Project 08S208
Annual Report – December 2007
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MESA VERDE
COOPERATIVE AGREEMENT

INTRODUCTION - Upper Colorado Environmental Plant Center (UCEPC) signed an amendment to an agreement with Mesa Verde National Park September 24, 2003, for the production of containerized material. Two additional agreements were made directly between Mesa Verde National Park and UCEPC for the production of another 320 similar containerized materials. A total of 4420 plants were to be provided to Mesa Verde National Park in order to complete those contracts. The table below shows contract species, targeted quantities, and UCEPC delivered quantities. In addition to the above, a new contract has been initiated. An agreement between Mesa Verde National Park and UCEPC was signed on August 8, 2007. The agreement is a three year contract for UCEPC to propagate 415 PLS pounds of selected indigenous grasses. This seed would be collected by the park staff in the summer of 2007.

Contract Species with Deliverable Targets

Common Name	Scientific Name	Target Qty.	Del. Qty.	Deficit	Adjusted Numbers
Bitterbrush	*Purshia tridentata*	40	15	25	
Chokecherry	*Prunus virginiana*	250	297		47
Douglas fir	*Pseudotsuga menziesii*	100	39	61	
Fendlerbush	*Fendlera rupicola*	150	489		339
Fourwing saltbush	*Atriplex canescens*	100	293		193
Gambel oak	*Quercus gambelii*	875	1166		291
Mountain mahogany	*Cercocarpos montanus*	260	237	23	
Penstemon	*Penstemon linarioides*		7		**7**
Pinyon pine	*Pinus edulis*	35	49	14	
Rabbitbrush	*Chrysothamnus nauseosus*	160	310		150
Rocky Mt. juniper	*Juniperus scopulorum*	20	21		1
Snowberry	*Symphoricarpos oreophilus*	880	310	570	
Squaw apple	*Peraphyllum ramosissima*	135	85	50	
Utah juniper	*Juniperus utahensis*	35	13	22	
Utah serviceberry	*Amelanchier utahensis*	875	574	301	
Woods' rose	*Rosa woodsii*	320	134	186	
Yucca	*Yucca baccata*	185	289		104
	Total:	**4420**	**4328**	**1252**	**1132**

OBJECTIVE – Work continues on the main entrance road to Mesa Verde National Park. The objective of this agreement is for UCEPC to produce quality plants of the target numbers by species for restoration work after road construction. The addition of containerized shrubs to the revegetation work will contribute to the overall appearance and aesthetic appeal of the construction work once completed. The indigenous grasses that have adapted to the area's poor soil will be helpful in improving the drainage and erosion problems, thereby protecting the new pavement.

ACTIVITIES - UCEPC initiated production on the above containerized species in 2003. UCEPC utilized four different types of containers to optimally match root structure with container in terms of shape and size. Six cell "Tubepacks", four cell "Bookplanters", ten cubic inch "Conetainers" and thirty-two cubic inch "Zipsets" were all used for production. A standard soil mix of vermiculite, perlite, and peat moss was used in each container type for propagation. In most cases, materials were planted as they germinated after and during cold moist treatment. Deliveries were made in 2005, 2006, and 2007. We anticipate a final delivery in 2008. In July, UCEPC received seed from Mesa Verde National Park. After cleaning, a total of 185 grams of Indian Ricegrass, *Achnatherum hymenoides,* and 63 grams of needle and thread, *Hesperostipa comata,* had been collected. This seed, along with five other materials previously grown for Mesa Verde National Park by UCEPC, will be used to establish the increase fields. The table below shows targeted species and amounts.

Common Name	**Scientific Name**	**Seed Production Acres**	**PLS # Seed**
Indian ricegrass	*Achnatherum hymenoides*	*0.5*	*50*
Louisiana sage	*Artemisia ludoviciana*	*0.02*	*5*
Muttongrass	*Poa fendleriana*	*0.5*	*5*
Needle and thread	*Hesperostipa comata*	*0.5*	*Hay bales*
Salina wildrye	*Leymus salinus*	*0.5*	*50*
Slender wheatgrass	*Elymus trachycaulus*	*0.5*	*100*
Western wheatgrass	*Pascopyrum smithii*	*1.0*	*200*
Yarrow	*Achillea millefolium*	*0.02*	*5*
	Total:	***3.5***	***415***

RESULTS – On September 5, 2007, UCEPC planted four fields. One half of an acre of *Poa fendleriana,* muttongrass, one half of an acre of *Elymus trachycaulus,* slender wheatgrass, one acre of *Pascopyrum smithii,* western wheatgrass, and one half acre of *Leymus salinus,* salina wildrye, were planted into prepared beds. November 13, 2007, two additional fields were planted, 7 – 50' rows of *Achillea millefolium,* yarrow, and 7-50' rows of *Artemisia ludoviciana,* Louisiana sage.

On September 10, 2007, a UCEPC employee delivered 178 containerized plants to the park for the revegetation of areas along the entrance road and around the resident housing. (See Distribution and Delivery sheet # CO PMC-07-014). In addition, on October 25, 2007, a shipment of three species of Mesa Verde seed was sent to the park. A total of 17 PLS lbs consisting of 7 lbs of *Achillea millefolium,* Yarrow, 6.5 lbs of *Poa fendleriana,* muttongrass, and 3.8 lbs of *Artemisia ludoviciana,* Louisiana sage, were shipped to MVNP for the Federal Highway Administration's work on the road project. This seed was field produced by UCEPC in a previous agreement (See Distribution and Delivery sheet # CO PMC-07-20 Park).

Since UCEPC is 92 plants short of the agreement, additional material is still being produced through 2008 to make up for the shortfall. Woods' rose (*Rosa woodsii*) has been planted at UCEPC for rooting stock and propagation of several shrubs species continues.

SUMMARY – Production of containerized materials will continue into 2008 to make up for materials not delivered by UCEPC in 2007. Utah serviceberry, mountain snowberry, bitterbrush, and Woods' rose fell short of their target numbers and efforts will be focused on producing these materials. Due to the small quantity of *Stipa comata* and Indian ricegrass seed, exact increase measures have not yet been determined. Due to a very wet winter, we are optimistic that the new plantings will establish well.