

EAST BAY REGIONAL PARK DISTRICT  
DEPARTMENT OF PUBLIC SAFETY  
FIRE-RESCUE SERVICES



**DIABLO FOOTHILLS  
PRESCRIBED FIRE  
AND  
SMOKE MANAGEMENT PLAN**



February 15, 2011

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**Section 1. REVIEW AND APPROVAL**

**Prepared By:**

_____ Fire Officer East Bay Regional Park District	_____ Signature	_____ Date
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**Technical Review By:**

_____ Stewardship Manager East Bay Regional Park District	_____ Signature	_____ Date
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_____ Park Operations Chief East Bay Regional Park District	_____ Signature	_____ Date
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_____ Biologist East Bay Regional Park District	_____ Signature	_____ Date
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As requested under Section 5-408.1 h., I certify that the proposed burning described in this plan is necessary to achieve the specific management objectives of the vegetation management plan.

**Approved By:**

_____ Fire Chief East Bay Regional Park District	_____ Signature	_____ Date
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_____ Fire Chief CAL FIRE	_____ Signature	_____ Date
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**Section 2. BURN UNIT DESCRIPTION**

The project is located entirely within the boundary of Diablo Foothills Regional Park, located southeast of Walnut Creek in central Contra Costa County. The site is within State Responsibility Area lands and primary wildland fire suppression responsibility lies with the California Department of Forestry and Fire Protection (CAL FIRE). The East Bay Regional Park District Fire Department provides a strong secondary wildland fire response in support of CAL FIRE.

Coordinates: Township 1N, Range 1E, no section number  
 Latitude N 37.892 degrees, Longitude W 121.992 degrees  
 2005 Thomas Guide Map: Contra Costa County, map page 613, A5 and A6

The project is approximately 5.5 acres, bordered by a fire road, paved road, and a parking lot along the eastern edge. Additional boundaries will be created from a combination of existing trails, temporary control lines, wet lines, hose lays, and firing methods. Elevations range from 320 feet at the lowest point to 400 feet at the highest point. The entire project is on a gentle eastern facing slope. From Castle Rock Road, the site’s only access and egress point is from the parking lot at the entrance to the park.

**Section 3. FUEL LOADING AND DEAD FUELS**

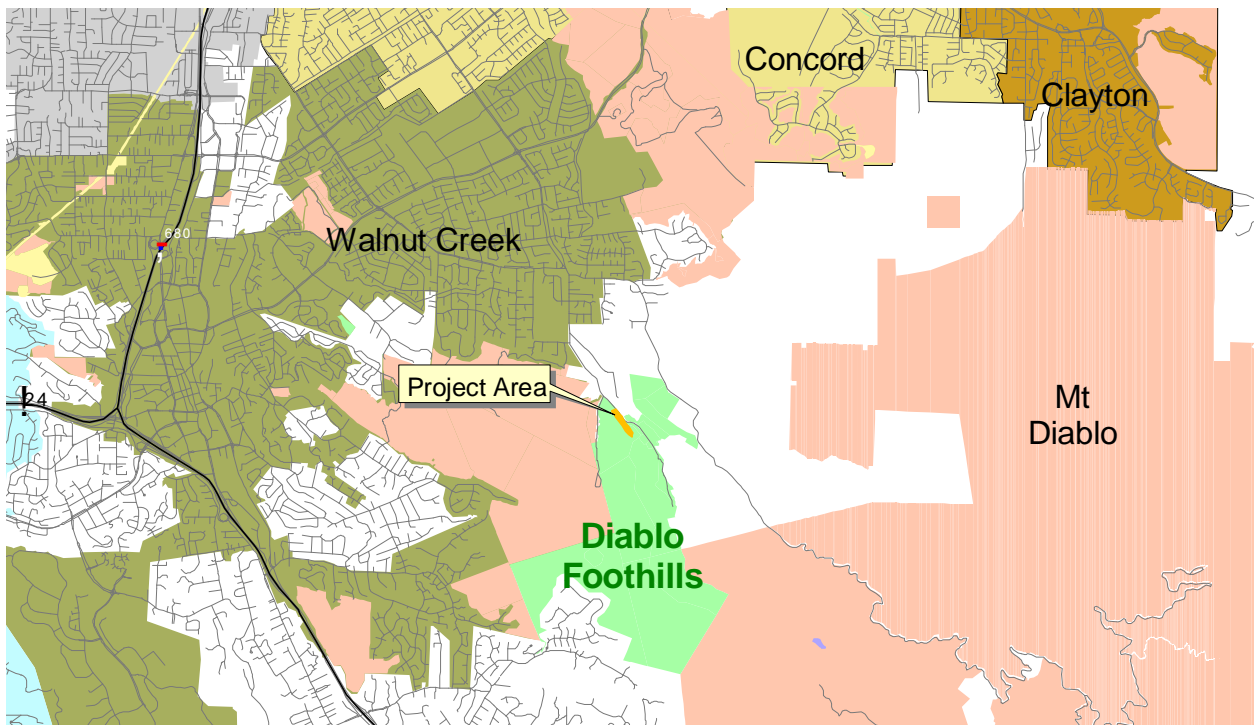
The entire 5.5 acre project is grazed annual grassland interspersed with patches of moderate to heavy stands of medusahead (*Taeniatherum caput-medusae*), estimated to average under 1 ton/acre. The grassland fuels will be cured at the time the project is in prescription. Fuel load estimation was derived using Park District’s historical data and the fuel model descriptions and tables listed in the “Aids to Determining Fuel Models For Estimating Fire Behavior” National Wildfire Coordination Group Publication Report INT-122 (Anderson 1982). The table below summarizes the vegetation and fuel types present to carry the fire when the project is in prescription.

