SARATOGA SPRINGS

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CITY OF SARATOGA SPRINGS

WATER SHORTAGE RESPONSE PLAN

(HAL Project No.: 360.46.100)

Adopted July 19, 2022
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CHAPTER 1 – PURPOSE

PURPOSE

The City of Saratoga Springs (City) operates separate drinking water and pressurized irrigation systems. Water shortages may occur in either system as water sources or infrastructure are temporarily or permanently disrupted due to natural events, wear and tear, or damage.

The purpose of this plan is to identify actions that can be taken to help immediately reduce water demand and to communicate those actions to City residents and staff as the community adapts to a water shortage. The recommendations in this plan are intended to help ensure the reductions in the community's water demand are proportional to the shortage. This plan does not address how to restore lost supplies or conserve water long-term.

CODE REVISIONS

When implementing actions recommended in this plan, the City Council may need to revise the municipal code. The basis for the revisions is presented in subsequent chapters.

- **8.01 Water Utilities Ordinance**
    - Authorize the City Manager or designee to declare a water shortage at the recommendation of the Public Works Director.
    - In the event of a long-term water supply shortage, the Council may consider adjusting water rates and/or water allocations.
    - Adjust the beginning and ending of the pressurized irrigation system operation at the recommendation of the Public Works Director.
    - Require customers to use the pressurized irrigation system (rather than the drinking water system) for landscape irrigation.
- **19.06 Landscaping and Fencing**
    - Consider suspending landscaping requirements for new construction during times of water shortage.
    - Consider requiring water-wise landscaping in residential park strips.
    - Consider requiring water-wise landscaping in commercial and HOA park strips.
    - Consider limiting turfgrass to high-use recreation areas and open spaces.
- **14.02 Time-of-Day Watering Parameters**
    - Consider further restrictions (e.g., day of week by odd/even house address) based on water shortages or other capacity limitations in the pressurized irrigation system.

CHAPTER 2 – GUIDING PRINCIPLES

Many actions may be taken when responding to a water shortage, sometimes with conflicting results or competing stakeholders. The following guiding principles informed the actions recommended in the following chapters and should be consulted in the event of a dispute between any conflicting actions.

1. **Priority of drinking water over pressurized irrigation.** Because of its importance in indoor use, public health, and firefighting, drinking water will always take precedence over irrigation. The drinking water system has multiple layers of redundancy for these reasons. The pressurized irrigation system has fewer redundancies and its use may be more readily curtailed without significant impacts to the public.
2. **Immediate demand reduction.** When a water shortage is in effect, the main objective is to reduce water demand to a level that the water system can sustain until the shortage is resolved. This plan focuses on responses that result in immediate reduction of water demand. Concerns such as long-term water conservation strategies, restoration of lost water supplies, or development of new water facilities should be addressed in other plans.
3. **Reduction based on facts.** Rather than request a general reduction because there is some overarching issue like low snowpack, water demand reduction objectives should be specific and proportional to the shortage (or anticipated shortage) of the water supply in question.
4. **Equitable citywide response.** Even though a particular water shortage (e.g., loss of a canal source) may physically impact only certain customers or portion of the City, the response will be citywide in order to enable the execution of this plan across applicable City departments, consistent messaging to the public, and equitable adjustments (if any) in water rates.
5. **Preservation of trees and shrubs.** The investment of cost, effort, and time required to grow and maintain trees and shrubs is significant. During a water shortage, efforts should be made to preserve trees and shrubs, which may require hand watering.
6. **De-prioritization of turfgrass irrigation.** Turfgrass requires considerable water but is largely ornamental and quite resilient. During an irrigation water shortage condition, turfgrass should be the first target for reductions utilizing methods that will preserve the turfgrass with minimal irrigation so that it can recover the following season.
7. **Maintenance of turfgrass in high-use recreation areas.** Public and private parks and other public open spaces such as those owned and managed by HOA's, churches, and schools are important community assets. While the turfgrass in non-high-use areas should be allowed to go dormant (but not dead) through a reduction in irrigation in response to water demand reductions or policy changes, some turfgrass should be maintained and preserved in an active condition for recreation purposes.
8. **Partnership preferred.** Communication, policy, rates, and other tools will be used first to elicit voluntary reductions in water demand from the community. Enforcement by fine or legal action is a last resort.

