Pine Creek/Sulphurbeds Allotment:
Dipping Vat Spring

2010 Update

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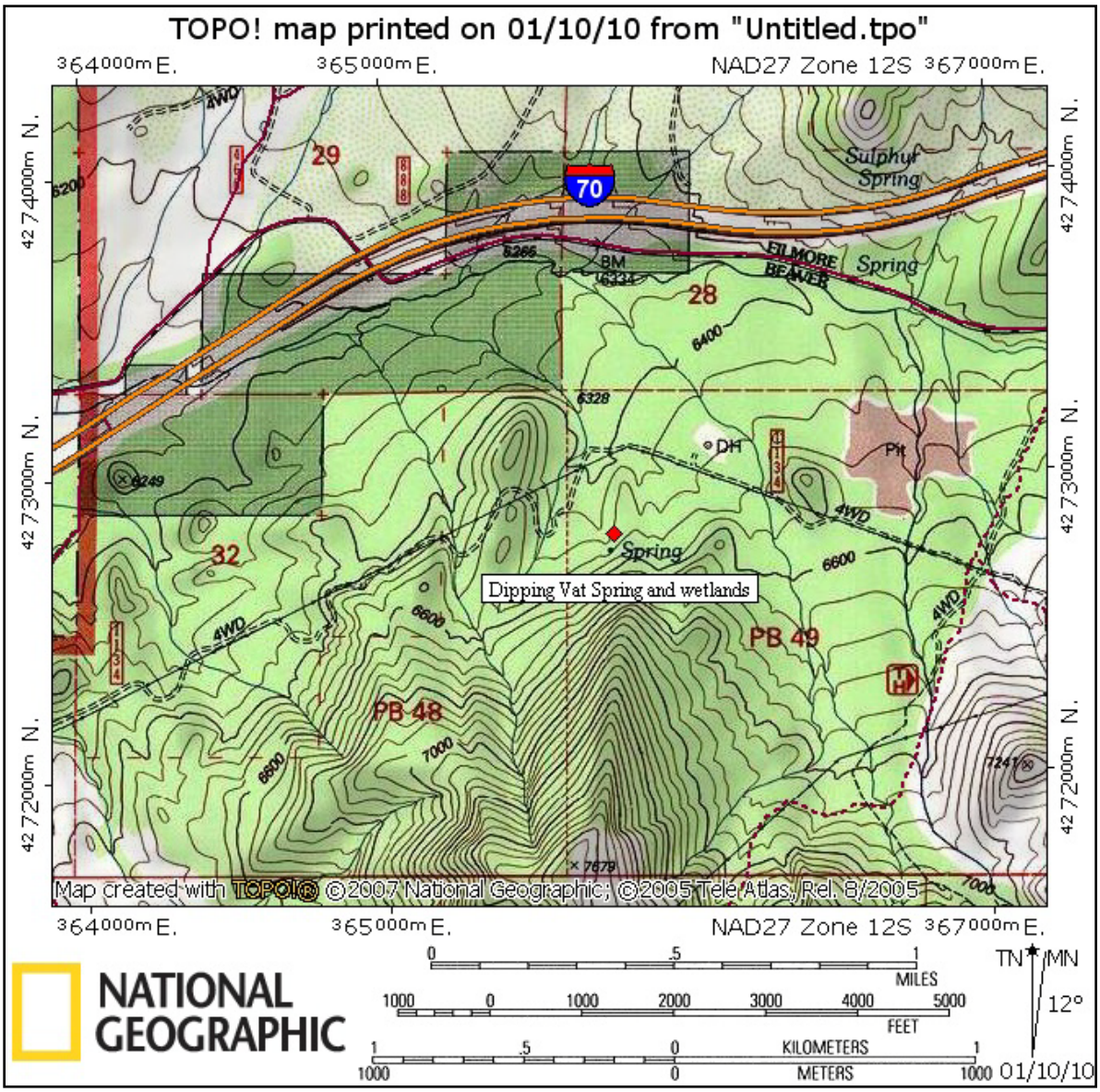
Grand Canyon Trust



