Descriptions and Photos of Modifications within the

Camp Creek Watershed

The following modifications are organized in no specific order. The order was determined by way in which they were assessed in the field.

Modification 1 – This is a rock gabion structure that was constructed cross channel on BLM property. Camp Creek has cut around the right side (looking downstream) of the structure and has created a fifteen foot vertically exposed cutbank. See photo below. There is no active headcut associated with this structure.

Modification 2 – This is another rock gabion structure that was constructed cross channel. Camp Creek has again washed around the right side. See photo below. There is no active headcut associated with this structure.

Modification 3 – This is a rock gabion structure that was constructed cross channel. Camp Creek has washed around the right side. There is an active headcut where the stream has washed around the structure. The structure has been effective at catching sediment, however the headcut is currently cutting through the sediment that has been deposited. See photo below.

Modification 4 – This modification is another rock gabion structure that is cross channel. Unlike the other structures, this structure has not been washed around. Beaver have been active in building a dam upon the rock structure. This structure has been effective at trapping approximately four to five feet of sediment upstream. The hydraulic jump associated with this structure is approximately two feet. See photo below.

Modification 5 – This modification is on the lower portion of Clover Creek, near the confluence with Camp Creek. It is a cross valley earthen dam/road with several other berms upstream and downstream of the dam. Clover Creek has washed through the middle of the dam, however there is no active headcut associated with the wash. See photo below.

Modification 6 – This modification is a partial cross valley earthen dam on Clover Creek, upstream of modification 5. At this location Clover Creek is primarily sheet flow through a meadow and flows around the end of the earthen dam.

Modification 7 – This modification is a cross valley earthen dam/road with one visible drainage culvert. Clover Creek flows from the west end of the dam to the drainage culvert in the middle of the valley and dam. Above and below the dam is primarily wet meadow with short segments of definable channel.

Modification 8 – This is a road crossing on Camp Creek that accesses the Davis Creek drainage. The crossing has essentially performed as a low elevation dam. The streambed elevation difference above and below the road crossing is approximately five feet. There has been some discussion as to how this crossing may be affecting the recovery of Camp Creek. See photo below.

Modification 9 – This modification is upstream of the Weaver Place on Clover Creek. It is an earthen dam that is approximately ten feet in height. The upstream reservoir has a controlled outlet around the west side that includes a waterfall that is approximately seven feet in height. See photo below.

Modification 10 – This is another earthen dam that is located upstream of modification 9. It is approximately ten to fifteen feet in height and has an outlet around the east side of the reservoir that is a fast water natural substrate chute.

Modification 11 – See Figure 17 and associated text.

Modification 12 – This modification is an earthen dam which has created Clover Creek Reservoir.

Modification 13 – This modification is an earthen dam in Yank Gulch. It is a dam that has been washed out in the center and is no longer effective at damming water.

Modification 14 – This is a large earthen dam within a narrow valley in Yank Gulch, and upstream of modification 13. The dam is approximately twenty feet tall and has evidence that it is still effective at pooling water, though it was dry when visited.

Modification 15 – This is a four foot earthen dam used to irrigate a lower meadow on the West Fork of Camp Creek.

Modification 16 – This is a fifteen foot earthen dam located just upstream of modification 15 on the West Fork. This dam was built across the active channel.

Modification 17 – This is a twenty foot earthen dam located in the active channel and just upstream of modification 16 on the West Fork.

Modification 18 – This is a four foot cross valley dam upstream of modification 17, on the West Fork.

Modification 19 – This is a fifteen foot cross valley dam that has an approximate five acre marsh/pond upstream of the dam on the West Fork. A newly dug drainage ditch has redirected some of the flow on the east end of the marsh to higher ground downstream.

Modification 20 – This modification is a ten foot cross valley dam located upstream of modification 19 on the West Fork.

Modification 21 – This modification is another ten foot cross valley dam located upstream of modification 20. It has a five to ten acre pond/wetland upstream of the dam. There are approximately two more earthen dams immediately upstream of this area of which has created wet meadows.

Modification 22 – This modification is an earthen dam just upstream of where the Camp Creek Road crosses the West Fork. It is a cross valley dam approximately twenty-five feet high with approximately twenty acres of reservoir behind the dam.

Modification 23 – This modification is a large earthen dam with approximately forty feet of fill which has created Camp Creek Reservoir at the headwaters to the West Fork Camp Creek. Camp Creek Reservoir appears to be about twenty acres in size.

Modification 24 – This modification is on the Middle Fork of Camp Creek. It is an earthen dam with irrigation pond. This area has been modified such that a definable channel is often un-noticeable through the adjacent meadows.

Modification 25 – This is a road crossing at the entrance to the 96 Ranch. Water has been ponded upstream of the road crossing.

Modification 26 – This modification is an eight foot earthen dam with a small reservoir upstream of the 96 Ranch.

Modification 27 – This modification is an eight foot earthen dam with a small reservoir upstream. See photo below.

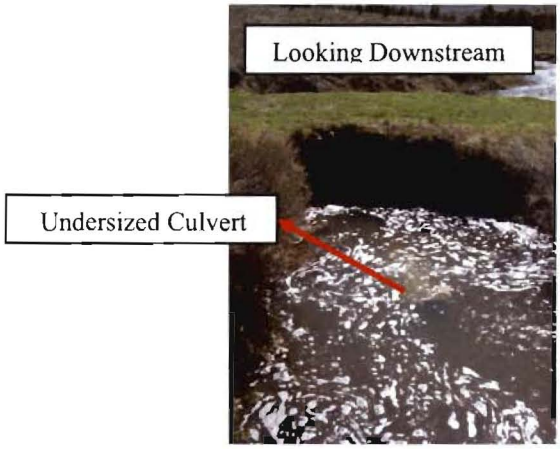
Modification 28 – This is a seventy foot high earthen dam (with road) in the headwaters of the Middle Fork Camp Creek. The earthen dam has created Logan Butte Reservoir.

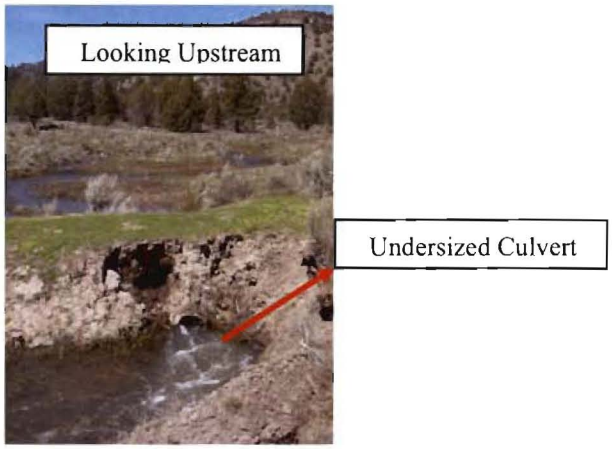
Modification 29 – This modification is a twelve foot high earthen dam on Parrish Creek with an approximate 5 acre reservoir.

Modification 30 – This modification is an eight foot earthen dam with a small reservoir on Parrish Creek

Modification 31 – This modification is a series of three to six foot earthen dams with small reservoirs on Parrish Creek.

Modification 32 – This modification is an old road crossing on Davis Creek. The culvert in the road fill is undersized which is backing up high flows and eroding the upstream and downstream sides of the road. See below photos.





Appendix 4A

Sample Description	Sample Date Time	Field Temperature (°C)	Field pH (SU)	Alkalinity as Calcium Carbonate (mg/L)	Field Alkalinity as Calcium Carbonate (mg/L)	Conductivity (µmhos/cm)	Field Conductivity (µmhos/cm)	Field Dissolved Oxygen (mg/L)	P... Da... Dis... D...
Camp Creek at Hwy 380	8/9/2005 13:15	17.1	7.7		357		696	7.9	
Camp Creek at Hwy 380	8/10/2005 11:00	14.4	7.6	340	350		685	5.2	
Camp Creek at Hwy 380	11/8/2005 12:00	3.1	8.2	167			366	13	
Camp Creek at Hwy 380	11/9/2005 10:00	<2.0	8.1	176		390		12	89
Camp Creek at Hwy 380	3/14/2006 12:05	4.4	8.5		220		457	11.4	
Camp Creek at Hwy 380	3/15/2006 9:58	3.3	8.5		205		431	11.4	

all data included in this spreadsheet is considered "Grade A" or "B" data, which means it is good for regulatory purpo...
means an estimated values
which means that something was a little "off" with the sample (as in it's holding time was exceeded), but th...
considers the
data to still be useful and of good enough
quality

temperature - need to look at continuous temperature data to assess moving 7-day average of daily maximum temperatures.
The 7-day criterion that would apply to Camp Creek is 18*C for salmon and trout rearing and migration
I don't think I have any continuous temperature data fro
Camp Creek
pH standard - values
should be 6.5-8.5

conductivity - we don't have a standard for conductivity, but I think it is interesting that the 3 different months of sampling conductivity values.
Not entirely sure what this means, but it would indicate that something different is happening each month.

