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Our File Number 38655-00001

June 13, 2003

VIA HAND DELIVERY

Arizona Corporation Commission
DOCKETED
JUN 13 2003
DOCKETED BY

Arizona Corporation Commission
Docket Control – Utilities Division
1200 W. Washington Street
Phoenix, Arizona 85007

Re: Duke Energy Arlington Valley, LLC
Docket No: L-00000P-99-0098 and
Docket No. L-00000P-01-0117

Attached is an original and thirteen (13) copies of Duke Energy Arlington Valley, LLC's Annual Report Regarding the Land Management Plan for the Arlington Valley Energy Project. This Report is being filed in compliance with Condition No. 13 (iv) in ACC Amended Decision No. 62995 and Condition 14 (d) in ACC Amended Decision No. 64495.

Very truly yours,

LEWIS AND ROCA LLP

Tom Campbell

Thomas H. Campbell

THC/bjg
Enclosures

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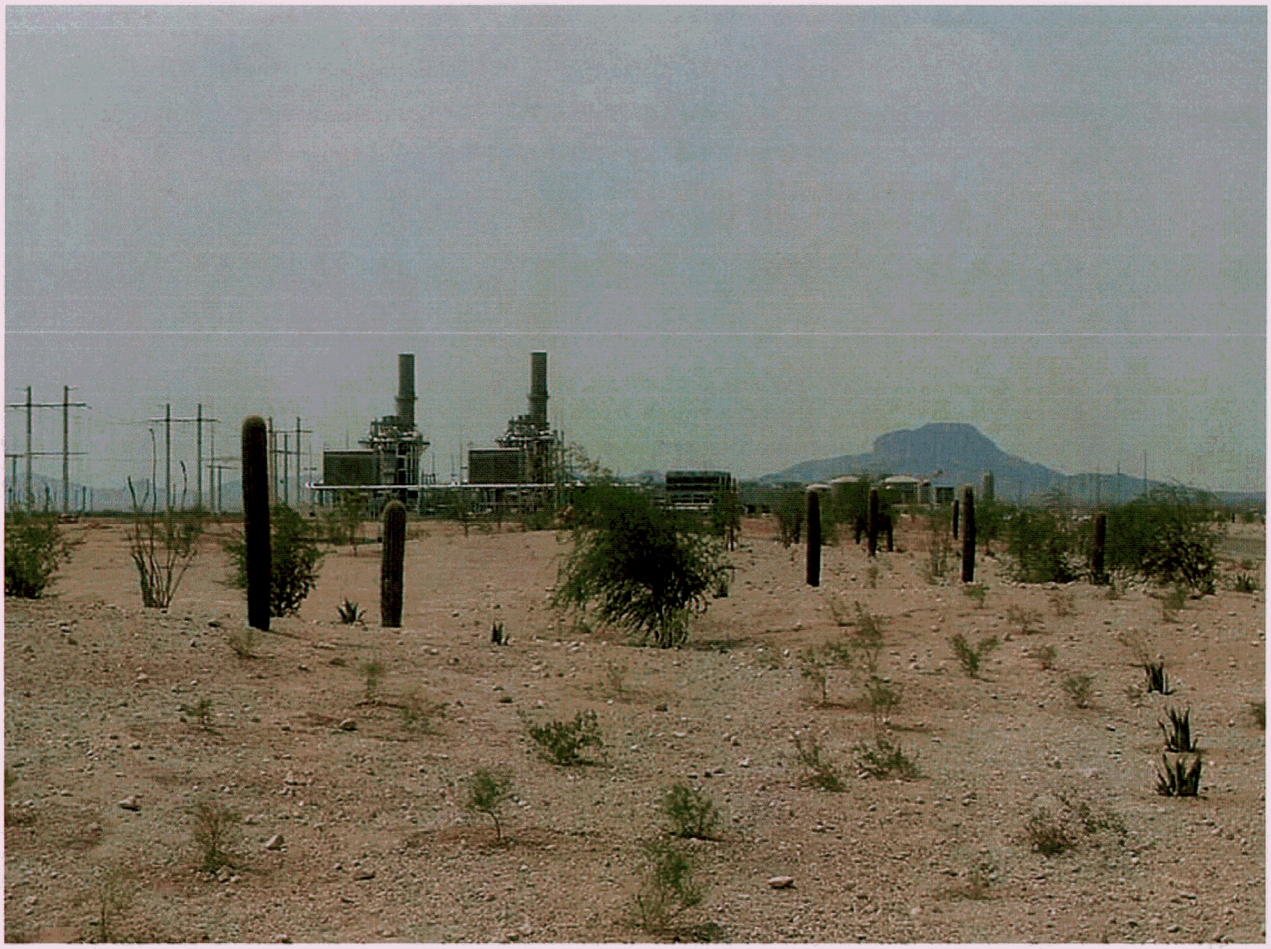
Duke Energy Arlington Valley, LLC



