

STATE OF OHIO EMERGENCY OPERATIONS PLAN



DROUGHT INCIDENT RESPONSE ANNEX

PRIMARY AGENCY

Ohio Emergency Management Annex

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DROUGHT INCIDENT RESPONSE ANNEX

- PRIMARY AGENCY:** Ohio Emergency Management Agency (Ohio EMA)
- SUPPORT AGENCIES:** Ohio Office of Budget and Management (OBM)
Ohio Department of Natural Resources (ODNR)
Ohio Environmental Protection Agency (OEPA)
Ohio Department of Health (ODH)
Ohio Department of Agriculture (ODA)
Ohio Department of Commerce, Division of State Fire Marshal (SFM)
Public Utilities Commission of Ohio (PUCO)
Ohio State University – Extension Office (OSU-EXT)
State Climate Office of Ohio (SCOO)

FEDERAL SUPPORT AGENCIES:

- U.S. Department of Agriculture – Farm Service Agency (USDA-FSA)
U.S. Army Corps of Engineers (USACE)
National Weather Service (NWS)

I. INTRODUCTION

A. Purpose

1. The Drought Incident Response Annex provides an effective and systematic means for the State of Ohio to assess, track, respond to, and lessen the impacts of drought. This document provides a consistent set of criteria to define the onset and severity of drought specifically for Ohio.

II. SITUATION AND ASSUMPTIONS

A. Situation

1. Drought is defined as a prolonged period of abnormally dry weather, where the lack of sufficient precipitation causes a serious hydrologic imbalance, having economic and/or social consequences which may affect all or a portion of the State of Ohio.

2. Drought severity depends on the degree of moisture deficiency, duration, and size of the affected area.
3. Drought is considered a meteorological phenomenon rather than the result of underdeveloped public water supply systems.
4. Drought is neither a cyclical nor a random weather phenomenon, but rather an episodic event that can have a profound effect upon the State of Ohio.
5. Drought is progressive in nature, and without diligent statewide tracking and communication, its presence may not be recognized until it has reached a severe level.
6. Drought can impact the State with a variety of complex problems, which, if identified and evaluated, can be dealt with in a well-organized manner.
7. The most significant potential drought impacts that could confront the State are in the areas of agriculture, forestry, fish and wildlife, recreation and tourism, public and private water supplies, water quality, and the economy.
8. This plan is based on current legislation and authorities that do not provide for the mandatory allocation of water supplies by the State.
9. The population of Ohio is equally dependent on public ground water systems or private wells and surface water for their water supply.
10. Ohio receives an annual average of 39.45 inches of precipitation (1981-2010 average), which recharges ground water and reservoirs. Extended droughts severely diminish the amount of water in streams, reservoirs and aquifers.
11. The State of Ohio monitors precipitation, groundwater levels, stream flows, snowpack, water quality, and utilizes numerous drought indices to ascertain drought potential.
12. Since 2000, Ohio has experienced three significant periods of drought: 2002-2003, 2007-2008, and 2012. State engagement during these droughts, although adequate, could have benefited from stronger, timely transfer of information between agencies early-on in the development of drought conditions.

B. Assumptions

1. Drought will create unusual management problems due to the uncertainty surrounding its occurrence, duration, magnitude, and severity.

2. Local preparedness, community action, and cooperation are keys to coping with water shortages.
3. Local governments will cooperate fully with water conservation recommendations made by the State of Ohio.

III. CONCEPT OF OPERATIONS

A. Defining Drought

Droughts can be categorized into three different types, and each one is connected to the others: Meteorological, Agricultural, and Hydrological.

1. Meteorological Drought is often the first indicator of drought development. It is typically defined as a period of precipitation deficit that is outside the climatological “normal” range based on a 30-year record of daily precipitation measurements. Therefore, it is highly dependent on local and regional climatology and is alleviated by a return of seasonal storms and precipitation.
2. Agricultural Drought occurs after the development of a meteorological drought. It is a moisture deficiency that is injurious to crops, livestock, or other agricultural commodities. Direct impacts from a meteorological drought may be linked to soil moisture deficits and specific agricultural impacts.
3. Hydrological Drought is evidenced by reductions in stream flow and in lake and reservoir levels, a lowering of the ground-water table, and consequently a decrease in ground-water discharge to streams and lakes. Hydrological drought often lags meteorological and agricultural drought and may be intensified by human activities and decisions.

B. Drought Monitoring

1. The U.S. Drought Monitor
 - a. The U.S. Drought Monitor (USDM) was created in 1999; jointly by the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln, the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Department of Agriculture (USDA).
 - b. USDM authors from the NDMC, NOAA, and USDA are in charge of creating a weekly map of drought conditions, which is officially released on Thursday morning. These authors rely heavily on experts from all states to synthesize the best available data, working with a network of more than 450 local observers (e.g., state climatologists, National Weather

Service staff, Extension) to interpret the information and coordinate assessments of impacts on the ground.

- c. The U.S. Drought Monitor is not a statistical model, though it leverages several numerical inputs including the Palmer Drought Severity Index, Standardized Precipitation Index, soil moisture and other hydrologic data. This product is available at <https://droughtmonitor.unl.edu>.

2. The State Ohio Drought Assessment Group

- a. The State Ohio Drought Assessment Group (ODAG) will be made up of representatives of support agencies to this plan; and as needed, other local, state, and federal agencies that can address aspects of existing drought conditions.
- b. The ODAG will be assembled, as needed, either in person, or virtually through email or webinar, to effectively, and in timely fashion, communicate, receive, and act on hydrologic conditions from all across Ohio during periods in which the state is entering, enduring, or coming out of drought.
- c. The information shared during ODAG discussions will be used to help make decisions regarding the intensity and impacts of drought in Ohio, necessary drought responses, and to determine the information that will be delivered to the U.S. Drought Monitor weekly author.

