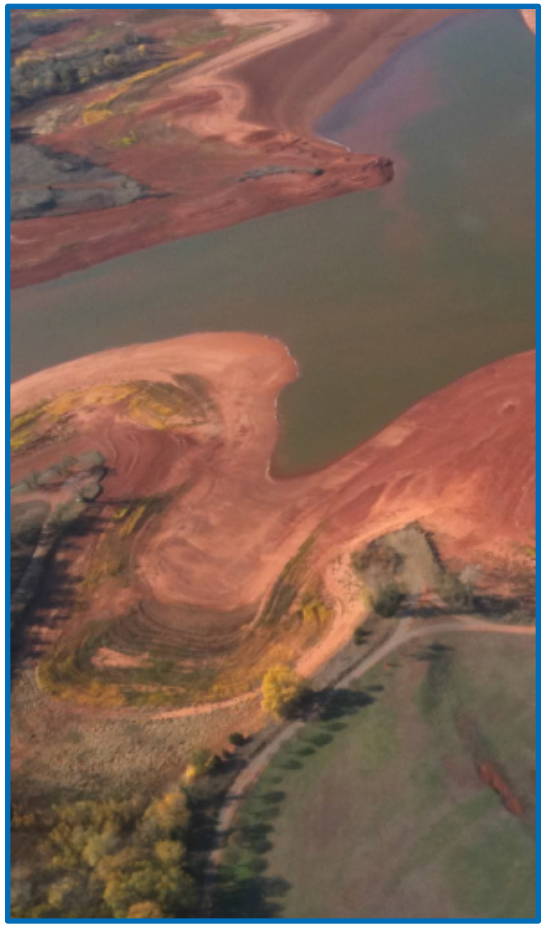
Drought Response and Recovery

A Basic Guide for Water Utilities

Drought Response and Recovery

Project Drivers



- Extreme and prolonged droughts can and have impacted water utilities across the U.S.
- Small to medium-sized water systems could use a user-friendly tool that outlines *short-term actions they can take to respond to drought* that also build long-term resilience
- Regardless of previous drought experience, utilities want to learn how other communities similar to them have responded to severe drought conditions

Drought Response and Recovery

Project Approach

- Captured lessons learned from six diverse case studies (varying location, system type, etc.) which helped to drive Guide content

- Worked with Water Sector Focus Group throughout Guide development

Case Study Visits:

- *Tuolumne Utilities District, CA
- *Spicewood Beach Water System, TX
- City of Las Vegas, NM
- City of Hogansville, GA
- Cities of Hays and Russell, KS
- City of Clinton, OK

*Pilot utility: included in-depth assessment

Guide Home Page

DROUGHT RESPONSE AND RECOVERY

A Basic Resilience Guide for Water Utilities

Select a menu option below. New users should start with Overview and Navigation.

Overview and Navigation

Staffing, Response Plans and Funding

Water Supply and Demand Management

Communication and Partnerships

Case Studies and Videos

EPA

Next ▶

Guide Navigation

Informational and Easy-To-Use

EPA

Staffing, Response Plans and Funding

Water Supply and Demand Management

Communication and Partnerships

Case Studies and Videos

NAVIGATING THE GUIDE

The Guide is divided into four sections:

- Staffing, Response Plans and Funding
- Water Supply and Demand Management
- Communication and Partnerships
- Case Studies and Videos

Navigate within and between sections using the clickable links on the far left and buttons on the navigation bar at the bottom of each page. Click Next ▶ or ◀ Previous to move page by page through the Guide.

Sections feature:

- Call-out boxes highlighting best practices and real-world examples
- Web links for learning more about specific topics
- Easy-to-use worksheets for specific activities in each section

Note that all of the worksheets as well as additional resources related to drought response and recovery can be found by clicking on "Resources" at the bottom of each page. Navigate directly to the Case Studies and Videos section for more detail on the six case study utilities that successfully responded to drought, and provided best practices and real-world examples referenced throughout the Guide. The Case Studies and Videos section will link you to the "Drought Response and Recovery Project: Case Studies Map." This website features a geoplatform map that hosts short videos on each case study.

In addition to the six case study utilities, videos on the site also cover:

- System efficiency and new water sources
- Water demand
- Partnerships

WORKSHEETS

Look for the worksheet icon to open the worksheets in Microsoft Word and Excel. You can fill in the worksheets and save the information to your computer.

Use these worksheets as a starting point, and add to them as needed.

Drought Response and Recovery Project: Case Studies Map

VIDEOS

Clicking on this video icon embedded throughout the Guide will take you to the EPA's Drought Response and Recovery Project: Case Studies Map website to view short videos.

You must be connected to the Internet to be taken to that website. The website features all the videos referenced in this Drought Guide. Click on the tabs at the top of the Case Studies Map website to browse through the videos. The Overview tab explains how to use the map.

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Resources ◀ Previous Next ▶

Quick navigation between sections and pages

Explore the Drought Guide more easily through:

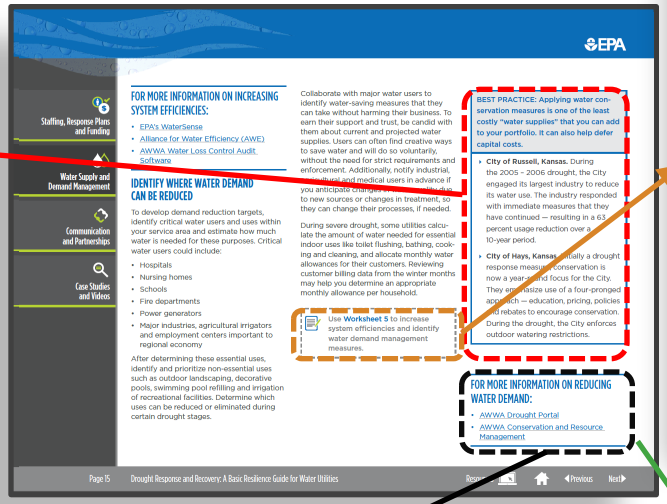
- Simple icons for tabs, worksheets and videos
- Separate boxes embedded throughout that represent certain types of info
- Sections broken up into key areas with bullets

Guide Features

Best Practices, Worksheets, Links and More

BEST PRACTICE: Applying water conservation measures is one of the least costly "water supplies" that you can add to your portfolio. It can also help defer capital costs.

- **(Corix) Spicewood Beach Water System.** The Texas utility's drought response plan established reduction goals and specific drought response measures to curtail non-essential uses and utilize alternate water sources. For example, during Stage 2 drought, the plan includes measures such as 10 to 20 percent reduction in water use, no more than twice per week irrigation during limited hours, no hydrant flushing, and additional measures for pools and outdoor water features.



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Staffing, Response Plans and Funding

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FOR MORE INFORMATION ON INCREASING SYSTEM EFFICIENCIES:

- EPA's WaterSense
- Alliance for Water Efficiency (AWE)
- AWWA Water Loss Control Audit Software

IDENTIFY WHERE WATER DEMAND CAN BE REDUCED

To develop demand reduction targets, identify critical water users and uses within your service area and estimate how much water is needed for these purposes. Critical water users could include:

- Hospitals
- Nursing homes
- Schools
- Fire departments
- Power generators
- Major industries, agricultural irrigators and employment centers important to regional economy

After determining these essential uses, identify and prioritize non-essential uses such as outdoor landscaping, decorative pools, swimming pool refilling and irrigation of recreational facilities. Determine which uses can be reduced or eliminated during certain drought stages.