Annual Report Regarding the Land Management Plan For the Arlington Valley Energy Project

June 2003

Background

On July 25, 2000, the Arizona Corporation Commission issued Decision No. 62740 amended in Decision No. 62995, November 3, 2000 granting a Certificate of Environmental Compatibility to Duke Energy Arlington Valley, LLC ("Duke Energy"). This Certificate was granted with 14 specific conditions. Condition 13 was added to address concerns raised by the Power Plant and Transmission Line Siting Committee regarding the manner in which Duke Energy was to manage the property it had acquired for water rights.

Specifically, Condition 13 states:

> Applicant shall implement a Land Management Plan that includes:
> (i) Installation of a professionally designed landscape plan for the entrance of the facility and along Elliot Road.
> (ii) A comprehensive revegetation program that will restore a large portion of the property with plant communities similar to the adjacent desert lands.
> (iii) A partnership with The Arizona Game and Fish Department to provide enhanced wildlife habitat on lands that border Centennial Wash.
> (iv) An annual report (for six years) submitted to the Arizona Corporation Commission setting forth the status of the Land Management Plan.

In April 2000, Duke Energy prepared a document entitled Land Management Plan for the Arlington Valley Energy Project. This document was entered into the record, as Exhibit A-6, during Duke Energy's CEC hearing before the Power Plant and Transmission Line Siting Committee. The Land Management Plan divides the property into five distinct zones. Duke Energy and its partners in the Land Management Plan set forth unique management plans for each of the five zones. The five zones and management objectives were set forth in the Land Management Plan as follows:

Zone 1: Landscape Plan

Duke Energy will retain a professional landscaping firm to design and implement a landscape plan for the southern edge of Elliot Road in front of the facility and both sides of the entrance road to the facility to help screen the facility from view.

Zone 2: Agricultural Lands Reclamation – actively farmed

This zone will remain in active agricultural production as long as reasonable to maintain the irrigation ditches in good working order and prevent potential dust and weed problems. When it is no longer reasonable to keep the land in agriculture, the land will be folded into the active reclamation activities described under Zone 3.

Zone 3: Agricultural Lands Reclamation – fallow agricultural land

This zone includes fallow agricultural lands. In order to better understand how to effectively implement a long-term revegetation strategy, Duke Energy has

contracted with the University of Arizona. Pursuant to this contract, the University will undertake a study that would investigate revegetation on arid lands. The preliminary plan for the investigation was set forth in the April 2000 Land Management Plan. A revised plan is included in the detailed discussion below.

Zone 4: Wildlife Habitat Management Area

This zone was set aside for cooperative efforts to utilize the land for a wildlife habitat area. To that end, Duke Energy has partnered with the Arizona Game and Fish Department to find appropriate uses of this property.

Zone 5: Centennial Wash

The Land Management Plan proposes to leave this area intact.

Management Plan Report

Zone 1: Elliot Road and Facility Entrance Road.
Goal: Develop a visual buffer between the facility and Elliot Road.
Progress:

As described in the previous Management Plan Report, Duke Energy has worked with Todd & Associates, Inc. in upgrading the initial landscape concept plans for the Elliot Road frontage and entry road to include substantially more landscape area along the entirety of the Elliot Road frontage. This has allowed for additional berming and plant material to provide visual buffering from the roadway.