3. Drought Indicators

- a. According to the World Meteorological Organization's Handbook of Drought Indicators and Indices, drought indicators are "variables or parameters used to describe drought conditions. Examples include precipitation, temperature, streamflow, groundwater and reservoir levels, soil moisture and snowpack."
- b. Drought indicators typically involve monitoring hydroclimatic variables which are linked to moisture conditions. Drought indicators expressed as percentiles (ranging from 0 to 100) help to standardize measurements relative to normal conditions at specific locations at a given time of year.
- c. Precipitation is a main indicator used to determine drought. The percent of normal value is most often used to determine the percentage of rainfall compared to normal (currently 1981-2010) that has occurred over the area at various timescales (e.g., last 30-days, 60-days).

- d. Soil moisture percentiles are frequently used to monitor agricultural drought. Soil moisture data can be derived from direct in situ measurements, land surface models, or remote sensing products.
- e. The USDM employs the Climate Prediction Center (CPC) soil moisture water balance model to compute percentiles, because this dataset provides a lengthy period of record.
- f. Streamflow percentiles can be utilized to monitor hydrological drought. The U.S. Geological Survey (USGS) operates 336 streamflow gauges in near real-time across Ohio.
- g. The effectiveness of soil moisture and streamflow based drought indicators is constrained by data availability and data quality.

4. Drought Indices

- a. According to the World Meteorological Organization’s Handbook of Drought Indicators and Indices, drought indices are “are typically computed numerical representations of drought severity, assessed using climatic or hydro-meteorological inputs including the indicators listed above.
- b. Drought Indices are used to identify the beginning, end, and severity of drought within the context of specific operational definitions (Table 1).
- c. Drought indices vary in terms of their complexity and input data.
- d. It is best practice to use a variety of drought indices to monitor drought severity, since no one index can perfectly represent drought conditions and drought impacts for all types of drought.
- e. Table 1 shows five commonly used drought indices and indicators with their corresponding severity thresholds according to USDM.
- f. The key drought indices that are used to determine drought conditions in Ohio are the Standardized Precipitation Index (SPI), the Standardized Precipitation-Evapotranspiration Index (SPEI), and the Palmer Drought Severity Index (PDSI).
- g. In 2009, the World Meteorological Organization (WMO) encouraged the global adoption of the SPI as the leading index for drought monitoring. The calculation of the SPI only requires precipitation inputs. The simplicity of the SPI has made it a popular drought index which can be easily applied everywhere. The SPI expresses precipitation deficits and excesses in terms of normal precipitation at that location.

Table 1. USDM Drought Severity Thresholds According to the Drought Index Used.

Courtesy: <https://droughtmonitor.unl.edu>

Category	Description	Possible Impacts	Ranges				Objective Drought Indicator Blends (Percentiles)
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	
D0	Abnormally Dry	<ul style="list-style-type: none"> Going into drought: <ul style="list-style-type: none"> short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> some lingering water deficits pastures or crops not fully recovered 	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested 	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed 	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies 	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

- h. The primary advantage of the SPI is that it can be calculated at different timescales, so it can be used to monitor meteorological, agricultural, and hydrological drought. For example, the 1-month SPI represents short-term precipitation patterns and near-surface soil moisture, while the 3- or 6-month SPI characterize inter-seasonal variations in precipitation and agricultural stress. A potential weakness of the SPI is that it does not account for atmospheric water demand. Therefore, the SPI may not reflect other physical processes that influence drought, such as evaporative demand, surface runoff, and soil water storage.
- i. In contrast to the relative simplicity of the SPI, there are also drought indices which provide a more holistic representation of components in the hydrologic cycle which influence drought. The Standardized Precipitation-Evapotranspiration Index (SPEI) uses both precipitation and potential evapotranspiration (PET) to represent drought conditions. PET is estimated using temperature data. Similar to the SPI, the SPEI can be calculated at many timescales to capture different types of meteorological, agricultural and hydrological drought.
- j. Prior to the widespread adoption of the SPI, the Palmer Drought Severity Index (PDSI) was the most widely used index for drought monitoring. The PDSI calculates relative wetness and dryness based on a simple water balance model using temperature and precipitation. The PDSI represents moisture conditions at an approximate timescale of nine months. That is, the value in any given month is based on the accumulated effects of moisture supply and demand over the last ~9 months. Therefore, the PDSI

is best suited for monitoring agricultural and hydrological drought. The PDSI is more difficult to calculate than the SPI and SPEI because it requires the parameterization of the soil's available water capacity (AWC). The primary weakness of the PDSI is the inability to monitor drought conditions at a variety of timescales.

5. Drought Assessment Methods

- a. All of the aforementioned drought indices and indicators have strengths and weaknesses for monitoring different classifications of drought. Ultimately, to ensure drought classification matches impacts, multiple drought indices will be used when possible.
- b. The ODAG shall mirror the USDM '*convergence of evidence*' approach to classify drought by considering numerous sources of data. Most likely, situations will warrant the need to monitor precipitation indices (e.g., SPI, SPEI) as a first indication of drying conditions.
- c. Including multiple drought indices and indicators will quantify confidence and uncertainty for drought classification, and help match agricultural and other hydrological indications of drying conditions as reported from the communities throughout Ohio.

C. State Drought Response

1. Depending on the type of drought incident that is facing Ohio and the observed and expected impacts of a drought incident, not all DIRA support agencies may be engaged in all levels of drought response actions at the same time.
2. It should be noted that this plan presents general guidelines for a "typical" progressive drought scenario. The exact actions taken by the individual state agencies may vary based on the best drought response tailored to the particular traits of each drought experience.
3. The levels of drought response outlined in this plan will be driven by determinations of the level of impacts that are caused by drought. These impacts are defined using both physical measures of climatic, hydrologic or agronomic factors (precipitation, streamflow, soil moisture) and the severity and geographic extent of observed impacts to human health and safety and the environment (low water supplies, fire danger, poor water quality).
4. The decisions to designate a level for Drought Emergency remains with the Governor of Ohio and is outlined below.

