

**Appendix 1:** Materials for and results of codevelopment activities.

**Figure A1.1:** Worksheet used during the group exercise for recording a solution to a drought scenario.

Drought Scenario Planning Worksheet							
Scenario #:							
Group #:							
		Management Decisions					
Solution #	Objective	Herd Size / Composition	Rotation Sequence	Utilization %	Days in Pasture	Other	
		Jan-May Cows ___ Bulls ___ Yearlings ___	Riparian ___ Hdqrts ___ Pipeline ___ Wydot ___ Son of Gun ___ Miners C ___ Timber T ___ Preach Tom ___ Old Homes ___	Riparian ___ Hdqrts ___ Pipeline ___ Wydot ___ Son of Gun ___ Miners C ___ Timber T ___ Preach Tom ___ Old Homes ___	Riparian ___ Hdqrts ___ Pipeline ___ Wydot ___ Son of Gun ___ Miners C ___ Timber T ___ Preach Tom ___ Old Homes ___		None New AOI Emergency/Outside AMP Other Comments:
What were the issues that came up?			How can you work through them?				

**Table A1.1:** Drought scenarios used for group exercises

Scenario	Drought Threat and Policy Constraints	# Solutions	Objectives
A	1) -1 SPI winter to all pastures	Easy solution to reduce use in each pasture	1. Illustrates how the tool works 2. Provides baseline for scenario “B”
B	1) Same as “A”, and 2) add policy constraint of not grazing same dates as previous year	Many possible solutions, but not easy to solve	1. Illustrates how policy constraints are applied 2. Gives opportunity to begin discussion about communication between partners, and District Ranger discretion
C	1) -1 SPI winter for all pastures, and 2) -1 SPI summer for the Miner’s Camp, Timber Top, Preacher Tom, and Old Homestead pastures	Many possible solutions, none of them simple. This is likely to require reducing animals, feeding on private land, or negotiating for variances and other pastures.	1. This is performed with the entire group, before breakout and lunch 2. This illustrates the capacity of the tool to develop solutions 3. This illustrates the importance of communication between ranchers and Tonto.
D	1) -1 SPI summer in Preacher Tom, Old Homestead, Miner’s Camp and Timber Top pastures, 2) No drinking water from June through December in Preacher Tom and Old Homestead pastures 3) No grazing 1 year after fire in Old Homestead, and 4) No grazing Riparian pasture May-September to avoid conflict with heavy recreation use.	Many possible solutions, none of them simple. This is likely to require reducing animals, feeding on private land, or negotiating for variances and other pastures.	1. This is performed by two of the 4 breakout groups. 2. Requires group to work with the tool. 3. Can compare solutions between the two groups. 4. Intended to lead to long-term discussion about making a road and/or bring pipeline to Preacher Tom pastures, 5. Illustrates combination of drought and policy constraints
E	1) -1 SPI winter for all pastures, 2) No drinking water from January through June in Son of a Gun, Preacher Tom, and Old Homestead pastures 3) No grazing 1 year after fire in Miner’s Camp and Timber Top pastures.	Many possible solutions, none of them simple. This is likely to require reducing animals, feeding on private land, or negotiating for variances and other pastures.	1. This is performed by two of the 4 breakout groups. 2. Requires group to work with the tool. 3. Can compare solutions between the two groups. 4. Intended to lead to long-term discussion about making a road and/or bring pipeline to Preacher Tom pastures,

			5. Illustrates combination of drought and policy constraints.
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**Table A1.2: Solutions from Group Scenario-Planning Exercise**