Duke Energy contracted with Valley Crest to install the final landscape and irrigation per plans prepared by Todd and Associates, Inc. As of November of 2002, the landscape and irrigation was 100% complete and fully operational.

The landscape palette, consisting of arid adapted plant species, and specifically those tolerant to salt and alkalinity, has proven to be successful. The landscape is flourishing, and the loss of plant materials has been minimal. The largest contributor to loss and damage has come from rabbits, primarily to the Brittle Bush (Encelia farinosa) shrubs closest to the roadway and at the far east end of the frontage near Wintersburg Wash. The shrubs were replaced in kind during the maintenance period, and have since grown to sufficient size to better withstand damage. In addition, there are native vegetation seedlings beginning to grow within the landscape area, including Brittle Bush, Mesquite, and Acacias.

Upon completion of the installation, Duke Energy contracted with Valley Crest to provide ongoing landscape maintenance, since this will be a critical factor in the long term success of the landscape. Specific guidelines were given to them as to maintaining the landscape in a naturalized character. It is the intent to allow the trees and shrubs to naturalize in form and character. More specifically, the trees shall be allowed to remain low branching as per their native character to provide maximum screening potential, as well as to provide shading and habitat for wildlife. Shrubs shall also be allowed to grow in their natural state, and under no circumstances be sheared or artificially pruned. In addition, native seedlings and starts from the new landscape materials shall be allowed to grow to further naturalize the landscape. Maintenance is basically limited to control of weed growth, and removal of dead or diseased material.

Control and operation of the irrigation system has been turned over to Valley Crest as part of their maintenance contract. The pump station and irrigation system are fully automated via a 'Tucor' controller. Seasonal schedules have been installed into the controller programming to provide maximum watering efficiency and to insure maximum growth potential to the new landscape. Upon maturity of the plant materials in seasons to come, schedules will be adjusted accordingly to minimize the water usage, while still ensuring the health and appearance of the landscape.

The landscape warranty period is in effect until November of 2003. At that time, trees and shrubs will be evaluated and replaced as needed.

Zone 2 and 3: Agricultural Lands.
Goal: Reestablish arid adapted vegetation that is self-sustaining and representative of adjacent plant communities.

As set forth in the April 2000 Land Management Plan, Duke Energy will revegetate a large portion of the fallow agricultural lands. In order to understand how to effectively implement a long-term revegetation strategy, Duke Energy contracted with the University of Arizona, Office of Arid Lands Studies. Pursuant to this contract, the University has undertaken a study that would investigate the best methods for large-scale revegetation on arid lands. The preliminary plan for the investigation was set forth in the April 2000 Land Management Plan. The University of Arizona's updated report, prepared specifically for this document, is included below.

THIRD ANNUAL ARLINGTON VALLEY RETIRED FARMLAND DESERT REVEGETATION REPORT

Prepared by T. M. Bean, M. M. Karpiscak and S. E. Smith
The University of Arizona, Tucson, Arizona
June 2003

Summary of previous report

As part of the Land Management plan for the Arlington Valley Energy Project, the University of Arizona has continued its study and implementation of a comprehensive revegetation program to restore a large portion of the property with self-sustaining plant communities similar to the adjacent desert lands. The primary purpose of the revegetation program is to return these former agricultural lands to beneficial use as open space that will attract wildlife and enhance the surrounding environment. The scope of the project is large: approximately 732 ha (1,810 ac) of retired agricultural land exists on the site, having lain fallow for a period of 5-15 years, as well as an additional 368 ha (910 ac) of currently farmed agricultural lands. A total of approximately 344 ha (850 ac) has been revegetated thus far. A small experimental planting of 7 ha (16 ac) was made in March 2001, followed by a scaled-up planting of 83 ha (206 ac) in November 2001, and a large-scale implementation planting of 255 ha (630 ac) in March 2003. Table 1 presents species included in each of the revegetation plantings. Results of the March 2001 planting and preliminary results from the November 2001 planting were presented in the Second Annual Report and are summarized here. This report focuses on the subsequent results of the November 2001 planting, preliminary observations of the March 2003 planting, and strategies for future plantings.