5. This Annex is organized to define progressively more involvement by state agencies as drought severity is determined, to increase according to four general action levels: Drought Advisory, Level I Drought, Level II Drought, and Level III Drought:
 - a. Drought Advisory
 - U.S. Drought Monitor classification: D0-D1
 - Light agricultural impacts, including a slowing of planting, crop growth, or minor pasture health deterioration
 - i. This level of drought response signifies that some or all of Ohio is entering or leaving drought conditions. The State Climate Office of Ohio is charged with determining whether conditions warrant the activation of the ODAG as defined below above in Section III-B-2.
 - ii. Once activated, a weekly convening of representatives will take place to determine the level of drought conditions across Ohio and to report these findings to the U.S. Drought Monitor. These activities will continue throughout all levels of drought response.
 - iii. During the Drought Advisory Phase, the Department of Natural Resources, Department of Agriculture, National Weather Service, and the Environmental Protection Agency will provide water supply, weather, crop and animal monitoring information to the Ohio Emergency Management Agency as required.
 - b. Level 1 Drought
 - U.S. Drought Monitor classification: D1-D2
 - Some level of drought impacts are expected, including some damage to crops and, pastures, streams, reservoirs, or wells are low with some water shortages developing or imminent, and perhaps voluntary water-use restrictions, as requested.
 - i. Once D2 drought is determined for any part of Ohio, the Executive Director of Ohio EMA will activate and will appoint a chair for the Drought Assessment Committee (DAC). DAC will consist of one-or-more representatives from the following agencies:
 - Ohio Department of Natural Resources (ODNR), Division of Soil and Water Resources
 - Ohio Environmental Protection Agency (OEPA), Division of Drinking and Ground Waters
 - Ohio Department of Agriculture (ODA)
 - Ohio Emergency Management Agency (Ohio EMA)

- Ohio Department of Commerce, Division of State Fire Marshal
 - Ohio State University Extension
 - State Climate Office of Ohio (SCOO)
 - National Weather Services (NWS) (Wilmington)
 - United States Department of Agriculture, Farm Service Agency (USDA-FSA)
 - Public Utilities Commission of Ohio (PUCO)
 - United States Army Corps of Engineers
 - Ohio Department of Health (ODH)
- ii. The State Drought Advisory Committee (DAC) will carry out the following tasks, and other tasks as assigned:
- Regularly issue reports on drought status through Levels 1-3 of a drought.
 - Identify resource information gaps and make recommendations for improvement.
 - Provide appropriate water availability reporting that includes information on observed and expected precipitation, stream flow, reservoirs and ground-water levels; and reports of dry or impacted wells. Ohio EMA will compile and distribute consolidated situational reports to the Governor and to other identified agencies and individuals.
 - Place continuous emphasis on improving the capability to provide accurate and timely assessments of water availability or agricultural deficiencies.
 - Make recommendations to the Governor and other identified parties concerning state-level response and recovery.
 - Monitor trends and serve as the technical advisor for the State and local decision-makers.
 - Provide information for the public and media.
 - Make recommendations relating to proposed State actions, including the activation of Impact Task Forces to monitor and review potential impacts on the State's agriculture, economy, environment, and natural resources.
 - Identify resource deficiencies that may aggravate drought effects.

c. Level 2 Drought

- U.S. Drought Monitor classification: D2-D3
- Major impacts are felt including crop or pasture losses likely, water shortages are likely and/or water restrictions are imposed.
- As conditions deteriorate further, widespread crop damage and water shortages are common.

- i. Once D3 drought conditions are determined for any part of Ohio, the DAC may request the Governor make a Drought Alert Declaration. A Drought Alert may be issued for all or a portion of the State of Ohio, based on data collected and observations that are made.
- ii. For a drought alert to be declared, conditions would indicate the potential for serious water shortages, or for an agricultural emergency with continued below-normal precipitation, and continued declining stream flows and ground water levels.
- iii. A Drought Alert will continue until rainfall, stream flows, reservoir levels, ground-water levels, and well conditions return to normal or near normal levels for that time of the year.
- iv. During a Drought Alert, the DAC will coordinate with representatives of Impact Task Forces for the development of additional assessment information and for the identification of emergency needs.

d. Level 3 Drought

- U.S. Drought Monitor classification: D3-D4
- There are major to exceptional impacts including widespread crop and pasture losses, major to extreme shortages of water in reservoirs, streams, and wells potentially creating water emergencies in some communities.
 - i. As drought conditions continue to deteriorate, it may be necessary for the Governor to declare an Emergency Response.
 - ii. A Drought Emergency may be declared when the U.S. Monitor has reached a D3 or D4 (extreme to exceptional) category in all or a portion of the State of Ohio. This indicates that precipitation, stream flows, reservoir levels, and ground-water levels have and will continue to decline, and/or that Emergency Response Actions are required.
 - iii. An Emergency Declaration will provide:
 - Adequate response to water shortages, and the implementation of emergency programs and actions as provided in the Ohio Revised Code.
 - The Governor an opportunity to activate the Drought Executive Committee (DEC). The DEC will be chaired by the Executive Director of Ohio EMA and will meet regularly to direct, facilitate and coordinate drought emergency response in Ohio.

