APPENDIX A NOTICE OF INTENT

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ACTION: 30-Day notice and request for comments; Extension of an existing information collection: 1651–0083.

SUMMARY: U.S. Customs and Border Protection (CBP) of the Department of Homeland Security has submitted the following information collection request to the Office of Management and Budget (OMB) for review and approval in accordance with the Paperwork Reduction Act: United States-Caribbean Basin Trade Partnership Act (CBTPA). This is a proposed extension of an information collection that was previously approved. CBP is proposing that this information collection be extended with a change to the burden hours. This document is published to obtain comments from the public and affected agencies. This proposed information collection was previously published in the **Federal Register** (75 FR 15446) on March 29, 2010, allowing for a 60-day comment period. This notice allows for an additional 30 days for public comments. This process is conducted in accordance with 5 CFR 1320.10.

DATES: Written comments should be received on or before July 12, 2010.

ADDRESSES: Interested persons are invited to submit written comments on this proposed information collection to the Office of Information and Regulatory Affairs, Office of Management and Budget. Comments should be addressed to the OMB Desk Officer for Customs and Border Protection, Department of Homeland Security, and sent via electronic mail to *oira_submission@omb.eop.gov* or faxed to (202) 395–5806.

SUPPLEMENTARY INFORMATION: U.S. Customs and Border Protection (CBP) encourages the general public and affected Federal agencies to submit written comments and suggestions on proposed and/or continuing information collection requests pursuant to the Paperwork Reduction Act (Pub. L. 104–13). Your comments should address one of the following four points:

(1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency/component, including whether the information will have practical utility;

(2) Evaluate the accuracy of the agency's/component's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collections of information on those who are to respond, including the use of appropriate automated, electronic, mechanical, or other technological techniques or other forms of information.

Title: United States-Caribbean Basin Trade Partnership Act (CBTPA).

OMB Number: 1651–0083.

Form Number: 450.

Abstract: This collection of information is required to implement the duty preference provisions of the United States-Caribbean Basin Trade Partnership Act (CBTPA). The provisions of CBTPA were adopted by the U.S. with the enactment of the Trade and Development Act of 2000 (Pub. L. 106–200). The objective of the CBTPA is to expand trade benefits to countries in the Caribbean Basin. For preferential treatment under CBTPA, importers are required to have CBTPA Certification of Origin (Form 450) in their possession at the time of the claim, and to provide it to CBP upon request. CBP uses the information provided on Form 450 to determine if an importer is entitled to preferential duty treatment under the provisions of the CBTPA. The CBTPA is provided for in 19 CFR 10.224 and the Form 450 can be found at *http://www.cbp.gov.*

Current Actions: This submission is being made to extend the expiration date with a change to the burden hours. CBP proposes to reduce the burden hours by revising our estimate of the number of claims made under CBTPA on a yearly basis. These revised estimates are based on the number of CBTPA claims that CBP received in 2009.

Type of Review: Extension (with change).

Affected Public: Businesses.

Estimated Number of Respondents: 84.

Estimated Number of Responses per Respondent: 57.2.

Estimated Number of Total Annual Responses: 4,804.

Estimated Time per Response: 15 minutes.

Estimated Total Annual Burden Hours: 1,201.

If additional information is required contact: Tracey Denning, U.S. Customs and Border Protection, Office of Regulations and Rulings, 799 9th Street, NW., 7th Floor, Washington, DC 20229–1177, at 202–325–0265.

Dated: June 7, 2010.

Tracey Denning,

Agency Clearance Officer, U.S. Customs and Border Protection.

[FR Doc. 2010–13935 Filed 6–9–10; 8:45 am]

BILLING CODE 9111–14–P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

[Docket ID FEMA–2010–0037]

Hazardous Fire Risk Reduction, East Bay Hills, CA

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Notice of intent to prepare an Environmental Impact Statement.

SUMMARY: The Federal Emergency Management Agency (FEMA) intends to prepare an environmental impact statement evaluating the environmental impacts of funding a combination of hazardous fuel reduction projects within the East Bay Hills area in Alameda and Contra Costa Counties, California. The projects may be funded through Federal assistance grants under the Pre-Disaster Mitigation (PDM) and Hazard Mitigation Grant Program (HMGP).