Summary of the results from the March and November 2001 plantings

The March 2001 experimental planting was designed to test the effectiveness of different revegetation techniques in establishing native vegetation. Treatments were assigned to a 7-ha (16 ac) field in a random block design with four replications. A combination rabbit/cattle fence was constructed around the perimeter of the four blocks, and selected treatments were replicated outside the fence to evaluate the effects of herbivory. Treatments included different combinations of irrigation method (none, furrow, and drip), plant materials (seed, hand-planted rose pots, mechanically planted rose pots, and hand-planted 3.8-l pots), and field preparations (ripping, no ripping). Results from this planting indicated that hand-planted, drip-irrigated 3.8-l transplants were the most successful treatment combination tested. It was also determined that furrow irrigation would not be included because it used excessive water for the species planted, seemed to promote weed establishment and was associated with poor survival for most species tested. Mechanical planting was discounted for future investigation because it provided poor survival and could not accommodate larger-size transplants. Ripping was determined to be unnecessary. Seed was temporarily discounted as a viable option due to the unpredictability of resulting stands and the limited number of species that became established.

The November 2001 scaled-up planting utilized these results to plant a larger area and further test transplants of various container sizes (rose pots, paper pots, and 3.8-l pots). Rose pots are the smallest of the transplants, measuring 2 x 2 x 3 in. Paper pots are larger, at approximately 3" in diameter and 8" in length. They consist of a rolled paper tube that is planted into the ground along with the plant, minimizing shock to the roots. The largest transplants are the 3.8-l container size, which are equivalent to the one-gallon plants sold in retail nurseries. All fields planted in November 2001 were irrigated using a low-cost drip-irrigation system modeled after vegetable production near Yuma, Arizona. As no seed was used, a pre-emergent herbicide was incorporated simultaneously with the installation of the drip lines. This helped reduce the establishment of weed species. All plants were transplanted into pre-wetted soil at densities of 250 plants ha^{-1} (100 plants ac^{-1}). With the exception of one field that received high levels of herbivory, all species and treatments showed improved survival over the March 2001 planting. Preliminary results at four months from the initial planting date suggested that 3.8-l transplants performed better than rose pot or paper pot transplants. However, four-month old plants of most desert species are extremely vulnerable to herbivory and environmental extremes, so further investigation was needed.

Subsequent results from the November 2001 planting

Over 20,000 plants of native species were planted in November 2001. We tested the survival of transplants of three different container sizes hand-planted into drip-irrigated fields. One-year survival of these plants is presented in Table 2. Not surprisingly, highest overall survival was observed in the largest transplants (3.8-l), followed by the paper pots and rose pots. Rose pots subjected to high levels of herbivory had the lowest survival. The herbivory was caused by rabbits and to a limited extent by deer. Although most species perform optimally when transplanted from large containers, some species performed well in rose pots and paper pots as

well. These species include *Atriplex canescens, Atriplex lentiformis, Lycium exsertum,* and *Prosopis velutina.* Plantings of such a large-scale, however, require a uniform protocol to optimize efficiency and so we recommend that all species be planted in 3.8-l container sizes. An additional advantage to the larger containers is that the transplanted species provide an immediate visual effect on these barren sites, which benefits both wildlife and human aesthetics (Figures 1 and 2). We were surprised to observe that virtually every species planted in November 2001 flowered and produced seed within the first year. Some of the species appear to be particularly effective in invading the interspaces between the transplants include *Baileya multiradiata, P. velutina,* and *Sphaeralcea ambigua.*

Preliminary observations from the March 2003 planting

The March 2003 planting utilized 3.8-l transplants hand-planted into drip-irrigated fields. Over 60,000 nursery-grown plants of native species were transplanted (Figure 3). With the exception of 8 ha (20 ac) of double-planted rose pots, no other container sizes were used. To further increase plant species richness and a growth-form diversity on the site we included three additional native species in this planting: *Aristida purpurea, Senna covesii,* and *Muhlenbergia porteri.* All species were planted into moist soil and have shown good initial survival. Survival has not been formally inventoried at this time but plans exist to begin monitoring later this year, using the same techniques as the November 2001 planting. Permanent monitoring stations will be established later this year to evaluate planting success in terms of plant cover and densities. Areas revegetated through March 2003 are displayed in Figure 4.

