WATER TRANSFER WORKING GROUP PROJECT DESCRIPTION

APPLICATION NO./COURT CLAIM NO.		
Claim 01467(A)03296		
APPLICANT NAME Kathleen Masterson	CONTACT NAME Kelly McCaffrey, Washington Water Trust	TELEPHONE NO. (206) 675-1585 x103 (206) 755-9146
WATER RIGHT HOLDER'S NAME (if different) Harry James Masterson & Mary Lou Masterson (Kathleen Masterson, Personal Representative of Harry Masterson)		

DATE OF APPLICATION	PRIORITY DATE
Estimated Ecology submittal date – August 20th, 2010	June 30, 1883

WATER SOURCE:	CROP:
Teanaway River	Mixed hay, timothy
INSTANTANEOUS QUANTITY: 4.8 cfs	ANNUAL QUANTITY: 1527.5 af/y
PERIOD OF USE: May 1 – September 15	
PLACE OF USE: Those portions of S½SW¼, SW¼SE¼ of Section 28, and N½NW¼, NW¼NE¼ of Section 33 lying southerly and westerly of Masterson Ditch, ALL being within T. 20 N., R. 16 E.W.M.	PURPOSE OF USE: Irrigation on 235 acres
IRRIGATION METHOD: Wheel lines	

CONSUMPTIVE USE CALCULATION:

No consumptive use is associated with this transfer.

Water for transfer is explicitly *conveyance* water, and to be used for the benefit of instream flows from original Point of Diversion to the confluence of the Teanaway River with the Yakima River.

POD: 900 feet south and 350 feet east from the north quarter corner of Section 25, being within the NW ¼ NE ¼ of Section 25, T. 20 N., R. 16 E.W.M.

Conveyance Volume Estimate:

Ditch Conveyance Water Estimate[1]: 469.54 acre feet

Efficiency Conveyance Water Estimate[2]: 482.2 acre feet

1) Estimate assumes 13% loss per mile of ditch for conveyance of water to irrigation field based on efficiency of 35% used for original flood irrigation (i.e., originally conveyed water right)

1) Estimate assumes water "saved" in change from flood irrigation to wheel lines and was protected instream based on history of use

Calculation for volume estimate is attached (Appendix A_pdf).

History of use is attached (Appendix B_pdf).

NARRATIVE DESCRIPTION OF PROJECT:

Masterson was confirmed an 1883 priority date water right under court Claim 01467(A)03296 in Subbasin No. 3 (Teanaway). WWT is proposing a permanent transfer of the conveyance portion of the water right, allowing for conveyance for continued irrigation via wheellines on 235 acres without use of former Masterson Ditch or flood irrigation practices. The water is to be placed into the state Trust Water Rights Program permanently. Our transfer application, on behalf of Masterson, proposes to change the purpose of use from irrigation to instream flow annually from May 1 to September 15 in 2010 and change the place of use for use as instream flow in the Teanaway River for approximately four miles.

This transfer would go into effect following Ecology approval. Optimistic approval date: Summer 2011.

1) Estimate assumes 13% loss per mile of ditch for conveyance of water to irrigation field based on efficiency of 35% used for original flood irrigation (i.e., originally conveyed water right, Exhibit A)

2) Estimate assumes water "saved" in change from flood irrigation to wheel lines and was protected instream based on history of use

APPENDIX A: Calculations to Be Submitted in Ecology Application

2010-62

TERMS: NIR (net irrig required), CIR (consumptive irrig required), TIR (total irrig required, or Qa), WIG (WA irrig guide), CFS (cubic feet per sec), AF (acre feet), EA (irrigation efficiency), Evap (evaporative loss). Qi (instantaneous withdraw), Qa (AF annual volume), CU (consumptive use)

Estimate of water needed for application to acreage via wheellines (i.e., continued needs for irrigation)

NIR and CIR only (not yet including Ea or Evap properties)

Cle Elum clover is considered the accepted WIG figures for Teanaway Timothy Hay.

Water Right for annual use		Month	NIR per WIG (in/acre)	# acres	AF in 2ndry (CU)	2ndry Gals/min	Both calc methods CU cfs/mo	CU cfs/mo
235	acres	may	0	235				
1527.5	Total AF (CFO 2001)	jun	3.54	235	69.33	522.91	1.17	1.17
6.5	af, water duty (af/acre)	july	6.84	235	133.95	977.77	2.18	2.18
5.4	"first 100%" duty (af/acre)	aug	5.06	235	99.09	723.32	1.61	1.61
1269	af, "first 100%" water duty	15-Sep	3.67	235	71.87	542.11	1.21	1.21
0.02	cfs/acre, "first 100%" Qi	oct						
4.7	calculated cfs, (0.02 x 235)	SubTotal of Consumptive use (CIR) =			**374.2375**			
4.8	"first 100%" cfs (CFO 2001)							
258.5	af, balance ("surplus water" right)							

"First 100%" duty reads back to the 1921 Teanaway River Adjudication, that set precedence for the current Yakima Adjudication.