CHAPTER 3 – RESPONSE LEVELS

Color-coded levels are an effective way to categorize water shortage conditions and communicate responses to staff and the public. The response levels in Tables 1 and 2 for the drinking water and pressurized irrigation systems are based on 2022 demands and capacities in fully functional existing water sources and purchase contracts. Unlike many Utah water systems, Saratoga Springs does not depend directly on snowpack and surface water, so typical water supply indicators are not as relevant as in other communities. Unlike most Utah cities, Saratoga Springs has an advantage with 100% of the irrigation water use metered and charged based on use.

Table 1: Drinking Water Shortage Response Levels

Level	Code	Severity	Water Supply Relative to Water Demand[2]	Recommended Reduction in Water Allocation[4]	Possible Scenarios[3]
DW-1	Green	Normal	> 120%	0%	Fully functional
DW-2	Yellow	Advisory	100%–110%	0%	Loss of a well
DW-3	Orange	Moderate	90%–100%	10%	Loss of CUWCD connections
DW-4	Red	Severe	80%–90%	20%	Loss of a well and CUWCD connection
DW-5	Brown	Extreme	< 80%	< 20%	Loss of multiple wells and/or CUWCD connections

Table 2: Pressurized Irrigation Shortage Response Levels[1]

Level	Code	Severity	Water Supply Relative to Water Demand[2]	Recommended Reduction in Water Allocation[4]	Possible Scenarios[3]
PI-1	Green	Normal	> 120%	0%	Fully functional
PI-2	Yellow	Advisory	100%–110%	0%	Loss of a canal, critical well, or multiple wells
PI-3	Orange	Moderate	90%–100%	10%	Loss of a canal, critical well, or multiple wells
PI-4	Red	Severe	80%–90%	20%	Loss of a canal, critical well, or multiple wells
PI-5	Brown	Extreme	< 80%	< 20%	Loss of one or more canals, wells, or loss of Utah Lake

Notes:

1. Given that irrigation water sources may not be interchangeable between northern and southern service areas, this table assumes an equitable adjustment throughout the City.
2. Water supply relative to water demand is an extended duration analysis that evaluates the ability of the City to meet its adopted level of service.
3. Possible scenarios are examples only and multiple factors will need to be evaluated for the City to assign a severity rating during a water shortage including availability of water supplies, anticipated duration of shortage, and current and future water demands on the system.
4. The recommended reduction in water allocation shall match the loss of water supplies relative to water demands, I.E., if the water supplies are 90% of the water demands, the water allocation shall be reduced by 10%.

CHAPTER 4 – WATER USER RESPONSE ACTIONS

The following actions, categorized by water system and customer type, may be recommended to water users during a water shortage. Some of the actions will not be popular but they may be necessary, as experiences throughout the West have demonstrated. Not all actions need be recommended. City staff should choose actions from the list that are appropriate for the severity of the given water shortage.

DRINKING WATER—RESIDENTIAL

The following actions are supported by a 2016 Water Research Foundation report which found that the largest indoor uses of water in single-family homes are toilets (24%), followed by faucets (20%), showers (20%), clothes washers (16%), and everything else (20%).

- Combine toilet flushes.
- Turn off faucets when not needed, like when brushing teeth. While waiting for faucet water to warm up, catch it in a pitcher and use it for something else.
- Take shorter (or fewer) showers.
- Combine laundry loads.
- Avoid outdoor use of drinking water (car washing, gardening, etc.)

