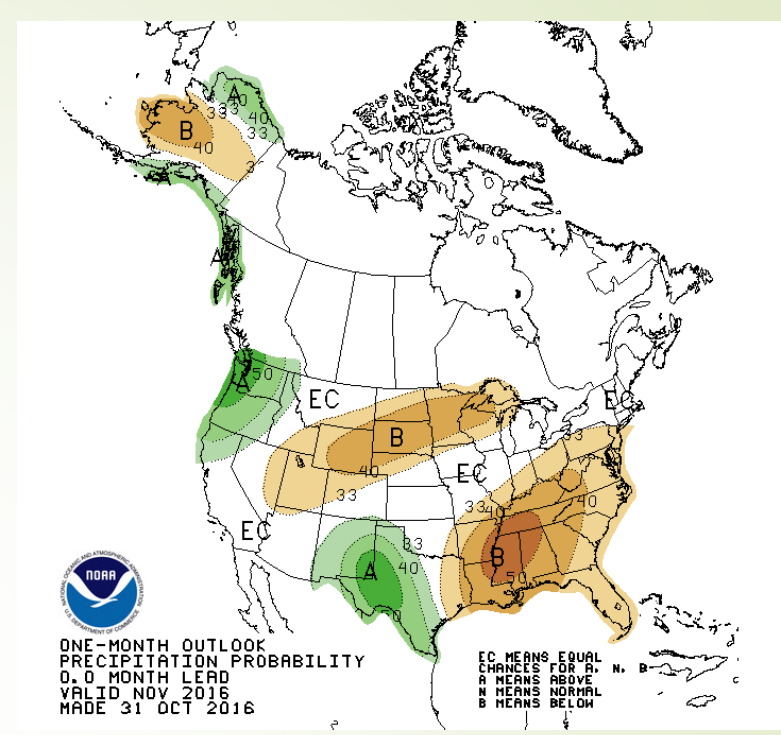
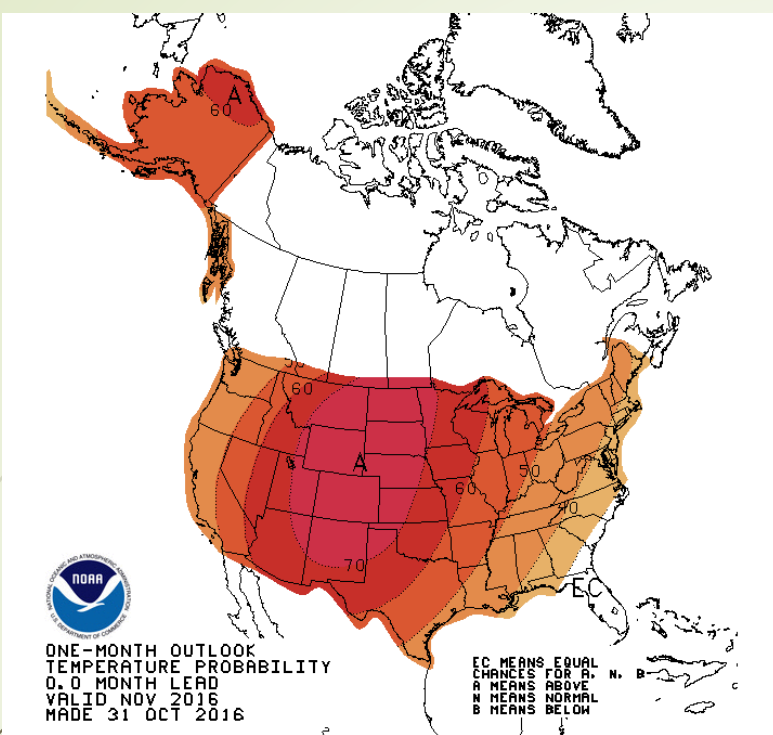
- None
- Level 1 (Orange diagonal lines)
- Level 2 (Red diagonal lines)
- Level 3 (Dark red diagonal lines)