Total CU: Incorporating efficiency (Ea) into NIR and adding evaporative loss (Evap); NIR + Evap = Total CU (aka Total Irrigation Requirement, TIR).

NRCS: 65% standard for wheel lines, (Table WA684.20.4, Red Manual))

Began using wheel lines in 1999 or 2000. Estimate Efficiency % = (NIR CUft/acre) / (6.5 duty)

Evap (evaporative loss) estimated: 10%. Evap is taken from Table 1, Column 4, Consumptive Use Guidelines (GUID-1210)

Soil attributes, USDA Web Soil Survey: Teanaway loam, 0-3% slope, 19.5% clay, 40.4% sand, 40% silt. Available water capacity rating 0.17 in./in. Low AWC rating: 0-3 in./in. Soils classified as "Group C" - slow infiltration rate when thoroughly wet; soils w/layer that impedes downward movement of water or moderately fine texture or fine texture. Soils have a slow rate of water transmission.

Month	NIR: Af-CU/yr	%Ea	%Evap	Total duty (TIR)	Evap loss	Total CU	cfs/month
jun	69.33	65%	10%	106.66	10.67	80.00	1.34
jul	133.95	65%	10%	206.08	20.61	154.56	2.51
aug	99.09	65%	10%	152.45	15.24	114.33	1.92
15-Sep	71.87	65%	10%	110.57	11.06	82.93	1.35
				575.75	57.58	**431.82**	
				((Af-CU/yr) / (%Ea))	(Total duty * %Evap)	(NIR + Evap loss)	(AF/(days * 1.9835))

DITCH CONVEYANCE WATER - Estimate of ditch water based on "loss" referenced in CFO (3/29/1999 ROR, pg 58, lines 10-19).

*Ea (efficiency) for original flood irrigation (35%)

Efficiency	**35.3%**	
est. loss per mile (13%)	0.13	
af needed to apply on field	1060.16	*CU needed / Ea
af needed for mile 3 of ditch	1197.98	
af needed for mile 2 of ditch	1353.72	
af needed for mile 1 of ditch	1529.71	
[(AF needed from ditch @ start) - (AF need to apply on field)] = ***Ditch Conveyance Water*** =	**469.54**	af (over 3 miles)

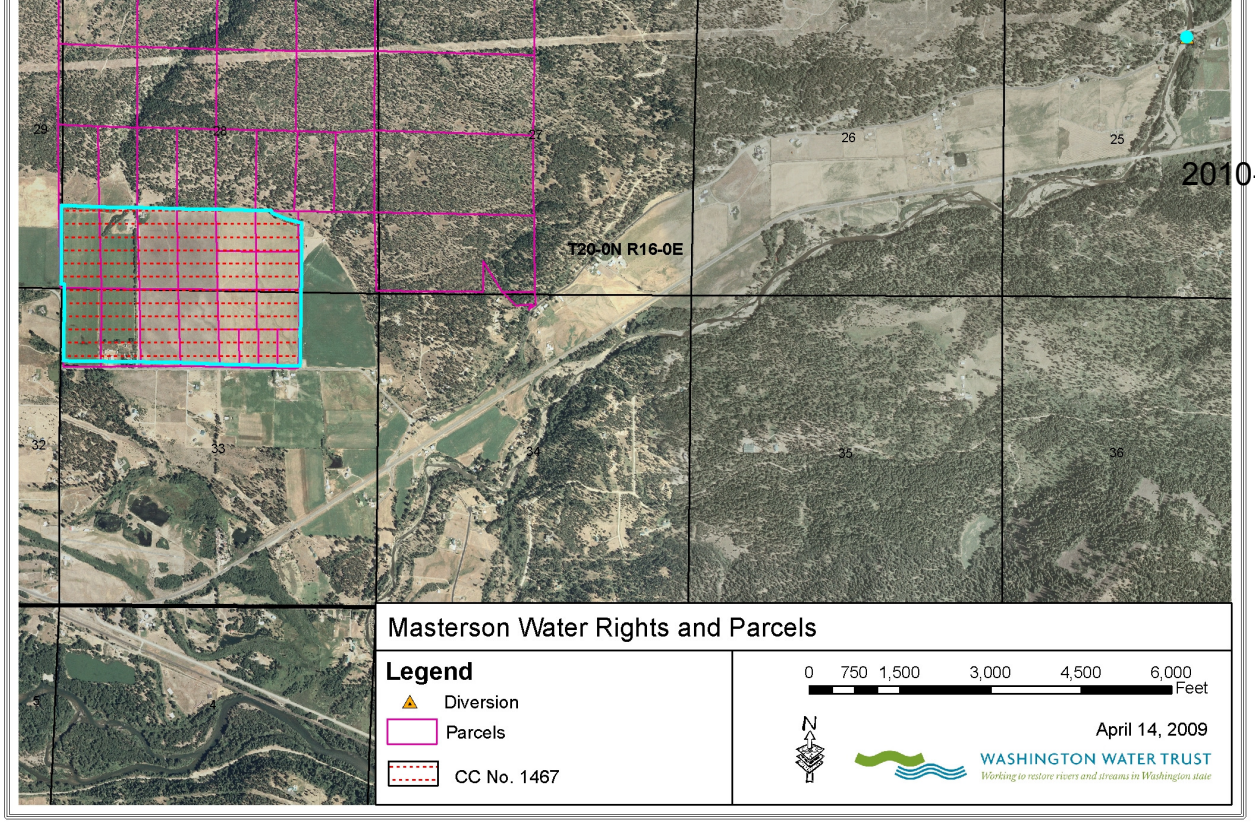
EFFICIENCY CONVEYANCE WATER - Estimate of (irrigation) efficiency water created from flood irrigation to wheellines

