

## Outline for State Drought Management Plan (SDMP) (2016)

1. Authority
  - a. Statutory Authority: MCA § 2-15-3308(3)(a) – must have a plan approved by the Governor.
2. Justification for Update
  - a. NEED: Reflect current Montana State Water Plan objectives in regards to drought.
  - b. NEED: Fulfill state and federal emergency response requirements (Montana Emergency Response Framework, US National Response Framework and National Preparedness Goal).
3. Current Drought Response
  - a. In the last five years, Montana provided in excess of \$21.4 million in direct funding to local watershed groups, irrigation districts, conservation districts, water-user associations, and private individuals for water management planning and project implementation.
    - i. NEED: Tabular list of where money went and where it came from.
  - b. State funds have led to improvements in water use efficiency, instream flows, and local drought planning.
    - i. NEED: Tabular list of which projects did what and where.
  - c. In 2016 the DNRC began providing monthly water supply reports during the growing season to each of the four planning basins identified in the Montana State Water Plan to provide a one-stop-shop for drought and water supply information at a more localized level.
  - d. NEED: Build on current success to create a more organized, locally-informed and targeted approach in order to provide water users the resources they need to respond, mitigate and prepare for drought.
4. Planning Process
  - a. Summary of Montana Drought Plan Update Process
    - i. Findings from Drought Forums
    - ii. Stakeholder participation in Planning Process
    - iii. Public participation
  - b. NEED: Inter-Agency Coordination
    - i. Federal, state, local, municipal, tribal, universities, non-profits
    - ii. NEED: resources to join stakeholders together and provide framework for regional watershed level coordination.
  - c. NEED: Program integration with other state planning efforts and with FEMA mitigation programs.
  - d. NEED: Review, update and approval process and impact assessments
5. Drought in Montana
  - a. History of drought in Montana and how people have dealt with life in a semi-arid environment.
    - i. Catalogue of previous droughts and impacts.

- ii. Historical inventory, including historic Palmer Drought Severity Index, USGS stream gage records, paleoclimatology as well as historical field reports if available.
- b. Guiding Philosophy
  - i. Locally driven, on-the-ground solutions.
  - ii. Use a “bottom up” approach to establish priorities as informed by local drought management and planning efforts.
  - iii. Provide technical and financial support for both emergency response and long-term mitigation.
  - iv. Provide coordination and information sharing at the local, regional, state and federal levels.
- c. Montana’s climatic diversity and the varied impacts from drought.
  - i. NEED: A system for organizing the state based on climatic diversity – this summer used planning basins identified in the State Water Plan.
  - ii. NEED: Identify why Montana is vulnerable to drought.
- d. Outline all drought-related responsibilities for each state agency.
  - i. Each agency will have an easily referenced section of the plan explaining their various roles, programs and responsibilities.
  - ii. NEED: Identify what authority each agency has for what expenditure, what is already being done, how to coordinate, what additional is needed, and an outline of who did what in the last 5 years.
    - 1. Send out survey to all agencies to identify what was done/what is needed.
  - iii. *(brief summary provided as a start/example):*
    - 1. Governor’s Office – activation of plan, emergency funding
    - 2. DNRC – state reservoirs, real-time water supply and distribution instrumentation, technical and financial support for local drought management planning, regional coordination, irrigation efficiency, information on water rights and enforcement projects.
    - 3. DES – FEMA mitigation, information sharing through DES County Executive Directors and coordination with County and City Commissioners.
    - 4. Dept. of Ag. – coordinating with the Extension Service and Conservation Districts to provide information, education, research on drought resilience, soil moisture, exploration of water storage alternatives, controlling wildfire, invasive weeds and insects.
    - 5. Dept. of Livestock – hay hotline, numbers on livestock/impacts, veterinarian reports, working with producers for best management practices.
    - 6. DEQ – municipal water suppliers, water quality concerns.

7. FWP – fishing closures/restrictions, studies on impacts from low flows and high water temperatures, Future Fisheries program, Murphy rights, stakeholder engagement.

