

Drought Management Planning

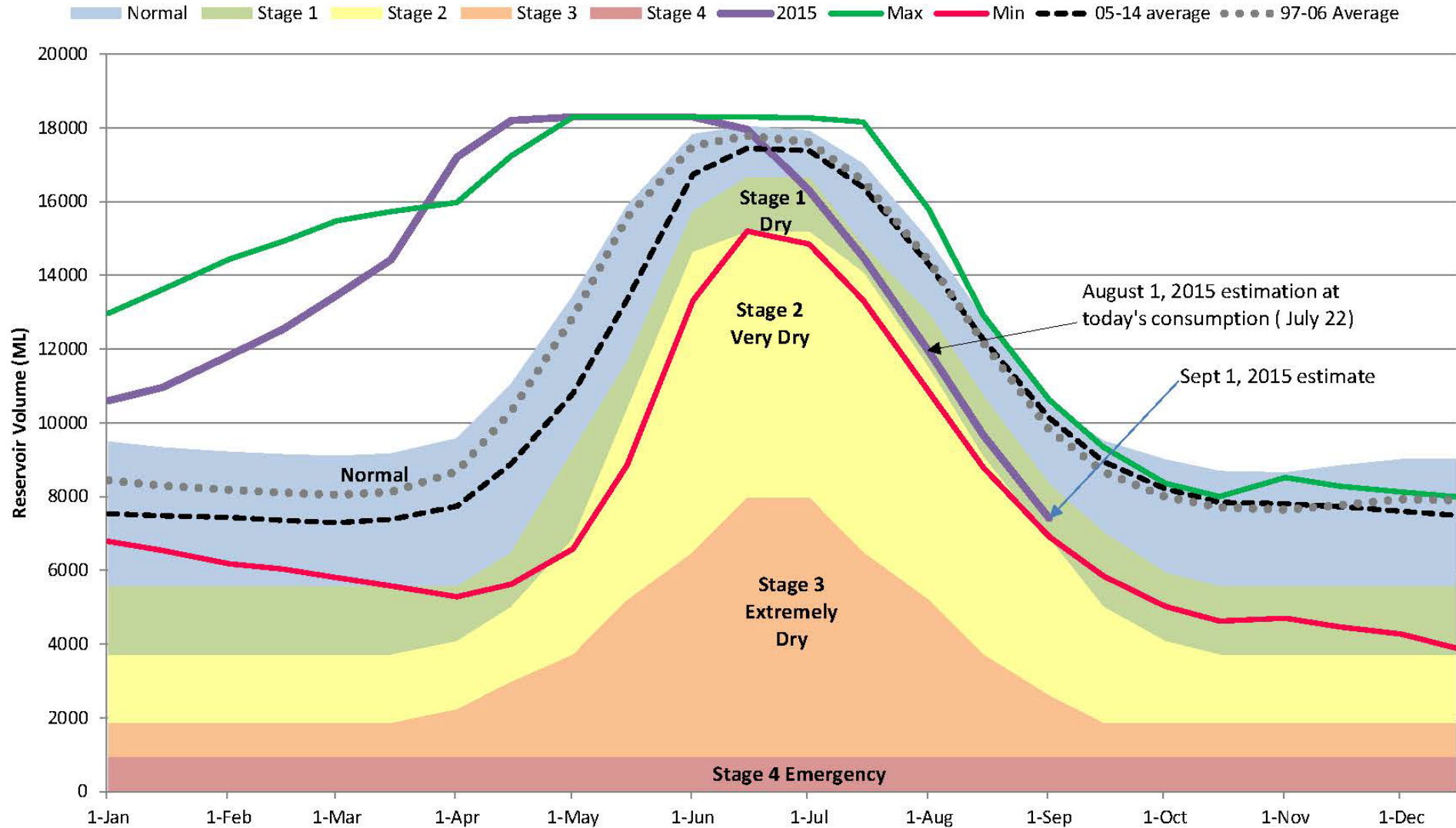
Regional District of North Okanagan
Greater Vernon Water



