

North Santiam Drought Contingency Plan

December 8, 2016

Bureau of Reclamation
City of Salem
North Santiam Watershed Council
*Santiam Water Control District
Marion County

Project Overview

➤ Project goal

Build long-term resiliency to drought in order to minimize impacts to the communities, local economies, and the critical natural resources within the watershed

➤ Roles and responsibilities

- Bureau of Reclamation
- Cost share partners (50/50)
- Task Force (Stakeholders)
- Working groups (Monitoring, Vulnerability, Response, Mitigation, Administrative)
- Management Team

Cost Share Partners:

Santiam Water Control District
City of Salem
City of Stayton
Marion County
North Santiam Watershed Council
NORPAC Foods, Inc
Oregon Dept of Agriculture
Oregon Dept of Env. Quality
Oregon Dept of Forestry
Marion SWCD
Linn SWCD
Stayton Fire Dept.

Task Force Members:

Bureau of Reclamation
City of Salem
City of Stayton
Detroit Lake Business Association
Detroit Lake Federal Lakes
Detroit Lake Recreation Stakeholders
Landowners
Linn SWCD
Marion County
Marion SWCD
North Santiam Watershed Council
NORPAC Foods, Inc
Oregon Dept of Agriculture
Oregon Dept of Env Quality
Oregon Dept of Forestry
Oregon Water Resource Dept
Oregon Dept of State Lands
Santiam Water Control District
Stayton Fire Dept
US Army Corps of Engineers
US Forest Service

DCP Planning Process Work Plan

- 1. Drought Monitoring (predict, recognize, and respond)
- 2. Vulnerability Assessment (risks and impacts)
- 3. Mitigation Actions (mitigate risks and impacts before drought)
- 4. Response Actions (reduce impacts during drought)
- 5. Operational and Administrative Framework (roles and responsibilities)
- 6. Plan Update Process

What we've accomplished

DCP Element	Work Group #1	Work Group #2	Draft Chapter	Task Force Meeting
1. Monitoring framework	X	X	X	X
2. Vulnerability assessment	X	X	X	
3. Mitigation actions	X	X	X	X
4. Response actions	X	X	X	
5. Operational and administrative framework				
Plan update process				

Draft Chapters: <http://northsantiam.org/?p=6212>

Element #1 Drought Monitoring

Table 1 NSW DCP Current Conditions Monitoring Table

Date: Aug 9, 2016		Indicators and Indices							
		National Indices	NSW Climate Indicators		NSW Hydrologic Indicators			NSW Environmental	
NSW Drought Stage	Definition/Possible Impacts	US Drought Monitor (Weekly Update)	Air Temperatures (1 month departure from normal. °F)	Precip. (% of Normal for Water Year)	Snow Pack (% normal SWE)	Detroit Reservoir (Percent above water control diagram)	USGS 7-day Flow (drought), N. Santiam @ Mehama (Class, Percentile)	USGS 7-day Flow (drought), N. Santiam @ Below Boulder Creek (Class, Percentile)	Stream Water Temp. N. Santiam @ Greens Bridge near Jefferson (°C above TMDL threshold, Sept 1 – June 15 = 13.0°C June 16 – Aug 31 = 16.0°C)
	Indicator Monitoring Period	All Year	All Year	All Year	Dec 1 – June 1	All Year	All Year	All Year	All Year
	Enter Data in This Row	DO	-1.5	102	na	-27	Above normal, 79%	Below normal, 15%	5.5
(Stage 1) Heads Up – Potential for Drought	Current conditions (e.g., low snowpack) point to the potential for upcoming drought conditions.	DO	0 to 2	80 to 71	70 to 61	-3 to -10	Below Normal (24 to 10)	Below Normal (24 to 10)	-1.0 to 0.0
(Stage 2) Moderate Drought	Some damage to crops, pastures Streams, reservoirs, or wells low. Some water shortages developing or imminent Voluntary water-use restrictions may be requested	D1	2 to 4	70 to 61	60 to 51	11 to -30	Moderate Hydrologic Drought (9 to 6)	Moderate Hydrologic Drought (9 to 6)	0.1 to 2.0
(Stage 3)	Crop or pasture losses likely						Severe Hydrologic Drought (9 to 6)	Severe Hydrologic Drought (9 to 6)	

Monitoring (cont.)