- The DEC will develop short- and long-term drought response recommendations as they relate to agricultural concerns and the protection and support of public and private water supplies. The DEC’s recommendations and responses will be based upon input from the DAC.
- A Drought Emergency may be canceled when precipitation levels, stream flows, reservoir levels, and ground-water levels increase and the Drought Severity Index readings begin to rise above “Severe Drought” or “Extreme Drought” levels. Extended forecasts should also indicate that normal conditions over a four-week period can be expected before a Drought Emergency is canceled.
- The Directors of the following agencies and organizations will appoint representatives to the DEC:
 - Ohio Department of Natural Resources
 - Ohio Environmental Protection Agency
 - Ohio Department of Health
 - Ohio Department of Agriculture
 - Ohio Department of Commerce
 - Ohio Department of Job and Family Services
 - Ohio Attorney General
 - Public Utilities Commission of Ohio
 - Ohio Emergency Management Agency
 - State Climate office of Ohio
 - State Representatives as named by the Speaker of the House
 - State Senators as named by the President of the Senate

D. Activation of the State Emergency Operations Center

1. The State Emergency Operations Center (State EOC) may be activated at any time to support drought response operations.
2. Refer to the Base Plan of the Ohio Emergency Operations Plan for general information on Emergency Operations Center activation.

E. Impact Task Forces

1. The following Impact Task Forces may be activated to collect information and report their findings and recommendations to the DAC: Agriculture, Wildfire, Fish and Wildlife, Recreation and Tourism, Public Water Supplies, and Economic Impacts.

2. Refer to Attachment 3 for more information on composition, activities and responsibilities of the Impact Task Forces.

F. Water Conservation Actions

1. It may be appropriate for state agencies to recommend and/or enter into water conservation actions when D3 conditions are present, stream flows, reservoir levels, and ground-water levels are continuing to decline, forecasts indicate that an extended period of below-normal precipitation is expected, and/or the DAC otherwise determines that water conservation actions are required.
2. Monitoring, oversight, and analysis activities, and water supply conservation measures particularly by Impact Task Forces, may be increased in response to increased drought levels on the recommendation of Drought Impact Task Forces.
3. Partial activation of the State EOC may occur along with the initiation of conservation actions, but its activation will depend on the needs/requests of citizens and public officials in drought-affected areas of the State.
4. Conservation actions may be suspended when precipitation increases, stream flows, reservoir levels, and ground-water levels stop their decline, and U.S. Drought Monitor stage drops below D3, and/or when the DAC otherwise determines that conservation actions are no longer required.

G. Local Public health Actions

1. In response to drought conditions, local health departments may:
 - a. Issue alteration and construction permits for private water systems.
 - b. Sample private water systems.
 - c. Register water haulers.
 - d. Inspect water-hauling vehicles.

IV. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

A. Organization

1. Federal

The following organizations of the federal government may assist Ohio during drought emergencies with a variety of loans, grants, and programs for material and personnel support.

- a. U.S. Department of Commerce
- b. Small Business Administration
- c. Federal Emergency Management Agency
- d. U.S. Department of Labor
- e. U.S. Army Corps of Engineers
- f. General Service Administration
- g. U.S. Department of the Interior

2. State

- a. The following state organizations may provide programs and specialized support to local governments during drought emergencies.

- 1) Ohio Department of Natural Resources
- 2) Ohio Water Development Authority
- 3) Ohio Department of Development
- 4) Treasurer of the State of Ohio
- 5) Ohio Department of Job and Family Services
- 6) Adjutant General's Department, Ohio National Guard
- 7) Ohio Emergency Management Agency
- 8) Ohio Public-Private Partnership
- 9) Ohio Department of Health

- b. Activation of the DAC will be maintained when increased monitoring and response actions are warranted and if the DAC is needed to provide appropriate state-level assessments and response/recovery recommendations to the DEC.

3. Local

- a. Local jurisdictions will be encouraged to enact appropriate ordinances and/or restrictions to ensure adequate and equitable water supply distribution and to establish local drought emergency public information and education programs.

B. Assignment of Responsibilities

1. Ohio Emergency Management Agency (Ohio EMA)

- a. Provide chairperson for the Drought Assessment Committee and the Drought Executive Committee.
- b. Coordinate the use of Ohio National Guard water trailers and Ohio EMA pipe and pumps for use by local communities.
- c. Coordinate drought-related press releases through the Joint Information Center.
- d. Maintain coordination with agency-based Public Information Officers to ensure consistency in drought-related information through the Joint Information System.
- e. Support the creation and distribution of drought information to the public.
- f. Develop written updates of the Ohio Drought Response Plan and submit to DAC members for review, recommendations and approval.

2. Ohio Department of Natural Resources (ODNR)

- a. Monitor water resources on a regular basis and report to EMA under Phase I, normal conditions.
- b. Provide information on available water resources within the State.
- c. Review and update public water supply plans for each community.
- d. Assist communities, industries, and others to develop water conservation plans and programs.
- e. Monitor hydrologic and water supply conditions, gather and interpret water data regarding supply, use and trends.
- f. Maintain information on outlet discharge capacity of State-owned reservoirs and improve structural work for State-owned reservoirs as appropriate.
- g. Register all water withdrawals greater than 100,000 gallons per day, collect annual reports, and analyze annual usage statewide and regionally.
- h. Assist in education of the public concerning general water management needs and answer requests for water resource information.

- i. Chair the following task forces; Wildfire, Fish and Wildlife, and Recreation and Tourism.
 - j. Mediate conflicts of source utilization in cooperation with EPA.
 - k. Coordinate use of Lake Erie water, in cooperation with EPA.
 - l. Provide information on the status of feeder canals throughout the State of Ohio.
3. Ohio Environmental Protection Agency (OEPA)
- a. Monitor water quality on a regular basis and report to EMA under Phase I, normal conditions.
 - b. Recommend voluntary cutbacks in water usage.
 - c. Initiate recommendations for water conservation based upon recognized priorities.
 - d. Mediate conflicts of source utilization in cooperation with DNR.
 - e. Post streams where water quality standards are not met.
 - f. Coordinate with the Department of Health on the release of drought-related health advisories.
 - g. Assist in encouraging cut backs of industrial use of water.
 - h. Chair Public Water Supply Task Force.
4. Ohio Department of Health (ODH)
- a. Provide increased surveillance of private water supplies and water haulers.
 - b. Issue registrations for private water system contractors.
 - c. Analyze water well samples from local health departments upon request.
 - d. Work with partners to collect water samples from bathing beaches at Lake Erie and inland water bodies and to issue public messaging regarding recreational water safety.
 - e. Provide instructions on emergency disinfection of water.