DATES: Comments must be submitted by July 12, 2010.

ADDRESSES: You may submit comments, identified by Docket ID FEMA–2010–0037, by one of the following methods:

Federal eRulemaking Portal: http://www.regulations.gov. Search for Docket ID FEMA–2010–0037 and follow the instructions for submitting comments.

Fax: 703–483–2999.

Mail/Hand Delivery/Courier: Office of Chief Counsel, Federal Emergency Management Agency, 500 C Street, SW., Room 835, Washington, DC 20472–3100.

Instructions: All submissions received must include the agency name and Docket ID. Regardless of the method used for submitting comments or material, all submissions will be posted, without change, to the Federal eRulemaking Portal at *http://www.regulations.gov,* and will include any personal information you provide. Therefore, submitting this information makes it public. You may wish to read the Privacy Act notice that is available via a link in the footer of *http://www.regulations.gov.*

Docket: For access to the docket for this notice or comments submitted by the public on this notice, go to the Federal eRulemaking Portal at *http://www.regulations.gov* and search for docket ID FEMA–2010–0037. These documents may also be inspected at FEMA, Office of Chief Counsel, Room 835, 500 C Street, SW., Washington, DC 20472–3100.

FOR FURTHER INFORMATION CONTACT: Alessandro Amaglio, Regional

Environmental Officer, Region IX, FEMA, 1111 Broadway, Suite 1200, Oakland, CA 94607–4052 and phone number at (510) 627–7027.

SUPPLEMENTARY INFORMATION: Section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA, and FEMA's Environmental Considerations regulations require the preparation of an environmental impact statement (EIS) for major Federal actions that would have significant impacts on the quality of the human environment. The CEQ regulations at 40 CFR 1501.7 require the issuance of a notice of intent to prepare an EIS to initiate the scoping process. Scoping is an early and open process that assists the Federal action agency in determining the scope of issues to be addressed and for identifying significant issues related to a proposed action.

FEMA has received four hazard mitigation applications for fuel reduction projects in the East Bay Hills area in California. The proposed action is to fund these four projects under section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), Public Law 93–288, as amended, establishing the Hazard Mitigation Grant Program (HMGP) and Section 203 of the Stafford Act, establishing the Pre-Disaster Mitigation (PDM) grant program. The Strawberry Canyon Vegetation Management Project involves the removal of eucalyptus and other exotic-non native trees in a 60-acre area, chipping the downed trees and scattering the chips in portions of the cleared area, and the semiannual application of herbicides, as needed, to eradicate eucalyptus tree sprouts from the area. The Claremont Canyon Vegetation Management Project involves the removal of eucalyptus, Monterey pine, and acacia trees in a 45-acre area, chipping the downed trees and scattering the chips in portions of the cleared area, and the semiannual application of herbicides, as needed, to eradicate eucalyptus tree sprouts from the area. The City of Oakland's project involves thinning and eradication techniques within 325 acres. The East Bay Regional Park District project involves the treatment of 590 acres to reduce fuel load through brush removal (mechanical and hand), chemical treatment, limbing and mowing, thinning, and grazing techniques as appropriate to reduce the risk of fire hazard. These projects would affect approximately 980 acres of the Wildland-Urban Interface in the East Bay Hills running from Lake Chabot to Wildcat Canyon and Sobrante Ridge, encompassing both Alameda and Contra Costa Counties.

In January 2008, FEMA published a notice of availability of a draft environmental assessment for the Strawberry Canyon Vegetation Management Project for public comment. The draft environmental assessment can be found at FEMA's Web page *http://www.fema.gov/library/viewRecord.do?id=3111*. The public involvement process revealed concerns regarding the effectiveness and scope of the vegetation removal methodologies and application of wood chips in portions of the area, impacts to plant and animal species in the area, and concerns regarding cumulative impacts of all projects in the area. FEMA has determined that an EIS should be conducted to address cumulatively the Vegetation Management Projects for the Strawberry Canyon as well as the Claremont Canyon, and the ones proposed by the City of Oakland and the East Bay Regional Park District.

In addition to the proposed action, FEMA is considering the following alternatives:

(1) No action, which involves denying the grant applications;

(2) Funding the grant applications with conditions to address their environmental impacts;

(3) Funding the grant applications with fuel reduction methodologies that are different than as proposed by the applicants; and

(4) Partially funding the grant applications, including funding some grant projects and denying others.

