# Introduction

The objective of the NSW DCP response actions element is to reduce risks to critical assets and resources that were identified during the vulnerability assessment (Element #2) by identifying, evaluating, and prioritizing actions to improve resiliency during drought conditions. Response actions are planned actions that are implemented in a step-wise manner, based on the specific stages of drought identified in the monitoring framework (Element #1). They are not intended to be crisis driven (i.e., in response to unanticipated circumstances); such actions are implemented by emergency response programs. In the pre-drought stage (Stage 1 – “Heads up”), response actions are interrelated with mitigation actions (Element #3), which conserve water and improve resiliency before drought conditions. This relationship between mitigation and response, the process used to identify the NSW DCP response actions, and the final response actions matrix, are described in more detail in this chapter.

This DCP is intended to initiate ongoing, collaborative drought planning in the NSW study area. Over time (i.e., during a recurring period to update the DCP), the response actions matrix should be reviewed and adjusted based on new information, and how well it serves the needs of decision makers and their constituents. Some of this new information is discussed in Section 3 of this chapter.

# REsponse actions

## REsearch

Response actions are one of the most common elements of drought contingency, management, and emergency management planning. A review of state, local and watershed level drought plans compiled on the National Drought Mitigation Center’s website[[1]](#footnote-1) indicates that plans are based upon locally defined stages of drought that increase in intensity; though the number of stages, specific triggers used to define the stages, and individual response actions themselves all differ. For example, the City of Santa Fe, NM[[2]](#footnote-2) uses the three stages and triggers (Figure 1), though the City of Las Vegas, NV[[3]](#footnote-3) uses ten stages.

*Figure 1: City of Santa Fe, NM, stages and triggers*.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Non-Emergency** | **Emergency** | |
| **Stages** | **Normal** | **Warning** | **Crisis** |
| **Green** | **Orange** | **Red** |
| **Triggers** | **Supply >=Unrestricted Demand** | **Supply is 80-100% Unrestricted Demand** | **Supply is 0-10% Unrestricted Demand** |

Three to four stages are the most common in planning, though a greater number may be useful in some cases, depending upon the likelihood of drought and the results of the vulnerability assessment.

Stages are often based upon local water supply conditions. As the intensity of drought conditions increase, the stages increase. For example, the City of Arlington, TX[[4]](#footnote-4) water is supplied by reservoirs, therefore its drought stages are based upon when the total raw water supply in its reservoirs drops to 25%, 40% and then 55% of conservation storage depleted. Stages for the City of Columbia, TN[[5]](#footnote-5), are more varied. Stages 1 through 3 are based upon declining reservoir levels; however, Stage 4 (Emergency Shortage) is based upon when river flow is inadequate to meet water demands.

Of interest, drought response plans prepared at the local level for reservations and watersheds with multiple jurisdictions often emphasize the voluntary nature of coordination and action implementation. The Klamath Basin[[6]](#footnote-6) Drought Plan indicates that a menu of response actions (such as reducing surface water for irrigation, water leasing, forbearance, short-term transfers, groundwater substitution, etc.) are voluntary. The Susquehanna River Basin[[7]](#footnote-7) entities issue public notices of a drought watch/warning/ declaration and call for voluntary water conservation, though the plan indicates that restrictions could be adopted (such as for nonessential water uses applying to individual water users). The Blackfoot Plan[[8]](#footnote-8) explains the need for “shared sacrifice”, and calls for voluntary reduction of water use to maintain in-stream flows. This concept of shared sacrifice to protect critical in-stream and out-of-stream needs and competing demands for water was raised with the Working Group during response action development, and is discussed in the following sections.

## NSW DCP Response action planning process

A Working Group of resource management professionals was convened to review and provide feedback on the NSW DCP response action planning process and matrix. Meetings were held on August 17 and September 20, 2016 to establish a vision/goal for the process, discuss response actions and a draft matrix, and approve the final draft response actions for submittal to the Task Force. Additional input and participants were solicited via email to ensure adequate sector representation. The final list of Working Group participants is provided in Appendix A of this DCP. An overview of this planning process and the results of each step are presented in this section.