<b>Vegetation Type</b>	<b>Annual Grassland</b>
<b>% of unit</b>	<b>100 %</b>
<b>National Fire Behavior Fuel Model</b>	<b>1</b>
<b>NFDRS Fuel Model</b>	<b>A</b>
<b>Vertical Arrangement</b>	<b>4" - 24" tall grass; no ladder fuels</b>
<b>Horizontal Continuity</b>	<b>uniform, moderate density</b>
<b>Acres</b>	<b>5.5</b>

<b>Tons/Acre</b>	<b>1</b>
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**Section 4. VICINITY MAP**

The map below shows Diablo Foothills Regional Park and the specific project site in relation to the surrounding areas.



**Section 5. PROJECT MAP**

The project map below shows the specific site location.

DIABLO FOOTHILLS PRESCRIBED FIRE PLAN



## **Section 6. LAND MANAGEMENT GOALS AND OBJECTIVES**

The project goals and objectives of this wildland vegetation management prescribed burn are to increase plant diversity, enhance native grass species occurrence (purple needle grass, elymus, California brome), reseed with compatible subclovers, and substantially reduce the competitive impact of the medusahead (*Taeniatherum caput-medusae*) in grasslands. Prescribed burning restores native grasses, increases plant diversity, and can produce a decrease in medusahead.

Broadcast burning is a viable strategy to attempt to control the problem. Several alternatives to prescribed fire have been closely evaluated as possible management treatments to control the medusahead problem in this project area. Mowing, disking, and chemical treatment are not appropriate in this situation due to expected environmental impacts, size of the project area, steepness of terrain and excessive cost. An environmental impact analysis is not required for this project, based on land use plan review and approval.

EPA and the California State Water Resources Control Board mandate that public land holding agencies whose in-holdings include major watersheds promote best management practices to reduce non-point source water pollution (sedimentation, erosion, animal wastes and chemicals). Prescribed burns are clearly a low impact management practice and are a very effective vegetation management strategy in open space grassland. The proposed burning identified in this plan is necessary to achieve these specific management objectives.

## **Section 7. SCHEDULING**

This burn project will be completed between June 1 and December 31, 2011. Scheduling depends on the morphological stage of the medusahead life cycle. Scheduling of this project will be coordinated with the biologist who will monitor the plant morphology. Weather conditions during the six months prior to the anticipated mid-May to late June time window will determine the optimal time to burn.

In an effort to minimize daily and cumulative air quality impact to the regional area, the project will be scheduled in coordination with Bay Area Air Quality Management District (BAAQMD) and other local agency prescribed fire projects. No more than 5.5 acres will be burned per day. The project will be completed by burning the plot in one day or over a series of days that may or may not be consecutive. This project is expected to take 1 full day under favorable conditions to complete. Plots that are not burned during the same day will be treated as separate burns throughout the notification process. The actual burn dates and acreage burned will be reported to BAAQMD.