Collaborate with major water users to identify water-saving measures that they can take without harming their business. To earn their support and trust, be candid with them about current and projected water supplies. Users can often find creative ways to save water and will do so voluntarily, without the need for strict requirements and enforcement. Additionally, notify industrial, agricultural and medical users in advance if you anticipate changes in water supply, due to new sources or changes in treatment, so they can change their processes, if needed.

During severe drought, some utilities calculate the amount of water needed for essential indoor uses like toilet flushing, bathing, cooking and cleaning, and allocate monthly water allowances for their customers. Reviewing customer billing data from the winter months may help you determine an appropriate monthly allowance per household.

Use **Worksheet 5** to increase system efficiencies and identify water demand management measures.

BEST PRACTICE: Applying water conservation measures is one of the least costly "water supplies" that you can add to your portfolio. It can also help defer capital costs.

- **City of Russell, Kansas.** During the 2005 - 2006 drought, the City engaged its largest industry to reduce its water use. The industry responded with immediate measures that they have continued — resulting in a 63 percent usage reduction over a 10-year period.
- **City of Hays, Kansas.** Initially a drought response measure, conservation is now a year-round focus for the City. They emphasize use of a four-pronged approach — education, pricing, policies and rebates to encourage conservation. During the drought, the City enforces outdoor watering restrictions.

FOR MORE INFORMATION ON REDUCING WATER DEMAND:

- AWWA Drought Portal
- AWWA Conservation and Resource Management

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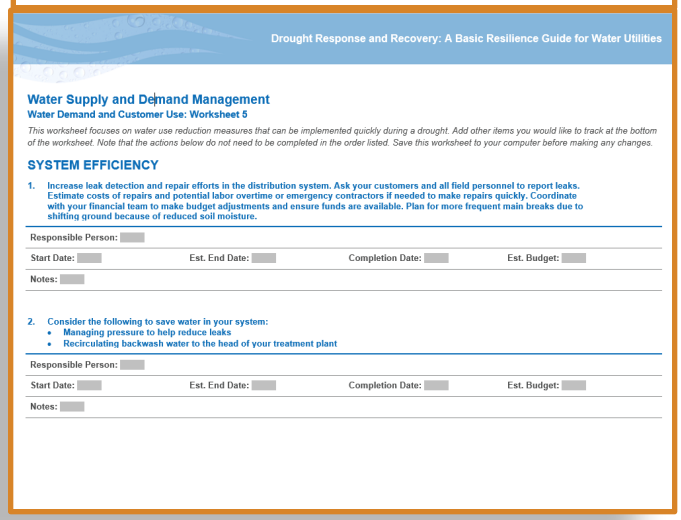
Use **Worksheet 5** to identify water demand management measures that can be implemented quickly.



Drought Response and Recovery: A Basic Resilience Guide for Water Utilities

Water Supply and Demand Management

Water Demand and Customer Use: Worksheet 5

This worksheet focuses on water use reduction measures that can be implemented quickly during a drought. Add other items you would like to track at the bottom of the worksheet. Note that the actions below do not need to be completed in the order listed. Save this worksheet to your computer before making any changes.

SYSTEM EFFICIENCY

1. **Increase leak detection and repair efforts in the distribution system. Ask your customers and all field personnel to report leaks. Estimate costs of repairs and potential labor overtime or emergency contractors if needed to make repairs quickly. Coordinate with your financial team to make budget adjustments and ensure funds are available. Plan for more frequent main breaks due to shifting ground because of reduced soil moisture.**

Responsible Person:

Start Date: Est. End Date: Completion Date: Est. Budget:

Notes:

2. **Consider the following to save water in your system:**
   - **Managing pressure to help reduce leaks**
   - **Recirculating backwash water to the head of your treatment plant**

Responsible Person:

Start Date: Est. End Date: Completion Date: Est. Budget:

Notes:

FOR MORE INFORMATION ON WATER DEMAND MANAGEMENT:

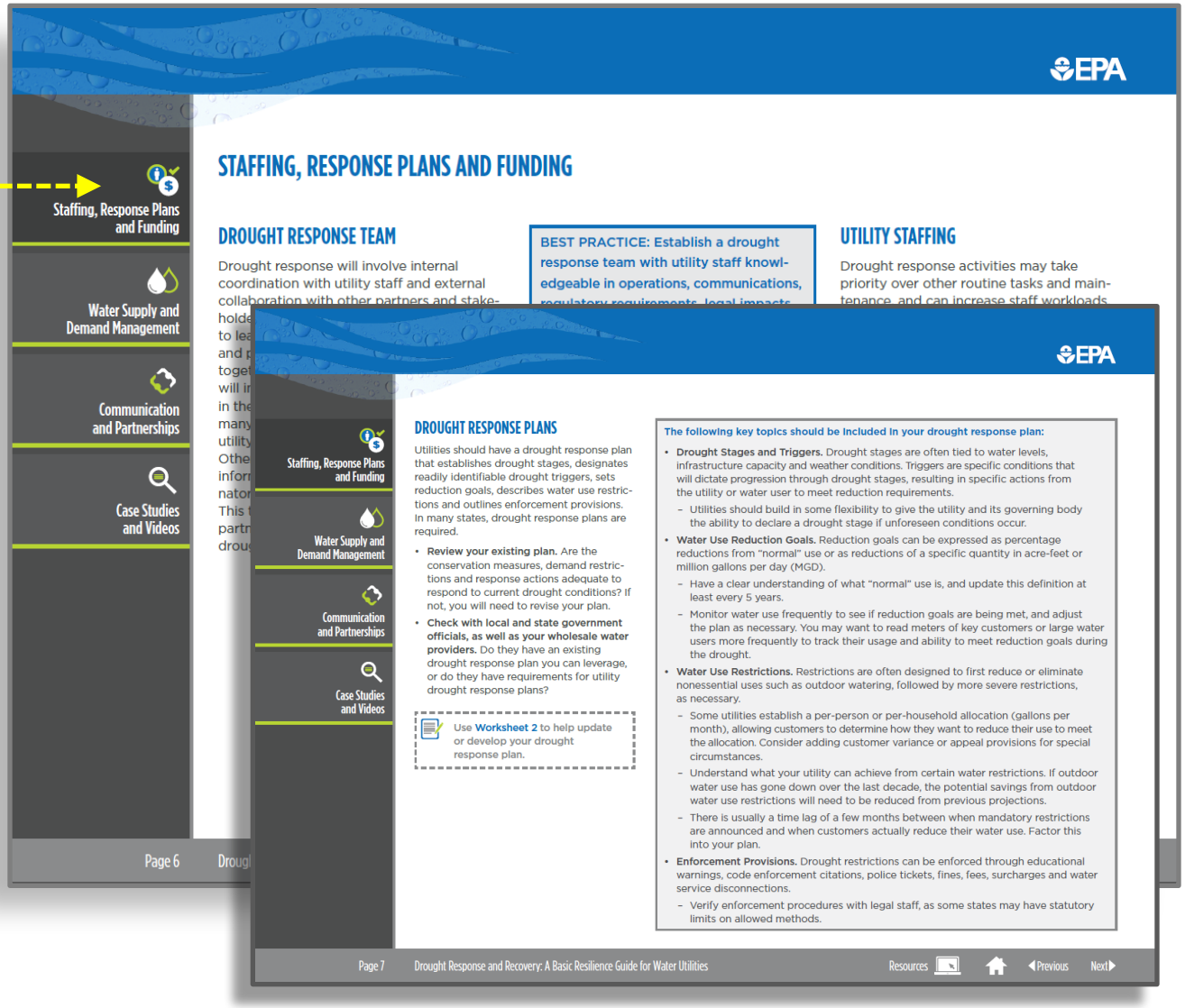
- Alliance for Water Efficiency (AWE)
- AWWA Drought Portal
- EPA's WaterSense
- AWWA Conservation and Resource Management

After the Drought:

- Continue to implement your leak detection and repair program that ensures a prompt response mechanism for utility staff to make repairs. Prioritize and repair or replace components in the water distribution network that could lead to leaks.
- Look for other ways to use water efficiently throughout your utility or other departments, such as installing low-flow fixtures, retrofitting landscapes and replacing inefficient irrigation systems.
- Initiate a program to conduct annual water loss audits.