Watch Shortage Coverage

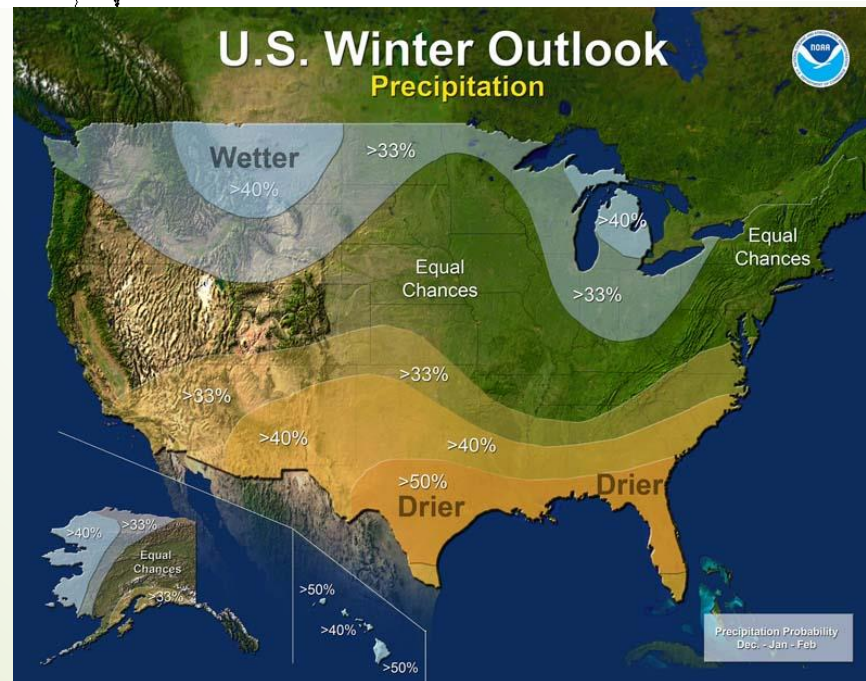
- Watch (Yellow square)
- Warning (Purple square)

At the bottom of the map, there is a scale bar showing 30 miles and coordinates: 38.031 -84.171 Degrees. The bottom right corner of the map area says "Kentucky Division of Geograph".

The Windows taskbar at the bottom shows the following icons: Start button, Internet Explorer, File Explorer, Microsoft Excel, Microsoft Outlook, Microsoft Word, Microsoft PowerPoint, Skype, and a red circular icon. The system tray on the right shows the time as 2:28 PM and the date as 11/11/2016.



Predicting the Future??



FPB Status (as of 11/15/2016)



- ▶ Flow in the KY River is **currently** adequate for system demand
 - ▶ Flow of 600 cfs = 388 MGD; average raw water withdrawal is 8-10 MGD
- ▶ Stream flows, watershed reservoir levels/discharge rates, precipitation, weather conditions, Georgetown usage tracked daily by WTP staff
 - ▶ National Weather Service, KY Mesonet, Louisville COE, USGS Streamflow
- ▶ KY River raw water withdrawals and distributed water amounts tracked daily
- ▶ WTP staff stay in daily contact with FPB's largest wholesale customer (Georgetown)
- ▶ WTP staff staying in contact with applicable DOW staff
- ▶ Distribution staff continue to respond quickly to leaks and breaks, flush primarily for water quality concerns and do a great job of communicating with customers if they have leaks on their service lines or in their homes when working service orders
- ▶ Public communication and information documents reviewed

Current Drought—Impacts on FPB Water Department



- Selling more water, primarily to wholesale customers
 - November 2016 trending 2 MGD higher than 2015
- Low turbidity/high organic raw water hard to treat—chemical costs up
- Daily overtime at WTP to meet system and wholesale demand
- Conservation is a challenge in the fall/winter
 - Less to no “non-essential” usage



Question or Comment:

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