Moore Park Monitoring Plan

Parks and Cemeteries Division

City of Klamath Falls, Oregon

prepared by

Gene Rogers

Wildland Fire Technologies, Inc.

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Executive Summary

This document has been prepared as a supplement to the Moore Park Forest Resource Management Plan (FRMP, May 2012) and the preceding Moore Park Fuels Management Plan (FMP, June 2005). The fuels plan was written first to initiate hazard fuels and forest health improvement treatments while the forest resource management plan was developed. The fuels plan is Appendix A01 in the FRMP. That document and all of the appendices are stored collectively on the compact disk where this document resides. All are in .pdf format.

It is the intent of the current City Park managers to have this monitoring plan available for future park managers as a supplement to the two mentioned plans. Without documentation of past treatments it can be difficult to understand present or future vegetative conditions. The thinning work done over the last ten years will need periodic monitoring and decisions for maintenance work. In-growth of shrub species and particularly juniper seedlings will require periodic evaluation and maintenance work. Monitoring of natural ponderosa pine seedlings will be needed to determine if planting will be needed to ensure future canopy trees or to populate openings. Annual monitoring of some wildlife species, e.g. bald eagle, will need to be coordinated with future maintenance treatments.

Vegetative treatments, including prescribed fire, have been done in Moore Park since 2004. The FMP includes a proposed schedule of treatments by type and acreage. These treatments were specific to the delineated vegetation types throughout the park. Actual treatments completed were based on the proposed treatments with modifications from post-treatment reviews, funding availability and as opportunities arose to acquire labor and/or equipment. This document includes the recommended monitoring objectives for those treatments and non-treated areas of the park.

25 Years of Planning and Resource Management in Moore Park

This section briefly describes the history of resource management planning efforts and treatment activities that occurred in Moore Park during the period of 1988 through 2013.

The author has frequently visited Moore Park trails since 1982. His background in wildland fire suppression and forest fuels treatments made him notice the decadent condition of much of the shrub vegetation in the park. He also noted the dense pockets of pine and juniper with intermingled limbs, often with dense, decadent brush under the trees. The park's forest resources were definitely at risk to wildfire.

Interagency involvement with the then Klamath Falls Fire Department generated interest in proposing fuels treatments to reduce the wildfire potential in Moore Park. Treatments, including prescribed fire, were viewed as an opportunity to cross-train personnel and improve the health of the park's natural resources. On June 1st of 1988 his presentation to the Parks and Recreation Advisory Board was favorably received and supported by the Parks and Recreation Director. See appendix MP01. In October of that year the author moved to a new position out of the area and his proposals lost momentum with the passing of the Parks and Recreation Director, Harold Howard, in January 1990.

The next City official responsible for decisions about the park did not support the use of prescribed fire in the park. The road gates were locked as a fire prevention measure, and to reduce the wear and tear of traffic on the upper road loops. By 1993 a proposal to selectively harvest dead and dying trees was proposed by the city. This plan and another in 1994 did not receive approval by the Oregon Department of Fish and Wildlife (ODFW). In 1995 a subsequent plan was developed and was implemented with ODFW support and cooperation. See FRMP appendix A02. This project had a narrow margin for profit (which paid for the forester and logger) and did not address thinning of residual trees or brush.

The KAGO Fire of August 13, 2003 generated a renewed interest in the wildfire potential of fuels in Moore Park. This fire ran from the south into Moore Park before subsiding. The author was contacted by the City Parks and Cemeteries Director, Valeri Lantz. She requested a proposal to prepare a Fuels Management Plan for the park that would supplement a Forest Resource Management Plan being prepared by an Oregon Department of Forestry (ODF) forester. The Fuels Management Plan was finalized in June 2005. The FRMP ultimately ran into funding issues and progress stopped for a few years.

Initial treatments were started in 2004 as the plan was being developed. A small treatment was implemented in April of 2004 as a demonstration. This site was reviewed by an gathering of public, agency specialists and City administrative people as part of a "walk in the park" a few days later, see page 30 FMP. Positive feedback to the treatments proposed led to the completion of 28.5 acres of hand and mechanical treatments in three vegetation types that year. Proposed fuels and vegetative treatments continued to occur as collaborative opportunities and funding sources could be developed. Multiple pile burning projects have been completed with the first prescribed fire underburn successfully completed in 2009.