Name Dipping Vat Spring	Date: June 1, 2009 Team members Season Martin, Wayne Y. Hoskisson, Marilyn McCord **September 1-2, 2010** Surveyors: O'Brien/ Hoskisson/ Wheeler
NF/RD Fishlake NF/Beaver RD	**Allotment:** Pine Creek/Sulphurbeds **Pasture:** Cove Creek
GPS: 12 N 365758mE 4272753mN NAD CONUS 27	**Elevation:** 6569'
Aspect: North	**Animal sign:** birds, elk, snake

Dominant vegetation: *Carex nebrascensis, Agrostis stolonifera, Juncus balticus, Poa pratensis,* two *Brassica* spp., *Cirsium* sp., *Rannunculus* sp., *Mimulus* sp.

Site Condition: moderate disturbance	**Disturbance Type:** livestock (including old non-functioning water trough and a flowing pipe)
Water flow:	
Water Right:	

Geomorphic Setting: hill slope	**Slope position** footslope	**Orifice Geomorphic Type:** seepage
Spring Type: Helocrene	**Primary Lithology of Source:** not determined	
Discharge:	**Habitat Size:** 100 – 1000 m^2	**Spring Brook Length:** more than 250 m
Average Water Depth: 1 cm	**Average Water Width:** 1 m	
Emergent Cover: 89% (averaged over 4 segments)	**Vegetative Bank Cover:** 93% (averaged over 4 segments)	**Spring Brook Incision:** <60 degrees from vertical