Drought Response and Recovery Guide

Staffing, Response Plans and Funding (1A)



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Staffing, Response Plans and Funding

Water Supply and Demand Management

Communication and Partnerships

Case Studies and Videos

STAFFING, RESPONSE PLANS AND FUNDING

DROUGHT RESPONSE TEAM

Drought response will involve internal coordination with utility staff and external collaboration with other partners and stake-

BEST PRACTICE: Establish a drought response team with utility staff knowledgeable in operations, communications, regulatory requirements, legal impacts

UTILITY STAFFING

Drought response activities may take priority over other routine tasks and maintenance, and can increase staff workloads

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EPA

Staffing, Response Plans and Funding

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DROUGHT RESPONSE PLANS

Utilities should have a drought response plan that establishes drought stages, designates readily identifiable drought triggers, sets reduction goals, describes water use restrictions and outlines enforcement provisions. In many states, drought response plans are required.

- **Review your existing plan.** Are the conservation measures, demand restrictions and response actions adequate to respond to current drought conditions? If not, you will need to revise your plan.
- **Check with local and state government officials, as well as your wholesale water providers.** Do they have an existing drought response plan you can leverage, or do they have requirements for utility drought response plans?

Use **Worksheet 2** to help update or develop your drought response plan.

The following key topics should be included in your drought response plan:

- **Drought Stages and Triggers.** Drought stages are often tied to water levels, infrastructure capacity and weather conditions. Triggers are specific conditions that will dictate progression through drought stages, resulting in specific actions from the utility or water user to meet reduction requirements.
  - Utilities should build in some flexibility to give the utility and its governing body the ability to declare a drought stage if unforeseen conditions occur.
- **Water Use Reduction Goals.** Reduction goals can be expressed as percentage reductions from "normal" use or as reductions of a specific quantity in acre-feet or million gallons per day (MGD).
  - Have a clear understanding of what "normal" use is, and update this definition at least every 5 years.
  - Monitor water use frequently to see if reduction goals are being met, and adjust the plan as necessary. You may want to read meters of key customers or large water users more frequently to track their usage and ability to meet reduction goals during the drought.
- **Water Use Restrictions.** Restrictions are often designed to first reduce or eliminate nonessential uses such as outdoor watering, followed by more severe restrictions, as necessary.
  - Some utilities establish a per-person or per-household allocation (gallons per month), allowing customers to determine how they want to reduce their use to meet the allocation. Consider adding customer variance or appeal provisions for special circumstances.
  - Understand what your utility can achieve from certain water restrictions. If outdoor water use has gone down over the last decade, the potential savings from outdoor water use restrictions will need to be reduced from previous projections.
  - There is usually a time lag of a few months between when mandatory restrictions are announced and when customers actually reduce their water use. Factor this into your plan.
- **Enforcement Provisions.** Drought restrictions can be enforced through educational warnings, code enforcement citations, police tickets, fines, fees, surcharges and water service disconnections.
  - Verify enforcement procedures with legal staff, as some states may have statutory limits on allowed methods.

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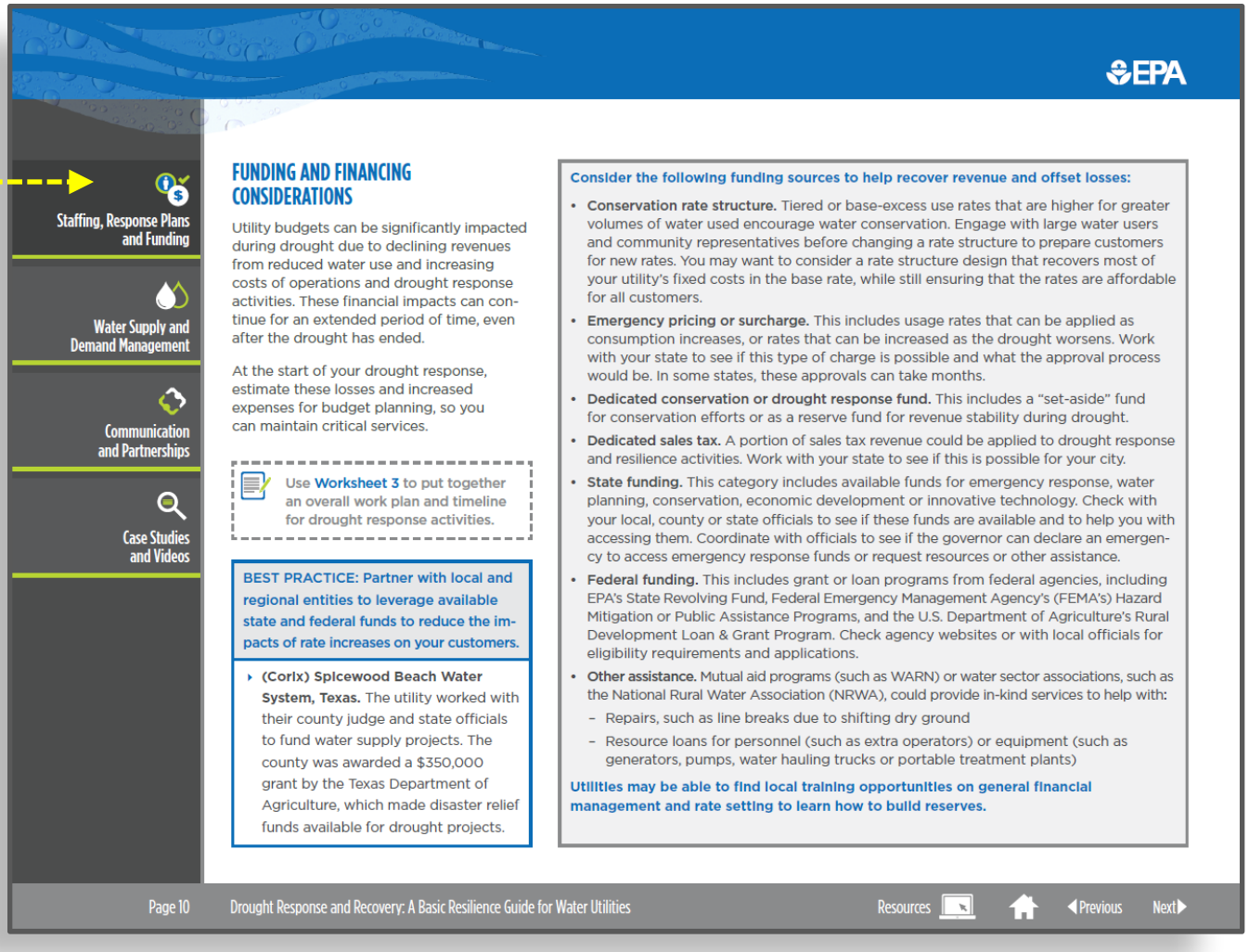
Topics cover:

- Developing a drought response team
- Considerations and challenges with utility staffing
- Key points to include in a drought response plan
- Tips and tools for training on and exercising drought response

Drought Response and Recovery Guide

Staffing, Response Plans and Funding (continued)



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Staffing, Response Plans and Funding

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FUNDING AND FINANCING CONSIDERATIONS

Utility budgets can be significantly impacted during drought due to declining revenues from reduced water use and increasing costs of operations and drought response activities. These financial impacts can continue for an extended period of time, even after the drought has ended.