Table 2 Future Trend Indicators Table

Category	Description	Future Trend Indicators				NRCS Summary Report, Detroit Lake Inflow Forecast (Current month thru September, % Avg)
		1-Month Temp. Outlook	3-Month Temp. Outlook	1-Month Precip. Outlook	3-Month Precip. Outlook	
+1	Trend Improving	Below mean temps predicted	Below mean temps predicted	Above mean precip predicted	Above mean precip predicted	>115
0	Trend Neutral or Mixed	Normal temps predicted	Normal temps predicted	Normal precip predicted	Normal precip predicted	115 to 85
-1	Trend Worsening	Above mean temps predicted	Above mean temps predicted	Below mean precip predicted	Below mean precip predicted	<85

Table 3 Drought Stage Calculator

Drought Stage	Enter # of Indicators Per Stage from Table 7	Multiply Column 1 x Column 2
0	4	0
1	2	2
2	2	4
3	1	3
4	1	4

(a) Total of Column 3 = 13

(b) #of indicators recorded this monitoring period = 10

Divide (a) by (b) and then round to whole number = **Drought Stage 1**

Element #2 Current Vulnerability

HIGH

Muni water use – Jefferson

Muni water use – Mill City, Aumsville

Muni water use – Salem

Muni water use – Stayton

Muni water use – Lyons-lehama; Gates

Muni water use – Detroit, Idanha

Commercial irrigation

(Muni) commercial /indus. use

Water dependent recreation

Instream natural resources

Fire suppression (multi-sector)

Individual domestic use

Non-commercial irrigation

Hydropower

Other irrigation/watering

Upland natural resources

LOW

HIGH

SENSITIVITY

Consequences:

- ▶ Public health and welfare
- ▶ Economic impact
- ▶ Watershed health

Sensitivity:

- ▶ Is there a backup water supply?
- ▶ Is there adaptability?
- ▶ Is it (assumed) important to the public?