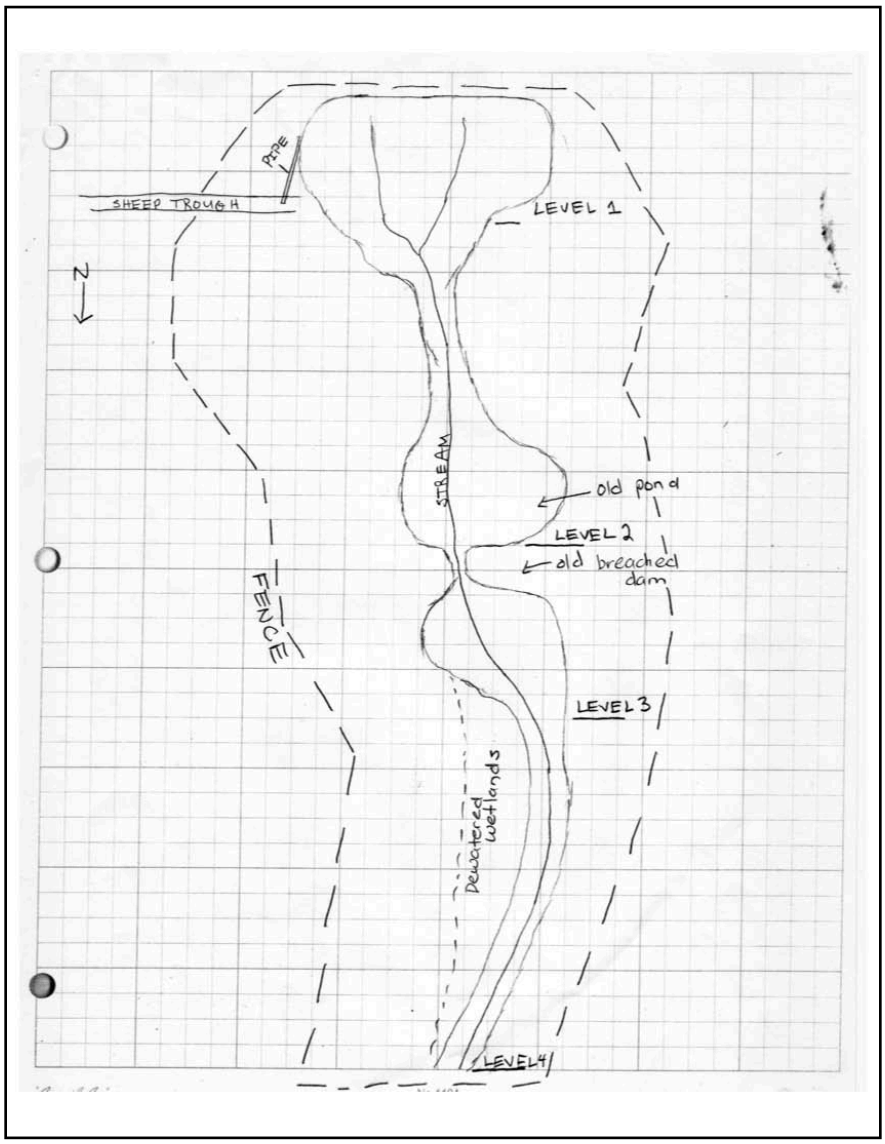
Substrate Composition

Fines <0.05mm	Sand 0.05mm-2mm	Gravel 2mm-64mm	Cobble 64mm-256mm	Boulder >256mm	Bedrock	Peat
85%	10%	5%				

Dipping Vat Spring and associated wetlands are located in the northern portion of Cove Creek Pasture of Pine Creek/Sulphurbeds Allotment, south of I-70 and FR 1134. They are located at the base of the north slope of a 7,700' peak.

In 2008, Grand Canyon Trust submitted a report to the Tushar Allotments Collaboration on conditions at Dipping Vat Spring (see Appendix A, below)

In its 2009 *Final Report*, the Tushar Grazing Allotments Collaboration agreed an exclosure would be constructed around the wetlands below Dipping Vat Spring, and water would be piped from the point of the non-used, old sheep watering trough to a cattle trough below and away from the wetlands.



June 1, 2009 sketch of Dipping Vat Spring and associated wetlands

(a) Wetlands Fencing

May-June 2009

A post, pole, and wire fence (Figs. 1-2) was constructed at the end of May and beginning of June 2009 by Forest Service, Grand Canyon Trust and Great Old Broads for Wilderness volunteers, and hunters with the UDWR Dedicated Hunter Program. However, the upper (south) end of the fence was not post and pole, but merely a wire fence with T-posts.

The fencing and monitoring of the Dipping Vat spring and wetlands by the Forest Service is being funded in part as a Utah Partners for Conservation and Development project ("Tushar Mountain Watershed Improvement").The monitoring relevant to Dipping Vat Spring and

wetlands proposed in this project states, “Annual monitoring of protected wetlands will occur as part of allotment administration. Fence and pipeline maintenance will occur annually.”

In addition, the project proposes maintenance of associated pipelines to provide water for ungulates away from the spring source. The project states, ‘These waters will be on a float system to ensure unused water stays at the spring source to help aid in the recovery of wetland vegetation and to ensure the spring does not dry up.”

As of October 18, 2009, wires in the upper fence (wire and T-post) were broken and loose (Figs. 3-4. Unless the fence is fixed prior to cattle entry in 2010, the wetlands will be trampled by cattle. In addition, although cattle were scheduled to exit Cove Creek Pasture by Sept. 30, 2009, water was still flowing from the spring in the pipe (Fig. 5), and spraying out of the pipe near the unused sheep dipping vat (Fig. 6).

Fig. 1 (05/29/09) West side of pole/post/wire wetlands fence.

Fig. 2 (05/29/09) Western side of exclosure, looking SE. at the meadow. Note drier, cheatgrass-dominated portion near fence behind volunteer.

Fig. 3 (10/19/09) Top wire broken at top (south) end of exclosure

Fig. 4 (10/19/09) Top wires loose at top (south) end of exclosure

Fig. 5 (10/18/09) Water system installed for piping spring water to cattle

Fig. 6 (10/18/09) Water spraying from water pipe to cattle trough; cattle scheduled to be out of pasture (and not needing the water) by Sept. 30, 18 days earlier.

(b) Dipping Vat Spring Report

June 1, 2009

On June 1, Season Martin and Wayne Hoskisson, Grand Canyon Trust, assessed Dipping Vat Spring using the *USDA Forest Service Ground-Water Resource Inventory and Monitoring Protocol: Level I Spring Ecosystem Inventory* (2008 Revised Draft). The Cove Creek Pasture was rested in 2008, and cattle were not scheduled to enter Cove Creek Pasture in 2009 until July 26, after the wetlands fence had been constructed.