Strategies for future plantings

Results from the March 2001 experimental planting show that certain species are much more effective at establishing from seed than others, given that drip-irrigation is used. Unfortunately, most of the dominant species of the surrounding unfarmed desert areas showed poor establishment from seed in that experiment. A 16 ha (40 ac) portion of the property will be seeded this fall and in the spring of 2004 as part of an experiment to determine optimal seeding rates and season for selected species. In most revegetation seedings, large amounts of seed are used because the entire field is seeded. Using drip-irrigation, only the area immediately surrounding the drip emitters received seed and so only a very small fraction of seed is used compared to a traditional seeding. Drip-irrigated seed might offer a way to reduce plant material costs in the revegetation program, as well as provide a method that is much less time consuming and strenuous for the planters. However, this method will only be effective if we can gain more predictability over the resulting stand of vegetation from a given seed mixture seeded at a given time of year. Until such information is obtained, we will continue to utilize the proven method of drip-irrigated, hand-planted 3.8-l transplants.

Areas scheduled to be revegetated in the future area displayed in Figure 5. These are the areas located south of the Southern Pacific Railroad that are not used by Ducks Unlimited. The plant communities present in this area prior to agricultural development were likely to have differed slightly from those that existed in the areas revegetated thus far (Table 1). Differences in

watershed location and soil properties in these areas would indicate that they likely had a larger component of saltbush species. During the next few months, we will be studying unfarmed areas thought to be representative of saltbush communities in order to develop a plant palate especially suited to this area.

Table 1: Species included in each of the revegetation plantings at Arlington Valley Energy to date.

Botanical name	Common name	March 2001	November 2001	March 2003
Acacia greggii	Catclaw acacia	S, OG	RP	OG
Ambrosia deltoidea	Triangleleaf bursage	S, RP	NP	NP
Ambrosia dumosa	White bursage	S	RP, PP, OG	OG
Aristida purpurea	Purple threeawn	S	RP	OG
Atriplex canescens	Fourwing saltbush	S	RP, PP, OG	OG
Atriplex lentiformis	Quailbrush	S	RP, PP, OG	OG
Atriplex polycarpa	Desert saltbush	S, OG	RP, PP, OG	OG
Baileya multiradiata	Desert marigold	S	OG	OG
Bouteloua aristidoides	Needle grama	S	NP	NP
Calliandra eriophylla	Fairy duster	S	NP	NP
Cassia covesii	Desert senna	S	NP	OG
Festuca microstaycha	Desert fescue	S	NP	NP
Larrea tridentata	Creosotebush	S, RP	RP, PP, OG	OG
Lesquerella gordoni	Gordon's bladderpod	S	NP	NP
Lycium exsertum	Woflberry	S, OG	RP	OG
Muhlenbergia porteri	Bush muhly	NP	NP	OG
Olneya tesota	Ironwood	S	NP	NP
Opuntia acanthocarpa	Buckhorn cholla	S	NP	NP
Parkinsonia microphylla	Littleleaf paloverde	S	RP	OG
Plantago ovata	Indianwheat	S	NP	NP
Pleuraphis rigida	Big galleta	S	RP, PP, OG	OG
Prosopis velutina	Velvet mesquite	S, OG	RP	OG
Sphaeralcea ambigua	Desert globemallow	S	RP	OG
Sphaeralcea coulteri	Coulter's globemallow	S	NP	NP

"S" = seed
"RP" = rose pots
"PP" = paper pots
"OG" = 3.8-l pots
"NP" = not planted

Table 2: One-year survival (%, standard errors in parentheses) by container size of species planted at the Arlington Valley Energy property in November 2001.