At the start of your drought response, estimate these losses and increased expenses for budget planning, so you can maintain critical services.

Use **Worksheet 3** to put together an overall work plan and timeline for drought response activities.

BEST PRACTICE: Partner with local and regional entities to leverage available state and federal funds to reduce the impacts of rate increases on your customers.

- **(Corix) Spicewood Beach Water System, Texas.** The utility worked with their county judge and state officials to fund water supply projects. The county was awarded a $350,000 grant by the Texas Department of Agriculture, which made disaster relief funds available for drought projects.

Consider the following funding sources to help recover revenue and offset losses:

- **Conservation rate structure.** Tiered or base-excess use rates that are higher for greater volumes of water used encourage water conservation. Engage with large water users and community representatives before changing a rate structure to prepare customers for new rates. You may want to consider a rate structure design that recovers most of your utility's fixed costs in the base rate, while still ensuring that the rates are affordable for all customers.
- **Emergency pricing or surcharge.** This includes usage rates that can be applied as consumption increases, or rates that can be increased as the drought worsens. Work with your state to see if this type of charge is possible and what the approval process would be. In some states, these approvals can take months.
- **Dedicated conservation or drought response fund.** This includes a "set-aside" fund for conservation efforts or as a reserve fund for revenue stability during drought.
- **Dedicated sales tax.** A portion of sales tax revenue could be applied to drought response and resilience activities. Work with your state to see if this is possible for your city.
- **State funding.** This category includes available funds for emergency response, water planning, conservation, economic development or innovative technology. Check with your local, county or state officials to see if these funds are available and to help you with accessing them. Coordinate with officials to see if the governor can declare an emergency to access emergency response funds or request resources or other assistance.
- **Federal funding.** This includes grant or loan programs from federal agencies, including EPA's State Revolving Fund, Federal Emergency Management Agency's (FEMA's) Hazard Mitigation or Public Assistance Programs, and the U.S. Department of Agriculture's Rural Development Loan & Grant Program. Check agency websites or with local officials for eligibility requirements and applications.
- **Other assistance.** Mutual aid programs (such as WARN) or water sector associations, such as the National Rural Water Association (NRWA), could provide in-kind services to help with:
  - Repairs, such as line breaks due to shifting dry ground
  - Resource loans for personnel (such as extra operators) or equipment (such as generators, pumps, water hauling trucks or portable treatment plants)

Utilities may be able to find local training opportunities on general financial management and rate setting to learn how to build reserves.

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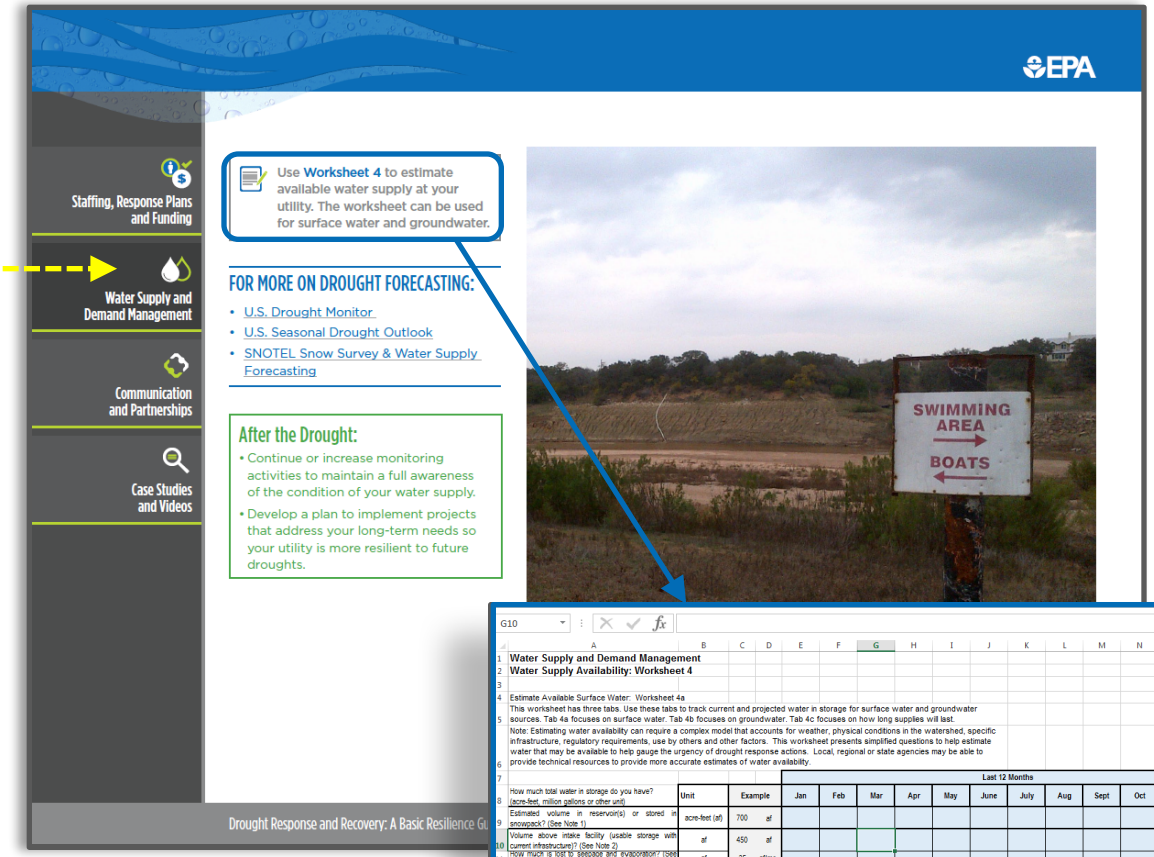
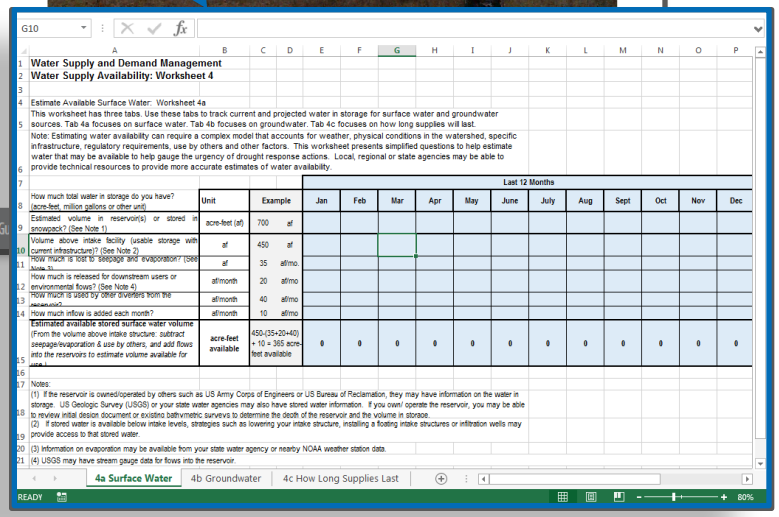
Topics cover:

- Potential sources of funding to recover revenue
- Examples of how others approached funding (conservation rates, sales tax, grants, etc.)
- Where to look for help or assistance (WARN, NRWA, etc.)