FEMA plans to conduct public scoping meetings during July 2010. FEMA will provide notices of the time and place of the meetings through local news media.

Authority: 42 U.S.C. 4331 *et seq.;* 40 CFR part 1500; 44 CFR part 10.

W. Craig Fugate,

Administrator, Federal Emergency Management Agency.

[FR Doc. 2010–13926 Filed 6–9–10; 8:45 am]

BILLING CODE 9119–19–P

DEPARTMENT OF THE INTERIOR

National Park Service

30-Day Federal Register Notice of Intention To Request Clearance of Collection of Information; Opportunity for Public Comment

AGENCY: National Park Service, Interior.

ACTION: Notice and request for comments.

SUMMARY: Under the provisions of the Paperwork Reduction Act of 1995 (Pub. L. 104–13, 44 U.S.C., Chapter 3507) and 5 CFR Part 1320, Reporting and Record Keeping Requirements, the National Park Service (NPS) invites public comments on an extension of a currently approved information collection Office of Management and Budget (OMB) Control # 1024–0231.

The OMB has up to 60 days to approve or disapprove the requested information collection, but may respond after 30 days. Therefore, to ensure maximum consideration, OMB should receive public comments within 30 days of the date on which this notice is published in the **Federal Register**.

The National Park Service published the 60-day **Federal Register** notice to solicit comments on this proposed information collection on April 5, 2010 (75 FR 17152–17153). No comments were received on this notice.

DATES: Public comments on the proposed Information Collection Request (ICR) must be received by July 12, 2010.

ADDRESSES: You may submit comments directly to the Desk Officer for the Department of the Interior (OMB #1024–0231), Office of Information and Regulatory Affairs, OMB by fax at 202/395–5806, or by electronic mail at *OIRA_DOCKET@omb.eop.gov.* Please also send a copy of your comments to Ms. Jo A. Pendry, Chief, Commercial Services Program, National Park Service, 1849 C Street, NW. (2410), Washington, DC 20240, or electronically to *jo_pendry@nps.gov.*

FOR FURTHER INFORMATION CONTACT: Jo A. Pendry, phone: 202–513–7156, fax: 202–371–2090, or at the address above. You are entitled to a copy of the entire ICR package free-of-charge.

SUPPLEMENTARY INFORMATION:

Title: Concession Contracts—36 CFR Part 51.

OMB Control Number: 1024–0231.

Expiration Date of Approval: July 31, 2010.

Type of Request: Revision of a currently approved information collection.

Description of Need: The information is being collected to meet the requirements of Sections 403(7) and (8) of the NPS Concessions Management Improvement Act of 1998 (the Act), concerning the granting of a preferential right to renew a concession contract and Section 405 of the Act regarding the construction of capital improvements by concessioners. The information will be used by the agency in considering appeals concerning preferred offeror determinations and agency review and

APPENDIX B EROSION MODELING

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United States
Department
of Agriculture

Forest Service

Rocky Mountain
Research Station

Research Note
RMRS-RN-23-12-WWW

March 2005

Fuels Planning: Science Synthesis and Integration

Environmental Consequences Fact Sheet: 12

Water Erosion Prediction Project (WEPP) Fuel Management (FuMe) Tool

Rocky Mountain Research Station

Pacific Northwest Research Station

North Central Research Station

Pacific Southwest Research Station

Synthesizing Scientific Information for Fire and Fuels Project Managers

William Elliot
David Hall
USDA Forest Service
Rocky Mountain Research Station
Moscow, ID

Environmental Consequences
Team Leader
Elaine Kennedy Sutherland
USDA Forest Service
Rocky Mountain Research Station
Missoula, MT

Fuels planning: Science synthesis and integration, an interagency research/management partnership to support the Ten-Year Fire Plan, led by Russell T. Graham, RMRS, and Sarah M. McCaffrey, NCRS.

What is WEPP FuMe?

The Water Erosion Prediction Project (WEPP) Fuel Management (FuMe) tool was developed to estimate sediment generated by fuel management activities. WEPP FuMe estimates sediment generated for 12 fuel-related conditions from a single input. The conditions are an undisturbed forest, three severities of wildfire, three severities of prescribed fire, two severities of thinning, and three levels of road traffic.