### Step 1 – Establish a goal for response actions

During the first meeting, the consultants presented an overview of the amount of water currently used by municipal water providers and irrigation districts in the NSW, and what potential levels of water conservation could look like (in acre-feet) now and in the future. Currently, the possibility of regulatory action is small because a sufficient amount of “public water” is available to all water users. (Stored water released from Detroit Reservoir without an associated water right is considered public water and available for appropriation by downstream water right holders). However, junior water right holders could be at risk for regulation in favor of senior water right holders in the event of multiple years of drought, and water dependent businesses above the reservoir experience drought conditions sooner than lower areas in the watershed. In the future, the amount of “public water” is likely to be reduced after the issuance of water rights to protect stored water releases from Detroit Dam and the conversion of minimum perennial streamflows to instream water rights. This would reduce the amount of water available to all water users/sectors, particularly junior water rights holders (including municipalities), and water-dependent businesses. In the longer-term future, climate change and population growth in the basin are expected to exacerbate these conditions and impacts on all sectors to varying degrees.

This introduction to local water-use provided background for the Working Group to discuss how water use and water users affect one another within the watershed, now and in the future. One group member suggested that if all water rights holders reduce water use, it could benefit in-stream natural resources (e.g., vulnerable listed fish) as well as provide “insurance” for the reservoir (e.g., vulnerable recreational assets). Another member suggested that a watershed-wide plan could help inform the next Willamette Project Biological Opinion, which will likely be developed prior to 2023. And another indicated that, while regulatory action has not yet occurred in this watershed, it is occurring in other areas so there is precedent. However, a collaborative effort, where watershed residents direct their own response to drought conditions could replace the need for future regulation. It is all “one water”, and residents must protect one another and the critical natural resources within the watershed during drought.

The outcome of this discussion was the following goal for implementing response actions:

*As participants of the NSW DCP, drought response actions in the N. Santiam Watershed will be implemented on a collaborative, voluntary, and watershed-wide basis. Response efforts will be directed by the overarching operational framework outlined in Chapter 5 of the DCP (yet to be developed). It is the intent that all sectors and local water users, regardless of vulnerability, will participate in the response actions identified in this DCP to reduce impacts to the health, safety, and welfare of communities; economies; and the critical natural resources within the watershed.*

### Step 2 – Develop a prioritized draft response action matrix framework

Using information compiled from the research (Section 2.1) and the stages and indicators identified during development of the monitoring framework (Element #1), the consultants prepared a draft response actions framework. The framework identifies five categories of response actions that are prioritized based upon progressive stages of drought (i.e., public education begins in Stage 1, whereas emergency response begins in Stages 3 and 4):

* Public education and relations
* Monitoring and evaluation
* Water rights management
* Water conservation
* Emergency response

Additional detail about these categories is provided in Section 2.2.4.

Each category includes several more-specific response actions, and identifies the relevant sectors, lead entities for implementation[[9]](#footnote-9), and relevant stage of implementation for each action. (Implementation of each response action may correspond to one or more stages of drought.) The four drought stages for implementation correspond to the following stages in the drought monitoring framework:

* Stage 1 – Heads up
* Stage 2 – Moderate drought
* Stage 3 – Severe drought
* Stage 4 – Extreme drought

### Step 3 – Populate response action matrix (develop actions for each drought stage)

With the framework drafted, the Working Group provided preliminary input at the first meeting for response actions that they would like to see included in the matrix. In addition, the consulting team reviewed existing response actions for those Working Group members that currently operate under their own response programs. For example, the City of Salem implements a 4-stage curtailment plan with its own triggers that are identified in their Water Conservation and Management Plan (WMCP) (Figure 2).

*Figure 2: Salem Curtailment Plan Stages*

The SWCD also lists curtailment options in its WMCP (although this document is under revision) that can be triggered based upon state declaration of drought[[10]](#footnote-10). Using this information and local knowledge, the consultants populated the draft NSW DCP response actions matrix (Figure 3). [Note: This will be inserted in the final PDF.]

The NSW response actions matrix is intended to primarily focus on those actions that can be conducted on a watershed-wide basis, and provide flexibility for water users to continue to use their existing plans. For example, one (draft) NSW DCP response action is to “Practice ‘wise water use’”. For the SWCD, this may mean “Decrease operation and management spills to near zero”, whereas for the City of Salem, this may mean “Discontinue operating City decorative fountains that do not recirculate water”. For those entities that do not have existing response plans, their final local response actions should be determined by their planning and governing bodies with the specific intent to conserve water and protect vulnerable assets and resources within the watershed.