Scenario D Solutions				
Group	Solution #	Objectives	Practices	Expected Forest Service Approval Type (per practice number)
1	1	<ul style="list-style-type: none"> <li>• Meet restriction dates</li> <li>• Minimize water hauling</li> <li>• Minimize herd reductions</li> <li>• Avoid grazing burned pasture</li> </ul>	<ol style="list-style-type: none"> <li>1. Change pasture rotation‡</li> <li>2. Sell 70 yearlings‡</li> <li>3. Don't use pastures* without water</li> </ol>	1-3. No new NEPA documentation needed; DR approval to update AOI
1	2	<ul style="list-style-type: none"> <li>• Meet restriction dates</li> <li>• Minimize water hauling</li> <li>• Minimize herd reductions</li> <li>• Manage burned pasture for positive outcome</li> </ul>	<ol style="list-style-type: none"> <li>1. Change pasture rotation‡</li> <li>2. Sell 50 yearlings‡</li> <li>3. Haul water for 15 days at end of year†</li> <li>4. Increase utilization in a pasture to 25%‡</li> <li>5. Use burned pasture during fire recovery to promote soil health*</li> </ol>	1-3. No new NEPA documentation needed; DR approval to update AOI 4-5. DR approval; inspection for available forage; DR consults with specialists.
1	3	<ul style="list-style-type: none"> <li>• Meet restriction dates</li> <li>• Minimize water hauling</li> <li>• Minimize herd reductions</li> <li>• Yearlings available to sell as buffers</li> </ul>	<ol style="list-style-type: none"> <li>1. Change pasture rotation‡</li> <li>2. Reduce a pasture utilization to 10%*</li> <li>3. Permanent pipeline in pasture with dry dirt tanks*</li> </ol>	1-2. No new NEPA documentation; DR approval to update AOI 3. Small NEPA (CE) for pipeline/trough outside of AMP.
2	1	<ul style="list-style-type: none"> <li>• Meet restrictions imposed due to drought</li> <li>• Maintain herd size</li> <li>• Workable rotation</li> <li>• Maintain riparian and recreation resource</li> </ul>	<ol style="list-style-type: none"> <li>1. Change pasture rotation‡</li> </ol>	1. May need updated AOI, depends on timing. Will need to talk through it with DR.

2	2	<ul style="list-style-type: none"> <li>Meet restrictions imposed due to drought</li> <li>Maintain herd size</li> <li>Workable rotation</li> <li>Maintain riparian and recreation resource</li> <li>Resource enhancement Miners' Camp pasture</li> </ul>	<ol style="list-style-type: none"> <li>Change pasture rotation‡</li> <li>Increase herd by 30 cows‡</li> <li>Sell 110 yearlings in May‡</li> <li>Provide supplemental feed in headquarters pasture (private land; 10 acres) for 3 days†</li> </ol>	1-4. No new NEPA documentation; DR approval to update AOI
2	3	<ul style="list-style-type: none"> <li>Meet restrictions imposed due to drought</li> <li>Maintain herd size</li> <li>Workable rotation</li> <li>Maintain riparian and recreation resource</li> </ul>	<ol style="list-style-type: none"> <li>Haul water to a pasture for 6 weeks†</li> <li>Plan for pipeline into two pastures*</li> </ol>	<ol style="list-style-type: none"> <li>No new NEPA documentation needed; DR approval to update AOI; trail through another pasture; phone call when it happens</li> <li>Begin talking about update to AOI and NEPA approval to update AMP for pipeline and periodic grazing of high elevation pastures</li> </ol>
3	1	<ul style="list-style-type: none"> <li>Maximize cows and utilization</li> <li>No water hauling</li> </ul>	<ol style="list-style-type: none"> <li>Increase to 300 yearlings (assume permit allows)‡</li> <li>Sell all 300 yearlings in May‡</li> <li>Need a couple days use to trail through some pastures</li> </ol>	1-3. No Forest Service approval needed
Scenario E Solutions				
Group	Solution #	Objectives	Practices	Expected Forest Service Approval Type (per practice number)
3	1	<ul style="list-style-type: none"> <li>Reduce herd size as little as possible</li> <li>Minimize water hauling</li> </ul>	<ol style="list-style-type: none"> <li>Change pasture rotation‡</li> <li>Cull 25 open cows‡</li> <li>Sell yearlings‡</li> <li>Haul water to a pasture for 34 days†</li> <li>Temporary pipeline into a pasture†</li> </ol>	<ol style="list-style-type: none"> <li>1-3. No approval needed</li> <li>4-5. Archaeology clearance for temporary waters</li> <li>6. NEPA for well site</li> </ol>