The Forest Resource Management Plan, completed by the author, was approved in April 2012. That plan was prepared in the ODF Stewardship Plan format. Vegetative treatments have continued as recently as April 2013 when 25 acres of thinning and hand piling were completed. As of this writing those piles and about 10 acres more remain to be burned. It is anticipated those piles will be burned in the fall of 2013. The result is approximately 135 acres of forest vegetation in Moore Park has been treated to reduce wildland fire potential, increase forest health and improve wildlife habitat between 2004 and 2013.

Past, Present and Future Treatments

The FMP and FRMP refer to the same plant association groups as vegetative type islands, which are numbered 1 through 10. Treatments proposed were able to cross type boundaries where appropriate. Objectives for wildfire, forest health and/or wildlife habitat were discussed prior to, during and following each cycle of treatments. Discussions involved City Park managers, private and public natural resource specialists, and other public and private parties.

A table of treatments through 2012 is found on page 53 of the FRMP. An additional 25 acres was planned for thinning and hand piling. This work was mostly completed in April 2013. Those piles and about 10 acres of piles from 2012 remain to be burned as of this writing. That burning should be targeted for fall of 2013. Care should be taken to find and burn the scattered piles from previous projects that were missed.

The estimated fuels treatment acres proposed in the FMP have been achieved. Additional treatments to meet the objectives of the FRMP and FMP are at the discretion of the current and future managers of Moore Park. Opportunities for forest health and/or habitat improvement treatments have and will be the result of periodic field trips with an interdisciplinary group of local specialists.

Future treatments noted in the FRMP to consider would include: planting ponderosa pine seedlings in stand openings, monitor and remove encroaching juniper seedlings, mitigate noxious weeds and invasive species, evaluate growth of shrub species for wildfire potential, monitor forest stands for disease and insect mortality, identify candidate trees for snag recruitment and replacement. Future treatments will be the result of the monitoring process described in the next section.

Monitoring and Evaluation

Monitoring will be the key to identification of future project needs. A routine of visiting past treatments site to evaluate the need for maintenance treatments should occur annually. The findings of the annual site visit would be an excellent opportunity to gather the current representatives of collaborating agencies, departments and organizations to discuss opportunities to implement identified needs. Parks Advisory Board, City managers and council members should be encouraged to attend these interdisciplinary field trips. Public "show me" field trips would be a way to meet the public education objectives of the FRMP.

Shrub Growth, Flammability and Habitat

Brush has been cut by hand (chainsaw) and mowed by mastication machines (Bobcat and Slashbuster) in several locations noted on page 52 of the FRMP. Before and after pictures are found in that document and in appendices MP02 and MP03. The oldest treatments were done in 2004. Growth response has varied with aspect, shading and species. Much of the brush exceeded 50 years of age when cut. Those years of growth had allowed a significant layer of litter to accumulate under the plants. Age also increased the proportion of the shrub canopy that contained dead limbs. A third factor increasing the flammability of the older shrub pockets was needle-drape from overhead ponderosa pine. The combination of surface litter accumulation, canopy dead limbs and needle-drape give a visual indicator of the overall flammability. The picture below is an extreme example of dense needle-drape in Moore Park.

It is anticipated that the response of chokecherry will be most dramatic. The portions cut in 2004 in types 8, 9 and 10 are showing the most response on the north aspect above Lakeshore Drive. It is expected that the chokecherry will not be in need of maintenance for 25 years. Wildlife browse quality is higher in younger stems as the shrub takes on a small tree characteristic with

age. Maintaining a mosaic of age classes in brush pockets in Moore Park will improve wildlife habitat. Klamath plum and birch-leaf mahogany are also in association with the chokecherry, but individuals are not a wildfire hazard, only where found in tight clumps. A secondary objective in cutting these brush species was to stimulate younger, more palatable browse for deer.

The chokecherry in the above photo taken June 21, 2013 is 9 years since being cut. All of the stems are green. Monitoring intervals of five years should be adequate. The Klamath plum in the photo below is showing heavy browse activity since being cut in 2004. Klamath plum and birch-leaf mountain mahogany are sprouting well but are growing slower than the chokecherry, apparently due to browsing by deer. Note the chokecherry in the center for growth rate comparison to the shorter Klamath plum.