DRINKING WATER—COMMERCIAL, INSTITUTIONAL, AND INDUSTRIAL

- Limit or reduce use of drinking water for non-consumption purposes (I.E., washing, irrigating, recreation).
- Restaurants: Refill glasses of water only upon request.
- Other settings: Install water conservation signage around sinks and drinking fountains.

PRESSURIZED IRRIGATION

The largest impact in cutting irrigation demand is decreasing the frequency, runtime, and/or size of irrigated areas and high-water use landscaping. The City has already implemented many of these actions in its management of parks and open spaces.

- Replace manual sprinkler timers with smart controllers.
- Reduce frequency of turfgrass irrigation from twice weekly to once weekly. Turfgrass may become dormant until the following season.
- Fertilize turfgrass to compensate for reduced irrigation.
- Raise lawn mower height to better shade grass and protect roots.
- Remove turfgrass from park strips or other non-recreational areas and replace it with xeriscaping such as drip-irrigated shrubs and/or mulch.
- For trees and shrubs, replace spray irrigation systems with drip irrigation systems.
- Clean sidewalks and driveways with a broom instead of a hose.

CHAPTER 5 – CITY RESPONSE ACTIONS

The following actions, listed under the responsible City department, may be considered during a water shortage. The priority of actions will depend on the specific water shortage conditions.

CITY COUNCIL

- Facilitate other City departments' actions by resolutions, approvals, code amendments, and public support.
- Amend water rates. Such rate changes may include:
    - Increase price of construction water (in the future, establish capabilities for fixed-network metering and tiered rates.)
    - Increase price of high-use water tiers.
    - Establish a special surcharge fee for pressurized irrigation during pressurized irrigation shortages.
- Adopt this Water Shortage Response Plan by ordinance and authorize staff to implement it (the following are provided for illustrative purposes):
    - Authorize a reduction in water allocations proportional to the water shortage (for drinking water, in tiered rate volume limits; for pressurized irrigation, in lot area multipliers).
    - Suspend water leakage forgiveness programs during water shortages.
    - Work with CUWCD and other agencies to provide financial incentives for the implementation of waterwise landscaping in both residential and non-residential properties. Budgeting for these actions may be required and open space requirements must still be met.
        - Residential – Park strip conversions to replace turfgrass with mulch and drip-irrigated water-wise plants and the use of smart controllers.
        - Non-residential – The use of smart controllers and the conversion of non-high-use areas of turfgrass to water wise landscaping.
        - City – The conversion of non-high-use areas of turfgrass to water wise landscaping.
    - Allow one-year deferral of front yard landscaping requirement for active and new building permits. (Or temporarily prohibit new landscape installation.)
    - Incentivize or compensate temporary water use reductions from large water users. (Especially effective if pre-arranged.)
    - Adjust the seasonal start and stop dates for the pressurized irrigation system at the recommendation of the Public Works Director.
    - Restrict irrigation days and times at the recommendation of the Public Works Director.
    - Strategically use the drinking water system to supplement the pressurized irrigation system.

CITY MANAGER

- Reduce water allocations proportional to the water shortage as authorized by Council.
    - For drinking water, in tiered rate volume limits.
    - For pressurized irrigation, in lot area multipliers.
- Work with Public Relations team to communicate situation (see next chapter).
- Implement actions directed by the City Council.

PARKS & OPEN AREAS

- Reduce water use to match shortage.
- Begin water reductions with non-high-use areas (e.g., detention basins, parks strips, etc.). Preserve high-use areas where possible (e.g., sports fields.)
- Prepare non-high-use areas for dormancy.
- Participate in the communication and education plan.
- Identify areas where the City could implement water-wise landscaping.
- Modify fertilizer materials and frequency to compensate for less irrigation.
- Tune up irrigation systems for maximum efficiency.
- Delay turfgrass installation at City new parks.
- In coordination with the Planning & Zoning Department, encourage builders to delay turfgrass installation if possible.
- In coordination with the Recreation Department, increase mow height on sports fields.