D.O. - Camp Creek designated as supporting "cool-water" aquatic life
for D.O. standard:
D.O. shall not be less than 6.5 mg/L as an absolute
minimum
during spawning season, D.O. shall not be less than 11.0 mg/L, or not less than 95%
saturation

(spawning - October 1-June 30)

B.O.D. - We do not have a standard for BOD, but usually background conditions are in the order of 1-3 mg/L. Two of the here are a bit higher than that, suggesting something might be going on to affect the available oxygen in the water

nutrients - DEQ does not have standards for nutrients (except for nitrate, which is 10 mg/L and is mostly geared towards drinking water concerns)

EPA has published nutrient guidance by Ecoregion. In looking at this data, Camp Creek appears to be hig nitrogen than you would expect under reference conditions (without human impacts) for the Bule Mountains Ecoregion. I've attached this guidance document to the email.

E.coli - the single sample standard is 406 organisms/100 ml. One of the November samples exceeded this. I'm not sure samples weren't collected.

chlorophyll-a - the standard for rivers is 15 ug/L. One sample exceeded this.

Turbidity - our standard talks about comparing values to "background" conditions, and if a sample is >10% above backgı then that is a WQ violation since we don't have "background" values here, that is hard to do with this data. The data highlighted in rec me to be pretty high turbidity values, though.

Appendix 6A

Form R-3: Riparian Conditions Confidence Evaluation

Watershed: Camp Creek - Crook Co.

Analyst's Name: Berta Tachie **Date** 6/15/07 **Page** 2 **of** 2

Resources used:

- ☐ ODF base maps
- ☒ Topographic maps
- ☐ CHT maps
- ☐ Land use maps
- ☐ Ecoregion map
- ☒ Ecoregion descriptions
- ☒ Aerial photographs
  - ☐ Black & white
  - ☒ Color
  - ☐ Color infrared

  Scale: 1: 2½": 1 mile

  Source: Crook Co. GIS Dept.
- ☐ Description of riparian vegetation and/or shade from stream surveys

  Source:

  RCU #s:
- ☐ Field verification of riparian vegetation X Did not field survey CCI 139-146 CCWI 176,177

  RCU #s: CCL 7+8 CCLD 41-43 CCSF 70-73, 78,79 CCMF 86,87,91,92
- ☐ Field verification of stream shading X Did not field survey

  RCU #s: CCL 7+8 CCLD41-43 CCSF 71-73 78,79 CCMF 86,87,91,92 CCI 139-146 CCWI 176,177

Confidence in riparian condition assessment:

- ☐ **Low:** Unskilled/unsure of procedure, didn't consult expert, no field-verification, no survey information used, potential for conditions to have changed since aerial photos taken
- ☒ **Moderate:** Some confidence in assessment procedure and personal skills, access to expert for help and/or review, some areas field-verified and/or covered by existing surveys, low potential for conditions to have changed since aerial photos taken
- ☐ **High:** Confident in using assessment procedure and/or personal skills, access to expert for help and/or review, extensive field-verification

Recommendation for additional field assessment; unanswered questions (if any) and why (complete on back of form):

Form R-3: Riparian Conditions Confidence Evaluation

Watershed: Camp Creek – Crook Co.

Analyst's Name: Berta Youtie **Date** 6/5/07 **Page** 1 **of** 2

Resources used:

- ☐ ODF base maps
- ☒ Topographic maps
- ☐ CHT maps
- ☐ Land use maps
- ☐ Ecoregion map
- ☒ Ecoregion descriptions
- ☒ Aerial photographs
  - ☐ Black & white
  - ☒ Color
  - ☐ Color infrared

  Scale: 1: 2½": 1mile

  Source: Crook County GIS Dept
- ☐ Description of riparian vegetation and/or shade from stream surveys

  Source:

  RCU #s:
- ☒ Field verification of riparian vegetation

  RCU #s: CCL1-6 CCL9-40 CCL SF 44-69 CCMF 80-85, 93,94 CCW95-128 CCI-129-138 CCDC 147-152 CCP 153-169 CCWi 170-175
- ☒ Field verification of stream shading

  RCU #s: CCL1-6 CCL9-40 CCL 44-69 CCMF 80-85, 93,94 CCW95-128 CCI 129-138 CCDC 147-152 CCP 153-169 CCWi 170-175

☒ Landownership map

Confidence in riparian condition assessment:

- ☐ **Low:** Unskilled/unsure of procedure, didn't consult expert, no field-verification, no survey information used, potential for conditions to have changed since aerial photos taken
- ☐ **Moderate:** Some confidence in assessment procedure and personal skills, access to expert for help and/or review, some areas field-verified and/or covered by existing surveys, low potential for conditions to have changed since aerial photos taken
- ☒ **High:** Confident in using assessment procedure and/or personal skills, access to expert for help and/or review, extensive field-verification

Recommendation for additional field assessment, unanswered questions (if any) and why (complete on back of form):

Appendix 6B

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Yautic 5/21/07 Date: 17th Page 1 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-water-shed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Bank Damage Notes	
CC L1	R	2640	CC	L	JD Claro	SC	12	5-45	G		road	0-L	RRS-1	G-10	Butler
CC-L2	L	2640	CC	L	JD Claro Uplands	SC	12	5-45	G		road	0-L	RRS-1	8-10	Butler
CCL3	R	5280	CC	L		SC	3-10	1-20			road		RRS-1	G-10	Butler
CCL4	L	5280	CC	L		C	3-10	1-18			road		RRS-1	G-10	Butler
CCL5	R	4620				C	3-10	1-20					RRS-1	8-10	Schwa
CCL6	L	4620				SC/C	3-10	1-20					RRS-1	8-10	Schwa
CCL7	R	6600											RRS-1	NS	Schwab
CCL8	L	6600											RRS-1	NS	Schwab
CCL9	R	1720				C	3	3-10			road		RRS-1	G-10	BLM
CCL10	L	1720				C	3	1-8			road		RRS-1	G-10	BLM
CCL11	R	2640				C	3	5-8					RRS-1	G-10	BLM
CCL12	L	2640				SC	3	5-45					RRS-1	G	BLM

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: BY Date: 5/17/07 Page 2 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-watershed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Notes	
CC L13	R	120	CC	L	SD-Blue Mtn	C	3	1-20	6		bridge	0L	RRS-1		BLM
CC L14	L	120				C	3	1-20			bridge		RRS-1		BLM
CC L15	R	2640				C	3-5	3-25			road		RRS-1		BLM
CC L16	L	2640				C	3-5	3-25					RRS-1		BLM
CC L17	R	3300				C	3-6	3-25					RRS-1		BLM
CC L18	L	3300				C	3-6	3-25					RRS-1		BLM
CC L19	R	6600				C	3-10	3-25			road		RRS-1		BLM Butler
CC L20	L	6600				SC	3-10	3-25					RRS-1		Butler
CC L21	R	3000				C	3-5	3-15			cliffs road		RRS-1	below Severance	BLM
CC L22	L	3000				C	3-5	3-15			cliffs		RRS-1	"	BLM
CC L23	R	3960				C	1-3	3-20			road		RRS-1	above Severance	Twin Butte
CC L24	L	3960				UC	1-3	3-100					RRS-1		Twin Butte
			↓	↓	↓				↓			↓			

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Yantis Date: 5/22/07 Page 3 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-watershed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Bank Ft Notes	
CC L25	R	1320	CC	Lower	80-Clano uplands	SC	3-5	10-25	B			L-O	RRS-1		Twin Buttes
CC L26	L	1320	↓	↓	↓	SC	3-5	10-25	↓			↓	↓		Twin Buttes
CC L27	R	2[illegible]				C	3	0-6			road				Twin Buttes
CC L28	L	2[illegible]				C	3	6-10							Twin Buttes
CC L29	R	11880				C	3	0-10						8-20 Ft	Co. BLM TB
CC L30	L	11880				C	3	0-10						8-20 Ft	Co. BLM TB
CC L31	R	5280				C	3-5	3-10						8-20	Twin Buttes
CC L32	L	5280				C	3-5	3-10						8-20	Twin Buttes
CC L33	R	3000				C	3-10	0-6						20-30	Twin Buttes
CC L34	L	3000				C	3-10	3-10						20-30	Twin Buttes
CC L35	R	4000				C	3-10	3-10						16-30	Solo Buttes
CC L36	L	4000				C	3-10	3-10						16-30	Solo Buttes
CCL37	R	7000	↓	↓	↓	C	3-10	0-6	↓			↓	↓	16-30	Weaver Butte.
CCL38	L	7000				C	3-10	3-10						16-30	

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Yautie 5/24+31/07 Date: _____ Page 4 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-water-shed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Banks Notes	
CCL 39	R	60000	CC	Lower	JD-Clamo Uplands	C	3-16	0-6	G			0-L	RRS-1	16-30	BLM
CC-L 40	L	6000	CC	Lower	↑	C	3-10	3-10	G			0-L	RRS-1	16-30	BLM
CC-LD 41	Meadow	5500	Lower-Davis	→		UC			G			0-L	RRS-2	NS-	Twin Buttes
CC-LD 42	R	4000	Lower-Davis	→					M			0-L	RRS-4	NS	Twin Buttes
CC-LD 43	L	4000	Lower Davis	→					M			0-L	RRS-4	NS	Twin Buttes
CC-LD 44	R	14500	Lower Davis	→		C	1-3	1-6	M			10-L	RRS-4	3	BLM - Twin Butt
CC-LD 45	L	14500	Lower Davis	→		C	1-3	1-6	M			10-L	RRS-4	3	BLM - Twin Butt
CC-LD 46	R		Lower-Davis	→		UC	Dry		M-G			0-L	RRS-4 RRS-1	0-2	BLM
CC-LD 47	L		CC	Lower Davis	↓	UC	Dry		M-G			0-L	RRS-4 RRS-1	0-2	BLM