#### Objectives

After discussion with the Working Group, it was agreed that all actions will be implemented on an as needed, collaborative, voluntary, and watershed-wide basis. For example, if additional streamflow is needed in Stages 3 or 4, a water rights holder may voluntarily forebear (ie., stop) use, or switch to an alternate source. The amount of water is not specified. There were several reasons for not including numeric objectives (e.g., 10 percent reduction at a specific flow measurement location) for water conservation, including: political, budgetary, lack of enforcement capacity (even if objectives are voluntary), inability to quantify the benefits, and insufficient infrastructure to currently measure baseline withdrawal accurately. On-going collaboration with state and federal natural resource managers is needed to provide guidance on the appropriate numeric objectives for meaningful conservation. As an alternative, voluntary reduction objectives will be included in outreach messaging (see Step 4, Stages 2, 3 and 4). Overall, the Working Group preferred a voluntary approach for this first iteration of the DCP. If voluntary measures do not increase resiliency, numeric objectives may be considered in future plan iterations.

#### Relationship between Mitigation and Response Actions

In Stage 1, response actions are interrelated with mitigation actions (Element #3), which are the actions to conserve water and improve resiliency before drought conditions. The distinction is drawn between preparing for drought and implementing preparations. This is most clear with public education. One mitigation action that Marion County is working on is to prepare a pre-scripted response messaging program. Implementation of this program, that is, issuing the messages on websites and in newspapers, even in Stage 1, is a response action that will let watershed residents know how monitoring indicators are changing and inform of worsening conditions.

### Step 4 – Finalize and approve response actions matrix

At the second Working Group meeting, members reviewed each response action for its inclusion in the final draft matrix, as well as the drought stage identified as the implementing guideline. The Working Group agreed that the following response actions should be included:

**Stage 1: Heads Up**

Conservation Messaging, Public Education and Outreach

* **Carry out response action messaging for each drought stage**.

Watershed-wide response action messaging (developed during the mitigation action element) should be communicated in a stylized, branded manner (also developed as a mitigation action), using partner websites, newspapers and press releases. The need to communicate: (1) how upstream areas of the watershed will be in drought before downstream areas, (2) how all residents within the watershed are conserving water (e.g., “shared sacrifice”), and (3) why conservation is important, are key ideas for messaging. Both instream flow and supply should be discussed. A map could be added with details. Example messages could include:

* + The watershed is in Stage 1/Heads up drought. Many sectors depend upon the N. Santiam River. Here’s how others in the watershed are affected by drought. Practice using water wisely. Here’s how (provide examples of wise water use such as in WMCPs, and information about future response action opportunities such as water rights leasing – explained below).

Municipal, agricultural, natural resource managers, and recreation owners would be expected to collaborate on and benefit from this response action. Marion County emergency public information officers and City emergency response managers already engage multiple sectors in natural hazard mitigation preparedness, response and recovery and should participate in this effort. Resulting messages should then be shared with other agencies and sectors within the watershed. Establishing a partnership to develop and implement outreach and common messaging (ie., templates), and a common "brand" for watershed-wide dissemination of drought stages and voluntary conservation efforts is a short term mitigation action in this plan.

Monitoring and evaluation

* **Continue to track and report drought monitoring framework indicators.**
* **Coordinate among N. Santiam Watershed water providers, managers, and users.**

Both of these response actions are critical for preparing for and responding to drought by using the appropriate response actions for each drought stage. Using the NSW DCP monitoring framework to track drought stage is critical to triggering coordinated implementation of actions. Coordination is necessary to prepare for and implement response actions watershed wide, and promote voluntary withdrawal reductions to reduce vulnerability to key assets and resources. Municipal, agricultural, natural resource managers, recreation and commercial/industrial users would be expected to collaborate on these response actions to benefit all water users in the watershed.

Water rights management

* **Forebear use**

Water rights owners currently have the ability to forbear use of any portion of their water at any time. That is, they can voluntarily stop or reduce their water use during the season to leave more water instream during critical periods to protect vulnerable instream natural resources.