Species	Container size			
	Rose pots east*	Rose pots west	Paper pots	3.8-l
Acacia greggii	0 (9.2)[b]	48.3 (9.2)[a]	NP	NP
Ambrosia dumosa	5.0 (11.6)[b]	25.4 (11.6)[b]	42.4 (11.6)[ab]	76.3 (11.6)[a]
Atriplex canescens	3.3 (13.7)[b]	90.0 (13.7)[a]	71.7 (13.7)[a]	69.3 (13.7)[a]
Atriplex lentiformis	0 (14.6)[b]	100 (12.6)[a]	80.0 (11.3)[a]	96.0 (11.3)[a]
Atriplex polycarpa	1.4 (9.8)[c]	42.0 (9.8)[bc]	57.8 (9.8)[ab]	85.4 (9.8)[a]
Baileya multiradiata	NP	NP	NP	22.6 (9.6)
Larrea tridentata	0 (6.0)[c]	19.9 (6.0)[bc]	42.4 (6.0)[ab]	89.5 (6.0)[a]
Lycium exsertum	45.9 (5.4)[b]	100 (6.0)[a]	NP	NP
Parkinsonia microphylla	0 (0)	0 (0)	NP	NP
Pleuraphis rigida	10.0 (19.0)[b]	55.0 (19.0)[ab]	50.0 (21.2)[ab]	100 (19.0)[a]
Prosopis velutina	34.0 (19.7)[b]	100 (19.7)[a]	NP	NP
Sphaeralcea ambigua	0 (42.2)	66.7 (36.5)	NP	NP
Mean survival	10.2 (5.6)[c]	49.2 (5.6)[b]	54.6 (5.6)[b]	79.6 (5.6)[a]

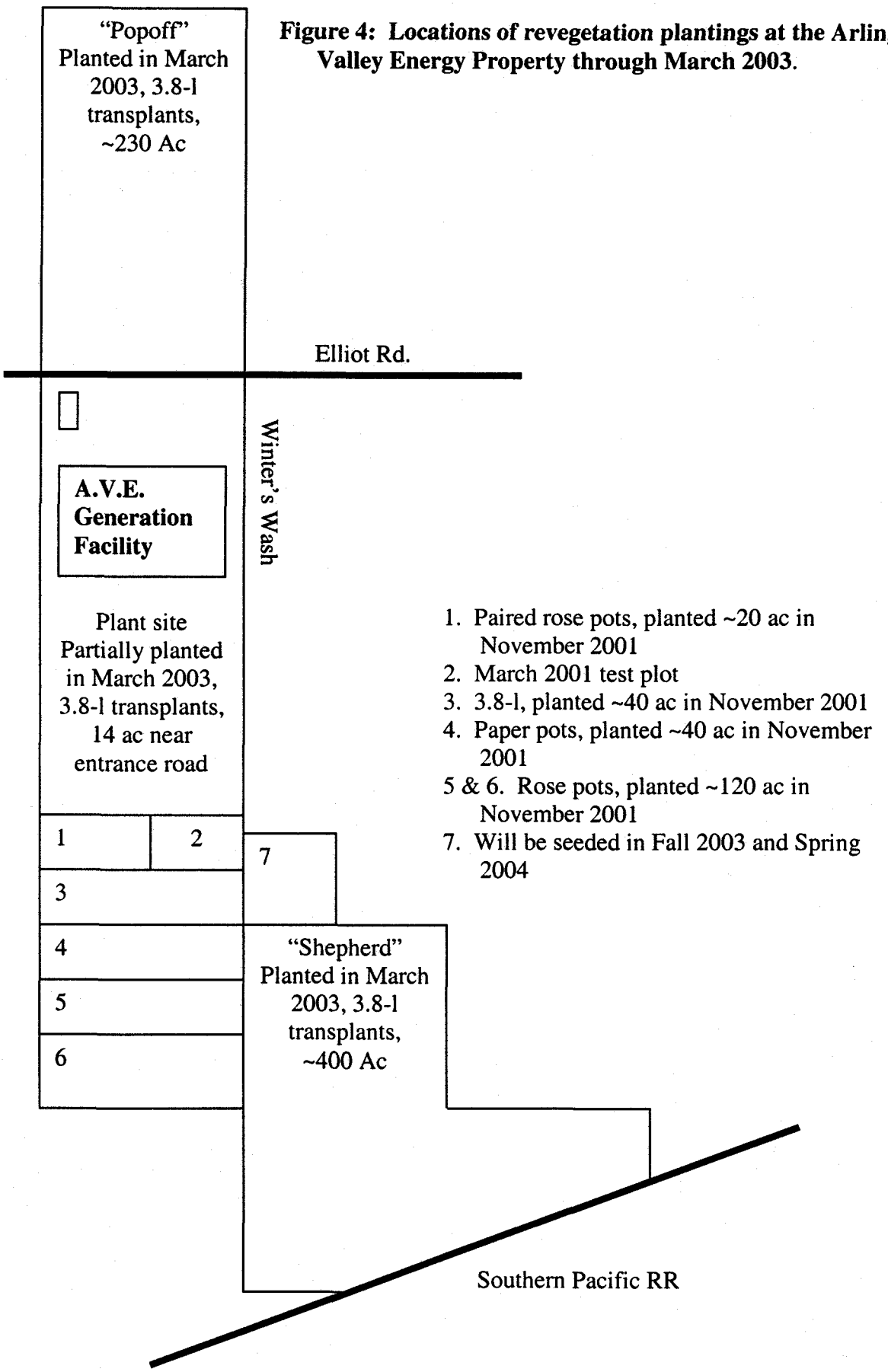
Due to the small sample size, differences were tested using Wilcoxon Rank Sum tests. Values with different superscript letters were significantly different at the $P<0.05$ level. All plants were irrigated twice per month via drip-irrigation.
*Rose pots east were subjected to high levels of herbivory
"NP" = Not Planted