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Youtie Date: 5/23/07 Page 5 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-watershed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Bank Ty	Notes
CC-SF 48	R	2640	CC	S. Fork Clearcr	80-Clarno Uplands	C	3-12	1-6	G			0-L	RRS-1		
CC-SF 49	L	2640				C	3-12	1-6	G				RRS-1		
CC-SF 50	Meadow	4280				uc		1-100+	G				RRS-2		
CC-SF 51	R	1500				C	1-3	3-5	G				RRS-1		
CC-SF 52	L	1500				C	1-3	3-5	G				RRS-1		
CC-SF 53	R	1500				C	12-24	3-5	G				RRS-1		
CC-SF 54	L	1500				C	12-24	3-5	G				RRS-1		
CC-SF 55	R	2000				C	Dry		G				RRS-1		10-12
CC-SF 56	L	2000				C	Dry		G				RRS-1		10-12
CC-SF 57	Pond	500				uc									
CC-SF 58	R	2640				C	1-3	1-5	G				RRS-1		6-10
CC-SF 59	L	2640				C	1-3	1-5	G				RRS-1		6-10
CC-SF 60	Pond	1320	↓	↓	↓	uc						↓			

Weaker ↓

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Barbe Youtie Date: 5/23/07 Page 6 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-water-shed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Bank Notes	
CC-SF 61	R	1500	CC	SFork Clover Creek	JD-Cano uplands	C	3-5	1-20	G			0-L	RRS-1	Yak CK dry	Weaver
CC-SF 62	L	1500	↑	↓	↓	C	3-5	1-20	↓			0-L	RRS-1	3-6	↓
CC-SF 63	R	3800				C	1-3	3-25				0-L	RRS-1	6-10	
CC-SF 64	L	3800				C	1-3	3-25				0-L	RRS-1	6-10	
CC-SF 65	R L	5280				C	Dry					L	RRS-1	6-10	
CC-SF 66	R	6600				C	1	3-12				L	RRS-1	10-15	
CC-SF 67	L	6600				C	1	3-12				L	RRS-1	10-15	
CC-SF 68	R	11880				C	Dry	0-15				L	RRS-1	6-10	BLM Weaver
CC-SF 69	L	11880				C	Dry	0-15	↓			L	RRS-1	6-10	BLM Weaver
CC-SF 70	Pond	750					Dry					L			Weaver
CC-SF 71	R	4000							G				RRS-1	NS	Weaver
CC-SF 72	L	4000	↓	↓	↓				G				RRS-1	NS	Weaver

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Youtie 5/23/07 + Date: 6/1/07 Page 7 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-watershed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Bank Downcut Notes	
CC-SF 73	Meadow	8000	CC	S Fork Clover CK	JD-Clarno uplands				G			0-L	RRS 2	NS	G1
CC-SF 74	R	1200				C	1-3	1-3	H		road	10-L	RRS-5	1-3	G1
CC-SF 75	L	1200				C	1-3	1-3	H		road	10-L	RRS-5	1-3	G1
CC-SF 76	R	8000				UC	1	50+	H		road	20-L	RRS-5	1-3	G1
CC-SF 77	L	8000				UC	1	50+	H		road	20-L	RRS-5	1-3	G1
CC-SF 78	R													NS	G1
CC-SF 79	L			↓										NS	G1
CC-MF 80	R	8000		Middle Fork		C	3-5	3-15	G		road	0-L	RRS-1	10-15	BLM
CC-MF 81	L	8000				C	3-5	3-15	G		road	0-L	RRS-1	10-15	BLM
CC-MF 82	R	3960				C	Dry		G		road	0-L	RRS-1	5-15	BLM
CC-MF 83	L	3960				C	Dry		G		road	0-L	RRS-1	5-15	BLM
CC-MF 84	R	8000				C	0 marshy	20-25	G			0-L	RRS-1	10-15	BLM
CC-MF 85	L	8000	↓	↓	↓	C	0 marshy	20-25	G			0-L	RRS-1	10-15	BLM

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Voutie Date: 6/1/07 Page 8 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-water-shed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm dlecon due to:	Shade (%)	Riparian recruitment situation	Bank Deconst Notes
CC-MF B6	R	13,500	CC	Middle Fork	30-Dano Uplands				G			0-L	RRS-1	NS
CC-MF B7	L	13,500	↓	↓	↓				G			0-L	RRS-1	NS
CC-MF B8	R	4280				C	1-3	1-3	G-M		road	10-L	RRS-1 RRS-5	10-12 spillway
CC MF B9	L	9280				C	1-3	1-3	G-M			5-L	RRS-1 RRS-5	10-12 spillway
CC-MF 90	Pond	1500				UC								
CC-MF 91	R	10,500+										L		NS
CC-MF 92	L	10,500+										L		NS
CC-MF 93	R	10,500+				C	Dry	6-9				L		6-12 BLM
CC-MF 94	L	10,500+	↓	↓	↓	C	Dry	6-9				L		6-12 BLM

96 Reach ↓

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Yartie Date: 5/22/07 Page 9 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-watershed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Bank Dewatering Notes	
C-W 95	R	5500	CC	W. Fork	JD-Clarno Uplands	C	2-10	0-25	G-B			0-L	RRS-3	20-36	BLM
C-W 96	L	5500				C	2-10	1-22	G-B			0-L	RRS-3	20-36	BLM
C-W 97	R	2640				C	3-6	1-25	B			10-L	RRS-3	10-20	BLM
C-W 98	L	2640				C	3-6	1-25	B			10-L	RRS-3	10-20	BLM
C-W 99	R	12,000				C	1-3	0-25	G-B			1-L	RRS-1	10-25	BLM
C-W 100	L	12.000				C	1-3	0-25	G-B			1-L	RRS-1	10-25	BLM
C-W 101	R	7000				C	3-6	0-25	B			0	RRS-1	10-20	Bezona
C-W 102	L	7000				C	3-6	0-25	B			0	RRS-1	10-20	Bezona
C-W 103	R	5800				C	1-4	0-15	G			0	RRS-1	4-20	Bezona
C-W 104	L	5800				C	1-4	0-15	G			0	RRS-1	4-20	Bezona
C-W 105	R	4000				C	3-6	1-25	G			0	RRS-1		Bezona
C-W 106	L	4000	↓	↓	↓	C	3-6	1-25	G			0	RRS-1		Bezona

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Youtie Date: 5/22/07 Page 10 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-water-shed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm dscon due to:	Shade (%)	Riparian recruitment situation	Notes	
CC-W 107	R(1)	3500	CC	W Fork	JD-Clarno Uplands	C	1-3	1-3				0-L	RRS-1	2Forks	Bezona
CC-W 108	L(1)	3500				C	1-3	1-3				0-L	RRS-1		Bezona
CC-W 109	R(2)	3500				C	1-3	3-10				0-L	RRS-1		Bezona
CC-W 110	L(2)	3500				C	1-3	3-10				0-L	RRS-1		Bezona
CCW 111	meadow	7000				uc		100+				0-L	RRS-2		Hatfield
CCW 112	Pond	1500				uc		100+				0-L			
CCW 113	R	1320				C	1-3	1-15	M-G			10-L	RRS-1 RRS-4		
CCW 114	L	1320				C	1-3	1-25	M-G			10-L	RRS-1 RRS-4		
CCW 115	R	5280				uc		100+				0-L	RRS-2		
CCW 116	L	5280				uc		100+				0-L	RRS-2		
CCW 117	Pond	1000				uc						0-L			
CCW 118	Meadow R	4000				uc	1-3					0-L	RRS-2		
CCW 119	Meadow L	4000	↓	↓	↓	uc	1-3					0-L	RRS-2		

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Yactie Date: 5/22/07 Page 11 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-water-shed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm dlecon dus to:	Shade (%)	Riparian recruitment situation	Notes
CCW 120	R	10,560	CC	W Fork	JD-Clarno Upland	UC	1	100+	G			0-L	RRS-1	
CCW 121	L	10,560	↓	↓	↓	UC	1	100+	↓			↓	RRS-1	
CCW 122	Meadow	600				UC	1	100+			road		RRS-2	
CCW 123	Pond	1200				UC								
CCW 124	R	3000				UC	1	100+					RRS-2	
CCW 125	L	3000				UC	1	100+					RRS-2	
CCW 126	Pond	1320				UC								
CCW 127	R	12000+				UC	Dry						/	
CCW 128	L	12000+	↓	↓	↓	UC	Dry		↓			↓		