PLANNING & ZONING

- Consider revising ordinances to encourage more water-wise landscaping (Section 19.06) while still meeting the vision of Saratoga Springs. Ideas may include:
    - Revise ordinance to require water-wise landscaping in residential park strips.
        - Consider the width of remnant parcels for compatibility with sustainable vegetation.
        - Concrete or other impervious surfaces are not allowed.
        - Pavers allowed.
        - Mulch with or without drip-irrigated water-wise plants.
        - Maintain compliance with open space requirements.
    - Revise ordinance to require water-wise landscaping in commercial and HOA park strips.
        - Concrete or other impervious surfaces are not allowed.
        - Pavers allowed.
        - Mulch with or without drip-irrigated water-wise plants.
        - Maintain compliance with open space requirements.
    - Revise parks ordinance to limit turfgrass to high-use recreation areas and open spaces.
        - Allow turfgrass in high-use areas where it will be walked/played on (e.g., soccer fields, picnic areas, playgrounds).
        - Maintain compliance with open space requirements.

- Prescribe water-wise landscaping (with or without drip irrigation) in park strips, along trails, in ornamental places, and in small, irregular, or steep areas that cannot be efficiently irrigated.
- Consider artificial turfgrass around playgrounds.

PUBLIC RELATIONS & COMMUNITY OUTREACH

- Prepare and distribute press releases on water shortages.
- Prepare social media announcements and updates.
- Coordinate other water shortage communications.
- Discuss irrigation practices with property owners of non-residential large open spaces.
- Participate in the communication and education plan.

PUBLIC WORKS

- During drinking water shortages, reduce or stop diversions of drinking water to the pressurized irrigation system.
- During irrigation water shortages, manage the supply of drinking water and if necessary, reduce or stop diversions of drinking water to the pressurized irrigation system.
- Using data from the City's automated advanced metering infrastructure system, identify excessive users; coordinate individual outreach with other City departments, including public relations.
- Assist in programs that encourage residents, businesses, and other non-residential institutions in the removal (or hire contractors to remove) of existing turfgrass. (I.e., Residents to replace with water-wise landscaping.)
- Suspend routine fire hydrant flushing but continue basic maintenance.
- Discuss water conservation activities for new construction in the preconstruction meeting.
- Consider equipping construction hydrant meters with fixed network meter reading system devices.
- Allow contractors to connect to secondary water blowoffs for dust control.
- Reuse blowoff water from water line testing for dust control.
- Alternate dust control options and other best management practices (BMPs) that require less water.
- Identify and mitigate water needs for on-site material processing (e.g., crushing, compacting).
- Provide bottled water for Public Works crews.
- Make recommendations to the City Council to adjust the beginning and/or ending of the operation of the City's pressurized irrigation system and to temporarily suspend new landscaping requirements for both residential and commercial developments.

UTILITY BILLING

- Update water rates when authorized by City Council.
- Run leak reports and alert customers of high-water use.
- Include water shortage messages in water bills.

CHAPTER 6 – COMMUNICATION PLAN

In order for a water shortage response to be effective, messages must be communicated to water users and the broader community. The City's Public Relations & Community Outreach Department will be responsible for water shortage communications, including 1) the announcement of a water shortage, 2) updates on the water shortage, and 3) resolution/recission of the water shortage.

Water users should be referred to https://conservewater.utah.gov/ for additional ideas and resources.

CONTENT

Water shortage messages may take the form of press releases, social media posts, radio announcements, and more. Regardless of the format, they could include the following content with details specific to the water shortage in question:

1. The response level and severity of the shortage.
2. The cause of the shortage.
3. The expected duration of the shortage.
4. Actions expected of water users (percentage of water demand reduction, specific guidance to do so, and timeframe for achieving reduction).
5. Actions being taken by the City.
6. A direction to further information.

EXAMPLES

Two examples are provided below.

Example 1

Saratoga Springs is anticipating a Level 5 (Extreme) pressurized irrigation shortage beginning in August 2022 due to the ongoing drought and low water levels in Utah Lake.