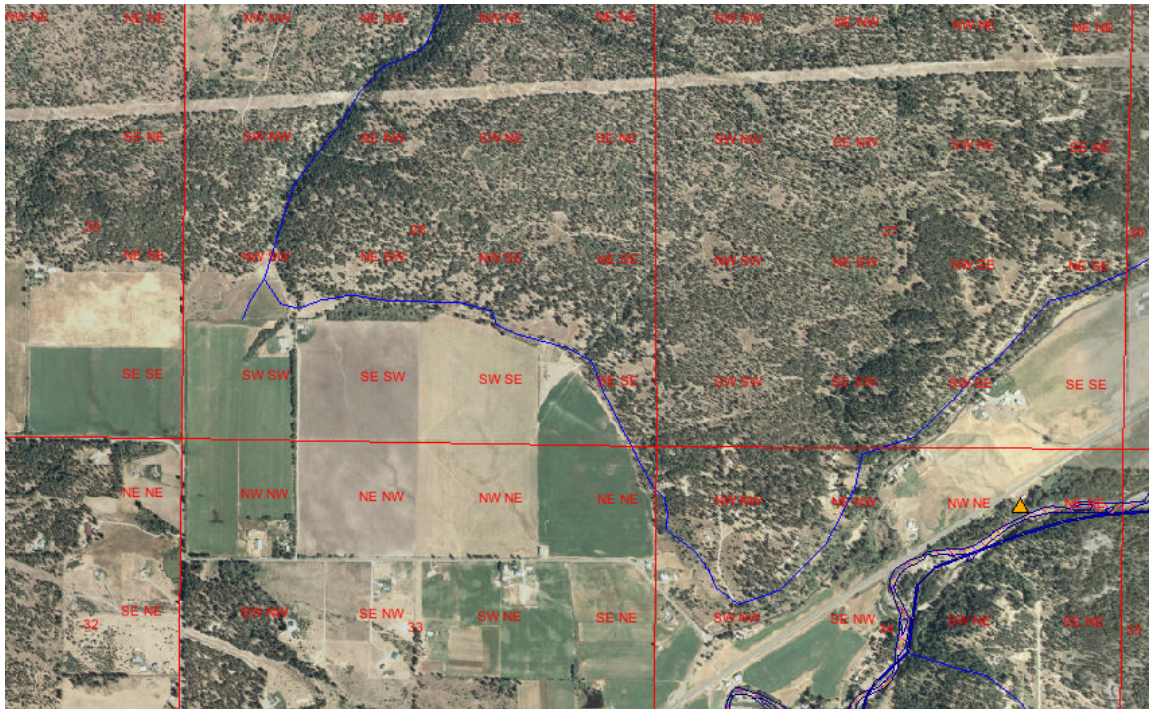
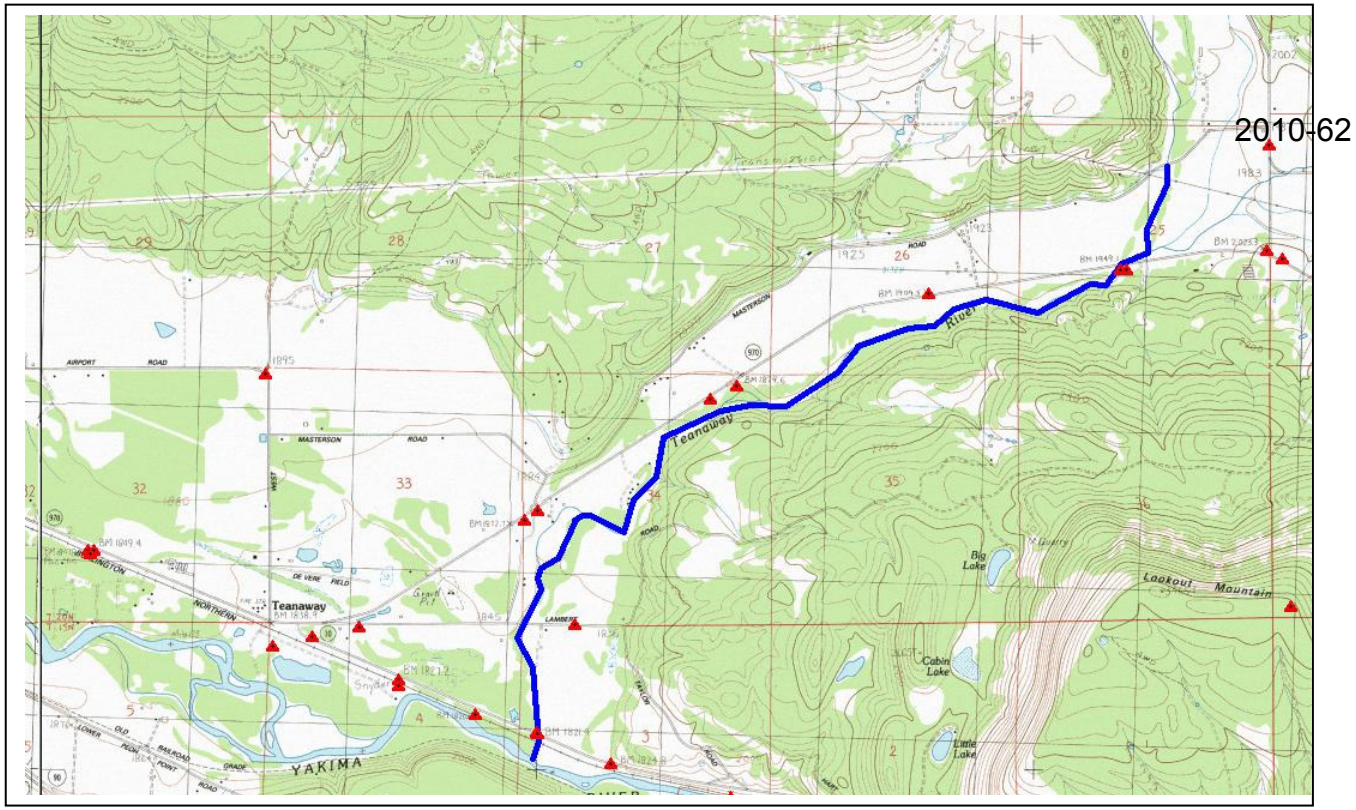
** This assumes water protected