- f. Provide information to food service operations regarding approved water sources.
 - g. Support local health departments regarding private water systems, registering water haulers, and inspecting vehicles.
 - h. Provide technical information regarding private water system supplies.
 - i. Coordinate with OEPA on the release of drought-related health advisories.
5. Ohio Department of Agriculture (ODA)
- a. Coordinate with the U.S. Department of Agriculture in collecting information regarding critical shortages of food products and livestock feed.
 - b. Develop State request for federal assistance and declaration of drought related agricultural emergencies in coordination with the U.S. Department of Agriculture.
 - c. Plan for the emergency distribution of livestock feed.
 - d. Chair the Agriculture Task Force.
 - e. Assist in encouraging cutbacks of agricultural use of water.
6. Ohio Department of Commerce, Division of State Fire Marshal (SFM)
- a. Participate in the activities of the Wildfire Impact Task Force
 - b. Disseminate fire safety information to Ohio jurisdictions and the media.
7. Public Utilities Commission of Ohio (PUCO)
- a. Regulated investor-owned utilities advise PUCO of their drought status, establish contact person for status reports and recommend conservation education.
 - b. Provide advice to PUCO regulated investor-owned utilities to follow their tariffs with regard to voluntary and mandatory conservation measures.
 - c. Provide reports on current status of PUCO regulated investor-owned utilities' ability to provide service to their customers. The reports will also contain any information that the PUCO Drought Coordinator would deem necessary to assist the Drought Task Force.

- d. Monitor all events that may/will affect this or other PUCO regulated investor-owned utilities.
8. Ohio State University Extension (OSU-EXT)
 - a. Coordinate with County Extension Agents for local drought response activities.
 - b. Provide reports to the DAC on drought notifications and conditions in counties.
 - c. Assist in distributing drought-related Emergency Public Information (EPI)
 9. U.S. Department of Agriculture – Farm Service Agency (USDA-FSA)
 - a. Implement federal drought assistance programs as requested.
 - b. Coordinate reports from Food and Agricultural Councils (FACs) with DAC.
 - c. Provide assessments of drought damage.
 - d. Coordinate requests for drought-related Presidential Declaration of Agricultural Emergency.
 - e. Administer drought-related federal relief in coordination with ODA.
 10. U.S. Army Corps of Engineers (USACE)
 - a. Coordinate the development of drought plans and procedures for lakes, dams, etc. within the State of Ohio with DNR and Ohio EMA.
 - b. Provide information/reports to the DAC.
 - c. Coordinate USACE drought-related activities with DAC and affected Ohio localities.
 - d. Construct wells and transport water to ranchers, farmers and political subdivisions for human and livestock consumption.
 - e. Sell supplies of water from USACE reservoirs during emergencies as available.
 11. State Climate Office of Ohio (SCOO)

- a. Assist with OSU Extension and the College of Food, Agricultural and Environmental Sciences (CFAES) to communicate with local farmers at the county level. Gather and organize reports from OSU Extension and the CFAES that indicate the near real time state of drought around Ohio. This will include improving an intercomparable (potentially instrumented) network of soil moisture conditions.
- b. Archive historical climate and drought data to inform comparative analyses with actual conditions. Provide research and reports related to statewide drought conditions and durations.
- c. Participate in communication of drought conditions in Ohio to regional and national drought monitoring entities (e.g. National Drought Monitor)
- d. Reinforce public education and communication efforts initiated by Ohio EMA.

12. National Weather Service (NWS)

- a. Provide research and reports on local weather patterns and forecasts to support drought-related planning and response activities.

V. PLAN DEVELOPMENT AND MAINTENANCE

- A. The Emergency Management Agency is responsible for the maintenance of the Drought Incident Annex of the Ohio Emergency Operations Plan. It will be reviewed on an annual basis by all partner agencies and will be updated at least every four years.
- B. Partner agencies will develop and maintain standard operating procedures related to each of their assignments of responsibility in the Annex.

VI. ATTACHMENTS

- Attachment 1 - Impact Task Force Descriptions
- Attachment 2 - Drought Response Actions Matrix

STATE DROUGHT IMPACT TASK FORCES

There are six state-level Drought Impact Task Forces. When activated, Drought Impact Task Forces will coordinate and facilitate individual agency actions and oversee cooperative efforts of agencies with assigned responsibilities under each Task Force. Task Force Agency Representatives must be able to speak for their agencies and have the authority to make reasonable commitments toward effective cooperation and coordination and the allocation of resources from their agency.

The duties and activities of each Task Force are to include, but are not limited to:

1. Develop, revise and update, as necessary, Task Force guidelines and procedures.
2. Establish procedures for coordination with other task forces, State and federal agencies, local government, and public and/or private groups.
3. Identify key contacts in State, Federal, and private support groups.
4. Review existing reporting and analyzing capabilities and identify information gaps.
5. Recommend the activation of drought response phase levels and response activities, and analyze response barriers.
6. Report to the Drought Assessment Committee and/or the Drought Executive Committee on a monthly basis during a conservation phase and on a weekly basis in a drought emergency.
7. Report on status of drought response.
8. Maintain supporting data and records of activities.
9. When deactivated, prepare a final report on activities and submit to the Ohio Emergency Management Agency.

IMPACT TASK FORCE #1 – AGRICULTURE

PURPOSE

To assist farmers during drought conditions, assess and project likely impacts, identify alternative responses and sources of assistance; and as needed, report to the Drought Assessment Committee and/or the Drought Executive Committee.