Irrigation supplies will be 40% below normal. We ask residents to begin reducing outdoor watering accordingly until further notice. In particular, residents should prepare to limit watering lawns to once per week and to voluntarily discontinue watering park strips. Trees, shrubs, and gardens may be hand watered. We will maintain some city parks for recreation. More specific guidance is forthcoming.

We have temporarily adjusted water rates and allotments to reflect the water shortage. For more information, please visit www.saratogaspringscity.com.

Example 2

Saratoga Springs is experiencing a Level 3 (Moderate) drinking water shortage due to mechanical failures at two city wells. Repairs will take approximately two months.

In the meantime, we ask residents and businesses to reduce indoor water use by 25% until further notice. This means shorter showers, combined laundry loads, and yes, fewer toilet flushes. Our drinking water supply is critical for sanitation and firefighting, so every gallon counts.

We have temporarily adjusted water rates and allotments to reflect the water shortage. For more information, please visit www.saratogaspringscity.com.

CHANNELS

The following communication channels are recommended.

- **City website and social media.** The initial announcement of a water shortage will likely occur online where it can immediately reach a wide, connected audience. The current status of the response should always be found on the City website.
- **Customer water bill.** An insert explaining the water shortage and expected response should be included in each water bill for the duration of the shortage.
- **Saratoga View.** The monthly City newsletter can announce or remind residents of a water shortage and the associated response.
- **Broadcast media.** For emergencies especially, local radio and television stations like KSL and KBYU can spread the word.
- **Public meetings.** Public meetings may be appropriate to discuss increased water rates, landscape restrictions, and other water shortage responses.

APPENDIX A

Guidance for Advance Notice of Irrigation Water Reduction

Message Content

1. **Saratoga Springs' water system is unique.** The City has separate drinking water and pressurized irrigation systems with limitations in water supply, facilities, rights, and timing that must be considered when responding to a water shortage.
2. **Irrigation water comes from Utah Lake and groundwater wells.** The City's water sources for the irrigation system are from Utah Lake and groundwater wells.
3. **The City's Utah Lake water rights are limited.** The City's Utah Lake water storage rights are in the upper part of the lake; if the lake drops below a specific level, the City will no longer be able to pump water from Utah Lake.
4. **Hydrologic projections indicate low Utah Lake levels.** Water managers project that Utah Lake water level will reach historic lows in _____.
5. **This year an irrigation water shortage is projected.** A loss of the ability to pump Utah Lake water is projected beginning in _____.
6. **Irrigation water use reductions are required.** With the loss of the Utah Lake water supply, the City's irrigation sources will be reduced by _____% to ____% which requires the City's residents, businesses, and governments to reduce irrigation water use by the same amount.
7. **Raise mower height to maximum.** Turfgrass can be more tolerant of infrequent irrigation if the height of the grass is taller. Typical maximum mower heights are 3 inches.
8. **Fertilize.** When the turfgrass is being irrigated twice a week it can be fertilized which will help it be stronger and more tolerant when irrigation frequency is reduced to once a week.
9. **Separate tree/shrub and turfgrass irrigation systems.** If possible, separate the irrigation systems for the trees/shrubs from the turfgrass. Below-ground drip systems are effective for trees/shrubs because they reduce the germination of weed seeds.
10. **Reduce irrigation of turfgrass to once a week.** Over a period of 1 to 2 weeks, transition the irrigation frequency from twice weekly to once weekly. This will assist the turfgrass in adapting to its dormant condition until the following season. When dormant, turfgrass may appear brown.
11. **Preserve trees and shrubs by irrigating twice weekly.** The cost, effort, and time required to grow and maintain trees and shrubs is significant. During times of water shortages, efforts should be made to preserve trees and shrubs by irrigating them twice per week. When turfgrass is irrigated once per week, irrigation of tree-shrubs twice a week may require hand watering.