Juniper Seedling Encroachment

Juniper encroachment in Moore Park has been accelerated in the decades following settlement. This has been due to removal of natural fire primarily due to grazing. Annual ocular surveys of park will readily show where juniper seedlings are encroaching. Hand removal or prescribed fire when grasses are cured will keep the encroachment in check. Retaining some seedlings for future legacy junipers (over 20") could be considered. They are a natural species in the area but will aggressively take a site in the absence of fire.

Ponderosa Pine Seedlings

Natural ponderosa pine seedlings should be protected from prescribed fire or future fuels treatment projects. These are the ideal future overstory pine candidates. Although showing browse damage, natural seedlings are surviving throughout the park.

Planting ponderosa pine seedlings is discussed in the FRMP, and in appendix A06 of that document. Now that most of the initial vegetative treatments have occurred areas that are candidate sites for planting seedlings can be identified. Openings with little shade among mature pines should be selected. Stock can be arranged by contacting a service forester at ODF. If possible, seedlings from local tree seed should be utilized. Ideal seed would be from the Moore Park ponderosa pines.

One challenge for future park managers will be the establishment of future overstory trees without overstocking the site. The areas planted in vegetation type 9 in 2009 will need to be monitored and thinned to select the best candidate trees. That decision should be made when the trees are 15-20 years old and well established (around 10 feet tall). Even though vexar tubes were place on these seedlings over 50% are showing impacts of deer browsing.

Mixed Conifer Forest

The northeast aspect slope of Moore Mountain supports a mixed conifer forest. This forest is found in vegetative type 1 and 2. Douglas fir, incense cedar, ponderosa pine and western juniper are present in the stand. Understory brush is quite thick and decadent. Steep slope conditions make vegetative treatment options prohibitively expensive. A future wildfire may be the only element of change in vegetation density and age distribution.

Snags

Moore Park does not have a lot of snags, many were cut in 1995. The most familiar one is located just off the trail in the northwest portion of the park overlooking Klamath Lake. That snag is frequented by a variety of birds. The author has discussed snag recruitment with Park Operations Superintendent John Bellon. It is recommended that unless viewed as a safety hazard that the snags be retained as habitat. A mature ponderosa pine has died and is a good candidate for retention. It is located west of the maintenance yard.

Monitoring Fuels Treatments

A variety of fuels treatments have been prescribed and utilized in Moore Park. Slashbusters (2) have been used in the southern portion of the park. Operators vary in skill and care. Seasonal timing is very important to avoid soil disturbance. Best results have been achieved when operating on frozen ground or on snow. The photos on page 12 show a site before and after work done on frozen ground in December 2006. If conditions moist and ground disturbance is occurring, curtail operations. It is better to avoid disturbance than to mitigate it later. Smaller mastication units have been successful in summer conditions due to very light track pressure. Both examples of this work were on Bobcat units with very economical per acre production rates. It is important to have regular observation and verbal critique of the work being done by machines.

Mastication machinery can thin clumps of small trees, but leave ragged results when used to prune trees. Follow-up hand work with saws, including pruning saws, gives the best visual result. Pruning should be part of any thinning work to reduce the ladder fuels that enable fire to enter the tree canopy. Areas of foreground visibility are best done by hand. On-site monitoring will again assist in achieving desired results.

Hand piling for burning of slash from thinning and pruning operations has been done several years in Moore Park. It is critical that the piles be arranged in dense, tight piles. Loose piles will not burn well and require intensive labor to achieve a clean burn. Covering will allow rapid ignition in wet weather. Even good piles require personnel to attend and chunk in the pieces to achieve a clean burn, see pictures below. One project crew produced poor piles that did not burn well and had to be re-piled by another crew. Monitoring the work as it is done is vital to good results.

Example of a properly burned hand pile

Example of a poorly attended hand pile

Pile burning is a good option for slash mitigation, especially in off-road locations where a chipper cannot be transported. Hand piles should be burned in the fall, winter or spring with fall or winter preferred as the fuel moisture content will be higher in spring. ODF, Lomakatsi and Keno Rural Fire Protection District have provided personnel and equipment for hand pile burning projects in recent years. U.S.Forest Service and B.L.M. personnel have assisted in past years. Smoke management constraints must be followed and ODF can assist with reporting of smoke producing projects.