## 6. Structure & Function

- a. The primary purpose of the Governor’s Drought and Water Supply Advisory Committee (DWSAC) is to identify times of either drought or flooding and what can be done to ensure safety, resilience and long-term mitigation.
  - i. The DWSAC, according to MCA § 2-15-3308(2), shall be made up of members from the “departments of natural resources and conservation; agriculture; commerce; fish, wildlife, and parks; military affairs; environmental quality; and livestock. The governor's representative must be appointed by the governor, and the representative of each department must be appointed by the head of that department. Additional, nonvoting members who represent federal and local government agencies and public and private interests affected by drought or flooding may also be appointed by the governor.”
  - ii. The tasks of the DWSAC are outlined in MCA § 2-15-3308(3)(a-g): “(a) with the approval of the governor, develop and implement a state plan that considers drought and flooding; (b) review and report drought and water supply monitoring information to the public; (c) coordinate timely drought and flooding impact assessments; (d) identify areas of the state with a high probability of drought or flooding and target reporting and assistance efforts to those areas; (e) upon request, assist in organizing local advisory committees for the areas identified under subsection (3)(d); (f) request state agency staff to provide technical assistance to local advisory committees; and (g) promote ideas and activities for groups and individuals to consider that may reduce drought or flooding vulnerability.”
  - iii. The DWSAC will make recommendations to the Governor for drought and flood mitigation by March 15 of each year. It will also summarize the water year (Oct – Sept) in a report to the Governor by October 15 of each year. If an emergency meeting is called, the DWSAC will vote on any drought or flood advisory levels needed, as described in section 10 of this outline.
- b. The DWSAC must meet twice a year. The DWSAC will form a Monitoring Sub-Committee (MSC) to meet monthly at a public meeting throughout the year to assess water supply conditions and make recommendations to the DWSAC. At the request of the MSC, the DWSAC can hold emergency meetings throughout the year to determine if any action is needed in response to drought or flood.
  - i. March –
    1. The DWSAC will meet in person to assess conditions and evaluate the growing season ahead at a public meeting. It will make recommendations for voluntary action in communities that appear vulnerable to drought. If a community has a drought response plan, the

- DWSAC will highlight its use as a tool to avoid drought consequences and communicate with appropriate stakeholders.
2. A March Water Supply Report from the MSC will be distributed to all county and city commissioners as well as all DES County Executive Directors. The report will include an overview of current water supply conditions as well as any potential for drought in the coming months. It will also communicate any recommended actions and/or existing local drought management plans.
- ii. October –
    1. The DWSAC will review the impacts of any drought or flooding from the preceding season. It will review and amend the Drought Management Plan as needed based on impact reports.
    2. An October Water Supply Report from the MSC will be distributed to all county and city commissioners as well as all DES County Executive Directors. The report will summarize any impacts, actions taken, needs not met, and amendments to ensure they are met in the future.
  - c. The MSC will consist of members from partner agencies, including the National Weather Service (NWS), the Natural Resources Conservation Service (NRCS), US Geological Society (USGS), the Montana Bureau of Mines and Geology (MBMG), the National Agricultural Statistics Service (NASS), the Farm Service Agency (FSA), the Natural Resources Information Service (NRIS), the Montana Climate Office, and the Bureau of Reclamation (BOR).
    - i. The MSC monthly meetings will be public and a report will be generated from each meeting that will be distributed widely through media outlets, the [www.drought.mt.gov](http://www.drought.mt.gov) website, Basin Water Supply Newsletters, and the state agencies represented on the DWSAC.
  - d. Local drought management planning is recognized as a critical part of drought response and building long-term resilience. The DWSAC, through the various agencies it represents, will work to further technical, financial, and human resources to assist communities in their efforts to make decisions about drought and how to respond locally.
    - i. NEED: A way to include local drought management plans/coordinators, their progress, needs and concerns with the DWSAC.
    - ii. NEED: A form of communicating local drought management plans, water supply reporting, and impact reporting to County and City Commissioners, Conservation Districts, Watershed Councils, Farm Service Agents, MSU Extension Agents, FWP Biologists and DES Coordinators.
  - e. The DWSAC will coordinate with state, local and tribal governments to establish a guiding set of best management practices in times of water shortage.
    - i. NEED – Protocol for interacting with Tribal governments.
    - ii. NEED – Outreach and inclusion of Tribal partners needs to be a priority from the start.

## 7. Vulnerability Assessment

- a. Purpose – identify how Montana is vulnerable to drought and what can be done to reduce or eliminate those vulnerabilities.
  - i. Partner with Montana universities to assist in defining and collecting data.
  - ii. Survey state employees state-wide through a questionnaire.
- b. NEED: Create a new set of Water Resource Surveys for the state or some alternate resource of a similar nature.
- c. NEED: A system to establish 5<sup>th</sup> order HUC level overviews or “water budgets” in order to better gauge accurate water use projection.
- d. NEED: Establish a qualitative as well as quantitative assessment tool.
  - i. Risk = Hazard x Vulnerability
  - ii. Risk probabilities should be in terms of frequency of occurrence, magnitude and severity, and consequences.
- e. NEED: Catalog assets and resources in a system and across sectors at the county scale.
  - i. Assign quantifiable value (or at least rank order) and importance to those resources.
  - ii. Identify the vulnerabilities or potential threats to each resource.
  - iii. Mitigate or eliminate the most serious vulnerabilities.
- f. NEED: Determine vulnerability sectors (*below is suggested*):
  - i. Domestic & Municipal
  - ii. Agriculture & Livestock
  - iii. Recreation & Tourism
  - iv. Fisheries & Wildlife
  - v. Power, Mining & Industrial