2011 Greater Vernon Water Drought Management Plan Review

- Implementation of 2007 Drought Management Plan (in response to 2010 drought) illustrated:
 - Stages were too drastic – major shift in water use restrictions between Stage 1 and 2
 - Asked to clarify triggers/factors assessed in decision-making process for moving to a higher drought stage
 - Lack of Communications Plan

Restriction Trigger Level Chart



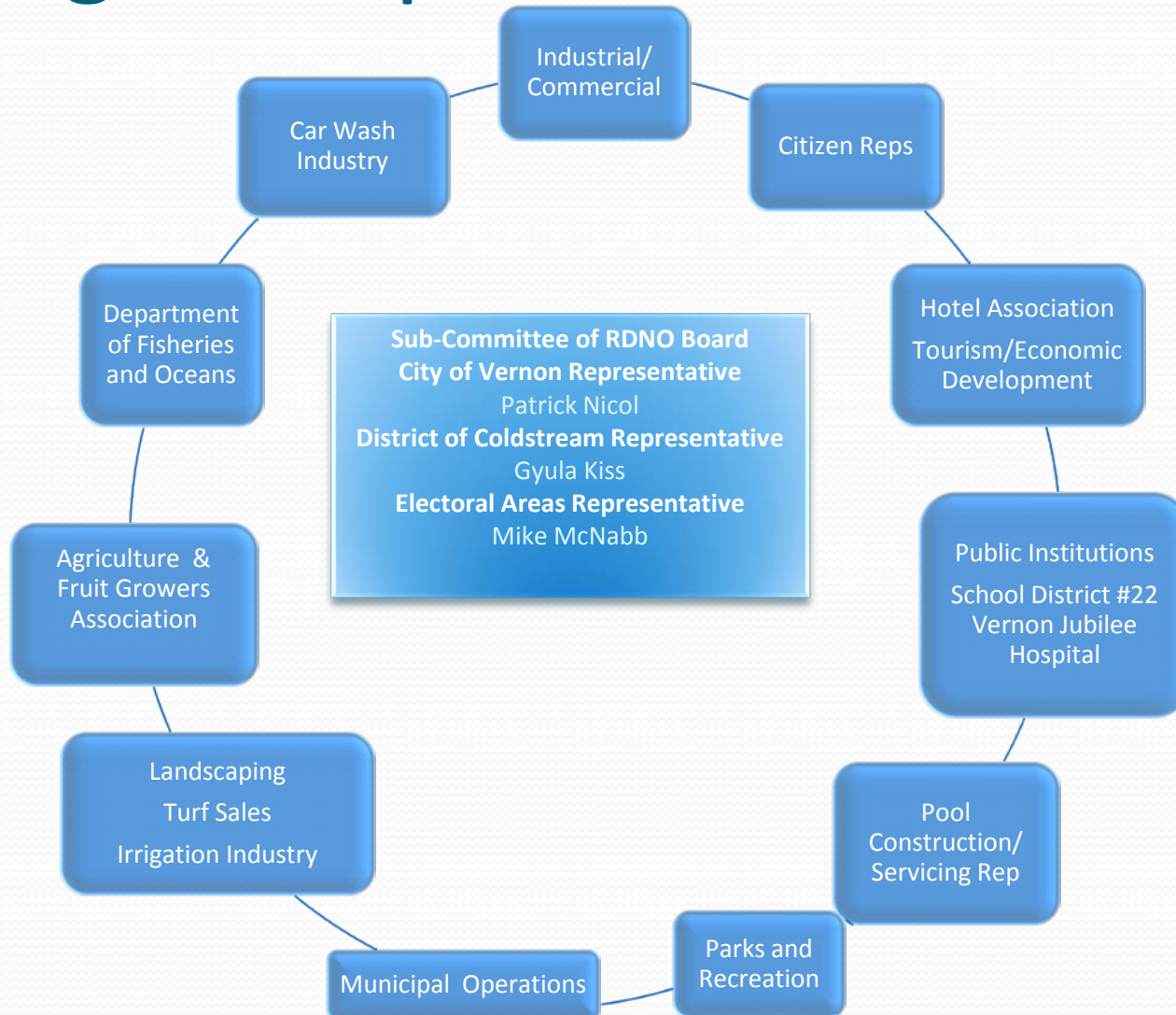
2011 DMP Review – 3 Part Process

1. Consultant reviewed 2007 DMP and incorporated expanded analysis of drought triggers, such as weather forecasts and demand levels, as well as utility improvements to avoid use of restrictions
2. Drought Response Team (DRT) struck - focused primarily on assessing restriction actions that would support meeting the water use reductions recommended by the DMP
3. Communications Plan - a separate document to be developed by staff after the core DMP was finalized

DMP Review - impacts beyond quantity...