Hatfield ↓

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek – Crook Co. Name of Analyst: Berta Youtie Date: 5/17+31/07 Page 12 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-watershed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Bank Erosion Notes
CCI 129	R	2640	CC	Indian C, Parrish C	JD-Clarno Uplands	C	1-3	0-25	G			L 0	RRS-1	10-20
CCI 130	L	2640	↓	↓	↓	C	1-3	0-25	G			L	RRS-1	10-20
CCI 131	R Meadow	11,000				EC	1-3	100+	G			L	RRS-2	
CCI 132	L Meadow	11,000				EC	1-3	100+	G			L	RRS-2	
CCI 133	R	2640				C	1-3	0-12	M		road	L 5	RRS-4	2-5
CCI 134	L	2640				C	1-3	0-12	M		road	L 5	RRS 4	2-5
CCI 135	R	2500				C	2-6	0-18	M		road	L 5	RRS 4	3-6
CCI 136	L	2500				C	2-6	0-22	M		road	L 5	RRS 4	3-6
CCI 137	R	6600				C	3	1-15	M			L 10	RRS 4	1-3
CCI 138	L	6600				C	3	1-15	M			L 10	RRS 4	1-3
CCI 139	R	9200							M				RRS 4	NS
CCI 140	L	9200	↓	↓	↓				M				RRS 4	NS

Bezona ↓ Fildes

whittier ↓

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Yautie Date: 5/17/07 Page 13 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-watershed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Downcut Notes	
CCI 141	R Meadow	5280	CC	Indian/ Parrish	80-Clamo Highlands	UC			G-M			L	RRS-2	NS	whether
CCI 142	L Meadow	5280				UC			G-M			L	RRS-2	NS	↓
CCI 143	Meadow	3300				UC		100+	G			L	RRS-2	NS	USFS
CCI 144	R&L	3000				UC			C-M			M	RRS-6	NS	USFS
CCI 145	Meadow	3000				UC		100+	G			L	RRS-2	NS	USFS
CCI 146	R&L	6600				C			C-M			M	RRS 6	NS	USFS
CCI 147	R	5280				C	1	0-3	G-M			0-L	RRS-4	1-3	Fildes
CCI 148	L	5280				C	1	0-3	G-M			0-L	RRS-4	1-3	Fildes
CCI 149	R	5500				C	1-1.5	1-3	C-M			30-M	RRS-6	1-2	USFS
CCI 150	L	5500				C	1-1.5	1-3	C-M			30-M	RRS-6	1-2	USFS
CCI 151	R Meadow	2640				UC	.5	100+	G			5-L	RRS-2	0	USFS
CCI 152	L Meadow	2640				UC	.5	100+	G			5-L	RRS-2	0	USFS
CCI 153 (B)	Pond	600	↓	↓	↓	UC			-						

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Yaeger Date: 5/24/07 Page 14 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-water-shed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm discon due to:	Shade (%)	Riparian recruitment situation	Bank Dowcut ft Notes	
CCP 153	R	8000	CC	JC Parrish	JD-Clarno uplands	C	Dry	—	G			0-L			Bezona
CCP 154	L	8000				C	Dry	—	G			0-L			Bezona
CCP 155	R	3900				C	1	3-20	G			0-L	RRS-1	3ft+	Fildes
CCP 156	L	3900				C	1	3-20	G			0-L	RRS-1	3ft+	Fildes
CCP 157	Pond	1200				UC	—	—	—						Fildes
CCP 158	Meadow	8000				UC	1-3	100+	G			0-L	RRS-2	2	Fildes
CCP 159	Pond	300				UC	—	—	—						
CCP 160	R Meadow	2600				UC	1-1.5	300+	G			0-L	RRS-2	1-3	
CCP 161	L Meadow	2600				UC	1-1.5	300+	G			0-L	RRS-2	1-3	
CCP 162	R	1320				SC	1	6-15	M			5-L	RRS-2 RRS-5	3	
CCP 163	L	1320			↓	SC	1	6-15	M			5-L	RRS-2 RRS-5	3	↓
CCP 164	R	6600			JD-Clarno Highlands	C	1	1-3	M			10-L	RRS 4	3-6	USFS
CCP 165	L	6600	↓	↓	↓	C	1	1-3	M			10-L	RRS 4	3-6	USFS

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Form R-1: Riparian Condition Units

Name of Watershed: Camp Creek - Crook Co. Name of Analyst: Berta Youtie Date: 5/24+31/07 Page 15 of 15

RCU #	Bank	Length (ft)	Stream/ Lake	Sub-watershed	Eco-region	CHT	Stream Size	RA1 Width (ft)	RA1 Code	RA2 Code	Perm disccon due to:	Shade (%)	Riparian recruitment situation	Notes	
CCP 166	R	5000	CC	IC-Parrish	OD-Clarno Highlands	SC	.5-1	3-12	M		road	10-L	RRS-4		USFS
CCP 167	L	5000	↓	↑	↑	SC	.5-1	3-12	M		road	10-L	RRS-4		USFS
CCP 168	R	1320	↓	↓	↓	SC	1	3-12	M		road	10-L	RRS-5		USFS
CCP 169	L	1320	↓	↓	↓	SC	1	3-12	M		road	10-L	RRS-5		USFS
CCWi 170	R	2640	↓	↓	↓	C	1	1-3	G			0-L	RRS-1	1	Fildes
CCWi 171	L	2640	↓	↓	↓	C	1	1-3	G			0-L	RRS-1	1	Fildes
CCWi 172	R	8000	↓	↓	↓	C	1	1-3	M			15-M	RRS-4	1-3	USFS
CCWi 173	L	8000	↓	↓	↓	C	1	1-3	M			15-M	RRS-4	1-3	USFS
CCWi 174	R	1300	↓	↓	↓	UC	1	100+	H		road	10-M	RRS-5		USFS
CCWi 175	L	1300	↓	↓	↓	UC	1	100+	H		road	10-M	RRS-5		USFS
CCWi 176	R	5280	↓	↓	↓	SC	.5-1	10-20	M			5-L	RRS-4		USFS
CCWi 177	L	5280	↓	↓	↓	SC	.5-1	10-20	M			5-L	RRS-4		USFS

TERMS

RA1 Riparian Area 1

RA2 Riparian Area 2

Appendix 6C

Form R-2: Riparian Recruitment Situation Description

Analyst: Becka Youtie Date: 6/12/07 Page 1 of 6

Watershed: Camp Creek Ecoregion: John Day/Clarno Uplands

Riparian Recruitment Situation Name: Downcut - herbaceous vegetation RRS#1

Description:

At least 60 percent of the riparian channel units fall into this situation description. The majority of the riparian areas located in the Camp Creek Watershed are downcut 6 to 25 feet. Soils are deep, loamy clay derived from John Day and Clarno ash. These fine loamy soils are very conducive to erosion. Often steep slopes are devoid of vegetation. These deep incised canyons occurred sometime between 1876 and 1903 (Buckley 1993). Recovery is very slow and difficult. The stream is no longer connected to the large floodplain terraces located far above the downcut creekbed. New floodplains are now forming and aggrading in the bottom of the canyons. Current vegetation potential is not the same as historic potential vegetation. While historically the many channeled riparian area may have been dominated by willows (Buckley 1993), the vegetation now occurring in the incised canyons is herbaceous. Nebraska sedge, Baltic rush and Kentucky bluegrass are dominant. These are classified as Baltic rush associations in Crowe et al (2004) and Nebraska sedge community types in Kolvachik (1987). Very few remnant willows are found. Perhaps it is difficult for willow to find oxygen in these finely texture soils.

There is no easy fix for these sites. Without large scale management changes, reintroduction of beaver, and man-made technological innovations, the riparian areas may continue to erode after large flood events. However, currently the majority of sites are in an upward trend with new floodplains forming and native, herbaceous vegetation with good root structures holding the soil.

Map Symbol: No symbol for RRS 1 used on maps

Form R-2: Riparian Recruitment Situation Description

Analyst: Berta Youtie Date: 6/12/07 Page 2 of 6

Watershed: Camp Creek Ecoregion: John Day/Clarno Uplands

Riparian Recruitment Situation Name: Floodplain Connection - meadow RRS-2

Description:

Few of the riparian sites along Camp Creek are not incised and still have floodplain connection. These sites are not constrained either because they never downcut or due to landowner construction of dams in order to spread water across the floodplain. In these areas large herbaceous meadows still exist. These meadows are also dominated by Nebraska sedge, Baltic rush and Kentucky bluegrass. Willows are non-existent in these meadows but do occasionally occur immediately adjacent to the stream. These sites are very close to potential even though there is little shade from hardwoods.

Map Symbol: • • • ● ● ●

63

Form R-2: Riparian Recruitment Situation Description

Analyst: Berta Youtie Date: 6/12/07 Page 3 of 6

Watershed: Camp Creek Ecoregion: John Day/Clarno Uplands

Riparian Recruitment Situation Name: Downcut - Hardwoods RRS-3

Description:

Located on the West Fork of Camp Creek is a BLM exclosure that has been fenced from livestock since 1966. This is our best example of what might occur if grazing was eliminated. The site has aggraded quite a bit through time and the vegetation is very diverse. There have been trespass cattle on site and wildlife are not excluded. Young willows are uniformly distributed throughout the area. both sandbar/coyote willow (*Salix exigua)* and Mackenzie's willow (*Salix prolixa* or *Salix rigida* v. *mackenziena*). The exclosure has been there for 40 years . Why are these willows young and wimpy? Have major flood events taken them out, have deer browsed them or is this not really willow habitat? Although the soil is finely textured, the willows are growing on site but not providing much shade to the stream. I think it is unclear whether this site shows the potential for the rest of Camp Creek.

