MILITARY COMMUNITY FORESTRY PLANNING OFFUTT AIR FORCE BASE—A CASE STUDY

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Abstract. Offutt Air Force Base is headquarters for the Strategic Air Command and center for many activities of national importance. This community differs from most communities because the short residency of its inhabitants means increased management of vegetation by the base staff. Most vegetation activities had low priority and were not guided by a comprehensive plan. In 1987, a contract was initiated between the Air Force and the Nebraska Forest Service to develop a Community Forestry Plan for Offutt. Existing trees were evaluated and new plantings designed. Maintenance activities were recommended. The plan provides for future community forestry action and is a model for other military communities. The plan also relates to non-military communities.

Résumé. La base de l'armée de l'air d'Offutt est le quartier général de l'armée de l'air et le centre de nombreuses activités d'une importance nationale. Cette communauté diffère des autres parce que la courte période de résidence de ses habitants demande des efforts accrus de gestion de la végétation par le personnel de la base. La plupart des activités de gestion de la végétation avaient une faible priorité et n'étaient pas guidées par un plan de gestion. En 1987, un contrat fut conclu entre l'armée de l'air et le Service forestier du Nebraska afin d'élaborer un programme de foresterie urbaine pour Offutt. Les arbres en place furent évalués et de nouvelles plantations furent désignées. Des travaux d'entretien furent aussi recommandés. Le plan définit les actions futures en foresterie urbaine et est un modèle pour d'autres bases militaires. Le plan se rapporte aussi aux communautés civiles.

Arborists often prepare proposals or bids for landscaping and/or maintenance work. This large and complex project was completed on federal property and has application for municipal officials and other non-military communities to predict costs and benefits of Community Forestry Plans.

Offutt Air Force Base, in eastern Nebraska near Omaha, is the Strategic Air Command (SAC) national defense headquarters and center for many activities. This base is home for about 40,000 military and civilian workers and their dependents. Offutt frequently hosts visiting dignitaries and is a showcase for the Air Force. Land for the facility was acquired in 1888 and in 1896 the original buildings and landscaping were completed. Many of these buildings and some of these plantings still remain.

Offutt is a small city but unlike many communities where stability is the norm, the military residents are constantly changing as they transfer in and out of the base. This short term residency makes the community forest even more important than in the traditional, stable community. The residents have no long term attachment and rarely expect to stay long enough to reap the benefits from tree planting. Very few plantings are undertaken by the residents which means these responsibilities are ignored or left for the base operations staff.

Morale, a vitally important aspect of military life, depends largely on the quality of the living and working environment. Thus, an overall Community Forestry Plan was requested, to improve base morale.

Background

Over the years, considerable work was done with the tree resource as a part of routine maintenance, including planting of many trees and shrubs. The majority of this work was accomplished as funding and other priorities allowed. Often, vegetation took a lower priority and this is reflected in the current status of the base. While much was accomplished, the efforts were not guided by a plan. Some areas were well planted while other areas were overlooked and in dire need of planting. The base's 13,000 landscape trees include many species, with a wide variety of size and condition.

Nebraska is sparsely populated, about 20 people per square mile. Despite the rural image, most of Nebraska's 1.6 million residents live in cities and towns, with a wide range of community forestry activity. Arbor Day was created in

1. At the time of this article, authors were Vegetation Management Program Leader, Community Forestry Specialist and Program Leader, and Deputy State Forester.

Nebraska, Nebraskans are proud of their "Tree Planter's State" heritage and there is much interest and support for tree programs. 1987 saw 41 communities in Nebraska receive Tree City USA recognition by the National Arbor Day Foundation. These 41 communities are home to 47 percent of the state's population.

The Nebraska Forest Service (NFS), a part of the University of Nebraska, is active statewide in community forestry. NFS assists cities, towns, and villages with forestry-related activities, ranging from drafting a formal tree ordinance to helping organize the planting of two trees in the village park. The amount of assistance is limited by personnel and funding restrictions, but the NFS tries to give at least some help to each community that seeks aid.

Plan Initiation

The NFS was contacted by the Base in the spring of 1987 for help in developing a Community Forestry Program and Plan. The NFS Community Forestry Program (CFP) had worked with the Air Force for several years on small programs and projects. Most previous efforts were initiated by the Air Force, asking for services NFS offered. Other contacts between them occurred through professional organizations such as the International Society of Arboriculture, the Society of American Foresters, and the Nebraska Arborists Association.

Through these on-going contacts, a working relationship was developed. The NFS assistance level was sufficient at first, but the base's need proved greater than NFS could provide. The NFS

Table 1. Inventory results: condition class summary for Section 6, the Capehart Housing Area.

Species	Total # of trees	% of total	Condition Classes: Excel. #	Excel. %	Good #	Good %	Fair #	Fair %	Poor #	Poor %
Juniper	3	7	0	0	3	100	0	0	0	0
Aust. pine	1	3	1	100	0	0	0	0	0	0
Crabapple	1	3	0	0	0	0	1	100	0	0
Pin oak	1	3	0	0	1	100	0	0	0	0
Other fruit	2	5	0	0	0	0	1	50	1	50
Am. elm	1	3	0	0	0	0	1	100	0	0
Silver maple	6	14	0	0	2	33	4	67	0	0
Cottonwood	7	17	0	0	3	42	2	29	2	29
Decid. shrubs	14	34	0	0	14	100	0	0	0	0
Willow	5	11	0	0	0	0	0	0	5	100
Totals	41	100%	1	2%	23	56%	9	22%	8	20%

Table 2. Inventory results: size class summary for Section 6, the Capehart Housing Area.