Drought Response and Recovery Guide

Water Supply and Demand Management (2)





Water Supply and Demand Management
Water Supply Availability: Worksheet 4

Estimate Available Surface Water: Worksheet 4a
This worksheet has three tabs. Use these tabs to track current and projected water in storage for surface water and groundwater sources. Tab 4a focuses on surface water. Tab 4b focuses on groundwater. Tab 4c focuses on how long supplies will last.
Note: Estimating water availability can require a complex model that accounts for weather, physical conditions in the watershed, specific infrastructure, regulatory requirements, use by others and other factors. This worksheet presents simplified questions to help estimate water that may be available to help gauge the urgency of drought response actions. Local, regional or state agencies may be able to provide technical resources to provide more accurate estimates of water availability.

	Unit	Example	Last 12 Months											
			Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
How much total water in storage do you have? (acre-feet, million gallons or other unit)														
Estimated volume in reservoir(s) or stored in snowpack? (See Note 1)	acre-feet (af)	700 af												
Volume above intake facility (usable storage with current infrastructure)? (See Note 2)	af	450 af												
How much is lost to seepage and evaporation? (See Note 3)	af	35 af/mo.												
How much is released for downstream users or environmental flows? (See Note 4)	af/month	20 af/mo												
How much is used by other diverters from the reservoir?	af/month	40 af/mo												
How much inflow is added each month?	af/month	10 af/mo												
Estimated available stored surface water volume (From the volume above intake structure: subtract seepage/evaporation & use by others, and add flows into the reservoirs to estimate volume available for use.)	**acre-feet available**	450+(35+20+40) + 10 = 365 acre-feet available	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
(1) If the reservoir is owned/operated by others such as US Army Corps of Engineers or US Bureau of Reclamation, they may have information on the water in storage. US Geologic Survey (USGS) or your state water agencies may also have stored water information. If you own/ operate the reservoir, you may be able to review initial design document or existing bathymetric surveys to determine the depth of the reservoir and the volume in storage.
(2) If stored water is available below intake levels, strategies such as lowering your intake structure, installing a floating intake structures or infiltration wells may provide access to that stored water.
(3) Information on evaporation may be available from your state water agency or nearby NOAA weather station data.
(4) USGS may have stream gauge data for flows into the reservoir.

4a Surface Water | 4b Groundwater | 4c How Long Supplies Last

- Excel spreadsheet to help estimate available water supply (surface/groundwater)
- Ways to improve internal system efficiency
- Identifying where to reduce water demand and what measures work
- Options for obtaining new water supplies
- Tools/resources for drought forecasting, increasing efficiency, and demand management

Drought Response and Recovery Guide

Communication and Partnerships (3)

EPA

Staffing, Response Plans and Funding

Water Supply and Demand Management

Communication and Partnerships

Case Studies and Videos

COMMUNICATION AND PARTNERSHIPS

Click on video icon to go to the Drought Response and Recovery Project: Case Studies Map to watch a video about utility partnership actions.

SHARE CONSISTENT MESSAGES WITH DIFFERENT AUDIENCES

You should develop targeted, simple messages that communicate drought severity and your response steps or actions. The information should clearly state what actions different customers are required to take in each drought stage to meet water reduction goals, and why the restrictions are needed. Plan on communicating frequently with your customers and stakeholders throughout the drought.

- Make your board, council and other decision makers aware of your drought response plan and status of the water supply, so they are ready to make tough decisions that will affect customers.
- Use social media and traditional media, as well as bill inserts, newsletters, door hangers, billboards and road signs.
- Work with local utilities and agencies to make sure that you are all communicating consistent messages.
- Collaborate with neighboring utilities to implement the same water use restrictions so that customers don't get confused — this is especially important if there is more than one water supplier in the area.
- Speak at local organization or club meetings. Open these meetings by giving community members a chance to ask questions about the drought situation and then having your utility provide detailed information.
- Engage major employers, local student groups and county officials to help spread drought-related messages and to act as water conservation "models" within the community.

Work with key stakeholders and large water users to help generate ideas for establishing water restrictions that will have minimum impacts on businesses and operations, but still meet water reduction targets. You may also need to work directly with smaller local businesses to prepare them for potential reductions, especially businesses like car washes that may not be operating during extreme drought conditions.

BEST PRACTICE: Frequent, frank communication — using all available methods — is critical for getting customers to understand the severity of the drought and encouraging them to reduce water use.

BEST PRACTICE: Know which venues and media your community typically uses to get information, and then gear messages to your target audience using the preferred channels.

- **Tuolumne Utilities District, California.** To ask customers to "please save water," the District used newspapers, radio and television, website updates, customer newsletters, presentations and signage. Partnering with a nearby utility, the Office of Emergency Services and the Tuolumne Band of the Me-Wuk Tribal Council, the District also conducted a joint radio campaign. They did not use social media outlets, as they knew their customers did not get information from these sources.
- **City of Clinton, Oklahoma.** A strong partnership with the local newspaper helped the City provide accurate information about the drought and potential solutions to customers. The City used newsletters, website updates and text messaging to provide drought updates for those customers who subscribed to a notification service similar to a "reverse 911" program that alerts residents of emergencies.

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- Keys to communicating drought issues/ solutions to customers and decision-makers
- Examples of unique partnerships and outreach efforts
- Suggested partners to consider reaching out to

Drought Response and Recovery Guide

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CASE STUDIES AND VIDEOS

The following case studies highlight small and medium-sized utilities that successfully responded to drought. Reflecting a broad range of situations — diverse geographies, water resources, response actions and funding approaches — these utilities' actual stories demonstrate solutions that work.

They provide examples of proven ways to reduce demand, access additional water supplies, communicate effectively, secure funding and develop partnerships to survive drought. Lessons learned by your peers may help you plan for and respond to drought by finding solutions that work for you and your community.

Note that your state may have specific rules that could prevent use of some the case study utilities' actions, so first check with your state regulators or legal counsel; even if that is the case, these innovative solutions may inspire other ideas to help your utility and community become drought resilient.

Click on the images to learn about solutions from each case study.