- Poor water quality = higher demand on chlorine, exposed soils and lake foreshore to recreation damage (increased sedimentation), etc...
 - DMP needed to define the higher demands on staff to manage operations and enforcement
- Limitations of Infrastructure
 - Assessed benefits of more distribution inter-connections so that customers could be served by more than one source
 - Also recommended increasing storage capacity of reservoirs based on climate change shift towards less snow melt supply and more rain-based precipitation

Drought Response Team Structure

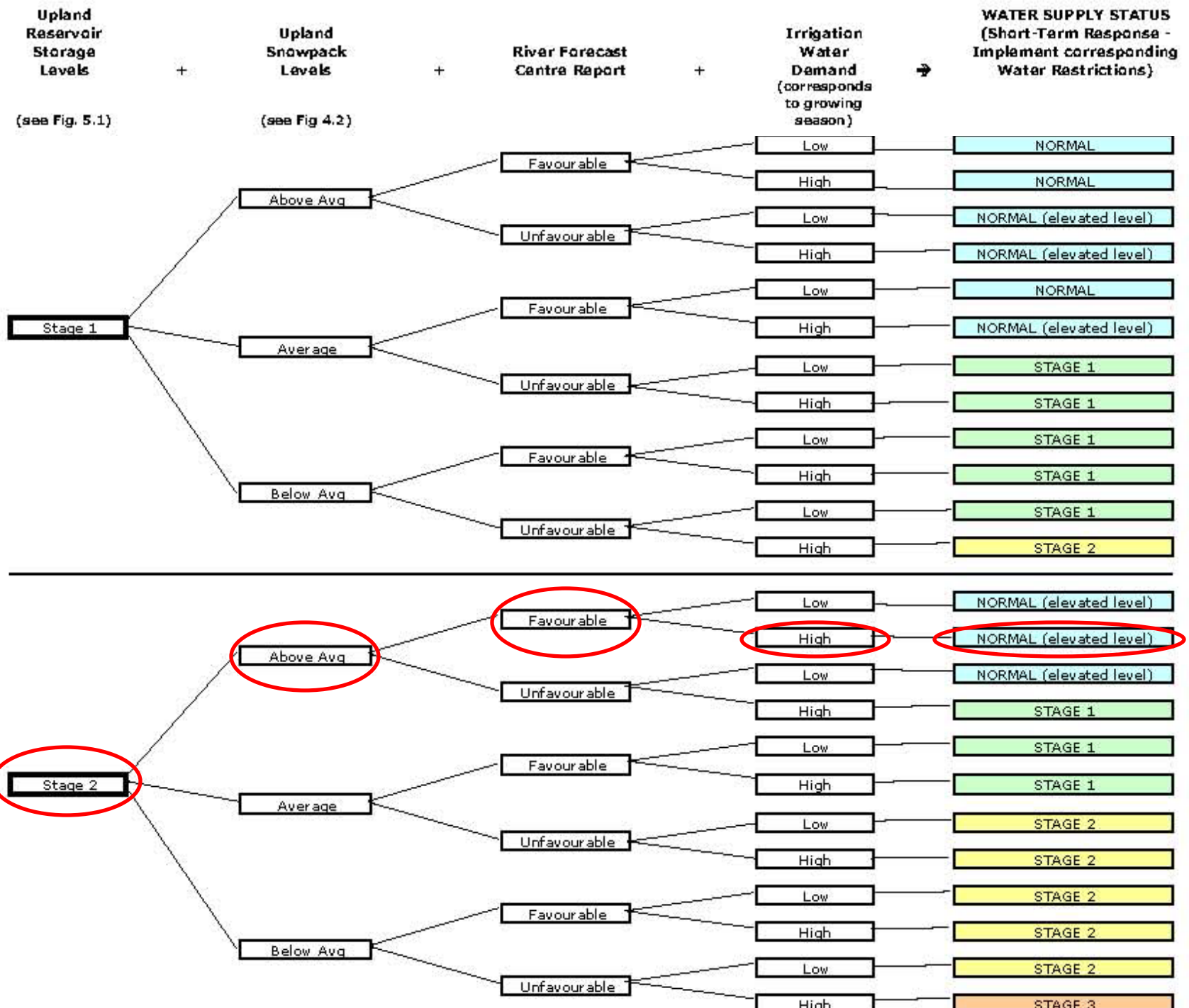


The Results

- Added another stage – now 5 Restriction Stages
- Permanent Stage 1 now “Normal”
- Stage 3 reservoir level trigger is lower, based on hydrological analysis of historic patterns
- 4 Trigger Factors: reservoir storage, snow pack, weather forecast, customer demand levels
- Updated restrictions added to new Water Use Regulation Bylaw
- Developed Communication Plan and signage

Why add a stage?

- “Normal” Restriction Stage replaces the previous Stage 1, have 5 stages – why?
 - We live in a normally dry climate.
 - year-round restrictions reflect how water should be used to avoid “restriction shock” and promote water use efficiency.
 - Addresses previous confusion about Stage 1 being year-round.
 - Increase awareness of drought in early stages by implementing more stages, gradual change.
 - Stage 1 restrictions are very similar to Normal – but requires increased communication and enforcement by staff.



How did the Restrictions change?

- No domestic/commercial outdoor watering on Mondays.
- 3 Day/Week Schedule:
 - Odd Addresses can water Tuesday, Thursday, and/or Saturday
 - Even Addresses can water Wednesday, Friday, and/or Sunday

WHY?

- Equity – months ending in 31 days let odd addresses gain a day.
- Easy to remember – always water on Thursday nights.
- Easier Enforcement – staff can patrol Mondays when there should be no watering.
- Improved flow monitoring – staff can assess other demand sources on Mondays since there should be minimal domestic outdoor use.

Pros & Cons of more detailed restrictions...

- Research into highest water users helped to define restriction activities that will give biggest bang for buck → also highlighted actions that are of little benefit.
- DRT members wanted to ensure restrictions burden was shared equitably, but this also caused a push for restrictions on industries that are relatively minor water users.
- Creating a specific restrictions list for Institutional Water Uses (parks, water features, spray parks etc.) helped to better define municipal actions to role model for the community while also recognizing need to preserve infrastructure.
- Learned about best practices for landscaping, e.g. avoid lawn seeding after May 31.

Detailed restrictions may not work for all customers...

- Agricultural customer restrictions include possible late turn on, early turn off, and:
 - Stage 2 = reduce allocation by 20%
 - Stage 3 = 50% reduction
 - Stage 4 = 80% reduction (minimal use to support livestock, perennial trees)
- Difficult to define specific irrigation limitations as farm operations are varied – focus on percentage reduction to allow each farmer to choose how they will cut back
- Elephant in the room – forage crops vs. perennials/livestock