## 8. Mitigation

- a. Purpose – Provide a clearinghouse of information and resources on drought and flooding mitigation strategies.
- b. State Hazard Mitigation Goals
  - i. Integration of local plans and objectives into state mitigation strategies.
  - ii. Increase delivery infrastructure and intersystem connections to allow water sharing.
  - iii. Develop new and robust water supplies and integrate natural storage opportunities.
  - iv. Increase the availability of monitoring data.
- c. NEED: State Drought Mitigation Capability Assessment
  - i. Pre-disaster hazard management policies, programs and capabilities
  - ii. Post-disaster hazard management policies, programs and capabilities
  - iii. State policies related to development in drought-prone areas
    1. Educate land use decision makers about open vs. closed basins, water neutral development, subdivision review, well pump tests, and full build out consequences when evaluating growth and development.
  - iv. State funding capabilities for drought hazard mitigation projects.

- d. NEED: State drought mitigation actions summary (table of goals, recommended actions, and lead agencies/entities)
  - i. Improve water availability monitoring and drought impact assessment
    - 1. Funding stream gage improvements
    - 2. Integrate state drought and flood monitoring
    - 3. Improve soil moisture data
    - 4. Create a vulnerability-weighted drought index
    - 5. Consider remote sensing
    - 6. Improve forecasting for low-flow and early runoff
    - 7. Coordinate groundwater monitoring to gain an overall water availability picture
  - ii. Increase public awareness and education
    - 1. Approach education from an “up and down the line” perspective being sure to include the full spectrum of stakeholders, from irrigators to municipalities.
    - 2. Drought info website
    - 3. Develop technical drought planning toolbox
    - 4. Continue creating and sending out monthly water supply e-newsletters to the four planning basins identified in the Montana State Water Plan.
    - 5. Develop a series of webinars on issues such as crop survival, livestock management, yard management, public water supply systems and reservoir management in times of drought.
    - 6. Develop early and adult educational materials and curriculum.
    - 7. Yearly water supply assessment conference hosted by the DWSAC.
  - iii. Enhance mechanisms to provide water supplies to areas of shortage during droughts.
    - 1. Work with existing efforts to fund water system improvements for drought mitigation and resilience.
    - 2. Identify ways to clarify where greater efficiencies are needed versus where flood irrigation is of benefit to aquifer recharge.
    - 3. Encourage study of feasibility of alternative transfer methods.
    - 4. Work with appropriate parties to improve water use conflict resolution.
    - 5. Provide outreach and education on how drought planning can lead to less water use conflict and offer guidance for conflict resolution.
    - 6. Explore technologies for water supply banking, floodwater diversion storage, aquifer recharge and snow banking.
    - 7. Evaluate the potential of water storage facilities on State Trust Land.
    - 8. Provide a better understanding of how existing state water resources, such as state water reservations, may be used to address water shortages.
    - 9. Promote legislation that provides for policy to allow for greater flexibility during drought conditions.
    - 10. Encourage local municipal water providers to include drought in water supply shortage planning and to consider drought in Capital Improvement Plans and Source Water Protection Plans.
    - 11. Develop rangeland fire insurance program that is tied to the response levels identified in the plan.

- iv. Coordinate and provide technical assistance for state, local and watershed planning efforts.
  1. Make completion of local drought plans a priority; including vulnerability & risk assessment in local hazard mitigation plans.
  2. Risk-based water system assessments.
  3. Develop approaches and technology to help agricultural producers adapt to drought.

9. Monitoring

- a. The MSC will conduct monthly meetings to foster a team atmosphere and gain experience.
- b. The MSC will report monthly in written form to the DWSAC and will include the DWSAC in assessment decisions in order to better respond to what is needed by decision makers.
- c. NEED: The MSC will produce a monthly two-page report on water supply conditions that will be made available to the DWSAC and the public through email, the drought.mt.gov website, newsletters, and in print. The DWSAC will collaborate with the Montana Climate Office, Montana Watershed Coordinating Council, Montana Association of Conservation Districts, Montana Association of Counties, DNRC, DES, DEQ and FWP to distribute the report widely.
- d. NEED: The MSC will develop a monitoring system using appropriate data and tools that links into the US Drought Monitor appropriately without losing local context.
  - i. The Montana Water Supply and Moisture Status by County map will be updated to be called the Montana Water Supply Map. The purpose of the map will be to evaluate conditions in an effort to inform the US Drought Monitor as well as assess flooding potential.
  - ii. It will attempt to provide a one-stop shop for any water related impacts that require emergency response. It will also provide a visual assessment tool for what areas are under what kind of state response action, as established in the plan.
  - iii. The map will follow the US DM severity levels for ease of use (D0, D1, D2, D3, etc.)
- e. NEED: The MSC will use regionally specific and well-defined indicators and triggers.
  - i. Severity indicators and impacts should be based on the US DM, the SWSI, SPI, and a way of measuring evapotranspiration (ET).
  - ii. State real-time stream gaging should continue to be an integral part of drought and flood monitoring.
  - iii. Each phase of severity must have corresponding response activities at the state level. Suggestions for local response may be identified.
  - iv. Identify what are best practices in the four planning basins based on water use sector.
  - v. Establish criteria for coming out of drought as well as going into it.
  - vi. Consistent assessment and communication of drought.
  - vii. Early drought impact documentation.