Area Description: Dipping Vat Spring is located in a small draw that drains into the Cove Creek drainage just to the east. The spring is on the toeslope of a ridge on the north end of the Tushar Mountains. Dipping Vat Spring is reached from I-70 by taking Exit 1 to Cove Fort, just north of the parking lot for the Cove Fort historical site. After driving under I-70 take FS 1136. Turn right on FS 1134, a dirt road in good condition. Turn right (west) where the road follows a power line. The small draw will be on the left with a road going south up the draw.

The slopes above and around the spring are cover with pinion, juniper, Gambel oak, and other mountain shrubs.

Spring Description: Dipping Vat Spring emerges in seeps on the toeslope of a ridge and through a flowing pipe. The seeps and pipe are at the same level; the pipe is on the north side of the wetlands created by the seeps. This upper portion of the wetlands is nearly level and about 30 ft. wide and 20 ft. long (Fig. 7). The pipe flows into a non-functioning sheep trough (i.e, a long, shallow wood trough; Fig. 8). After this initial portion of the wetland, the brook flows in a narrow ravine to another wetland segment created by what appears to be an old check dam (Fig 9). Compare with the 2006 spring evaluation. Tall grasses are now growing on the check dam and the hummocks are covered with tall and vigorous grass (Compare Fig. 9 with with Figs. 1-2 in Appendix A, below). The brook breaches the dam and continues flowing downslope through a verdant riparian zone (Fig. 10). Following this, the width narrows as it flows to the north. Shortly after the check dam, the slope flattens to 2-3% (Fig. 11). On June 1, 2009, the spring brook flowed the entire length of the exclosure (approximately 250 m.). The brook flowed a short distance beyond the fence line but was barely enough to wet a narrow strip of land (Fig 12).

Gambel oak grows immediately around the origin of Dipping Vat Spring (Fig. 7). A little further out and downstream, pinion and juniper dominate. A sagebrush flat adjoins Dipping Vat Spring on the west side (Figs. 10-11). The lower 150 m of the brook length is largely open on the west side with pinion and juniper on the east side. This open area is at the edge of the sagebrush flat (Fig. 11). Grass, sedge and rush dominate the ground cover near the brook.

Fig . 7 (06/01/09) Looking downstream through the wetlands at the origin of Dipping Vat Spring.

Fig. 8 (06/01/09) Spring pipe and old sheep trough.

Fig. 9 (06/01/09) The earthen bank of the old check dam is in upper center. Note the bare ground on the slope in the foreground. Compare with Figs. 1-2 (2006) Appendix A.

Fig. 10 (06/01/09) Spring brook and wetlands below the check dam. The sagebrush flat can be seen in the background.

Fig. 11 (06/01/09) View of mid portion of the Dipping Vat Spring brook. The sage brush flat is visible to the west (left). The foreground is trampled and forming hummocks

Fig. 12 (06/01/09) Looking upstream from the fence at the northern end of the newly constructed exclosure. Compared to the ground immediately along the brook the vegetation is relatively sparse. Note trampling on the brook.

(c) Dipping Vat Wetlands Assessment

(Oct 18-19, 2009)
(September 1-2, 2010)

On October 18 and 19, 2009, Grand Canyon Trust established five permanent point-intercept transects across the wetlands, and assessed species/genus and height of plants and ground cover at each point across the transects. No comprehensive plant survey has been completed for these wetlands.

As the shape of the wetlands is uneven, the transects, starting with A near the old dipping vat at the top of the wetlands through E near the lower portion of the fenced wetlands, are of differing lengths: (A) 94'; (B) 92'; (C) 42'; (D) 94'; (E) 38'.

Cove Creek Pasture was rested in 2008, and grazing in 2009 was scheduled for grazing July 26 after the fence was constructed through Sept 30. As of October 19, cattle did not appear to have entered the wetlands, despite the loose and broken wires on the top end of the exclosure (Figs. 3-4).