LEAD STATE AGENCY: Ohio Department of Agriculture

The Agriculture Task Force is chaired by the Department of Agriculture and will consist of the following state and federal agencies.

1. Ohio State University Extension
2. State and County Emergency Boards
3. USDA Farm Service Agency
4. Division of Soil and Water Resources, ODNR

ACTIVITIES:

1. Review available data sources and existing drought reports, and analyze potential threats.
2. Provide timely data to farmers and state and federal agencies.
3. Assist in emergency livestock feeding and water hauling operations.
4. Survey and monitor animal health and care.
5. Operate and maintain hay-locator service.
6. Coordinate economic outlook reporting.
7. Make requests and recommendations with respect to emergency funding.
8. Identify any gaps in these various programs and recommend action on unmet needs.
9. Prepare a final report upon deactivation.

IMPACT TASK FORCE #2 – WILDFIRE

PURPOSE

To assess and address drought-related impacts due to threats of wildfire; and as needed, report to the Drought Assessment Committee and/or the Drought Executive Committee.

LEAD STATE AGENCY: Ohio Department of Natural Resources, Division of Forestry

The Task Force is chaired by the Division of Forestry and will consist of the following State and federal agencies:

1. Division of Air Pollution Control, OEPA
2. Division of Wildlife, ODNR
3. Division of Parks and Recreation, ODNR
4. Division of the State Fire Marshal
5. U.S. Forest Service

ACTIVITIES:

1. Identify key personnel and contacts.
2. Assess and project the extent and potential impacts of wildfire threats.
3. Review existing wildfire protection capabilities and inventory ponds, lakes and dry hydrants, which may be available in firefighting efforts.
4. Project the need for additional resources.
5. Provide technical planning and preparedness assistance.
6. Recommend a burning ban, in specified areas or statewide, based on current and expected wildfire activity and available indicators.
7. Prepare a final report upon deactivation.

IMPACT TASK FORCE #3 – FISH AND WILDLIFE

PURPOSE:

Collect and evaluate data on fish and wildlife related impacts, project the potential severity of such impacts, and identify alternative mitigation measures and sources of assistance; and as needed, report to the Drought Assessment Committee and/or the Drought Executive Committee.

LEAD STATE AGENCY: Department of Natural Resources, Division of Wildlife

The Task Force is chaired by the Division of Wildlife and will consist of the following State and federal agencies:

1. ODNR, Division of Parks and Recreation
2. U.S. Fish and Wildlife Service
3. U.S. Forest Service
4. U.S. Army Corps of Engineers

ACTIVITIES:

1. Assess and project impacts on the State's fish and wildlife resources, including game and non-game species.
2. Recommend mitigation measures such as reservoir conservation pools, construction of watering ponds, etc.
3. Estimate funding and manpower requirements by project and species.
4. Review State-held water rights for fish and wildlife, and the potential impact of reservoir releases on domestic and other needs.
5. Prepare final report when deactivated.

IMPACT TASK FORCE #4 – RECREATION AND TOURISM

PURPOSE:

To assess the impact of drought on recreation and tourism, and coordinate public and private efforts to avoid or mitigate economic losses; and as needed, report to the Drought Assessment Committee and/or the Drought Executive Committee.

LEAD STATE AGENCY: Ohio Department of Natural Resources, Division of Parks and Recreation

The Task Force will be co-chaired by the Ohio Department of Natural Resources, Division of Parks and Recreation and will consist of the following State and federal agencies:

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| 1. Ohio Department of Health | 6. County Commissioners Association |
| 2. ODNR, Division of Wildlife | 7. U.S. Forest Service |
| 3. ODNR, Division of Forestry | 8. National Park Service |
| 4. ODNR, Division of Watercraft | 9. U.S. Army Corps of Engineers |
| 5. State and Local Governments Commission | |

ACTIVITIES:

1. Provide timely information on drought conditions and recreational impacts to appropriate State agencies and the public.
2. Identify major commercial and industry specific problems and recommend solutions.
3. Develop and disseminate information to the media and public concerning restrictions or closing of State and/or federal parks and recreation areas.
4. Prepare a final report when deactivated.

IMPACT TASK FORCE #5 – PUBLIC AND PRIVATE WATER SUPPLY

PURPOSE:

To ensure adequate supplies of potable water for essential domestic uses, as well as municipal and industrial needs; and as needed, report to the Drought Assessment Committee and/or the Drought Executive Committee.

LEAD STATE AGENCY: Ohio Environmental Protection Agency, Division of Drinking and Ground Waters

The Task Force will be chaired by the Division of Drinking and Ground Water and will consist of the following State and federal agencies:

1. Division of Soil and Water Resources, ODNR
2. Ohio Department of Health
3. Ohio Emergency Management Agency
4. State and Local Government Commission
5. Ohio Water Development Authority
6. Public Utilities Commission of Ohio
7. U.S. Army Corps of Engineers
8. Ohio Municipal League
9. County Commissioners Association

ACTIVITIES:

1. Provide water conservation program information.
2. Provide or coordinate water-hauling services by prioritized needs.
3. Develop a list of problem areas.
4. Facilitate approval of rate and operation changes.
5. Assess information concerning stream flows, reservoir levels, ground-water levels, and precipitation and recommend voluntary cutbacks of water usage by municipalities and industries.
6. Assess water quality.
7. Coordinate drought response activities with private water supplies as needed and encourage private water supplier conservation and cooperation for water usage during droughts.

8. The U.S. Army Corps of Engineers will make field investigations on eligibility for assistance when requested by the Governor to include: providing drinking water, transporting emergency water for human and livestock consumption and constructing wells based upon cost reimbursement to the government.
9. Prepare a final report upon deactivation.

IMPACT TASK FORCE #6 – ECONOMIC

PURPOSE:

To establish procedures and an organization to assess drought-related economic impacts and recommend and undertake specific responses; and as needed, report to the Drought Assessment Committee and/or the Drought Executive Committee.