Figure 1: Typical retired cropland in the areas adjacent to the Arlington Valley Energy property. Note the almost complete lack of vegetation recovery. An old concrete-lined irrigation ditch is in the foreground. Photo by T.M.B.

Figure 2: Land revegetated in the November 2001 planting. The plants are approximately 8 months old. Some of the more prominent species include Fourwing Saltbush and Creosotebush. A Big Galleta grass is in the foreground. Photo by T.M.B.

Figure 3: Some of the transplants used in the March 2003 planting. Desert marigold transplants are in the foreground. Photo taken by M.M.K.

Figure 4: Locations of revegetation plantings at the Arlington Valley Energy Property through March 2003.



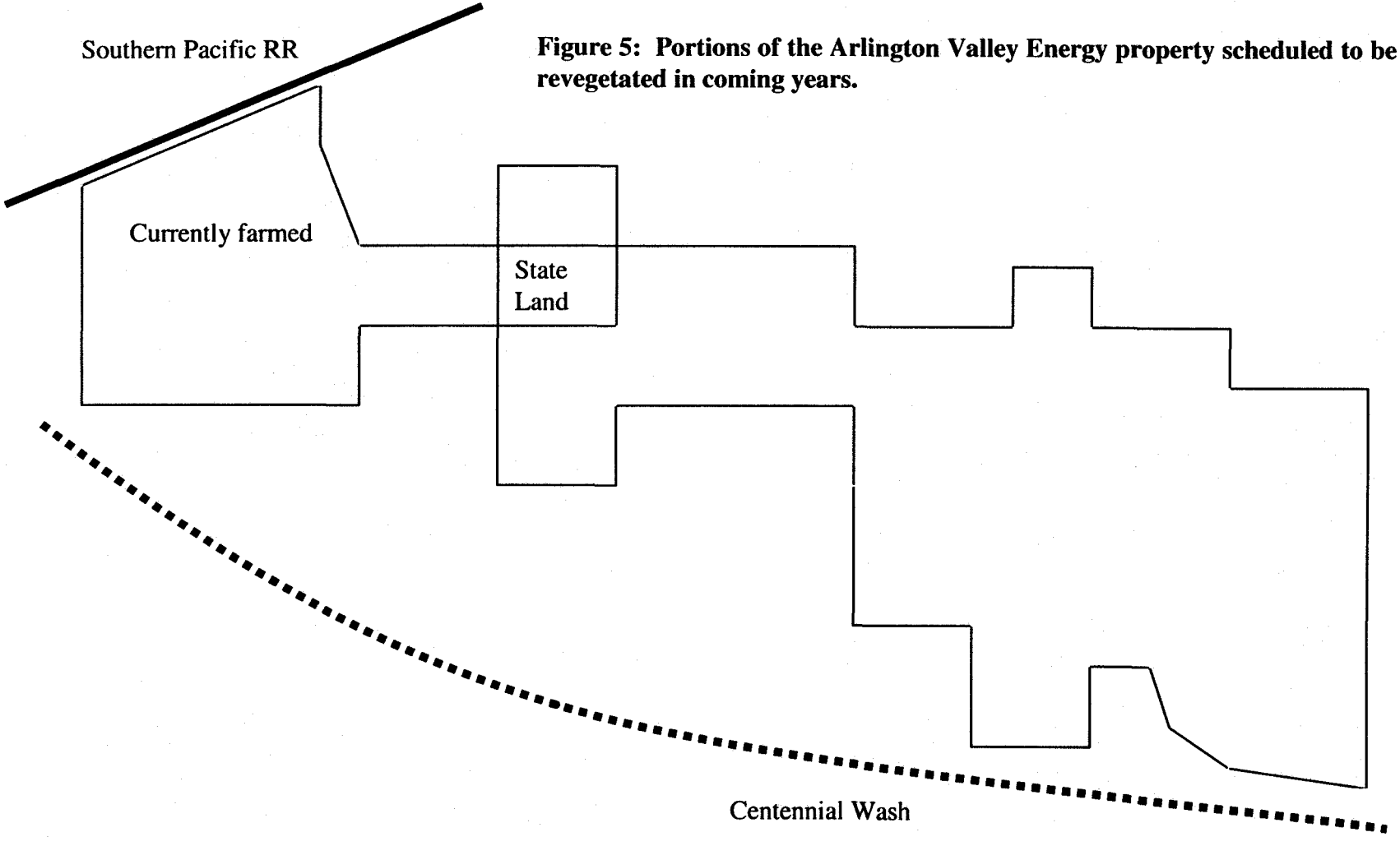


Figure 5: Portions of the Arlington Valley Energy property scheduled to be revegetated in coming years.

Zone 4: Wildlife Habitat Management Area
Goal: Provide enhanced wildlife habitat in the project area.

Under an agreement to provide survey and design services to Duke Energy, Ducks Unlimited, Inc. (DU) has performed engineering and survey related activities at the site of Duke Energy's Arlington Valley Energy Project, Arlington, Arizona. This effort will allow the development of master planning options for the property. The property surveyed covers approximately 1,500 acres and is located just north of the Centennial Wash and the Gila River.

DU has collected survey data that will be used to document existing water delivery means and methods employed by a current farming operation within the western half of the site. Collected data include ditch cross-sections, elevations, and various irrigation gate locations and dimension. Data was also collected to describe the wells / pump systems on site.