* **Switch to an alternate water source**

A separate, or complimentary, option that is currently available is to leave water instream and switch to an alternate water source, such as groundwater or impounded water. This response action provides the same benefits as forbearing use, though in certain areas, groundwater withdrawals could also impact water levels in neighboring wells or reduce groundwater contributions to instream flow. It may be best to implement this response action only after consulting local natural resources managers (ie., NRCS, watershed councils)

* **Lease water rights (full or split-season leases)**

An option that is currently available but not used very often in the N. Santiam is leasing instream of certificated water rights. Water rights leasing provides water right holders with a voluntary opportunity to leave water instream to protect natural resources when needed, but still protect rights for future beneficial out-of-stream use. (Leasing a water right instream is considered a beneficial use and protects the water right from forfeiture due to non-use). There are two different types of water rights leases: full and split-season. As part of the full lease, a water rights owner would indicate a specific number of acres that they voluntarily elect not to irrigate for the full season. A split-season lease requires an owner to measure the amount of water used so that the amount of water remaining for instream use can be quantified.

Municipal, agricultural, natural resource managers, and commercial/industrial users would be expected to collaborate on and benefit from this response action. Developing and seeking funding to incentivize a water rights leasing program is a high priority mitigation action in this plan.

Water conservation

* **Implement strategies identified in Water Management and Conservation Plans (WMCPs)**

As discussed in Section 2.2.3, entity-specific WMCPs (e.g., cities, SWCD) include curtailment plans that identify their own response actions for implementation at each curtailment stage. Actions may be for the entity itself and/or its customers. Though individually-defined curtailment stages may not exactly align with watershed-wide defined DCP drought stages, some parallels can be drawn. One suggested mitigation action is to align stages in curtailment plans with the DCP monitoring framework stages. Examples of local response actions from a city-specific curtailment plan include:

City actions

* Reduce watering at City facilities and/or parks as determined by the City Manager.
* Discontinue operating City decorative fountains that do not recirculate water.
* Limit City hydrant and water line flushing to essential needs for safety and human health.
* Prohibit City-staff from washing sidewalks, walkways, streets, driveways, parking lots, or other hard surfaces except where necessary for public health or safety.
* Discontinue washing City vehicles.

Customer actions

* Request that City water customers voluntarily reduce outdoor water uses such as lawn watering, car washing, patio cleaning, etc.

**Stage 2: Moderate Drought**

All Stage 1 response actions should be implemented in Stage 2. The following additional actions also can be implemented:

Conservation Messaging, Public Education and Outreach

* **Carry out response messaging (as developed during mitigation action development), using partner websites, newspapers and press releases.** Messaging should convey how upstream areas of the watershed may be in drought before downstream areas, how all residents within the watershed are conserving water, and why conservation is important. More information is provided in Stage 1 above. Example messages in Stage 2 could include:
  + The watershed is in Stage 2/Moderate drought. Some areas in the watershed are experiencing drought and drought impacts (eg., recreation is slow because reservoir levels are low; green bean yield is low because growers are water less). Here’s how everyone is saving water (provide examples). Please voluntarily reduce water by 5 percent. Here’s how you can do it (provide examples).

Monitoring and evaluation

* **Compile socioeconomic and environmental impacts of drought (ie. local data) for use in funding applications, messaging, and refinement of the vulnerability assessment**

As noted in the Vulnerability Assessment, local data quantifying impacts of drought on each of the sectors is a datagap. This information would be useful for refining the assessment, as well as for messaging, identifying future effective actions to build resiliency, and “making the case” in grant applications to obtain funding to implement these actions. Municipal, agricultural, natural resource managers, and the recreation sector (the most vulnerable sectors) would be expected to collaborate on and benefit from this response action.

**Stage 3: Severe Drought**

All Stage 1 and Stage 2 response actions can be implemented in Stage 3. The following additional actions also can be implemented:

Conservation Messaging, Public Education and Outreach

* **Carry out response messaging (as developed during mitigation action development), using partner websites, newspapers and press releases.** More information is provided in Stages 1 and 2 above. Example messages in Stage 3 could include:
  + The watershed is in Stage 3/Severe drought. All areas in the watershed are experiencing drought and drought impacts. Conservation is important to help prevent Stage 4. Here’s how everyone is saving water (provide examples). Please voluntarily reduce water by 10 percent. Here’s how you can do it (provide examples).