Gambel oak and juniper bound the wetlands on the southern, eastern, and western sides. Bare ground was recorded as 11%, with much of this being encountered at the drier edges of the wetlands. Exotic grasses (redtop, Kentucky bluegrass, crested wheatgrass, rabbitfoot grass, and cheatgrass) account for most grasses, with fowl mannagrass (*Glyceria striata*) the most common native grass. Kentucky bluegrass averages 9" tall, and other grasses 14" tall. Nebraska sedge is the dominant graminoid, and sedges/rushes average 11" in height. Graminoids account for 89% cover; forbs 12%.

2009 Vegetation Cover Data

Plants:	Cover (%)	# Species	Height (in.) (average)	Two most common species
Tree	15	4	138 (~11')	*Juniperus* sp., *Quercus gambelli*
Shrub	8	3	29	*Artemisia tridentata, Rosa woodsii*
Poa pratensis	11	1	9	*Poa pratensis*
Other Grass	36	>9	14	*Agrostis stolonifera, Bromus tectorum*
Grass-like Plant	42	>7	11	*Carex nebrascensis, Juncus balticus*
Forb	12	>8	8	*Cirsium* sp.
Totals	81	<32		

Non-plant Cover %:	Bare	Rock	Litter	Lichen, moss, biological crust
	11	0	89	0

Plant species encountered on the five point-intercept transects, in order of occurrence (2009)
[F = forb; G= grass; S = sedge; R= rush; S = Shrub; T = tree)

Carex nebrascensis (S)	58	
Agrostis stolonifera (G)	25	
Poa pratensis (G)	23	
Juncus balticus (R)	16	
Juncus spp. (R)	15	
Bromus tectorum (G)	12	
Quercus gambelii (T)	11	
Glyceria striata (G)	10	
Pascopyrum smithii (G)	6	
Pinus edulis (T)	6	
Agropyron cristatum (G)	5	
Eleocharis sp. (R)	5	
Artemisia tridentata (S)	5	
Rosa woodsii (S)	5	
Chrysothamnus viscidiflorus (S)	4	
Cirsium sp. (F)	4	
Pinus monophylla (T)	3	
Bromus inermis (G)	2	
Polygonum sp. (F)	2	
Apiaceae sp. (F)	1	
Brassicaceae sp. (F)	1	
Carex aquatilis (S)	1	
Cirsium sp. (F)		1
Polygonum sp. (F)	1	
Polypogon monspeliensis (G)	1	
Veronica sp. (F)	1	
Unidentified forb spp.	7	
Unidentified forb spp.	6	

(2010)

On August 30 and September 1, 2010, Canyon Trust re-read the five permanent point-intercept transects across the wetlands associated with Dipping Vat Springs that were established in 2009. Vegetation cover was once again assessed by genus and species, height of plants and ground cover across the transects.

Cattle were to be on the Cove Creek Pasture between June 16 and August 15 in 2010. At the time of our visit September 1 and 2, unauthorized cattle were present in Cove Creek Pasture (reported to the District September 1 and 2). The Dipping Vat exclosure fence was in good shape and the wires at the top end of the pasture had been mended (Figs 25 and 26).

Eight grass-like graminoids (sedges and spikerushes) accounted for 43% of the graminoid cover on the transects. Nebraska sedge averaged 21" in height as opposed to 11" last year. Six exotic grasses totaled 12% of the cover on the transects. Forbs are uncommon: the five native forbs intercepted on the transect total 5% cover. It will be important to track changes over the years.

Water was running through three small channels inside the exclosure near the top, but the water converged into one channel lower down on the slope. Water then crossed the road that follows the powerline to eventually flow into Cove Creek. Figures 13-26 are photographs of the same areas throughout Dipping Vat Springs in 2009 as compared to 2010.