Concurrent with the performance of field survey activities, DU engineers and biologists have visited the site on several occasions as part of developing options and concepts for future uses for the 1,500 acres. Possible land uses include wetland / waterfowl habitat development, creation of native desert habitat, and other scenarios as dependent on soil types, water availability, topographic information, and current vegetative cover.

DU has been developing options in concert with input from Duke staff. In addition, DU is utilizing the results of recent desert habitat restoration efforts performed by Duke representatives within adjacent sections of their property to refine options proposed. Once completed, DU will present these conceptual options to Duke as part of a report prepared summarizing the work. DU anticipates that this report will be finalized and presented on June 26, 2003.

Zone 5: Centennial Wash
Goal: Protect existing riparian vegetation

The project contains only a small portion of land that has not been extensively managed for agricultural production. This area located in the southeastern portion of the site is in Centennial Wash and contains a functioning riparian ecosystem. Duke Energy continues to maintain the area in its current state.

Conclusion

The Land Management Plan for the Arlington Valley Energy Project is progressing well. Duke Energy continues to work with its outside contractors including a professional landscaping firm, the University of Arizona, the Arizona Game and Fish Department and Duck's Unlimited. These efforts have resulted in the implementation of the landscape plan, a comprehensive test plot by the University of Arizona to study the best methods for large-scale revegetation, the desert planting of several hundred acres, and conceptual meetings with the Arizona Game and Fish Department and Duck's Unlimited regarding enhanced wildlife habitats.