Map Symbol:

Form R-2: Riparian Recruitment Situation Description

Analyst: Berta Youtie Date: 6/12/07 Page 4 of 6

Watershed: Camp Creek CrookCo. Ecoregion: John Day/Clarno Highlands

Riparian Recruitment Situation Name: Downcut - juniper - pine RRS-4

Description:

These sites may be slightly downcut from 1 to 5 feet. Juniper or ponderosa pine are dominant with some hardwoods present. Wood's rose, golden currant, willow, snowberry and aspen are present in the understory. Both Kovalchik 1987 and Crowe et al 2004 classify these sites as ponderosa pine/common snowberry communities. The majority of these sites are in low to medium shade conditions. Juniper is increasing and may not be a natural component of this community. Juniper may need to be removed before more desirable hardwoods that stabilize the soil can naturally increase on the site. Many of these sites have been over-grazed in the past, but current practices are leading to riparian conditions in an upward trend.

Map Symbol: - - - -

Form R-2: Riparian Recruitment Situation Description

Analyst: Berta Yadie Date: 6/12/07 Page 5 of 6

Watershed: Camp Creek Crook Co. Ecoregion: John Day/Clarno Highlands

Riparian Recruitment Situation Name: Adequate - hardwoods RRS-5

Description:

There are very few of these site situations found in the Watershed. They are located in the Indian Creek/Parrish (Jackson) Creek Sub Watershed draining the Maury Mountains at the highest elevations in the Watershed. Aspen is dominant with willow, chokecherry, snowberry, golden current and rose in the understory. Kovalchik (1987) describes these communities as quaking aspen/snowberry/bluewildrye. The sites have medium to adequate shade but more recruitment could be encouraged with an active fire program and protection from wild ungulate grazing. Often Ponderosa Pine and Douglas Fir replace these hardwoods if periodic fires do not occur. Grazing late in the season may be detrimental.

Map Symbol: XXX

Form R-2: Riparian Recruitment Situation Description

Analyst: Berta Yautie **Date:** 6/12/07 **Page** 6 **of** 6

Watershed: Camp Creek Crook Co. Ecoregion John Day/Clarno Highlands

Riparian Recruitment Situation Name: Adequate - conifer RRS-6

Description:

Near the headwaters of Double Cabin Creek which flows into Indian Creek, I located a riparian site dominated by grand fir with Douglas fir and ponderosa pine present. Kentucky bluegrass, baltic rush and heartleaf arnica were in the understory. This classifies as either grand fir / queenscup beadlily or grand fir/snowberry (Crowe et al 2004). These sites are only at the highest elevation in the IndianCreek/Parrish (Jackson) Creek Subwatershed. Large conifer trees provided adequate shade to the stream.

Map Symbol: 

Appendix 6D

Map Unit Description (OR)

Crook County Area, Oregon

DRAFT - SUBJECT TO CHANGE

088 - Willowdale loam, 0 to 2 percent slopes

Mean annual precipitation: 9 to 12 inches
Mean annual temperature: 50 to 52 degrees F
Frost-free period: 85 to 120 days
Farmland class: Prime farmland if irrigated

Willowdale and similar soils

Extent: about 85 percent of the unit
Landform(s): drainageways
Slope gradient: 0 to 2 percent
Parent material: mixed alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding frequency rare
Ponding frequency: occasional

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Land capability subclass, non-irrigated: 4c
Land capability subclass, irrigated: 3c
Drainage class: well drained
Hydric soil class: no
Hydrologic group: B

Representative soil profile:

	Texture	Permeability	Available Water Capacity	pH	Kw	Kf
A1 -- 0 to 4 in	loam	moderately rapid	0.4 to 0.8 in	6.6 to 7.3	.32	.32
A2 -- 4 to 11 in	sandy loam	moderately rapid	0.6 to 1.5 in	6.6 to 7.3	.24	.24
Ak -- 11 to 22 in	silt loam	moderately rapid	1.0 to 2.3 in	6.6 to 7.3	.43	.43
Bk1 -- 22 to 32 in	loam	moderate	0.9 to 2.1 in	7.4 to 7.8	.37	.37
Bk2 -- 32 to 50 in	clay loam	moderate	1.6 to 3.8 in	7.4 to 7.8	.32	.32
Bk3 -- 50 to 59 in	sandy clay loam	moderate	0.6 to 1.9 in	6.6 to 7.3	.24	.24
Ck -- 59 to 70 in	sandy clay loam	moderate	0.8 to 2.3 in	6.6 to 7.3	.24	.24

Ecological Site / Plant Association: LOAMY BOTTOM (R010XY005OR)

214 - Blancocanyon ashy loam, 0 to 5 percent slopes

Mean annual precipitation: 9 to 12 inches
Mean annual temperature: 48 to 52 degrees F
Frost-free period: 90 to 120 days
Farmland class: Farmland of statewide importance

Blancocanyon and similar soils

Extent: about 85 percent of the unit
Landform(s): stream terraces
Slope gradient: 0 to 5 percent
Parent material: alluvium from weathered John Day sediment and volcanic tuff.
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding frequency none
Ponding frequency: frequent

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability subclass, non-irrigated: 4s
Land capability subclass, irrigated:
Drainage class: moderately well drained
Hydric soil class: no
Hydrologic group: B

Representative soil profile:

	Texture	Permeability	Available Water Capacity	pH	Kw	Kf
A -- 0 to 4 in	ashy loam	moderate	0.6 to 0.6 in	7.9 to 8.4	.43	.43
Bkn1 -- 4 to 9 in	ashy sandy loam	moderately rapid	0.2 to 0.8 in	9.0 to 9.6	.43	.43
2Bkn2 -- 9 to 15 in	loam	moderate	0.2 to 0.9 in	9.0 to 9.6	.43	.43
2Bkn3 -- 15 to 36 in	loam	moderate	0.8 to 3.1 in	9.0 to 9.6	.37	.37
2Bkn4 -- 36 to 42 in	sandy clay loam	moderately slow	0.8 to 1.1 in	7.9 to 8.4	.28	.28
2Bkn5 -- 42 to 48 in	loam	moderately slow	0.7 to 1.1 in	8.5 to 9.0	.43	.43
2Bkn6 -- 48 to 60 in	silt	moderate	0.6 to 1.8 in	8.5 to 9.0	.64	.64

Ecological Site / Plant Association: DRY BASIN (R024XY009OR)

DRAFT - SUBJECT TO CHANGE

249 - Embal-Luckycreek complex, 0 to 5 percent slopes

Mean annual precipitation: 10 to 16 inches
Mean annual temperature: 39 to 46 degrees F
Frost-free period: 40 to 90 days
Farmland class: Prime farmland if irrigated

Embal and similar soils

Extent: about 60 percent of the unit
Landform(s): drainageways
Slope gradient: 0 to 5 percent
Parent material: volcanic ash mixed with allvuium from volcanic rock
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding frequency rare
Ponding frequency: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Land capability subclass, non-irrigated: 6c
Land capability subclass, irrigated:
Drainage class: well drained
Hydric soil class: no
Hydrologic group: B

Representative soil profile:

Texture	Permeability	Available Water Capacity	pH	Kw	Kf
A1 -- 0 to 2 in	moderately rapid	0.2 to 0.3 in	6.6 to 7.8	.28	.28
A2 -- 2 to 10 in	moderately rapid	0.9 to 1.0 in	6.6 to 7.8	.28	.28
A3 -- 10 to 20 in	moderately rapid	1.1 to 1.3 in	6.6 to 7.8	.28	.28
C1 -- 20 to 30 in	moderate	1.1 to 1.6 in	7.4 to 8.4	.32	.32
C2 -- 30 to 60 in	moderate	3.0 to 4.2 in	7.4 to 8.4	32	.32

Ecological Site / Plant Association: SWALE 10-14 PZ (R023XY202OR)

Luckycreek and similar soils

Extent: about 25 percent of the unit
Landform(s): alluvial benches
fan terraces
small drainageways
stream terraces
Slope gradient: 0 to 5 percent
Parent material: fine-loamy alluvium from volcanic rock with ash in the surface.
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding frequency frequent
Ponding frequency: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Land capability subclass, non-irrigated: 4c
Land capability subclass, irrigated: 4c
Drainage class: well drained
Hydric soil class: no
Hydrologic group: C

Map Unit Description (OR)

Crook County Area, Oregon

DRAFT - SUBJECT TO CHANGE

Representative soil profile:			*Texture*	*Permeability*	*Available Water Capacity*	*pH*	*Kw*	*Kf*
A1	--	0 to 2 in	ashy loam	moderately rapid	0.3 to 0.4 in	6.6 to 7.3	.15	.20
A2	--	2 to 8 in	ashy loam	moderately rapid	0.6 to 1.2 in	6.6 to 7.3	.20	.28
2Bt1	--	8 to 23 in	clay loam	moderately slow	1.5 to 3.1 in	6.6 to 7.3	.24	.32
2Bt2	--	23 to 38 in	gravelly clay loam	moderately slow	1.5 to 3.2 in	6.6 to 7.3	.20	.32
2Bk1	--	38 to 52 in	clay loam	moderately slow	1.4 to 2.9 in	7.4 to 7.8	.28	.37
2Bk2	--	52 to 60 in	very gravelly clay loam	moderately slow	0.8 to 1.7 in	7.9 to 8.4	.10	.37

Ecological Site / Plant Association: SR MOUNTAIN SWALE 12-16 PZ (R010XC017OR)