LEAD STATE AGENCY: Office of Budget and Management

The Task Force will be co-chaired by the Office of Budget and Management and the Department of Taxation and many consist of the following State and federal agencies:

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| 1. State of Ohio Treasurer | 6. State and Local Government Commission |
| 2. Ohio Department of Commerce | 7. County Commissioners Association |
| 3. Ohio Department of Agriculture | 8. Ohio Municipal League |
| 4. Ohio Department of Job and Family Services | 9. Public Utilities Commission of Ohio |
| 5. Ohio Department of Development | |

ACTIVITIES:

1. Identify actual and potential economic impacts of drought by area of the State.
2. Develop and employ an economic simulation model to project drought impacts.
3. Identify actual or potential revenue loss by State and local governments.
4. Recommend mitigation measures.
5. Identify State and federal sources of financial assistance.
6. Monitor the costs incurred by State agencies responding to the drought.
7. Identify priority areas for additional State funding.
8. Prepare a final report upon deactivation.
9. Respond to needs of migrant workers in affected areas of the State of Ohio.
10. Prepare statistical information for Presidential Declaration of Disaster request.

State of Ohio – Drought Incident Annex
 Attachment 2 - Drought Response Actions Matrix

AGENCY	PRE-DROUGHT ACTIONS	INCREASED MONITORING ACTIONS	CONSERVATION ACTIONS	EMERGENCY RESPONSE ACTIONS
Governor's Office	1. Work with OEPA, ODNR, and the General Assembly to pass water allocation and other appropriate legislation.	1. Receive recommendations from the Drought Assessment Committee regarding water supplies in Ohio.	1. Activate Impact Task Groups as appropriate.	1. Declare a Drought Emergency.
		2. Issue Drought Alert for areas of Ohio affected.	2. Continue public awareness and strongly encourage local governments to issue water restrictions.	2. Activate the Drought Executive Committee.
		3. Issue burning bans as needed by Executive Order.	3. Order state agencies to comply with local water conservation restrictions.	3. Encourage restrictions on non-essential uses of water.
		4. Establish liaison with local governments as needed.	4. Issue Executive Orders regarding waived permits, fees, and other restrictions for carriers bringing hay and needed supplies for agricultural relief.	4. Implement progressive restrictions as conditions require.
		5. Request voluntary water use reduction.	5. Request the USDA to declare an Agricultural Disaster in Ohio, if warranted.	5. Continue previous actions.
			6. Seek emergency legislation if required.	

AGENCY	PRE-DROUGHT ACTIONS	INCREASED MONITORING ACTIONS	CONSERVATION ACTIONS	EMERGENCY RESPONSE ACTIONS
Ohio Environmental Protection Agency	1. Develop criteria for public supply emergency plans.	1. Coordinate with OEMA and other responders for release of public information.	1. Post streams where water quality standards are not met.	1. Coordinate with Governor's representatives for Declaration of Emergency.
	2. Assist owners/operators of public water systems in developing supply emergency plans.	2. Increase monitoring in alerted areas.	2. Issue conservation guidelines.	2. Mediate in conflicts of source utilization in cooperation with ODNR.
	3. Review water supply plans.	3. Train/review Phase 2 - Phase 4 requirements with regional offices.	3. Coordinate with ODH on release of health advisories.	3. Support Governor in enforcing provisions as required.
	4. Determine backup supplies and storage systems for public water suppliers.	4. Water suppliers report status to regional EPA water supply officials.	4. Review and recommend approval of local drought emergency requests by local officials in coordination with ODNR, ODH, and OEMA.	4. Initiate rationing procedures based upon recognized priorities.
	5. Provide monthly reports to OEMA on public water quality and supplies, in anticipation of drought conditions.	5. Advise water suppliers in affected areas to activate local water supply emergency plans and contingency plans as needed.	5. Monitor all public water supply facilities; augment staff.	5. Coordinate with ODNR for use of Lake Erie water.
			6. Activate prioritization of publicly-supplied water usage.	
			7. As directed by the Governor, assist localities in enforcing cutbacks of publicly-supplied industrial/ agricultural use of water.	
			8. Issue advisories for local mandatory restrictions of publicly-supplied water usage (ORC 6901.06).	
			9. Chair Public Water Supply Impact Task Force, when activated.	

AGENCY	PRE-DROUGHT ACTIONS	INCREASED MONITORING ACTIONS	CONSERVATION ACTIONS	EMERGENCY RESPONSE ACTIONS
Ohio Department of Natural Resources	1. Review and update water supply plans for each community.	1. Provide daily or weekly reports on water levels, hydrologic information, and developing shortages. Review status and availability of water storage in state or federal reservoirs.	1. Increase monitoring hydrologic and water supply conditions to weekly or daily.	1. Evaluate requests for downstream discharges from state-owned reservoirs for community water systems on emergency status and consider approval of water hauling from state-owned reservoirs for authorized purposes. Monitor uses and/or reservoirs.
	2. Gather and interpret water data regarding supply, use and trends.	2. Inform public regarding Ohio water rights and obligations for use of streams and groundwater.	2. Make calculation of draw down under various release rates for state-owned reservoirs.	2. Maintain close liaison with U.S. Army Corps of Engineers and Conservancy Districts regarding emergency water releases from respective reservoirs as appropriate.
	3. Analyze adequacy of existing water supplies and assist communities, agriculture, industries, and individuals to develop water- supply systems as needed to withstand appropriate drought conditions.	3. Coordinate with local water supply officials, review availability of water conservation plans and implementation of programs.	3. Make field checks to verify need and availability of water from state-owned reservoirs, including canals and associated lakes.	3. Confirm that water conservation measures have been implemented by communities or others requesting releases.
	4. Educate the public regarding general water management needs and answer requests for water information.	4. Review, correlate, and map data from weather information services and water level monitoring systems.	4. Coordinate requests for water from state-owned reservoirs with appropriate agencies.	4. Make recommendations to U.S. Department of Agriculture for harvesting hay or pasture on agriculture set-aside.
	5. Assist communities, industries and others to develop water conservation plans and programs; model conservation plans.	5. Analyze precipitation for deficiencies with communities known to have inadequate storage capacity.	5. Identify large withdrawals and consumptive uses and encourage water conservation.	5. Monitor hydrologic conditions as needed and provide updates.
	6. Monitor hydrologic and water supply conditions; evaluate conditions monthly and disseminate information.	6. Inform EOC and Governor's staff when conditions may warrant conservation and emergency status.	6. Restrict managed wetland pumping at selected locations as needed.	6. Make recommendations rationing withdrawals from state-owned reservoirs.