The Keno RFPD Bobcat proved very productive for thinning, mastication and pile burning support. It can quickly pick up large quantities of bole and limb material and push it into burning piles. This results in a hot, efficient burn with minimized smoke production. The machine was used in cooperation with a Lomakatsi hand crew in February 2012 to take advantage of a smoke management approval for burning.

Jackpot burning is mentioned in the FMP. It is a viable option for slash reduction. The pictures below were taken in spring of 2005. The debris from masticated brush was easily ignited with a drip torch and the fire spread through the slash and stopped when it encountered green grass. A few days of sunny weather will dry the slash. This method can be utilized in many locations in Moore Park with minimal personnel or risk. This technique is not for summer or fall conditions due to spread risk. Smoke management reporting would be required. Jackpot burning is the least complex of the prescribed fire options as there is no labor for preparation and can be done with little or no mop-up.

Underburning (broadcast prescribed fire under trees) is the best way to mimic natural fire. It is expensive due to personnel needed to conduct the burn, hold the burn while dealing with any spot fires and perform mop-up, if needed. A more complex burn plan is needed compared to jackpot and hand pile burning. Smoke management requirement must be met. As with jackpot burning, underburning requires the proper sequence of weather to dry the fuels, allow for burning without escape while meeting the weather requirements for smoke management (dispersion). As of this writing only one underburn has been conducted, in September of 2009 (see next photo).

Noxious Weeds

Several noxious weeds have been identified in Moore Park. Dalmation toadflax has been targeted by volunteer groups in the past. It remains an issue in the park growing in spreading clusters. It and other local noxious weeds are identified in the Noxious Weeds of Klamath County, appendix A08 in the FRMP. The photo below shows a typical clump of dalmation toadflax.

Eagle Monitoring

Eagle nest monitoring is required to confirm bald eagle nesting activity. Restrictions on mechanized work and required distances are in the FRMP. Anne Maloney of the ODF has been the monitoring contact since 2004. She has coordinated with Oregon Department of Fish and Wildlife (ODFW) on nesting activity. Mechanical treatments can be done within 1/2 mile of an active nest (line-of-sight), or 1/4 mile if the nest is not visible from the work site. This requirement runs from January 1 through August 31. Nest activity has to be verified through ODF/ODFW.

Photo Points

The author established 3 photo points in the south portion of the park to use for monitoring vegetation succession since the treatments started. They are referred to as PT1, PT2 and PT3. PT1 is at N 42.22482°, W 121.81024°, PT2 is at N 42.22795°, W 121.81019°, and PT3 is at N 42.22803°, W 121.80885°. Digital photographs have been taken at those three points in May 2010 before and after slashbuster work. The author took pictures at the three photo points in June of 2013 following additional hand treatment in 2011 and 2012. After locating the point via a gps unit, a series of 11 or 12 pictures are taking starting by facing north, then rotating clock-wise. The photos are then stitched via computer software to produce panorama views to produce 4 photos of a north, east, south and west view respectively. The initial before/after document is in appendix MP02, the June 2013 document is in appendix MP03.

Summary

Since vegetation treatments to reduce wildfire potential, increase forest health and improve habitat have begun in Moore Park in 2004 collaboration between the city, agencies, organizations and departments has lead to success. Many of the projects have been created and funded as the result of bringing personnel from these entities on field trips. It is highly recommended that an annual field trip be organized to walk the partners through areas where work has been accomplished and adjacent sites where work might be considered. Similarly, an annual field trip for wildfire protection agencies and departments will keep those personnel current on strategic and tactical opportunities for wildfire suppression utilizing fuel treatment areas in Moore Park. These field trips will also acquaint new personnel to what has been done and acquaint them with their collaborative partners.

Appendix (additional documents on the cd)

The following documents are included as appendices to the Monitoring Plan:

Appendix MP01: H&N 060288.pdf

Appendix MP02: May 2010 Slashbuster work in Moore Park_pan.pdf

Appendix MP03: Photo Point ck 062113 .pdf

Appendix MP04: Moore Park Plan_FINAL.pdf

Appendix MP05: the 25 appendices to the FRMP, including the FMP.