This prescribed fire and smoke management plan will be submitted to BAAQMD and CAL FIRE as a Wildland Vegetation Management Burn under Section 408 of Bay Area Air Quality Management District Regulation 5. The project will be conducted on a permissive burn day and in compliance with Regulation 5. For each burn day, final allowable burning acreage will be allocated by BAAQMD.

**Section 8. PRE-BURN CONSIDERATIONS**

Control lines, including hand lines and mow lines may be established prior to the actual burn day. All other temporary control lines, including wet lines and black lines, will be established during the burn.

Personnel will be assigned to monitor weather readings in the field prior to burning and once every hour during the burn until the fire is declared out by the Incident Commander. The information will be recorded and monitored to document fire weather, changes in smoke dispersal patterns, and fire behavior observations. In addition, the nearest RAWS station (Black Diamond) will be monitored for 1 week prior to the burn to observe 10 hr TL fuel moisture, relative humidity, wind speed and direction, and air temperature.

Three days before each planned burn day, BAAQMD’s meteorologist (415-749-4915) will be phoned to obtain the 72-hour weather forecast and outlook. Likewise, the request for BAAQMD’s 48-hour forecast and outlook will be made two days before each burn day. On the day before each burn day, a 24-hour forecast will be requested and BAAQMD will provide a final “go” or “no go” for the burn project. On the morning of the burn, all notifications, as described in Section 15, will be performed before any burning operation. This includes the call made to BAAQMD to obtain acreage allocation. News releases and information flyers will be prepared and distributed as necessary. Prescribed fire signs will be set up at the parking lot on the morning of the burn.

**Section 9. BURNING PRESCRIPTIONS**

The table below summarizes the weather and burning characteristics necessary to stay in prescription. Observed conditions will be recorded and documented.

Weather	Range	Optimum
Temperature (F)	55-90	70
Relative Humidity (%)	20-75	35
Wind Direction (azimuth)	ALL but from 140 to 270	N
Mid Flame Wind Speed (mph)	0 -15	5
Minimum Upper Level Wind Speed (mph)	10 mph or greater	NA
Minimum Mixing Height (ft)	1500 ft or higher	NA
Fuel Moisture 1 hour ( %)	3-13	7
Fuel Moisture 10 hour ( %)	7-20	11

Days Since Last Rain	5+	10
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Characteristics	Range	Optimum
Rate Of Spread (chain per hour)	40-400	120
Flame Length (ft)	0.5-6'	3'

**Section 10. FIRING TECHNIQUES AND HOLDING METHODS**

A small test ignition at the burn site will be conducted with a drip torch to observe ignition and combustion rates on the morning of the burn. Strip, head firing, and backing fire ignition patterns will be used to ignite the unit. Ignition devices will include fusees, penflares, Very pistols, and driptorches. Backing fires will be used whenever possible. Firing patterns and directions could change depending on wind direction, other weather parameters, or smoke management concerns. Holding crews will be in place to set the pace of the firing crews and to ensure that no fire crosses the control line. Control lines will be established using existing fire roads, trails, and any natural features where feasible. In addition, a combination of handlines, wet lines, hose lays, mobile attack lines, and firing methods may be used for fire control. Duration of project ignition will last approximately 1 to 5 hrs for each plot depending on burning conditions and plot size. Combustion and burn down time will be minimal in the grassland due to the light flashy fuels. The ignition period will generally be between 1000 and 1500 hrs, but will not be before 1000 or after 1500 hrs. All fire will be completely extinguished by the end of each project day.

**Section 11. ESCAPED FIRE CONTINGENCY PLAN**

The Escaped Fire Contingency Plan below will be included in the Incident Action Plan.

In the event of a significant escape, medical, or off-site emergency, the Incident Commander will be notified and all on-site personnel will be notified.

Upon notifications, all firing will be suspended, unless the Operations Section Chief determines that continued firing will assist the control of the escape or will not inhibit control actions.

Uncommitted units will stage for assignment.