270 - Bonnieview, depressional-Luckycreek complex, 0 to 5 percent slopes

Mean annual precipitation: 12 to 21 inches
Mean annual temperature: 39 to 46 degrees F
Frost-free period: 40 to 90 days
Farmland class: Farmland of statewide importance

Bonnieview, depressional and similar soils

Extent: about 50 percent of the unit
Landform(s): drainageways
low relief flats
stream terraces
Slope gradient: 0 to 5 percent
Parent material: residuum weathered from volcanic rocks and palesol material
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding frequency none
Ponding frequency: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 8
Wind erodibility index (WEI): 0
Land capability subclass, non-irrigated: 4c
Land capability subclass, irrigated:
Drainage class: moderately well drained
Hydric soil class: no
Hydrologic group: D

Representative soil profile:

		Texture	Permeability	Available Water Capacity	pH	Kw	Kf
A1 --	0 to 3 in	very gravelly clay loam	moderately slow	0.4 to 0.6 in	6.1 to 6.5	.10	.28
A2 --	3 to 10 in	gravelly silty clay loam	moderately slow	0.8 to 1.2 in	6.1 to 6.5	.15	.28
Bt1 --	10 to 22 in	clay	very slow	1.1 to 2.0 in	5.6 to 6.5	.17	.20
Btk2 --	22 to 27 in	cobbly clay	very slow	0.5 to 0.8 in	5.6 to 6.5	.15	.20
2Btk --	27 to 60 in	cobbly clay	very slow	2.9 to 5.2 in	6.1 to 6.5	.10	.28

Ecological Site / Plant Association:

Luckycreek and similar soils

Extent: about 35 percent of the unit
Landform(s): alluvial benches
fan terraces
small drainageways
stream terraces
Slope gradient: 0 to 5 percent
Parent material: fine-loamy alluvium from volcanic rock with ash in the surface.
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding frequency frequent
Ponding frequency: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Land capability subclass, non-irrigated: 4e
Land capability subclass, irrigated:
Drainage class: well drained
Hydric soil class: no
Hydrologic group: C

Map Unit Description (OR)

Crook County Area, Oregon

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Representative soil profile:	*Texture*	*Permeability*	*Available Water Capacity*	*pH*	*Kw*	*Kf*
A1 -- 0 to 2 in	ashy loam	moderately rapid	0.3 to 0.4 in	6.6 to 7.3	.15	.20
A2 -- 2 to 8 in	ashy loam	moderately rapid	0.6 to 1.2 in	6.6 to 7.3	.20	.28
2Bt1 -- 8 to 23 in	clay loam	moderately slow	1.5 to 3.1 in	6.6 to 7.3	.24	.32
2Bt2 -- 23 to 38 in	gravelly clay loam	moderately slow	1.5 to 3.2 in	6.6 to 7.3	.20	.32
2Bk1 -- 38 to 52 in	clay loam	moderately slow	1.4 to 2.9 in	7.4 to 7.8	.28	.37
2Bk2 -- 52 to 60 in	very gravelly clay loam	moderately slow	0.8 to 1.7 in	7.9 to 8.4	.10	.37

Ecological Site / Plant Association: SR MOUNTAIN SWALE 12-16 PZ (R010XC017OR)

420 - Railway-Gerow complex, 1 to 12 percent slopes

Mean annual precipitation: 16 to 32 inches
Mean annual temperature: 36 to 45 degrees F
Frost-free period: 30 to 70 days
Farmland class:

Railway and similar soils

Extent: about 50 percent of the unit
Landform(s): drainageways
swales
Slope gradient: 1 to 12 percent
Parent material: alluvium from mixed volcanic rock (vertic)
Restrictive feature(s): abrupt textural change
Seasonal high water table: approximately 0 inches
Flooding frequency occasional
Ponding frequency: frequent

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG). 5
Wind erodibility index (WEI): 56
Land capability subclass, non-irrigated: 6w
Land capability subclass, irrigated:
Drainage class: very poorly drained
Hydric soil class: yes
Hydrologic group: D

Representative soil profile:

Texture	Permeability	Available Water Capacity	pH	Kw	Kf
A1 -- 0 to 6 in silt loam	----		6.6 to 7.3	.37	.37
A2 -- 6 to 12 in silty clay loam	----		6.6 to 7.3	.32	.32
A3 -- 12 to 21 in clay loam	----		7.4 to 7.8	.32	.32
Bg -- 21 to 27 in silty clay	----		7.4 to 7.8	.20	.20
Bw1 -- 27 to 49 in silty clay	----		7.4 to 7.8	.32	.32
Bw2 -- 49 to 60 in clay loam	----		7.4 to 7.8	.32	.32

Ecological Site / Plant Association: WET MOUNTAIN MEADOW (R010XY001OR)

Gerow and similar soils

Extent: about 40 percent of the unit
Landform(s): stream terraces
Slope gradient: 1 to 12 percent
Parent material: alluvium from volcanic rock with volcanic ash.
Restrictive feature(s): none
Seasonal high water table: approximately 0 inches
Flooding frequency rare
Ponding frequency: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG). 6
Wind erodibility index (WEI): 56
Land capability subclass, non-irrigated. 6w
Land capability subclass, irrigated:
Drainage class: somewhat poorly drained
Hydric soil class: yes
Hydrologic group: C

Map Unit Description (OR)

Crook County Area, Oregon

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Representative soil profile:	Texture	Permeability	Available Water Capacity	pH	Kw	Kf
A -- 0 to 6 in	ashy silt loam	moderate	1.2 to 1.4 in	5.6 to 6.0	.24	.24
2AB -- 6 to 10 in	ashy silty clay loam	moderately slow	0.8 to 0.9 in	5.6 to 6.0	.32	.32
2Bwb1 -- 10 to 15 in	ashy silty clay loam	moderately slow	1.1 to 1.2 in	5.6 to 7.8	.32	.32
2Bwb2 -- 15 to 25 in	ashy silty clay loam	moderately slow	2.1 to 2.4 in	5.6 to 7.8	.32	.32
2Bwb3 -- 25 to 36 in	silty clay	moderately slow	1.5 to 2.2 in	6.1 to 8.4	.20	.20
2Bwb4 -- 36 to 60 in	silty clay loam	moderately slow	3.4 to 5.0 in	6.1 to 8.4	.32	.32

Ecological Site / Plant Association: MOUNTAIN MEADOW (R010XY002OR)

430 - Gerow silt loam, drained, 1 to 5 percent slopes

Mean annual precipitation: 16 to 22 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 30 to 70 days
Farmland class:

Gerow, Drianed and similar soils

Extent: about 85 percent of the unit
Landform(s): incised stream terraces
Slope gradient: 1 to 5 percent
Parent material: alluvium from volcanic rock with volcanic ash throughout.
Restrictive feature(s): none
Seasonal high water table: approximately 52 inches
Flooding frequency rare
Ponding frequency: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG). 5
Wind erodibility index (WEI): 56
Land capability subclass, non-irrigated: 6c
Land capability subclass, irrigated.
Drainage class: somewhat poorly drained
Hydric soil class: yes
Hydrologic group: C

Representative soil profile:	*Texture*	*Permeability*	*Available Water Capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 6 in	ashy silt loam	moderate	1.2 to 1 4 in	5.6 to 6.0	.24	.24
2AB -- 6 to 10 in	ashy silty clay loam	moderately slow	0.8 to 0.9 in	5.6 to 6.0	.32	.32
2Bwb1 -- 10 to 15 in	ashy silty clay loam	moderately slow	1 1 to 1.2 in	5.6 to 7.8	.32	.32
2Bwb2 -- 15 to 25 in	ashy silty clay loam	moderately slow	2 1 to 2.4 in	5.6 to 7 8	.32	.32
2Bwb3 -- 25 to 36 in	silty clay	moderately slow	1.5 to 2.2 in	6.1 to 8.4	.20	.20
2Bwb4 -- 36 to 60 in	silty clay loam	moderately slow	3 4 to 5.0 in	6.1 to 8.4	.32	.32

Ecological Site / Plant Association: MOUNTAIN MEADOW (R010XY002OR)

Map Unit Description (Brief, Generated)

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Crook County Area, Oregon

[Minor map unit components are excluded from this report]

Map unit: 088 - Willowdale loam, 0 to 2 percent slopes

Component: Willowdale (85%)

The Willowdale component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways, mountains. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is occasionally ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R010XY005OR Loamy Bottom ecological site. Nonirrigated land capability classification is 4c. Irrigated land capability classification is 3c. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

Map unit: 214 - Blancocanyon ashy loam, 0 to 5 percent slopes

Component: Blancocanyon (85%)

The Blancocanyon component makes up 85 percent of the map unit. Slopes are 0 to 5 percent. This component is on stream terraces. The parent material consists of alluvium from weathered John Day sediment and volcanic tuff.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R024XY009OR Dry Basin ecological site. Nonirrigated land capability classification is 4s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 1 percent. The soil has a moderately saline horizon wilhin 30 inches of the soil surface. The soil has a strongly sodic horizon within 30 inches of the soil surface.

Map unit: 249 - Embal-Luckycreek complex, 0 to 5 percent slopes

Component: Embal (60%)

The Embal component makes up 60 percent of the map unit. Slopes are 0 to 5 percent. The parent material consists of volcanic ash mixed with allvuium from volcanic rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R023XY202OR Swale 10-14 Pz ecological site. Nonirrigated land capability classification is 6c. This soil does not meet hydric criteria.