Intended Users

The tool is designed to be used by erosion specialists for detailed analysis of impacts of proposed fuel treatments, or by fuel management specialists for a quick estimate of potential sedimentation impacts from a given stand treatment.

Intended Uses

WEPP FuMe is intended to be used as a planning tool for:

- Categorical Exclusion justification
- NEPA analysis

Required Inputs

The user must select or specify the attributes of the treated area(s) as listed in table 1.

Table 1—Required inputs. The user can click the "question" buttons on the WEPP FuMe input screen to obtain additional information for each input.

Attribute	Description
Climate	Select nearest weather station from a list, and further specify the latitude and longitude of the site.
Soil texture	Select from a list of four choices.
Road density	Divide the number of miles of road in the watershed where the treatments are located by the area of the watershed.
Length(s) of treated hillslope(s)	The user may wish to analyze several hillslopes that make up the treated area.
Length(s) of untreated buffer(s)	The buffer is that area at the bottom of a hill that is not thinned or burned during a prescribed fire.
Hillslope gradient(s)	Steepness at the top, middle, and bottom of the hillslope; may be obtained with the aid of a GIS.
Time between disturbances	Wildfire return interval, and proposed time between thinning and/or prescribed fire activities.

What the Model Does

WEPP FuMe uses the inputs to carry out the 12 WEPP runs. The results are converted to common units, and long-term annual averages are determined based on the time between disturbances. The results for an initial analysis from the first four hillslope runs and the three road runs are presented in an output table like table 2.

Table 2—Output table presenting predicted sediment yield rates.

Line	Source of sediment	Erosion in year of disturbance (ton mi^{-2})	Return period of disturbance (y)	"Average" annual sedimentation (ton mi^{-2} y^{-1})
1	Undisturbed forest	0	1	0
2	Wildfire	2534.4	40	63.4
3	Prescribed fire	6.4	20	0.3
4	Thinning	0	20	0.0
5	Low access roads	0.2 to 2.7	1	0.2 to 2.7
6	High access roads	1.1 to 2.8	1	1.1 to 2.8

A narrative is then presented that aids the user in interpreting and reporting on the results. If the user is carrying out a NEPA or similar analysis requiring several options, the tables summarizing all of the runs following the narrative can be used. The **Disturbed WEPP** table (see table 3) contains the results from the first four hillslope runs summarized in the first output table, plus five additional runs to aid in preparing management alternatives. The final column of the **Disturbed WEPP** table describes the inputs for each run. The runs are intended to describe the conditions shown in the table. In all cases, cover means soil cover due to surface vegetative residue and rock.

Figure 1 shows how some of the results may be summarized, in this example comparing a no-action alternative (low traffic roads and high severity wildfire) to a fuel-treatment alternative (high traffic roads, but anticipated moderate severity wildfire). In this example, as shown from table 1, there was no sediment generated by the thinning operation, and little by the prescribed fire.

Table 3—Example of a disturbed WEPP table.

Run	Cover	Buffer	Condition
	percent		
Undisturbed	100	—	Conditions typically found 5 years after a human disturbance, or 10 years after a wildfire
Thinned forest	85–100	yes	Forest following a tractor thinning operation
Prescribed fire	85–100	yes	
High severity	30–45	no	Only condition with water wildfire repellant soils
Lower impact	95–100	yes	For a helicopter or other thinning low impact thinning operation
Higher severity prescribed fire	75–85	no	A dry fall burn
Lower severity	90–100	yes	A damp spring burn prescribed fire
Moderate severity wildfire	50–60	no	
Low severity wildfire	70–80	no	

Figure 1 clearly shows that if fuel treatment reduces the risk of high severity fire, there is a considerable drop in long-term sediment generation. The user may wish to copy and paste the results from each run directly into an analysis document, or the document's appendix.

WEPP FuMe only models hillslope surface erosion processes. It does not model channel processes such as sediment transport and gullying. The interface does not model landslides on disturbed hillslopes or on road networks.