Tuolumne Utilities District, Sonora, California

(Corix) Spicewood Beach Water System, Spicewood, Texas

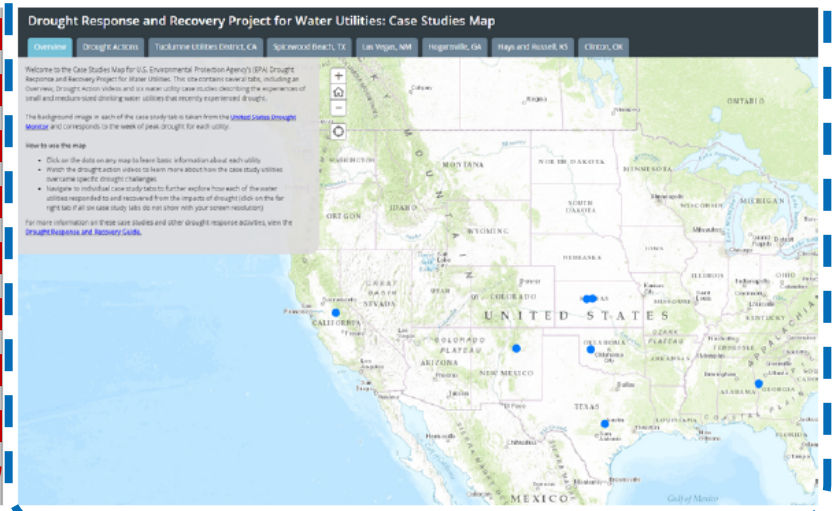
City of Las Vegas, New Mexico

City of Hogansville, Georgia

Cities of Hays and Russell, Kansas

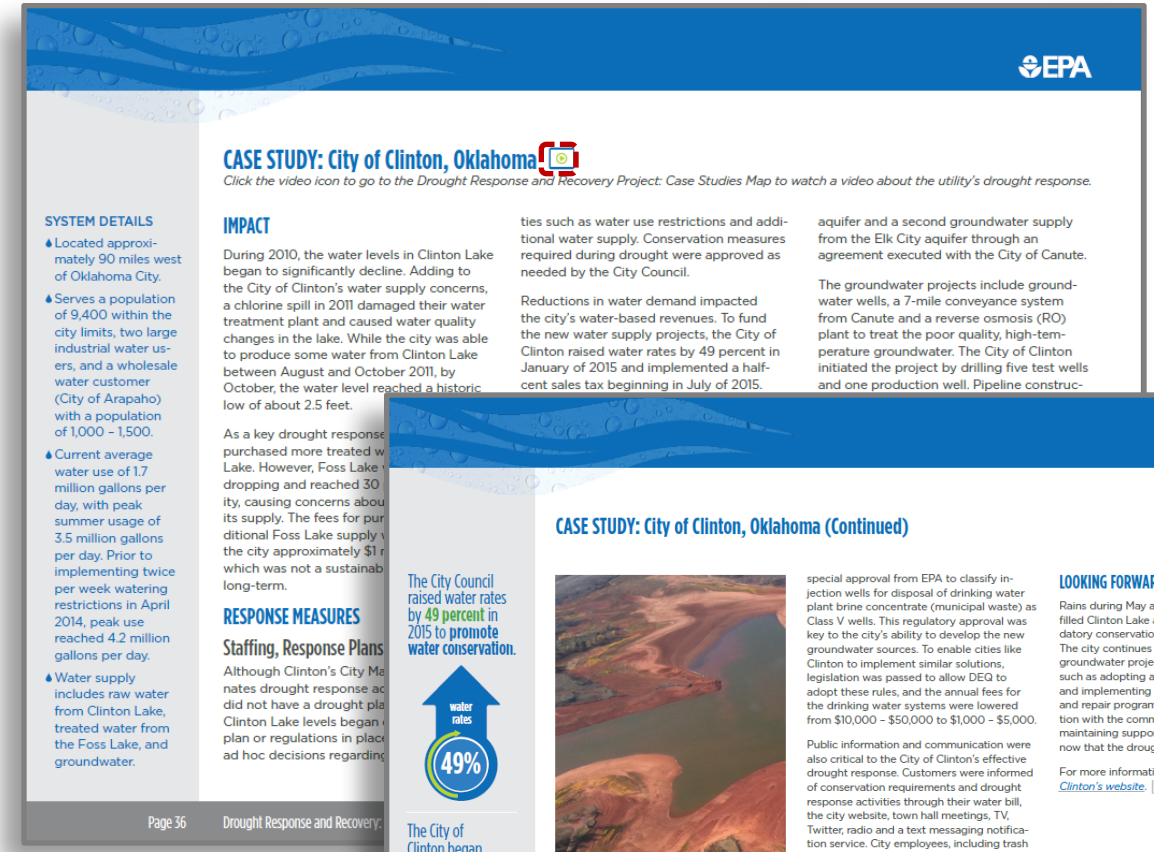
City of Clinton, Oklahoma

Click on the map to to exit the Drought Response and Recovery Guide and navigate to a website featuring a geoplatform map that hosts short videos on each case study.



Case Study Focus

City of Clinton, Oklahoma



EPA

CASE STUDY: City of Clinton, Oklahoma

Click the video icon to go to the Drought Response and Recovery Project: Case Studies Map to watch a video about the utility's drought response.

SYSTEM DETAILS

- Located approximately 90 miles west of Oklahoma City.
- Serves a population of 9,400 within the city limits, two large industrial water users, and a wholesale water customer (City of Arapaho) with a population of 1,000 – 1,500.
- Current average water use of 1.7 million gallons per day, with peak summer usage of 3.5 million gallons per day. Prior to implementing twice per week watering restrictions in April 2014, peak use reached 4.2 million gallons per day.
- Water supply includes raw water from Clinton Lake, treated water from the Foss Lake, and groundwater.

IMPACT

During 2010, the water levels in Clinton Lake began to significantly decline. Adding to the City of Clinton's water supply concerns, a chlorine spill in 2011 damaged their water treatment plant and caused water quality changes in the lake. While the city was able to produce some water from Clinton Lake between August and October 2011, by October, the water level reached a historic low of about 2.5 feet.

As a key drought response purchased more treated w Lake. However, Foss Lake dropping and reached 30 ity, causing concerns abou its supply. The fees for pur ditional Foss Lake supply the city approximately $1 which was not a sustainab long-term.

RESPONSE MEASURES

Staffing, Response Plans

Although Clinton's City Ma nates drought response ac did not have a drought pla Clinton Lake levels began plan or regulations in plac ad hoc decisions regarding

ties such as water use restrictions and additional water supply. Conservation measures required during drought were approved as needed by the City Council.

Reductions in water demand impacted the city's water-based revenues. To fund the new water supply projects, the City of Clinton raised water rates by 49 percent in January of 2015 and implemented a half-cent sales tax beginning in July of 2015.

aquifer and a second groundwater supply from the Elk City aquifer through an agreement executed with the City of Canute.

The groundwater projects include groundwater wells, a 7-mile conveyance system from Canute and a reverse osmosis (RO) plant to treat the poor quality, high-temperature groundwater. The City of Clinton initiated the project by drilling five test wells and one production well. Pipeline construc-

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EPA

CASE STUDY: City of Clinton, Oklahoma (Continued)

The City Council raised water rates by 49 percent in 2015 to promote water conservation.

water rates 49%

The City of Clinton began implementing a voter-approved half cent sales tax starting July 1, 2015, to fund new water supply projects.

special approval from EPA to classify injection wells for disposal of drinking water plant brine concentrate (municipal waste) as Class V wells. This regulatory approval was key to the city's ability to develop the new groundwater sources. To enable cities like Clinton to implement similar solutions, legislation was passed to allow DEQ to adopt these rules, and the annual fees for the drinking water systems were lowered from $10,000 – $50,000 to $1,000 – $5,000.

Public information and communication were also critical to the City of Clinton's effective drought response. Customers were informed of conservation requirements and drought response activities through their water bill, the city website, town hall meetings, TV, Twitter, radio and a text messaging notification service. City employees, including trash collection personnel, meter readers and code enforcement officers, would also advise residents of water use violations when observed during routine field work. The city also met individually with key stakeholders, including the two industrial users, to discuss issues related to the drought — especially from changes in water quality as the surface water levels declined, resulting in higher concentrations of total dissolved solids.

LOOKING FORWARD

Rains during May and June 2015 substantially filled Clinton Lake and Foss Lake, and mandatory conservation measures were lifted. The city continues to develop its proposed groundwater projects and explore actions such as adopting a drought response plan and implementing a routine leak detection and repair program. Continued communication with the community will be important to maintaining support for these investments, now that the drought emergency has ended.