GVW DMP Actions: 2012-16

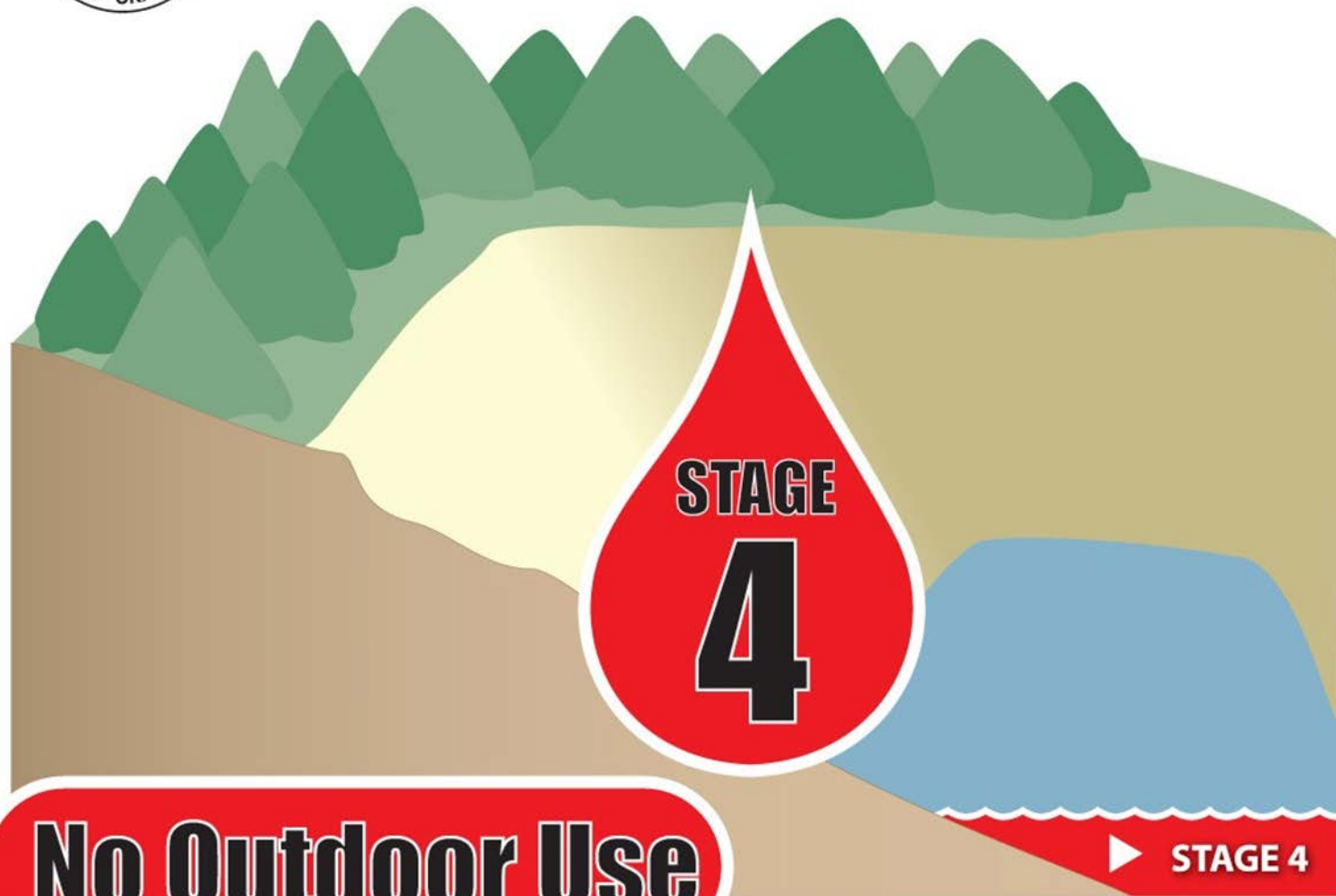
- Improved agricultural metering technology – universally metered as of 2012, online meter readings for customers since 2013, in 2015-16 adding radio transceivers to increase reading frequency/accuracy
- Agricultural Over Allocation Rates – customers pay significantly higher fees for use over their allocation
- GVW Water System Audit – staff are tracking metered use and estimating water use for unmetered activities like fire fighting, flushing, water quality sampling stations
- Tiered Consumption Billing Rates – encourage domestic demand management
- Assess licence availability and potential water sources for non-potable uses (irrigation)

GVW DMP Actions: 2012-16

- Education and outreach
 - Make Water Work Advertising Campaign
 - Landscape Irrigation Efficiency programs (workshops, factsheets, home audits)
 - Updates on local water supply status and forecast future conditions specific to the community
 - Direct contact with large water users (agricultural and commercial) to assess timing of water needs
 - Continue Drought Response Team—annual updates, recruit new members/industries
 - New signs / door hangers
 - Wanted high impact graphic to communicate restriction stage – useful for social media and for traditional sandwich board/billboard signs