Water rights management

* **Implement drought emergency water rights tools (ie., temporary transfers of water rights, emergency water use permits, and use of existing right option/agreement) available during governor declared drought**

A Governor’s drought declaration enables counties to benefit from emergency streamlined water rights programs, ground water usage, and other programs[[11]](#footnote-11). These program include the ability to obtain: an emergency water use permit to replace water not available under an existing water right; temporary drought transfers to temporarily change water rights type of use, place of use and point of diversion; temporary drought instream leases; and temporary substitution of a supplemental groundwater right for a primary surface water right. In addition, under a Governor’s drought declaration, it is possible to exercise a pre-approved agreement or option for moving water use from one location to another or for use by another entity. Municipal and agricultural sectors would be expected to collaborate on and benefit from this response action. The ability to use these tools prior to a Governor’s drought declaration (and based on having an approved DCP) is a mitigation action.

Emergency response

* **Seek state and federal assistance for emergency response actions**

Federal. Drought declaration may be granted at the federal level if the U.S. Drought Monitor (http://droughtmonitor.unl.edu/), indicates that a county is under intensity value D2 (Severe Drought) for eight consecutive weeks. The following federal drought benefits may be granted:

* NRCS – Technical and financial assistance
* Farm Services – Loan program to establish wells and overcome financial difficulties
* Rural Development – Loan programs to alleviate water shortages in rural areas
* American Red Cross – Technical assistance to distribute water and first aid from central sites to the municipal sector
* Department of Defense – Transport water for 30 days, drill wells for human consumption (after all other assistance is exhausted)
* Department of Health and Human Services – Technical, medical, and financial assistance
* Small Business Administration – Loans to homeowners and businesses to restore damaged property

State. Drought declaration may be granted at the state level11 when:

* County commissioners request by letter that the Governor declare a “drought emergency” “due to severe and continuing drought conditions.
* Copies of county requests are then forwarded to the Office of Emergency Management who forwards to the State Drought Council to provide recommendations and action.
* A State Drought Council meeting is then held to discuss climate and water conditions and to make a recommendation on the county request. Recommendations are then submitted to the Governor to approve or deny, or continue monitoring.

Assistance requests at the state level should be directed to the Oregon Emergency Management office in Salem (503-378-6377), or OWRD (503-378-8455). The Department of Administrative Services may authorize agencies to purchase without competitive bidding, and may purchase emergency supplies or equipment on behalf of agencies.

Additional details about federal and state agencies, and the assistance they can provide, is found at: <https://www.oregon.gov/OMD/OEM/fin_rec/docs/drought/drought_info_sheet_OEM.pdf>

Local. Ultimate responsibility for providing water service to citizens lies with the local water districts. Each jurisdiction is responsible for its own water supplies and maintenance of facilities. Assistance from the County and State will be in the form of personnel and equipment as requested by the affected area. Examples of emergency response assistance at the county level include:

* Submitting a request for emergency/disaster declaration
* Identifying and securing alternative drinking water supplies
* Providing emergency response messaging for radio and television
* Identifying contractor and vendors
* Coordinating with state and local supporting agencies

Assistance requests at the local level should be directed to Marion County Emergency Management Services (503-588-5108) or Linn County Sheriff’s Office, which is responsible for its Emergency Management Program (541-967-3950).

* **Implement Marion County Disaster Recovery Plan**

Marion County is working on completing a Disaster Recovery Plan that comprises the short and long term steps the County will take after an emergency to restore government function and community services to levels existing prior to the emergency. Short-term operations seek to restore vital services to the community and provide for the basic needs of the public (e.g., power, communication, water and sewage) to an acceptable standard while providing for basic human needs (e.g., life safety, food, clothing, and shelter). Once stability is achieved, long-term recovery efforts focus on restoring the community to a normal or improved state of affairs. Currently, the County’s Emergency Action Plan Annex ESF-18, Community Recovery and Economic Stabilization summarizes specific procedures and plans to support recovery, mitigation, and economic stabilization following a disaster.

**Stage 4: Extreme Drought**

All Stage 1 through 3 response actions can be implemented in Stage 4. The following additional actions also can be implemented

Conservation Messaging, Public Education and Outreach

* **Carry out response messaging (as developed during mitigation), using partner websites, newspapers and press releases.** More information is provided in Stages 1 and 2 above. Example messages in Stage 4 could include:
  + The watershed is in Stage 4/Extreme drought. The watershed is in extreme drought. Here’s how everyone is saving water (provide examples). Only use water for essential purposes (provide examples).