For more information, visit the *City of Clinton's website*. Exit

← BACK TO CASE STUDY HOME PAGE

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Two-page summary on water utility that includes:

- System details
- Drought response measures taken under:
  1. Staffing, Response Plans, and Funding
  2. Water Supply and Demand Management
  3. Communication and Partnerships

Links to external Case Studies Map and Videos

Case Studies Map and Videos Home

Geoplatform

Drought Response and Recovery Project for Water Utilities: Case Studies Map

Overview | Drought Actions | Tuolumne Utilities District, CA | Spicewood Beach, TX | Las Vegas, NM | Hogansville, GA | Hays and Russell, KS | Clinton, OK

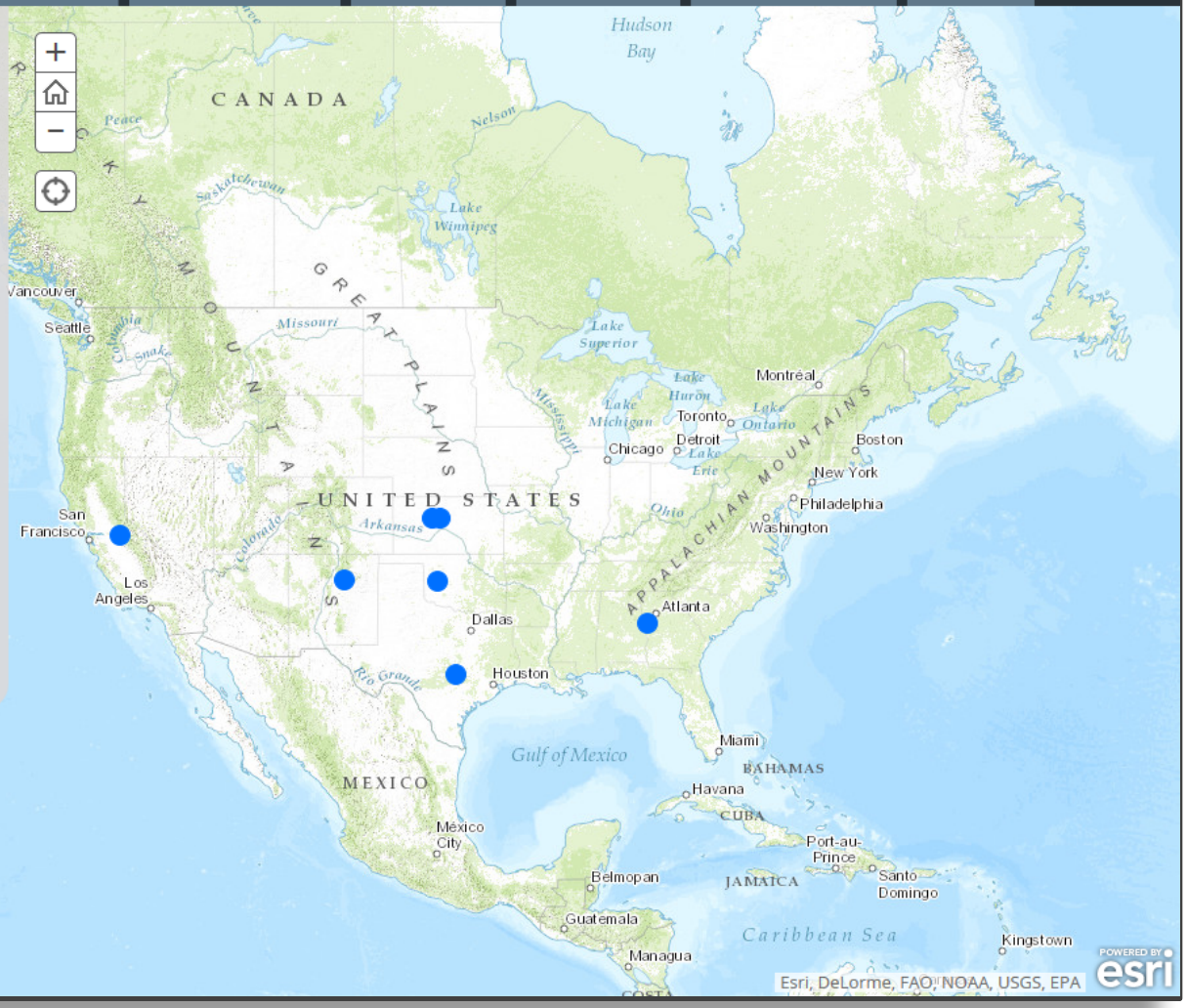
Welcome to the Case Studies Map for U.S. Environmental Protection Agency's (EPA) Drought Response and Recovery Project for Water Utilities. This site contains several tabs, including an Overview, Drought Actions and six case studies describing the experiences of small and medium-sized drinking water utilities that successfully responded to drought.

The background image in each case study tab is taken from the United States Drought Monitor and corresponds to the week of peak drought for each utility.

How to use the map

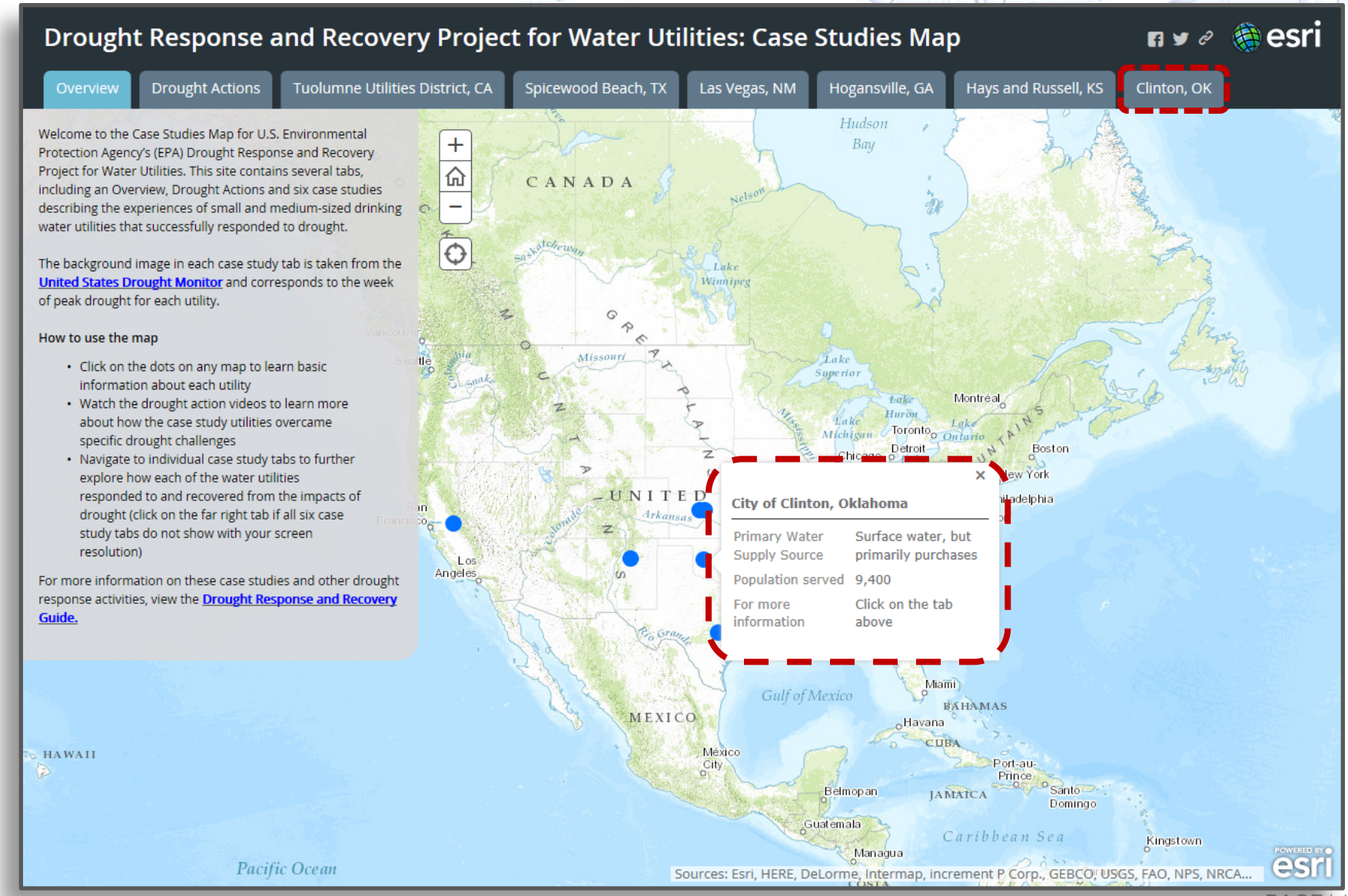
- Click on the dots on any map to learn basic information about each utility
- Watch the drought action videos to learn more about how the case study utilities overcame specific drought challenges
- Navigate to individual case study tabs to further explore how each of the water utilities responded to and recovered from the impacts of drought (click on the far right tab if all six case study tabs do not show with your screen resolution)