Outdoor Water Use Restrictions



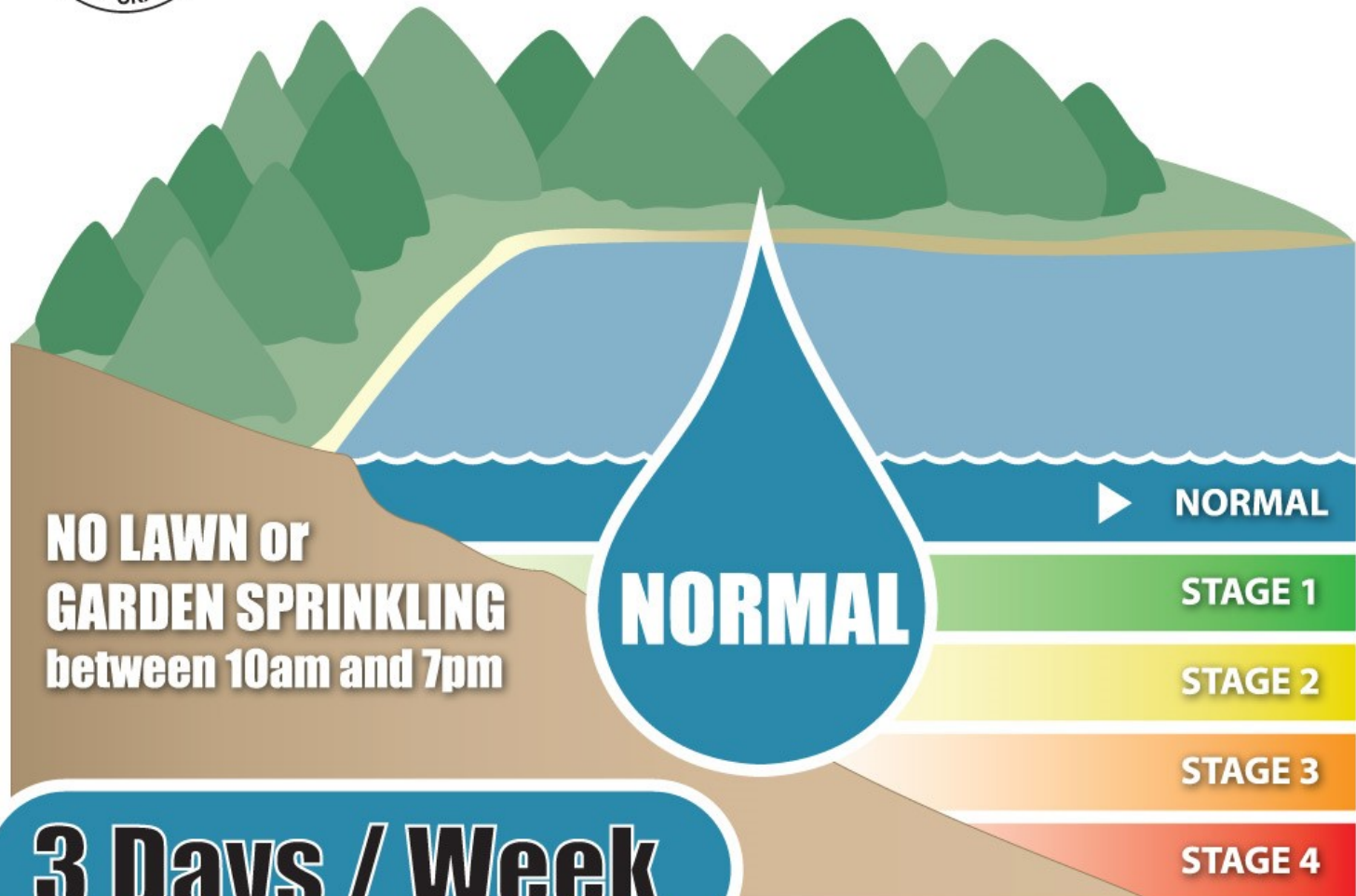
No Outdoor Use

▶ STAGE 4

www.rdno.ca/water



Outdoor Water Use Restrictions

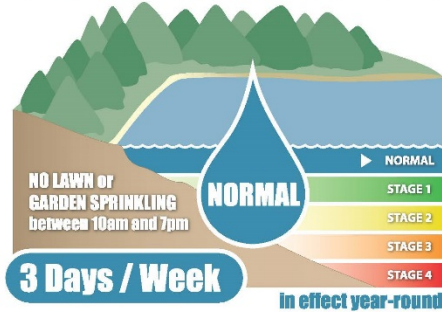


3 Days / Week

www.rdno.ca/water

Door Hanger

Residential Outdoor Water Use Restrictions



NORMAL

Residential Water Use Restrictions:

 **Manual Sprinklers** Up to 3 days a week
Between 6am-10am and 7pm-12am See reverse for schedule

 **Automated Sprinklers** Up to 3 days a week
Between 12am-6am See reverse for schedule

 **Micro-Jet / Drip Irrigation** Anytime

 **Hand-Watering** Anytime
Use a watering can or hose with spring-loaded nozzle.

 **New Lawns & Landscaping**
Follow watering instructions from supplier. New sod is exempt from watering restrictions for 2 weeks after installation, newly seeded lawns for 6 weeks.

 **Pools, Ponds & Water Features**
Fill and refill on days/times permitted by schedule (same as sprinklers). See reverse for schedule

 **Driveways, Decks & Outdoors**
Use a broom, blower, mop and bucket, or hose with spring-loaded nozzle for cleaning.

 **Vehicles, Boats & ATVs**
Use a bucket, or visit a waterwise commercial car wash. Also check for & remove any invasive plants or animals.

PLEASE NOTE: Restriction Stage Subject to Change

Tune into local media or visit www.rdno.ca/waterrestrictions
See other side for more information, or call 250.550.3700

PLEASE NOTE: Restriction Stage Subject to Change

STAGE	May Water Up To..	Odd Address	Even Address
NORMAL	3 days per week	Tues/Thurs/Sat	Wed/Fri/Sun
STAGE 1	3 days per week	Tues/Thurs/Sat	Wed/Fri/Sun
STAGE 2	2 days per week	Tues/Sat	Wed/Sun
STAGE 3	1 day per week	Saturday	Sunday
STAGE 4	NO WATERING	NO WATERING	NO WATERING
NO WATERING on Mondays • NO SPRINKLING 10am - 7pm			