The Incident Commander or Operations Section Chief will conduct a roll call to ensure all units are notified. The Incident Commander will advise EBRPD Dispatch of the escape and of actions to contain it.

The Incident Commander will request additional resources as needed through East Bay

Regional Parks Fire Department (EBY) Dispatch/Communications Center. The EBY Communications Center will notify both Contra Costa County Fire and CAL FIRE Morgan Hill of the escape. Minimum number of resources requested is four type III engines.

Upon successful handling of the emergency, all units will be notified and the prescribed burn will resume if appropriate.

## **Section 12. WEATHER INFORMATION**

At least 72 hours before the planned burn day, weather forecasts will be obtained from BAAQMD meteorologists and the National Weather Service. Additional information regarding local weather and wind speeds will be obtained from the nearest RAWS station, at Black Diamond, from various weather related web sites such as ([www.nws.noaa.gov](http://www.nws.noaa.gov)), ([www.wrh.noaa.gov/mtr/fireweather.php](http://www.wrh.noaa.gov/mtr/fireweather.php)), and local news media forecasts. A site-specific (spot) weather forecast will be requested from NWS 24 hours before the burn day. During the burn, weather will be monitored and observed. Ignition operations may be modified or suspended if there are significant adverse changes in the weather, especially due to frontal passages, strong winds, or decrease in relative humidity.

## **Section 13. SMOKE MANAGEMENT**

Smoke volume from the project should not have a significant impact upon the surrounding communities due the distance of the project from developed areas. Burning under wind conditions specified in the prescription will mitigate adverse smoke impacts. Smoke dispersal conditions will be evaluated in the morning prior to ignition and continually during the burn. Personnel will be assigned to patrol and observe smoke dispersal as necessary. When available, the Park District's helicopter will be used as an observation platform to assist with monitoring smoke dispersion criteria.

This project will be conducted in a manner that will avoid a significant smoke intrusion into any smoke sensitive area. In the event a smoke intrusion does occur in a smoke sensitive receptor, the following action will be taken to reduce smoke production if appropriate:

- \* Reduce the size of the burn plot by developing new control lines
- \* Suppress active fire
- \* Initiate mop up operations
- \* Focus suppression and mop up operations on areas of greater smoke production

Strip, head firing, and backing fire ignition patterns will be used to ignite the unit. Backing fires will be used whenever possible. Firing patterns and directions could change depending on wind direction, other weather parameters, or smoke management concerns. Smoke emission and behavior will be continually monitored visually. All personnel on scene will be instructed to report any observed smoke impacts or significant change in smoke emissions and/or column behavior to the Incident Commander. The Incident Commander will manage the project in a manner that will minimize smoke production and the impact to sensitive areas. The project size, number of plots

burned, firing tactics and burn duration will be adjusted to meet these goals. The table below lists developed areas (direction and distance) surrounding the project area.

Nearest Smoke Sensitive Receptor	Distance (miles)	Direction (Azimuth from project)
Walnut Creek	1	200 to 360
Concord	3	330 to 360, 0 to 30
Alamo	2	180
Danville	3	180
Castle Rock Recreation Area	0.1	135
Local residences and stables	0.1	90

During the burn, on-site monitoring will be conducted and information will be collected regarding weather, smoke, and fire behavior observations. Estimated mixing heights and upper level smoke transport winds will be obtained the day before the burn from the Northern California Geographic Area Coordination Center Internet site (<http://gacc.nifc.gov/oncc/predictive/weather/fwlrdd2.html>).

The estimated total particulate matter emission (PM 10) for this project is 0.04125 tons, calculated using the formula:

$$\text{PM 10 Emissions tons} = (\# \text{ acres of veg type}) * (\text{fuel load in tons/acre}) * (100\% \text{ combustion}) * (\text{PM 10 emission factor in lbs/ton}) * (\text{conversion factor of 1 ton/2000 lbs})$$

The combustion value of 100% and PM 10 emission factor of 15 lbs/ton for Grass/Forb was based on the USDA Table 8 of the “Air Quality Conformity Handbook - A Handbook for Land Managers”, USDA Forest Service, Air Resources/Fire Management, Pacific Southwest Region (November, 1995), available at (<http://www.arb.ca.gov/smp/techtool/emfac.htm>). See Section 3 for fuel loading estimates.