## 10. Emergency Declaration and Response

- a. NEED: Basis for prediction based on a historic understanding of drought impacts.
- b. NEED: Take the specific needs of different sectors and regions (climatic? planning basins?) into account when making decisions.
- c. Evaluate impacts to the following suggested sectors:
  - i. Municipal and Industrial Water Supply (M&I)
  - ii. Agriculture & Livestock
  - iii. Recreation
  - iv. Fisheries & Wildlife
  - v. Tourism
  - vi. Power & Mining
- d. NEED: Multiple response stages – update current Drought Alert and Severe Drought stages to include more variety in assessment and trigger setting.
- e. NEED: Clearly defined actions for sectors and local communities that correspond with drought declaration stages.
  - i. Create a schedule for all response actions.
  - ii. Create a system for declaration and response communication.
  - iii. ID water short zones and a plan for communicating this information (similar to fire danger warning system developed by USFS).
  - iv. Expedite the process for water transfers and permitting of temporary water rights.
  - v. Purchase water rights or permits to keep water in streams.
  - vi. Recommend federal drought concessions (e.g. opening up roadsides for haying).
  - vii. Activate state assistance and technical support to applicable sectors.

## 11. NEED: During and Post-drought Impact Assessment

- a. During Drought:
  - i. Monthly impact reports and water supply assessment.
  - ii. Agricultural report – crop types and how they are faring under drought conditions and a summary of USDA natural disaster designated areas.
  - iii. Fisheries report – fish stranding, restrictions and closures, algal blooms, fish kills.
  - iv. Public Health report – municipal water, wildfire, dust, air pollution
  - v. Water commissioners – collect data on decree implementation in correlation with monthly SWSI map.
  - vi. Water Right Enforcement Projects – work with DNRC to see if drought planning can be reflected in water rights enforcement projects in the database.
- b. After Drought:
  - i. Review the plan after each drought episode and revise as necessary with the governor's approval.
  - ii. Create a report summarizing hydrologic conditions of the drought episode as well as local impacts.



1. Collect impact reports from Municipal and Industrial Water Supply (M&I), Fisheries & Wildlife, Agriculture & Livestock, Recreation, Tourism, and Power & Mining.
  2. Collect reports from local FSA agents, MSU Extension agents, Watershed Coordinators, and Conservation Districts.
  3. Collect groundwater impact report.
  4. Collect CCR Reports for drinking water.
  5. Collect reports from areas identified by as chronically dewatered streams and from over-appropriated basins.
  6. Create a summary report of drought response – where, what was spent, why and impacts.
- iii. Conduct site visits to familiarize the DWSAC with vulnerable areas.
12. NEED: Funding
- a. Create a drought response fund.
    - i. This money will be available for both pre-drought planning efforts as well as long-term mitigation projects. Planning, mitigation and response based on forethought about drought consequences is the focus.
    - ii. It will be administered by the DNRC Water Resources Division in coordination with duties under Montana State Water Plan.
  - b. NEED: Identify the authority, structure and administration for monetizing the drought response fund.
  - c. Modify grants and loans to public water-supply systems to be more conducive to water conservation.
  - d. Contract with the Montana Climate Office for assessment and reporting.
13. NEED: Communication and Coordination
- a. Create a web-based interactive map to search watershed basin (5<sup>th</sup> order HUCs) to identify water use vulnerability and response activities at the local and regional levels.
  - b. Engage a wide variety of stakeholders in drought mitigation and response and include local entities in decisions about any state-wide mitigation programs.
  - c. Have good communication of drought status and appropriate response actions.
  - d. Encourage local governments to develop their own drought plans.
  - e. Work with the media to get water supply conditions more regularly incorporated into the news and weather reporting so that the general public is more aware of the consequences of living in Montana’s unique and semi-arid environment.

Questions for Existing DWSAC on Planning Process:

1. How will we accomplish the vulnerability assessment?
2. Should we contract with the National Drought Mitigation Center (NDMC) for their review?