Willfully wasting water is subject to a fine and/or water service shutoff.

Learn more at www.rdno.ca/waterrestrictions

We noticed you were watering:

- ☐ at the wrong time
- ☐ on the wrong day
- ☐ the street or sidewalk
- ☐ _____



Check to see if your grass needs watering:

Step on it and if the blades lay flat it's time to water, but if they spring back you can wait. Visit www.rdno.ca/water for more Waterwise gardening ideas & water conservation tips.

Prevent backflow contamination of your drinking water!

Install a frostfree Hose Connection Vacuum Breaker on your outdoor tap. Always bleed off pressure from the hose after using a spring-loaded nozzle. Learn more about cross-connections at www.rdno.ca/cc.



Door Hanger Front

Residential Water Use Restrictions:



Manual Sprinklers

Between **6am-10am**
and **7pm-12am**

Up to 3 days a week

See reverse for schedule



Automated Sprinklers

Between **12am-6am**

Up to 3 days a week

See reverse for schedule



Micro-Jet / Drip Irrigation **Anytime**



Hand-Watering

Anytime

Use a watering can or hose with spring-loaded nozzle.



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Door Hanger - Back

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What's Next? 2016 DMP Update

- Kalamalka Lake level
- Provincial drought level triggers
- GVW hydrometric data / piezometers (data collected over last 5 years)
- Local weather station data – new station installed at dam
- Impact of early agricultural water turn on on the reservoir trigger levels
- Need a different decision tree for different times of year?

Thanks for listening!

- Are there other triggers we should look at including?
- Would the Drought Sign work for your Utility?

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