	7. Identify, evaluate, research, and document water sources.	7. Increase monitoring of hydrological and water supply conditions to twice monthly or weekly.	7. Through various Divisions, Chair the Wildfire, Recreation & Tourism, and Fish & Wildlife Impact Task Forces when activated.	7. Restrict recreational uses as required for health and safety.
	8. Evaluate, improve, and automate data collection network, including stream flow, ground water, precipitation, reservoirs, and consumption. Report this information to EMA on a regular basis.	8. Compare hydrologic information with past drought conditions and determine stressed areas.	8. Director sits on Drought Executive Committee when activated.	8. Issue restrictions on managed wetland pumping as needed.
	9. Maintain information on outlet discharge capacity of state-owned reservoirs and improve structural works as appropriate for state-owned reservoirs.	9. Prepare and disseminate a drought report weekly for decision-makers and press.		9. Coordinate use of Lake Erie water in cooperation with OEPA.
	10. Register all water withdrawals greater than 100,000 gpd. Collect source reports, analyze annual usage statewide and regionally.	10. Prepare for a substantial increase in the number of requests for general and technical water resource and other hydrologic information.		
		11. Assign personnel to correlate storage data and outlet discharge capacity; determine current operational status of outlets for state-owned reservoirs.		
		12. Coordinate activities within ODNR and other local, state, and federal agencies as appropriate.		
		13. Identify large withdrawals and consumptive users in stressed areas.		
		14. Issue bans on open burning throughout Ohio including state forests and parks as required for safety.		

AGENCY	PRE-DROUGHT ACTIONS	INCREASED MONITORING ACTIONS	CONSERVATION ACTIONS	EMERGENCY RESPONSE ACTIONS
Ohio Department of Agriculture	1. Prepare plans for the emergency distribution of livestock feed.	1. Coordinate with the U.S. Dept. of Agriculture and State and County Emergency Boards to assess the agricultural situation in Ohio.	1. Develop state request for federal assistance from the U.S. Dept. of Agriculture.	1. Continue previous actions.
		2. Provide weekly agricultural reports on crops and animals affected by the drought.	2. Implement state plans for the emergency distribution of livestock feed.	
		3. Provide a representative to the Drought Assessment Committee when activated.	3. Assist in operation of a hay locator service.	
			4. Survey and monitor animal health and care.	
			5. Provide regular agriculture reports on crops and animals.	
			6. Investigate and enforce regulations regarding unfair pricing.	
			7. Chair the Agriculture Impact Task Force, when activated.	

AGENCY	PRE-DROUGHT ACTIONS	INCREASED MONITORING ACTIONS	CONSERVATION ACTIONS	EMERGENCY RESPONSE ACTIONS
Public Utilities Commission of Ohio	1. Review and update PUCO assignments in the Drought Incident Annex.	1. Encourage affected Commission-regulated utilities to notify customers of voluntary conservation measures.	1. Assure affected Commission-regulated utilities have considered notifying customers of conservation measures.	1. Coordinate with Governor's representative for Declaration of Emergency.
	2. Coordinate information/data received from Commission-regulated utilities.	2. Receive regular status reports from Commission-regulated utilities.	2. Provide status reports including developing emergencies concerning Commission-regulated water and electric utilities.	2. Enforce emergency provisions as required by Commissioner and Governor.
		3. Coordinate with EMA and other state-level responders for release of public information.	3. Follow EPA recommended prioritization of water usage to the extent of consistency with PUCO rules.	3. Activate drought emergency plans as required.
			4. Director sits on Drought Executive Committee, when activated.	

AGENCY	PRE-DROUGHT ACTIONS	INCREASED MONITORING ACTIONS	CONSERVATION ACTIONS	EMERGENCY RESPONSE ACTIONS
State & Local Governments	1. Assist local communities in development of water shortage and drought response plans.	1. Receive notifications of Drought Alert Declarations.	1. Maintain liaison with local government concerning seriousness of situation.	1. Continue conservation phase activities.
		2. Contact local governments concerning the drought and keep them informed of situations.	2. Coordinate between levels of government as necessary.	2. Call for mandatory restrictions of water usage.
			3. Call for enactment of voluntary water conservation measures by local communities.	

Ohio Emergency Management Agency	1. Coordinate with ODNR, OEPA, and other agencies to assess the possibility of drought conditions developed in the state.	1. Provide a Chair of the Drought Assessment Committee (DAC).	1. Provide raw water pipe and pumps to local jurisdictions.	1. Control and coordinate activation of the State EOC.
	2. Manage the review and maintenance of the Drought Incident Annex.	2. Provide regular reports to members of the Drought Assessment Committee.	2. Coordinate the use of water trailers by local jurisdictions with the OHNG.	2. Continue previous actions.
	3. Coordinate with other state agencies in creating or amending drought-related legislation	3. Maintain regular information flow with key federal, state and local agencies concerning drought conditions.	3. Continue activities from Phase II.	
			4. OEMA Executive Director chairs the Drought Executive Committee when activated.	