Map Unit Description (Brief, Generated)

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Crook County Area, Oregon

Map unit: 249 - Embal-Luckycreek complex, 0 to 5 percent slopes

Component: Luckycreek (25%)

The Luckycreek component makes up 25 percent of the map unit. Slopes are 0 to 5 percent. This component is on benches, drainageways, fan terraces, stream terraces, valleys. The parent material consists of fine-loamy alluvium from volcanic rock with ash in the surface.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is very rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R010XC017OR Sr Mountain Swale 12-16 Pz ecological site. Nonirrigated land capability classification is 4c. Irrigated land capability classification is 4c. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 270 - Bonnieview, depressional-Luckycreek complex, 0 to 5 percent slopes

Component: Bonnieview, depressional (50%)

The Bonnieview, depressional component makes up 50 percent of the map unit. Slopes are 0 to 5 percent. This component is on drainageways, valleys, flats, stream terraces. The parent material consists of residuum weathered from volcanic rocks and palesol material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4c. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Component: Luckycreek (35%)

The Luckycreek component makes up 35 percent of the map unit. Slopes are 0 to 5 percent. This component is on benches, drainageways, fan terraces, stream terraces, valleys. The parent material consists of fine-loamy alluvium from volcanic rock with ash in the surface.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is very rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R010XC017OR Sr Mountain Swale 12-16 Pz ecological site Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 420 - Railway-Gerow complex, 1 to 12 percent slopes

Component: Railway (50%)

The Railway component makes up 50 percent of the map unit. Slopes are 1 to 12 percent. This component is on drainageways, swales. The parent material consists of alluvium from mixed volcanic rock (vertic). Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is occasionally flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during April, May. This component is in the R010XY001OR Wet Mountain Meadow ecological site. Nonirrigated land capability classification is 6w. This soil meets hydric criteria.

Map Unit Description (Brief, Generated)

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Crook County Area, Oregon

Map unit: 420 - Railway-Gerow complex, 1 to 12 percent slopes

Component: Gerow (40%)

The Gerow component makes up 40 percent of the map unit. Slopes are 1 to 12 percent. This component is on stream terraces, valleys. The parent material consists of alluvium from volcanic rock with volcanic ash.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during April. Organic matter content in the surface horizon is about 8 percent. This component is in the R010XY002OR Mountain Meadow ecological site. Nonirrigated land capability classification is 6w. This soil meets hydric criteria.

Map unit: 430 - Gerow silt loam, drained, 1 to 5 percent slopes

Component: Gerow, Drianed (85%)

The Gerow, Drianed component makes up 85 percent of the map unit. Slopes are 1 to 5 percent. This component is on stream terraces, valleys. The parent material consists of alluvium from volcanic rock with volcanic ash throughout.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 52 inches during April. Organic matter content in the surface horizon is about 8 percent. This component is in the R010XY002OR Mountain Meadow ecological site. Nonirrigated land capability classification is 6c. This soil meets hydric criteria.

Rangeland Productivity and Plant Composition

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Crook County Area, Oregon

[Only the soils that support rangeland vegetation suitable for grazing are rated]

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct*
088:						
Willowdale	LOAMY BOTTOM	7,000	5,000	4,000	Basin wildrye	85
					Bluebunch wheatgrass	5
					Bluegrass	5
					Willow	5
214:						
Blancocanyon	DRY BASIN	1,800	1,500	1,000	Basin wildrye	50
					Creeping wildrye	15
					Basin big sagebrush	10
					Black greasewood	8
					Needle and thread	5
					Inland saltgrass	2
249:						
Embal	SWALE 10-14 PZ	2,000	1,800	1,500	Basin wildrye	35
					Basin big sagebrush	20
					Bluebunch wheatgrass	10
					Idaho fescue	10
					Sandberg bluegrass	5
					Thurber needlegrass	5
					Western needlegrass	5
Luckycreek	SR MOUNTAIN SWALE 12-16 PZ	3,000	2,500	2,000	Basin wildrye	50
					Idaho fescue	25
					Bluebunch wheatgrass	5
					Mountain big sagebrush	5
					Thurber needlegrass	5

Rangeland Productivity and Plant Composition

DRAFT - SUBJECT TO CHANGE

Crook County Area, Oregon

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct*
270:						
Bonnieview, depressional	---	2,000	1,500	1,000	---	---
Luckycreek	SR MOUNTAIN SWALE 12-16 PZ	3,000	2,500	2,000	Basin wildrye	50
					Idaho fescue	25
					Bluebunch wheatgrass	5
					Mountain big sagebrush	5
					Thurber needlegrass	5
420:						
Railway	WET MOUNTAIN MEADOW	---	---	---	Sedge	70
					Tufted hairgrass	20
					Rush	5
Gerow	MOUNTAIN MEADOW	4,000	3,000	2,000	Tufted hairgrass	70
					Sedge	20
					Bluegrass	5
					Rush	5
430:						
Gerow, Drained	MOUNTAIN MEADOW	4,000	3,000	2,000	Tufted hairgrass	70
					Sedge	20
					Bluegrass	5
					Rush	5

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Crook County Area, Oregon

#Error

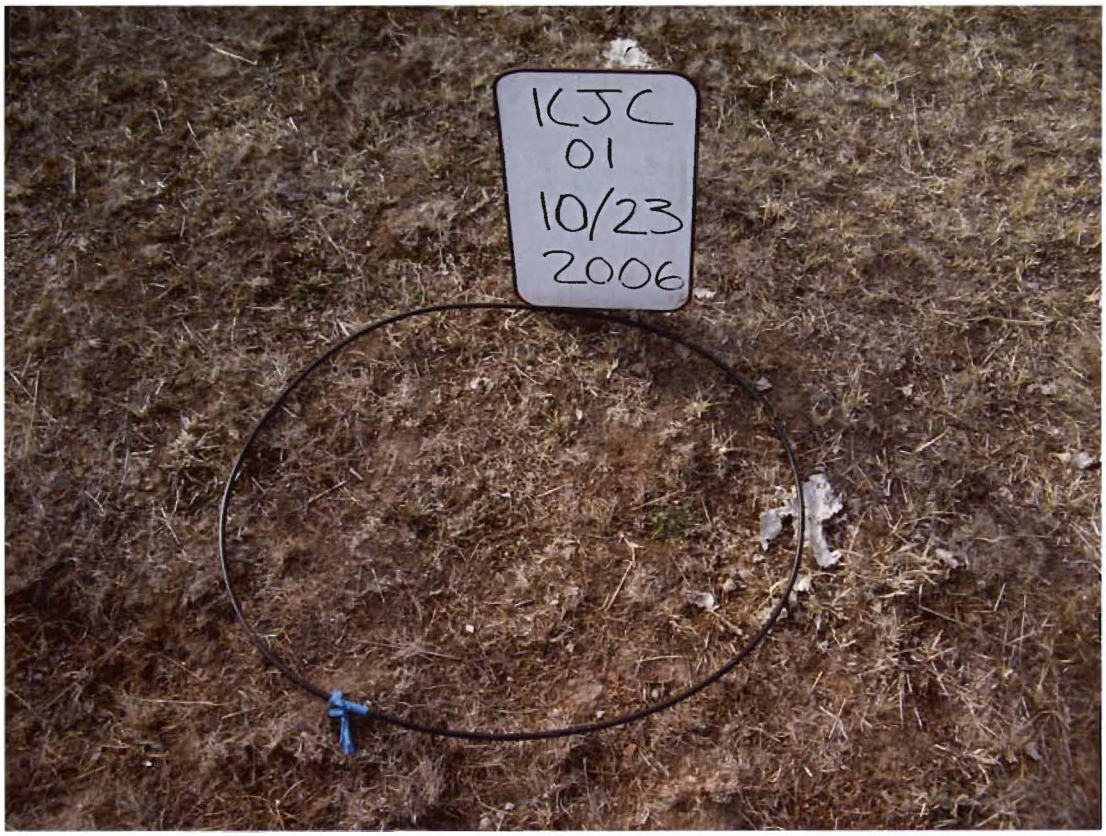
Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/ac	*Lb/ac*	*Lb/ac*		*Pct*
088:						
Willowdale	LOAMY BOTTOM	7,000	5,000	4,000	Basin wildrye	85
					Bluebunch wheatgrass	5
					Bluegrass	5
					Willow	5

Appendix 7A

Client: Crook County SWCD

Photo Location: Indian/Johnson Creek Sample Point 01 (Photo 1)

Date of Photo: 23 October 2006



Notes: No apparent grazing, 50-60% apparent utilization outside plot, Southeast aspect

Frontier
Natural Resource Consulting, LLC
297 NW 3rd Street • P.O. Box 813 • Prineville, Oregon 97754-0813
Phone: (541) 416-2699 • Fax: (541) 447-5742
www.rangelandmanagement.com

Client: Crook County SWCD

Photo Location: Lower Camp Creek Sample Point 02 (Photo 1)

Date of Photo: 25 September 2006

Notes: No apparent grazing, West Aspect

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Phone: (541) 416-2699 • Fax: (541) 447-5742
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Client: Crook County SWCD

Photo Location: Middle Fork Camp Creek Sample #2 (Photo 1)