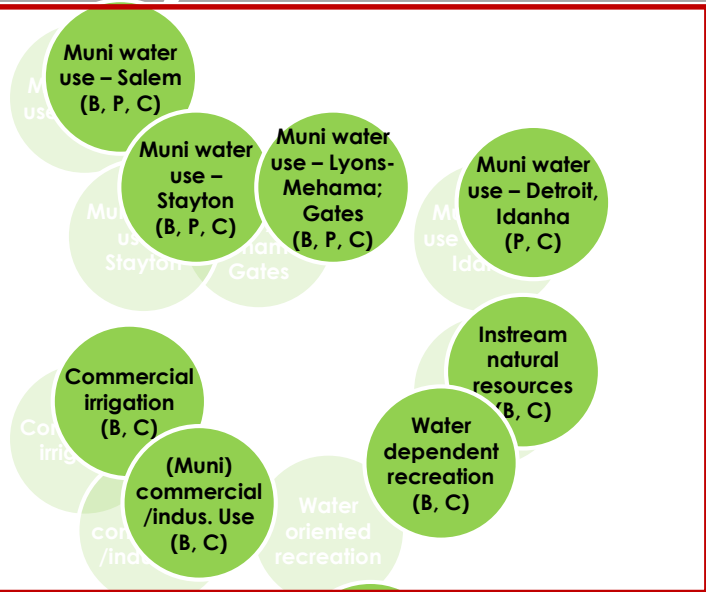
CONSEQUENCES

Future Vulnerability

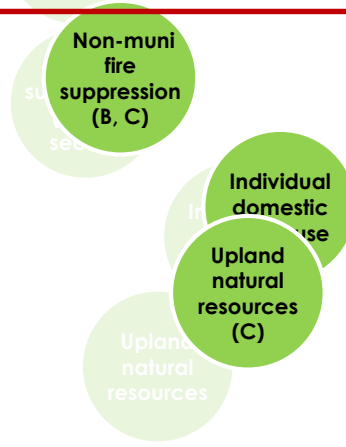
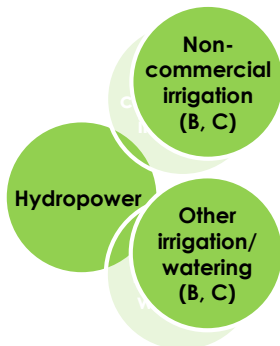
HIGH

Muni water use – Jefferson (P)

Muni water use – Aumsville, Mill City (P, C)



B = Bi-Op/Reallocation
P = Population Growth
C = Climate Change



LOW

HIGH

SENSITIVITY

Consequences:

- ▶ Public health and welfare
- ▶ Economic impact
- ▶ Watershed health

Sensitivity:

- ▶ Is there a backup water supply?
- ▶ Is there adaptability?
- ▶ Is it (assumed) important to the public?

CONSEQUENCES

Underlying causes

Asset/resource	Underlying causes
Municipal water – Salem	Intake limitations, <u>insufficient backup</u> , reliant on single source to large degree
Municipal water – Lyons-Mehama	Below reservoir, <u>single source</u> , no backup, no interconnection, all water rights junior* to large downstream water users
Municipal water – Gates	Below reservoir, all but .10 cfs junior to potential future instream water right, all water rights junior to large downstream water users, no interconnection
Municipal water – Detroit, Idanha	Above reservoir, supply from small tributaries, single source, <u>no backup</u> , no interconnections
Instream natural resources	Below reservoir**, subject to prior out of stream appropriation, no backup, “single source”
Commercial crop production	Below reservoir, insufficient backup
Muni commercial/industrial use	Below reservoir**, insufficient backup, potentially subject to municipal curtailment
Water dependent recreation - River boating/fishing	Below reservoir**, subject to prior out of stream appropriation, no backup, “single source”
Water dependent recreation - Reservoir recreation	USACE operations (ie., rule curve/Bi-Op implementation), infrastructure limitations (eg., parks, ramps, docks)

Underlying causes

Asset/Resource	Underlying causes
Municipal water – Aumsville	No backup, no interconnections, single source (groundwater)
Municipal water – Jefferson	Single source (below confluence with S. Santiam), no interconnections
Upland natural resources	Insufficient precipitation/”single source”
Individual domestic use	Likely no backup, no interconnections, likely single source
Non-commercial irrigation; Other irrigation/watering	Below reservoir, insufficient backup
Hydropower	USACE operations (ie., rule curve/Bi-Op implementation), SWCD dams below reservoir

DCP Planning Requirements

➤ 3. Mitigation Actions (mitigate risks and impacts before drought)

Objective: Identify, evaluate, and prioritize mitigation actions, for the critical resources identified during the vulnerability assessment. Mitigation actions conserve water and improve resiliency during non-drought conditions to mitigate risks to assets and resources.

➤ 4. Response Actions (reduce impacts during drought)

Objective: Evaluate and prioritize response actions that focus on the critical resources identified during the vulnerability assessment. Response actions conserve water during drought conditions to reduce risks to assets and resources.

Mitigation Actions

➤ Process

Establish a vision statement for mitigation actions

Develop menu of actions for each sector (current actions and potential future actions)

Prioritize actions

Mitigation Actions

Vision (abbreviated)

Through a combination of individual and collective mitigation actions NSW DCP mitigation actions will:

- ▶ Reduce drought risks and impacts and the need for response actions.
- ▶ Lay groundwork for effective response to drought.
- ▶ Consist of short- and long-term actions carried out by individual organizations according to their needs.
- ▶ Assist watershed wide programs (e.g. monitoring, messaging, and funding of key actions).