			6. Look at well site with pipeline off it where the four pastures meet*	
4	1	<ul style="list-style-type: none"> <li>• Get through the year</li> </ul>	<ol style="list-style-type: none"> <li>1. Change pasture rotation‡</li> <li>2. Sell 70 yearlings in fall; sell rest in May‡</li> <li>3. Haul water to a pasture for 33 days†</li> </ol>	1-3. No Forest Service approval needed
4	2	<ul style="list-style-type: none"> <li>• Reduce herd</li> <li>• (Least favorable solution)</li> </ul>	<ol style="list-style-type: none"> <li>1. Change pasture rotation‡</li> <li>2. Reduce herd: sell 25 cows, 2 bulls, 100 yearlings in fall; sell rest of yearlings in May‡</li> <li>3. Extension of 1-2 days use in some pastures†</li> </ol>	1-3. Require negotiation with DR
4	3	<ul style="list-style-type: none"> <li>• Water improvements</li> </ul>	<ol style="list-style-type: none"> <li>1. Change pasture rotation‡</li> <li>2. Water lot (corridor) into riparian pasture from another pasture*</li> <li>3. Juniper treatment*</li> <li>4. Trick tank*</li> <li>5. Extend pipeline*</li> <li>6. Pipe from springs in high elevation pasture to lower pasture*</li> </ol>	1-5. Some of these could be approved as an Emergency outside AMP (because of fire) or done with a CE. To do multiple projects would require an EA.
<p>*Preparatory; †Responsive; ‡Either Preparatory or Responsive  Acronyms: DR = District Ranger; AOI = Annual Operating Instructions; AMP = Allotment Management Plan; CE = Categorical Exclusion; EA = Environmental Assessment; NEPA =National Environmental Policy Act</p>				

**Table A1.3: Decision Table for FS decision process for a water development**

AOI: Annual Operate Instruction; CE: Categorical Exclusion; Sect 18: NEPA Sufficiency; EA: Environmental Assessment; EIS: Envir. Impact Statement

Table 1. Characteristics	Most likely Decision Type(s)					Likely Length of Decision Process (Months)					
	AOI	CE	Sect. 18	EA	EIS	<12	12	24	36	48	60
1. Previous NEPA Clearance	X		X			X					
2. Possible legal challenge		X				X	X				
3. Endangered species present (no effect)		X				X	X				
4. Endangered species “take”			X	X	X	X	X	X	X		
5. Recreational use conflict		X		X		X	X	X			
6. Multiple partners (private and/or govt) and beneficiaries (wildlife and livestock)		X				X	X				
7. Cultural resources present		X					X				
8. FS staffing is reduced		X					X	X			
9. FS funding priority is low		X					X	X	X		
10. New District Ranger (inexperienced)								X	X		
11. Precisely engineered project design at the beginning (No impact and complete design)		X				X					
12. <i>Upcoming NEPA scheduled within 3 years (added in discussion)</i>										X	X
13. <i>“5-year Drought Plan” prepared (added in discussion)</i>						X	X				
14. <i>Grouping projects (Multiple allotments) (added in discussion)</i>											

**Figure A1.2: Example of completed Worksheet for an EA (Environmental Assessment): Develop spring in “Son of a Gun” to deliver water to other pastures**

Scenario: Develop spring in “Son of a Gun” pasture to deliver water to other pastures		Group #:	Group Members:		
Characteristics 1. 2. 3.			Decision-type Assigned as either CE, EA Sect. 18, or EIS  <b>EA</b>	Likely Duration In Months	
Steps in the Decision-Process	# of Months __6-12__	# of Months __1-3__	# of Months __6-12__	# of Months __2__	# of Months __2__
What is likely to happened and when	<ul style="list-style-type: none"> <li>• Pre-design NEPA</li> <li>• What is there, and close scoping</li> <li>• Specialist’s input</li> </ul>	<ul style="list-style-type: none"> <li>• Scoping, Notice, and Public Comments</li> </ul>	<ul style="list-style-type: none"> <li>• Analysis and Specialist Review</li> <li>• Respond to Comments</li> </ul>	<ul style="list-style-type: none"> <li>• Draft decision</li> <li>• Objection Period</li> </ul>	<ul style="list-style-type: none"> <li>• Resolve objections</li> <li>• Decision</li> </ul>

**Figure 2 continued: Example of reverse page of Worksheet**

Tracking the Decision-process		
Who is involved?	What are the milestones?	How do you schedule your interactions?
<ul style="list-style-type: none"> <li>• District Ranger</li> <li>• District Range Staff</li> <li>• Permittee</li> </ul>	<ul style="list-style-type: none"> <li>• Each new phase of the process; or</li> <li>• Every AOI meeting; or</li> <li>• Every 6 months</li> </ul>	<ul style="list-style-type: none"> <li>• Who calls who?</li> <li>• Meet in person or by phone or email?</li> </ul>
Two new events or attributes that would slow the process, and how do you respond?		
New event/attribute	How much does it slow the process?	How do you respond to the new event/attribute?
<ul style="list-style-type: none"> <li>• New “species take” is expected,</li> <li>• new cultural resources discovered</li> <li>• fire and associated erosion</li> <li>• new staff/permit owner</li> </ul>		