CFO water confirmed, at flood irrigation efficiency =	1,527.50	af
Water needed for application via wheellines =	575.75	af (i.e. current on-farm delivery needs)
[(CFO confirmed water) - (water needed via wheellines)] = Total Conveyance Water =	951.75	af
[(Total conveyance water) - (ditch conveyance water)] = ***Efficiency Conveyance Water*** =	**482.20**	af

APPENDIX B: WR History of Beneficial Use: Masterson Ditch/Conveyance Water

Masterson Water History of Use:	Years to Next Use:
1995 – Last use of ditch - full irrigation season	beneficial use - full season - full water right
1996 – Ditch damaged	1
1997	2
1998 – Bureau of Reclamation leased water in full (1527af).	beneficial use - full season - full water right
1999	1
2000	2
2001 – Roza Irrigation district leased water in full (1527af), OPL signed.	beneficial use - full season - full water right
2001 – CFO states water is 1527.5af	
2002 – Landowner requested POD change to downstream for access to (1527af). Ecology approved.	1
2003 - (Compiling records of use)	2
2004 - (Compiling records of use)	3
2005 – Ecology leased all but 2 acres of irrigation water (1514af), OPL signed	beneficial use - full season - full water right
2006 - (Compiling records of use)	1
2007 - (Compiling records of use)	2
2008 - (Compiling records of use)	3
2009 – WWT leased water in full	beneficial use - full season - full water right
2010 – WWT leased water in full	beneficial use - full season - full water right


2010-62
T20-0N R16-0E
Masterson Water Rights and Parcels
Legend
Diversion
Parcels
CC No. 1467
0 750 1,500 3,000 4,500 6,000
Feet
N
April 14, 2009
WASHINGTON WATER TRUST
Working to restore rivers and streams in Washington state



Blue line indicates effected reach of Teanaway River