Date of Photo: 31 January 2007

Notes: No apparent grazing, Southwest aspect, Moderate Western juniper cover

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Client: Crook County SWCD

Photo Location: West Fork Camp Creek Sample #3 (Photo 2)

Date of Photo: 25 October 2006

Notes: No apparent grazing, Southeast aspect, Most Western juniper removed

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Appendix 7B

Camp Creek Watershed Rangeland Assessment
Indian Creek / Johnson Creek Sub-Basin
Summary of Plant Community Cover [1] Observations (n = 21)[2]

Natural Resource Consulting, LLC

Random Sample Point	Perennial Grasses and Sedges (%)	Western Juniper (%)	Exotic Annual Grasses (%)	Shrubs (%)	Forbs (%)	Conifers (%)
1	23.1	0	0	69.3	7.7	0
2	23.5	55.9	0	0	0	20.6
3	51.7	0	3.5	3.5	0	41.3
4	46.1	0	0	0	0	53.9
5	4.8	85.7	0	0	0	9.5
6	3.1	0	0	0	0	96.9
8	28.9	0	0	0	0	71.1
9	3.6	0	0	0	0	96.4
11	34.4	3.9	3.9	57.8	0	0
12	3.0	0	0	2.9	0	94.1
13	16.6	5.6	0	0	0	77.8
14	28.6	0	0	0	0	71.4
15	50.0	25.0	0	20.0	5.0	0
16	29.6	0	0	0	3.7	66.7
17	18.5	0	0	66.7	14.8	0
18	4.8	0	0	0	9.5	85.7
19	3.7	0	0	11.1	0	85.2
21	33.3	52.4	0	0	14.3	0
22	37.5	37.5	0	12.5	12.5	0
23	0	0	0	0	0	100.0
25	0	0	0	6.1	0	93.9
Mean ± SE for All Samples	**21.18 ± 3.75**	**12.67 ± 5.33**	**0.35 ± 0.24**	**11.90 ± 4.97**	**3.21 ± 1.15**	**50.67 ± 8.83**

[1] Canopy cover, determined by the 1st plant to intercept a vertical point.
[2] Observations consisted of 50 point samples at 1 meter intervals along a 50 meter transect.

Camp Creek Watershed Rangeland Assessment
Middle Fork of Camp Creek Sub-Basin
Summary of Ground Cover Observations (n = 12)[1]

Frontier
Natural Resource Consulting, LLC

Random Sample Point #	Bareground (%)	Litter (%)	Rock (%)	Vegetation (%)	Moss/Lichen (%)
2	24	18	22	34	2
4	44	24	0	28	4
6	38	22	6	34	0
7	72	10	2	16	0
8	36	32	4	28	0
15	34	14	8	34	10
18	20	14	0	64	2
19	14	36	2	56	2
20	28	34	0	38	0
21	32	24	0	38	6
22	38	28	2	32	0
24	26	26	2	46	0
Mean ± SE for All Samples	**33.83 ± 4.25**	**23.50 ± 2.40**	**4.00 ± 1.79**	**37.33 ± 3.72**	**2.17 ± 0.90**

[1] Observations consisted of 50 point samples at 1 meter intervals along a 50 meter transect.

Camp Creek Watershed Rangeland Assessment
West Fork of Camp Creek Sub-Basin
Summary of Annual Production Observations (n = 22)[1]

Natural Resource Consulting, LLC

Random Sample Point	Perennial Grasses and Sedges (lbs/acre dry matter)	Exotic Annual Grasses (lbs/acre dry matter)	Shrubs [2] (lbs/acre dry matter)	Forbs (lbs/acre dry matter)
1	119	0	0	0
3	272	18	0	18
4	204	18	0	18
5	68	0	187	35
6	153	0	85	136
7	323	0	51	0
8	102	54	0	18
9	17	0	0	102
10	119	0	51	51
12	70	0	0	36
13	17	36	0	178
14	51	0	561	0
15	119	0	0	0
16	17	126	34	72
17	221	0	17	143
18	34	0	476	18
19	51	0	85	18
20	119	414	0	18
21	17	34	459	68
22	986	0	0	0
23	68	396	0	54
24	0	18	0	0
Mean ± SE for All Samples	**143.00 ± 44.20**	**50.60 ± 25.20**	**91.20 ± 36.80**	**44.70 ± 11.10**

[1] Observations consisted of a single 4.8ft^2 plot near the cover transect origin.
[2] Shrub production considered only herbaceous material from current year's growth

Camp Creek Watershed Rangeland Assessment
Summary of Plant Community Cover [1] Observations [2] for all Sample Locations (2006-2007)

Natural Resource Consulting, LLC

Sub-Basin Location (sample size)	% Perennial Grass/Sedge Cover	% Western Juniper Cover	% Exotic Annual Grass Cover	% Shrub Cover	% Forb Cover	% Conifer Cover
Indian/Johnson Creek (n = 21)	21.18 ± 3.75	12.67 ± 5.33	0.35 ± 0.24	11.90 ± 4.97	3.21 ± 1.15	50.67 ± 8.83
Lower Camp Creek (n = 25)	47.50 ± 4.24	19.98 ± 4.24	3.43 ± 1.59	18.97 ± 4.03	9.50 ± 2.98	0.62 ± 0.62
Middle Fork Camp Creek (n = 12)	45.29 ± 4.58	10.51 ± 3.64	1.45 ± 1.45	36.67 ± 4.35	6.08 ± 2.02	0.00 ± 0.00
South Fork Camp Creek (n = 23)	42.48 ± 3.98	27.06 ± 5.84	2.20 ± 1.26	21.82 ± 4.17	5.92 ± 1.08	0.54 ± 0.54
West Fork Camp Creek (n = 22)	28.50 ± 4.27	24.62 ± 6.06	7.91 ± 3.46	32.60 ± 4.74	7.42 ± 1.65	0.00 ± 0.00
Mean ± SE for All Samples (n = 103)	**36.70 ± 2.11**	**19.96 ± 2.44**	**3.26 ± 0.92**	**23.14 ± 2.16**	**6.58 ± 0.91**	**10.61 ± 2.68**

[1] Canopy cover, determined by the 1st plant to intercept a vertical point.
[2] Observations consisted of 50 point samples at 1 meter intervals along a 50 meter transect.

Camp Creek Watershed Rangeland Assessment
Summary of Ground Cover Observations[1]
for all Sample Locations (2006-2007)

Natural Resource Consulting, LLC

Sub-Basin Location	**Sample Size** (n)	**%** **Bareground** (Mean ± SE)	**%** **Litter** (Mean ± SE)	**%** **Rock** (Mean ± SE)	**%** **Vegetation** (Mean ± SE)	**%** **Moss/Lichen** (Mean ± SE)
Indian/Johnson Creek	21	13.90 ± 2.02	31.05 ± 2.52	3.90 ± 1.23	50.14 ± 3.06	1.14 ± 0.53
Lower Camp Creek	25	28.16 ± 2.24	18.48 ± 1.31	11.20 ± 2.04	40.80 ± 2.86	1.44 ± 0.36
Middle Fork of Camp Creek	12	33.83 ± 4.25	23.50 ± 2.40	4.00 ± 1.79	37.33 ± 3.72	2.17 ± 0.90
South Fork of Camp Creek	23	35.30 ± 2.19	21.39 ± 1.60	4.09 ± 1.57	38.65 ± 2.42	0.61 ± 0.27
West Fork of Camp Creek	22	30.55 ± 2.59	25.77 ± 2.42	7.09 ± 2.14	35.45 ± 3.14	1.09 ± 0.34
Mean ± SE for All Samples	**103**	**28.08 ± 1.34**	**23.89 ± 1.01**	**6.47 ± 0.87**	**40.51 ± 1.41**	**1.20 ± 0.20**

[1] Observations consisted of 50 point samples at 1 meter intervals along a 50 meter transect.

Camp Creek Watershed Rangeland Assessment
Summary of Annual Production Observations[1] for all Sample Locations (2006-2007)

Natural Resource Consulting, LLC

Sub-Basin Location (sample size)	**Perennial Grasses and Sedges** (lbs/acre dry matter)	**Exotic Annual Grasses** (lbs/acre dry matter)	**Shrubs** [2] (lbs/acre dry matter)	**Forbs** (lbs/acre dry matter)
Indian/Johnson Creek (n = 21)	182.0 ± 44.2	0.0 ± 0.0	77.9 ± 59.1	20.5 ± 4.7
Lower Camp Creek (n = 25)	209.2 ± 39.1	4.4 ± 2.5	46.9 ± 15.7	30.2 ± 9.0
Middle Fork of Camp Creek (n = 12)	391.7 ± 88.4	5.8 ± 3.9	85.0 ± 34.8	90.7 ± 46.4
South Fork of Camp Creek (n = 23)	220.7 ± 43.5	10.0 ± 6.1	25.2 ± 13.8	91.5 ± 65.2
West Fork of Camp Creek (n = 22)	143.0 ± 44.2	50.6 ± 25.2	91.2 ± 36.8	44.7 ± 11.1
Mean ± SE for All Samples (n = 103)	**213.5 ± 21.6**	**15.2 ± 5.8**	**62.3 ± 15.6**	**52.0 ± 15.8**

[1] Observations consisted of a single 4.8ft^2 plot near the cover transect origin.
[2] Shrub production considered only herbaceous material from current year's growth