Dipping Vat Springs Vegetation Cover - 2010

Plants:	Cover (%)	# Species	Height (in.) (average)	Two most common species
Tree	17	4	~19ft	*Quercus gambelii, Juniperus osteosperma*
Shrub	3	2	24"	*Artemisia tridentata, Chrysothamnus nauseosus*
Poa pratensis	3	1	17"	*Poa pratensis*
Other Grass	10	5	22"	*Agrostis stolonifera, Glyceria striata,*
Grass-like Plant	43	9	17"	*Carex nebrascensis, Carex aquatilis*
Forb	3	19	7"	*Epilobium ciliatum, Trifolium hybridum*
Totals	84	~43		
Ground Cover %:	Bare	Rock	Litter	Lichen, moss, biological crust, water
Ground Cover (no overhead plants)	5	2	9	0
Ground Cover (includes beneath plants)	10	3	72	15 (Water)

Plant species encountered on the five point-intercept transects, in order of occurrence (2010)

Nebraska sedge	*Carex nebrascensis*	21%
Water sedge	*Carex aquatilis*	8%
Gambel oak	*Quercus gambelii*	8%
Spikerush	*Eleocharis palustris*	6%
Utah juniper	*Juniperus osteosperma*	6%
Baltic rush	*Juncus balticus*	6%
Redtop (E)	*Agrostis stolonifera*	4%
Smooth brome (E)	*Bromus inermis*	3%
Kentucky bluegrass (E)	*Poa pratensis*	3%
Cheatgrass (E)	*Bromus tectorum*	2%
Sagebrush	*Aremisia tridentata* var *vaseyana*	2%
Rocky Mtn juniper	*Juniperus scopulorum*	2%
Field sedge	*Carex praegracilis*	2%
Pinyon pine	*Pinus edulis*	1%
Curly leaf dock	*Rumex crispus*	1%
Willow herb	*Epilobium ciliatum*	1%
Crested wheatgrass (E)	*Agropyron cristatum*	1%
Needleleaf spikerush	*Eleocharis acicularis*	1%
Fowl mannagrass	*Glyceria striata*	1%
Longstyle rush	*Juncus longistylis*	1%
Softstem bulrush	*Scirpus acutus*	1%
Intermediate wheatgrass (E)	*Agropyon intermedium*	1%
Rabbitfoot grass	*Polypogon monspeliensis*	1%
Cat's eye	*Cryptantha* sp	1%
Alsike clover	*Trfolium hybridum*	1%
Groundsmoke	*Gayophytum ramosissimum*	1%
Rubber rabbitbrush	*Chrysothamnus nauseosus*	1%

Fig. 13 (10/18/09) Transect A, at 0' looking to 94'.

Fig 14 (9/2/2010) Transect A area, Sept 2010

Fig. 15 (10/18/09) Elk trampling above Transect A.

Fig. 16 (10/18/09) Transect B from 0’ looking west to 92’.

Fig 17 (9/2/2010) Transect B in 2010.

Fig. 18 (10/19/09) Transect C, 0’-42’; at a narrow portion of the wetlands.

Fig 19 (9/2/2010) Transect C in September 2010

Fig. 20 (10/19/09) Transect D, 94’ toward 0’.

Fig 21 (9/2/2010) Transect D in September 2010

Fig. 22 (10/19/09) Transect E 52'-0'; lower, drier end of fenced wetlands.

Fig 23 (9/2/2010) Transect E in September 2010)

Fig 24 (10/19/2009) Fence in upper part of exclosure broken

Fig 25 (9/2/2010) Upper fence of exclosure rebuilt.

Fig 26 (9/2/2010) Upper edge of exclosure fence rebuilt.

Fig 27 (9/2/2010) Abrupt wetland/upland boundary between Transects D and E.

Appendix A

2008 Dipping Vat Spring Report

Mary O'Brien
Grand Canyon Trust

Dipping Vat Spring is a currently un-used sheep watering trough, with a pipe disconnected to a watering trough, and trampled, incised, over-grazed spring-seep wetlands below (Fig. 1). The land adjacent to the wetlands is overgrazed (Fig. 2) During 2008, the Cove Creek Pasture is being rested, and shows the potential for restoration of the wetlands (Fig. 3) via fencing, and piping of water further downslope.

Major concerns:

- Violation of riparian utilization standards
- Isolation of the wetlands from the surrounding slopes through trampling, incision
- Reduction of wetland diversity; lower-elevation wetlands are rare

Fig. 1 (09/07/06) Wetlands below Dipping Vat Spring (pasture was rested in 2008)

Fig. 2. (09/07/06) Denuded slope above incised Dipping Vat Springs wetlands

Fig. 3 (07/15/08) Dipping Vat Spring wetland during a year it is rested. Redtop (*Agrostis stolonifera*), an exotic wetland grass and native Nebraska sedge (*Carex nebrascensis* are present.