Species	Total # of trees	Ave. diam. (inches)	Size Classes: 1-8 in #	1-8 in %	9-16 in #	9-16 in %	17-24 in #	17-24 in %	25 + in #	25 + in %
Juniper	3	5	3	100	0	0	0	0	0	0
Aust. pine	1	12	0	0	1	100	0	0	0	0
Crabapple	1	5	1	100	0	0	0	0	0	0
Pin oak	1	20	0	0	0	0	1	100	0	0
Other fruit	2	12	0	0	2	100	0	0	0	0
Am. elm	1	20	0	0	0	0	1	100	0	0
Silver maple	6	24	0	0	1	17	2	33	3	50
Cottonwood	7	17	2	29	0	0	4	57	1	14
Decid. shrubs	14	3	14	100	0	0	0	0	0	0
Willow	5	32	0	0	0	0	0	0	5	100
Totals	41	15%	20	49%	4	10%	8	19%	9	22%

was fortunate that the Offutt AFB staff recognized the need for a community forestry plan, wanted to work with the NFS, and aggressively tried to start a joint effort. It was decided that a special effort would be needed to address all community forestry needs of the base in a timely and efficient manner. This was the basis for the development of a contract to provide a Community Forestry Plan to the Air Force.

The goals for this Plan were: 1) to enhance personnel morale by providing pleasant surroundings in which to work and live; 2) to reduce grounds maintenance costs; 3) to reduce energy costs by planting trees that protected structures from weather extremes; and 4) to project a favorable impression for guests and visiting dignitaries. The plan sets forth recommendations, procedures, and a sequence of events toward those goals.

The first step in planning was to inventory all trees (condition, age, size, and species) on maps of the AFB. The maps were marked as to location and species of every tree and shrub on the base. The inventory was processed by a computer program that created reports by condition, size, and

Table 3: Inventory results: desirability class and value summary for Section 6, the Capehart Housing Area.

Desirability class	Total # of trees	Pct of total trees	Ave. diam. (in.)	Condition Classes percent of class totals exc.	good	fair	poor	value
Class I	0	0	0	0	0	0	0	$ 0
Class II	6	15	11	17	66	17	0	4000
Class III	2	5	12	0	0	50	50	0
Class IV	14	34	20	0	36	50	14	19000
Class V	19	46	19	0	74	0	26	2000
Totals	41	100%	18	2%	56%	22%	20%	25000

Table 4. Tree and shrub planting recommendations for Section 6, the Capehart Housing Area

Area	Species	Spacing	Plant description	Quantity	Est. cost
1.	Swamp W. oak	25-30'	1½" B&B	6	
	Norway maple	20-25'	1½" B&B	5	
				11	$ 1,925.
2.	Colorado spruce	20-25'	4-5' B&B	10	
	Ky. coffeetree	25-30'	5-6' BR	15	
				25	3,000.
		Total planting costs for Section 6 =			4,925.

Table 5. Maintenance practice recommendations for Section 6, the Capehart Housing Area

Areas	Treatment Year	Treatment	Aprox. cost	Units per treatment	Total # of treatments per plant	Est. cost
1,2	2,3	Water plants	$ 1.50	36P	6	$ 324.
1,2	2,3	Weed control	2.00	36P	2	144.
1,2	2,4	Prune plants	1.00	36P	2	72.
ALL	X	Prune existing trees	100.00	10P	1	1,000.
ALL	X	Hazard tree removal	300.00	7P	1	2,100.
		Total cultural practices cost for Section 6 =				$3,640.

species composition. Sample reports for one small section of the AFB are shown in Tables 1, 2, and 3, summarizing respectively Condition, Size, and Desirability/Value. The five Desirability classes represent tree quality from class one as most desirable to class five as least desirable for community planting. The values are based on the size, condition, and desirability class using the ISA Amenity tree valuation formula as a base.

Once the existing trees had been evaluated, planning for the future began. New plantings were designed for all appropriate areas of the base, including housing. The guidelines were:

- To ensure no species was more than 10% of the total. (Some species had to be fewer in new plantings because many of that species were already there).
- To choose low maintenance plants and designs. Future funds are always unpredictable. Maintenance should have high priority but should be as low as possible through proper plant selection.
- To complement existing facilities and vegation.
- To avoid conflicts with functioning of the base (security, aircraft operations, etc.).

Planting costs and maintenance schedules were assigned to new plantings. Recommendations were submitted to the Air Force for their comments, suggested changes were incorporated and the plan was submitted for approval.

Recommendations were made for maintenance procedures as well as for plantings. Proper methods of pruning, weed control, and watering were presented. Approximate costs for each activity was included, so the Air Force could predict money needed for future maintenance. (Samples in Tables 4 and 5.)

Special Considerations. Military activities on the base required special considerations in the plan. Bird air strikes are an important concern, so all plantings near the runway used open-canopy species that are undesirable for roosting and nesting. The Air Force has guidelines in BASH manuals (Bird Air Strike Hazard). In a "clear zone" around the runways no planting is allowed.

Security was a special concern. Visibility around base entrances and sensitive areas had to be taken into consideration. In areas under strict security, no woody vegetation was allowed.

The Offutt Plan

The plan provides the basis for future community forestry activities on the base. As with any plan, new constraints may arise, so the plan must be monitored. The plan is flexible and can be readily updated. This is important considering the volatile and high tech environment of this AFB. Community forestry will have a positive effect at Offutt. The plan guides the base in providing the best living and working conditions. The plan provides a useful map to guide tree planting and maintenance. It will allow enlightened decisions on species and placement, which reduce maintenance and replacement costs. Offutt will be a model for other military communities.

The plan has application to non-military communities. Because of the controlled environment at Offutt, valuable information gathered here will help municipal officials and others in non-military communities who develop similar plans to predict costs and benefits more accurately.

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