For more information on these case studies and other drought response activities, view the Drought Response and Recovery Guide.



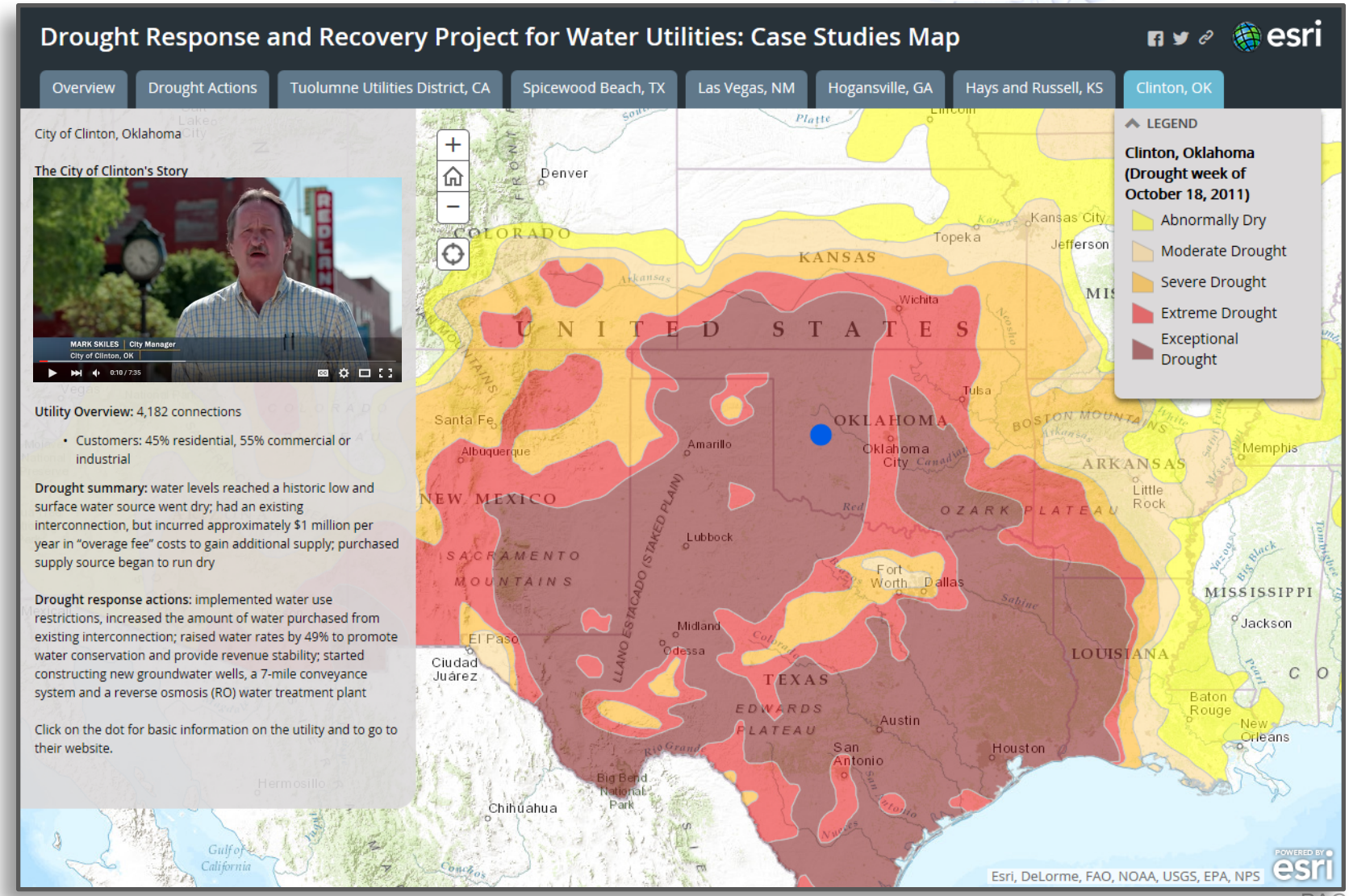
Case Studies Map and Videos Home

Geoplatform



Case Studies Map and Videos

Geoplatform – City of Clinton, Oklahoma

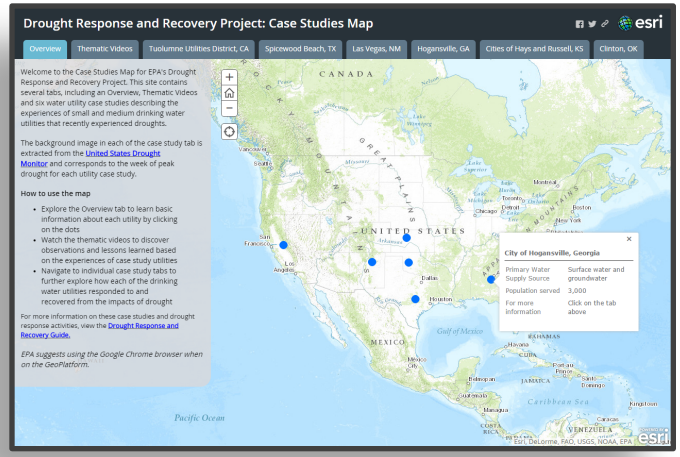


Drought Response and Recovery Guide

Release and Outreach

What's Next?

- Expected publication date – Early March 2016
- Two workshops conducted on 12/1/15 & 12/2/15
  - In Merced and Tulare, CA as part of the National Drought Resilience Partnership (NDRP)
- Presenting at AWWA Sustainable Water Management Conference in Providence, RI at 11:30am on March 9, 2016
- Working with DWPD to conduct additional 2016 workshops focusing on water loss and leak detection – locations TBD



Drought Response and Recovery Guide

Contacts

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