Total PM 10 emission:

$$(5.5 \text{ acres}) * (1.0 \text{ ton/acre}) * (100\% \text{ combustion}) * (15 \text{ lbs/ton}) * (1 \text{ ton/2000 lbs}) = \mathbf{0.04125 \text{ tons}}$$

**Section 14. MEDIA COORDINATION AND PUBLIC INVOLVEMENT**

A news release will be prepared three days prior to the burn. Informational flyers will be distributed to the nearby residents as necessary. Nearby residents smoke sensitive facilities (schools, businesses etc.) that could be affected by the smoke will be notified. The East Bay Regional Park District Public Information Officer will see that the press release is distributed to the media 1 to 2 days prior

to the anticipated ignition date. Trail Patrol Volunteer staff will be stationed at key entry points in the project area to restrict trail access to park users.

## **Section 15. NOTIFICATIONS**

The following agencies/personnel will be notified by the Incident Commander on the morning of the burn:

Bay Area Air Quality Management District (415) 749-4600 (after 8:30 am for acreage allocation)  
City of Walnut Creek – Shell Ridge Open Space (925) 943-5899 (ext 2162)  
Mt. Diablo State Park – (925) 837-6129 (Doug Camden)  
Castle Rock Arabians Horse Stables – (925) 937-7661  
Nancy Dupont, owner of Castle Rock Stables - (925) 980-8842  
EBRPD Stewardship Staff (510) 544-2346 or (510) 544-2343  
EBRPD Public Information Staff (510) 544-2208  
EBRPD Main Switchboard Operator 1-888-EBPARKS (0 for Operator)  
EBRPD Park Operations (510) 544-2500  
EBRPD Diablo Foothills Park Staff (925) 945-8244  
EBRPD Recreation Areas Unit Office (510) 544-3277  
EBRPD Dispatch Center (510) 881-1833 (Tell them to fax a checked copy of the GO/NO GO checklist to CAL FIRE at 408-778-6149)

The following agencies/personnel will be notified by the EBRPD Dispatch Center on the morning of the burn:

CAL FIRE Emergency Communication Center (408) 779-6611 (Tell them to notify Lookouts/Air Attack Bases and Region ECC/Duty Chief)  
CHP 911 center (707) 551-4100  
Contra Costa County Fire Dispatch (925) 930-5500 or (925) 933-1313

## **Section 16. PUBLIC AND PERSONAL SAFETY**

During the burn operation, safety is the primary consideration and will be stressed to all personnel on scene during the pre-burn briefing. Any special safety instructions will be included in the Incident Action Plan. A safety officer will be assigned for the entire burn operation and will be responsible for communicating any safety-related issues to the Incident Commander and personnel. Good communications will be required at all times and outlined in the Incident Action Plan. All personnel on the burn will meet the minimum Firefighter I qualifications and will wear full firefighting personal protective equipment, including nomex, hardhat, gloves, boots, and fire shelter.

## **Section 17. MONITORING AND EVALUTION PROCEDURES**

On-site monitoring will be conducted during the burn to observe weather, burning conditions, and smoke behavior, as outlined in Sections 12 and 13. Biologists will be on scene within 24 hours after the burn to assess the effectiveness of the burn and any impacts on wildlife or plants.

**Section 18. REHABILITATION**

There are no expected rehabilitation procedures necessary for this burn project.

**Section 19. POST-PROJECT REPORTS AND CORRESPONDENCE**

Within 30 days after completion of the burn project, a post burn report will be provided showing the total acreage, volume, or tonnage of vegetation actually burned. Included in the report will be a list of all personnel and apparatus at the burn and the total costs and cost per acre for the project. The report will be submitted to the Chief of the East Bay Regional Park District Fire Department. Also, copies of the following documents will be attached to the report:

- \*CAL FIRE approval letter or permit
- \*BAAQMD approval letter
- \*Prescribed Burn notification flyer
- \*Any additional correspondence related to the burn project

As per Regulation 5, 408.4, BAAQMD will be notified of actual acres burned before 12:00 on the day after each burn day. Per Section 408.5, a post-burn evaluation will be submitted to BAAQMD within 30 days of the completion of the project.