Appendix B- 2010 Cover data in Table Format

Dipping Vat Springs					
	Scientific Name	Common Name	Cover	Rel Cover	
Total Vegetation Cover			84.1		
Litter			9.2		
Gravel			2.1		
Bare Soil			4.6		
Total Ground Cover			95.4		
Cool season perennial grasses					Avg ht
	Glyceria striata	Fowl mannagrass	0.5	0.6	29.1
		Sub-total	0.5	0.6	
Grasslike plants					
	Carex aquatilus	Water sedge	7.7	9.4	
	Carex nebrascensis	Nebraska sedge	20.5	25.0	20.6
	Carex praegracilis	Sedge	1.5	1.9	
	Carex spp	Sedges	0.5	0.6	
	Eleocharis acicularis	Needleleaf Spikerush	1.0	1.3	14
	Eleocharis palustris	Common Spikerush	6.2	7.5	17.5
	Juncus balticus	Baltic rush	4.6	5.6	16.8
	Juncus longistylis	Longstyle rush	0.5	0.6	
	Scirpus acutus	Softstem Bulrush	0.5	0.6	
		Sub-total	43.0	52.5	
Introduced perennial grasses					
	Agropyron cristatum	Crested Wheatgrass	1.0	1.3	
	Agropyron intermedium	Intermediate Wheatgrass	0.5	0.6	
	Agrostis stolonifera	Red Top	4.1	5.0	21.5
	Bromopsis inermis	Smooth brome	3.1	3.8	
	Poa pratensis	Kentucky Bluegrass	3.1	3.8	17.2
		Sub-total	11.8	14.4	
Annual grasses					
	Bromus japonicus	Japanese Brome	P	P	
	Bromus tectorum	Cheatgrass	1.5	1.9	
	Polypogon monspeliensis	Rabbitfoot Grass	0.5	0.6	
		Sub-total	2.0	2.5	

Dipping Vat Springs					
	Scientific Name	Common Name	Cover	Rel Cover	
Perennial forbs					
	Allium sp	Wild Onion	P	P	
	Berula erecta	Cut-leaf water parsnip	P	P	7
	Cryptantha spp	Cat's Eye	0.5	0.6	
	Epilobium ciliatum	Fringed willow herb	1.0	1.3	
	Lathyrus lanszwertii	Lanszwert's sweet pea	P	P	
	Medicago lupulina	Black Medic	P	P	
	Polygonum douglasii	Knotweed	P	P	
	Ranunculus cymbalaria	Marsh buttercup	P	P	
	Rumex crispus	Curly leaf dock	1.0	1.3	
	Rumex salicifolius	Willowleaf Dock	P	P	
	Trifolium hybridum	Alsike Clover	0.5	0.6	
		Sub-total	3.0	3.7	
Annual and biennial forbs					
	Allysum minus	Alyssum	P	P	
	Cerastium sp	Chickweed	P	P	
	Chenopodium fremontii	Fremont Goosefoot	P	P	
	Cirsium vulgare	Bull Thistle (Invasive)	P	P	
	Gayophytum ramosissimum	Groundsmoke	0.5	0.6	
	Lactuca serriola	Prickly Lettuce	P	P	
	Melilotus officinalis	Yellow Sweetclover	P	P	
	Plantago patagonica	Pursh's Plantain	P	P	
		Sub-total	0.5	0.6	
Shrubs					
	Artemisia tridentata	Big Sagebrush	2.1	2.5	
	Chrysothamnus nauseosus	Rubber Rabbitbrush	0.5	0.6	
		Sub-total	2.6	13.1	
Trees					
	Juniperus osteosperma	Utah juniper	5.6	6.9	~15.6 ft
	Juniperus scopulorum	Rocky Mountain Juniper	2.1	2.5	
	Pinus edulis	Pinyon pine	1.3	3.1	
	Quercus gambelli	Gambel's oak	8.2	10.0	~22 ft
		Sub-total	17.2	12.5	