Mitigation Matrix

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Created a Matrix Table
Sector

12/2/08

- ▶ Goals of Sector
- ▶ Use/User Mitigation Action Lead
- ▶ Underling Causes
- ▶ Current Activities
- ▶ Future Potential Activities
- ▶ Top Priority (1-3 years)
- ▶ Top Priority (4+ years)

Response Actions

Vision (abbreviated)

Drought response actions will be:

- ▶ **implemented on a collaborative, voluntary, and watershed-wide basis.**
- ▶ **directed by the overarching operational framework (yet to be developed).**

It is the intent that all sectors and local water users, regardless of vulnerability, will participate in the response actions to reduce impacts to the health, safety, and welfare of communities; economies; and the critical natural resources within the watershed.

Response Actions

5 Categories:

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

Response Action Examples

- Public education and relations: Example- Stage 1 (Heads Up Stage) Coordinated Press Release
- Monitoring and evaluation: Example – All stages have a designated group track the indicators and report back to task force.
- Water rights management: Example- Stage 2 switch to an alternative water source -well
- Water conservation: Example – Stage 2 initiate voluntary actions. Later Stages implement individual curtailment plans.
- Emergency response: Example – Stage 4 Seek federal, state and local assistance. Marion County Emergency Response

Figure 3: Actions and Triggers for Watershed-wide Coordinated Drought Response

Revised 10/20

Actions	Related Multi-Sector Mitigation Action	Sectors	Lead	Stage 1: Head
Conservation Messaging, Public Education and Outreach				
Carry out response messaging (as developed during mitigation) (e.g., newspapers, websites). Example messages:	NSW DCP Education and Outreach Partnership	Municipal, Agriculture, Natural Resource Mgrs., Recreation		x
Stage 1: Many sectors depend on the N. Santiam R. Practice using water wisely. Here's how and why (provide examples).				
Stage 2: Some sectors are experiencing drought. Here's how everyone is saving water (provide examples). Please reduce water use by 5%. Here's how you can do it.				
Stage 3: All sectors are experiencing drought. Here's how everyone is saving water (provide examples). Please reduce water use by 10%. Here's how you can do it.				
Stage 4: Only use water for essential purposes.				
Monitoring and Evaluation				
Continue to track and report drought monitoring framework indicators	Establish DCP Group	Municipal, Agriculture, Natural Resource Mgrs.		x
Coordinate among N. Santiam Watershed water providers, managers, and users to promote voluntary withdrawal reductions		Municipal, Agriculture, Recreation, Natural Resource Mgrs., Commercial/Industrial		x
Compile socioeconomic and environmental impacts of drought (ie. local data) for use in funding applications, messaging, and refinement of the vulnerability assessment		Municipal, Agriculture, Recreation, Natural Resource Mgrs.		
Water Rights Management				
Forebear use (e.g., stop using during the season)	Water Rights Management Program Expand Emergency Drought Tool Usage	Municipal, Agriculture, Natural Resource Mgrs.		x (Planning step response)
Switch to an alternate water source (eg., wells)		Municipal, Agriculture, Commercial/Industrial		x (Planning step response)
Lease water rights for instream use		Municipal, Agriculture, Natural Resource Mgrs.		x (Full or split-s
Full lease (1 year)				
Split-season lease (less than one year, need to measure)				
Implement drought emergency water rights tools (eg., transfers, permits) available during governor declared drought	Municipal, Agriculture			

More Information:

Visit the North Santiam Watershed Council Website:
northsantiam.org

In Search Box Type: "NORTH SANTIAM DROUGHT"

Rebecca McCoun

Council Coordinator –North Santiam WC

(503) 930-8202

Adam Sussman – GSI Water Solutions, Inc.

Libby Smith – GSI Water Solutions, Inc.

Brent Stevenson – Santiam Water Control District