Emergency response

* **Carry out water hauling programs**

Assistance requests at the local level should be directed to Marion County Emergency Management Services. Local governments may request emergency water transportation from the following state departments: Department of Forestry (non-potable), when not being used for firefighting, Department of Transportation, Department of Fish and Wildlife, Military Department (National Guard). The municipal sector would be expected to benefit from this response action.

* **Dredge intakes, alter diversions**

Municipal water supplies are sourced from the North Santiam by intakes; agricultural water supplies are sourced by intakes and diversions. Poor water quality (ie., algae) due to low water may foul intakes; low water itself may disable both intakes and diversions. Dredging intakes and altering diversions may allow them to access water at lower flow. Because these activities are in-water actions, permits and consultations with state agencies are required, and should only be considered as emergency actions, such as to protect health, safety and welfare.

Municipal and agricultural sectors would be expected to collaborate on and benefit from this response action. Two related projects are long-term mitigation actions in this plan: Seeking funding for the design and implementation of upgrades to the Upper and Lower Bennett Dams (for irrigation), and evaluating alternatives to the Geren Island intake to access water at low flow (City of Salem).

# recommendations and datagaps

Marion County is working with the University of Oregon to inventory the drought (and other hazard mitigation) concerns of the smaller cities within the watershed. The Marion County Multijurisdictional Hazard Mitigation Plan will identify action items for future implementation, including infrastructure upgrades. The Plan should be complete and adopted in December 2016. Actions and projects in the Plan should be evaluated for inclusion as mitigation or response actions in this DCP.

# [note to reader regarding next steps]

The results of the mitigation and response action chapters will be incorporated into the next DCP chapters for Operational and Administrative Framework (Element #5), and the chapter for DCP Update Process (Element #6). Working Group meetings for these elements will be convened after the November Task Force meeting.

1. <http://drought.unl.edu/Planning/DroughtPlans/StateDroughtPlans/CurrentStatePlans.aspx> [↑](#footnote-ref-1)
2. City of Santa Fe Water Conservation and Drought Management Plan (2015) http://drought.unl.edu/archive/plans/drought/city/SantaFeNM\_2014.pdf [↑](#footnote-ref-2)
3. City of Las Vegas Drought Contingency and Emergency Response Plan (2011) http://www.lasvegasnm.gov/Water\_Shortage\_Action\_Plan.pdf [↑](#footnote-ref-3)
4. Arlington TX Drought Contingency and Emergency Water Management Plan (2014) http://www.arlington-tx.gov/water/wp-content/uploads/sites/3/2014/05/City-of-Arlington-2014-Drought-Contingency-and-Emergency-Water-Management-Plan-May2014.pdf [↑](#footnote-ref-4)
5. City of Columbia TN Drought Management Plan (2011) http://www.cpws.com/Files/Drought%20Management%20Plan\_Dec2011.pdf [↑](#footnote-ref-5)
6. Klamath Basin Restoration Agreement Drought Plan (2011) http://216.119.96.156/Klamath/library/DroughtPlan2011\_0711.pdf [↑](#footnote-ref-6)
7. Susquehanna River Basin Drought Coordination Plan (2000) http://www.srbc.net/hydrologic/docs/dm212.pdf [↑](#footnote-ref-7)
8. Blackfoot Drought Response Plan (2010) http://www.blackfootchallenge.org/Clone//wp-content/uploads/2012/06/Blackfoot-Drought-Response-Plan.pdf [↑](#footnote-ref-8)
9. Additional detail will be provided in an overarching operational and administrative framework outlined in Element 5 of the DCP (yet to be developed). [↑](#footnote-ref-9)
10. Oregon Drought Council makes recommendations to the state Emergency Management Group, which then provides a recommendation to the Governor on which areas in the state should be declared as a Drought Area. If the Governor officially declares the specific county or region as a Drought Area, the SWCD is then allowed to use any of the applicable tools under OAR 690-15-300 and ORS 540.523 for temporary water right transfer, water supplementation, qualify for federal relief funds, etc. [↑](#footnote-ref-10)
11. <https://www.oregon.gov/OMD/OEM/fin_rec/docs/drought/drought_procedures.pdf> (2014) [↑](#footnote-ref-11)