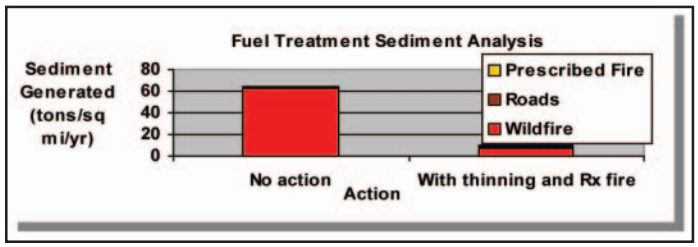

Figure 1—Graphic summary of results.

How to Obtain the Model

WEPP FuMe is an online interface that can be run with any recent Web browser. It can be found at: http://forest.moscowfsl.wsu.edu/fuels/

Environmental Consequences Fact Sheets

Look for fact sheet topics from the Environmental Consequences Team including information about the effects of fire behavior and alternative treatment strategies, Wildlife Response Model, weed responses, riparian systems, soil erosion, restoration objectives, treated spaces, the Fire Effects Information System (FEIS), and the First Order Fire Effects Model (FOFEM).

Fuels Planning: Synthesis and Integration

This fact sheet is one in a series being produced as part of a larger project supported by the USDA Forest Service to synthesize new knowledge and information relevant to fire and fuels management. Fact sheets address topics related to stand structure, environmental impacts, economics, and human responses to these factors. Information in the fact sheets is targeted for the dry forests of the Inland West, but is often applicable across broad regions of the country. For more information, please visit our Web site at: www.fs.fed.us/fire/tech_transfer/synthesis/synthesis_index

The Fuels Planning fact sheets are based on preliminary findings. Information from fact sheets will be synthesized in an upcoming publication.

WEPP FuME **
Fuel Management Erosion Analysis

Climate

*NEWARK CA
DENVER WB AP CO
MOUNT SHASTA CA
SEELEY LAKE RS MT 22.55 +
SEXTON SUMMIT WB OR

Custom Climate

Soil texture

clay loam
silt loam
sandy loam
loam

Road density (mi mi^{-2})

1

Hillslope horizontal length (ft)

		500	Total hillslope
Treated hillslope	490	10	Buffer

Hillslope gradient (%)

Top	Middle	Toe
5	5	5

Disturbance return period (y)

Wildfire	Prescribed fire	Thinning
100	100	20

Run WEPP FuME

WEPP FuME **
Fuel Management Erosion Analysis Results

Climate	**NEWARK CA**
Soil texture	loam
Hillslope length	500 ft
Hillslope gradient	77 77 77 % *
Buffer length	10 ft
Wildfire cycle	100 y
Prescribed fire cycle	100 y
Thinning cycle	20 y
Road density	1 mi mi^{-2}

* Hillslopes with greater than 50% gradient may be prone to mass failure.

Running **Disturbed WEPP** for Undisturbed forest ... Thinned forest ... Prescribed burn ... Wildfire ... Lower thinning ... Higher Rx fire ... Lower Rx fire ... Moderate wildfire ... Low wildfire ...
Running **WEPP:Road** for No traffic ... Low traffic ... High traffic ...

Output summary based on 50 years of possible weather

Line	Source of sediment	Sediment delivery in year of disturbance (ton mi^{-2})	Return period of disturbance (y)	"Average" annual hillslope sedimentation (ton mi^{-2} y^{-1})
1	Undisturbed forest		1	19.2
2	Wildfire	6758.4	100	67.6
3	Prescribed fire	640	100	6.4
4	Thinning	25.6	20	1.3
5	Low access roads	3.4 to 12.8	1	3.4 to 12.8
6	High access roads	11.4 to 18.9	1	11.4 to 18.9

Summary of Analysis

The output summary table presents the predicted sediment yield rates from seven runs with the WEPP model. The outputs from those runs were converted to common units of ton mi^{-2} y^{-1}. From these runs, several key watershed sedimentation values can be estimated.

Background sedimentation. The background sedimentation rate -- the rate that will occur with no action -- can be estimated either with or without roads. In the absence of roads, the background sedimentation rate is erosion from undisturbed forest plus erosion from wildfire. This value is the sum of lines 1 and 2, or 19.2 + 67.6 = 86.8 ton mi^{-2} y^{-1}. If the existing low access road network is included in the background sediment rate, then the background rate will be the sum of lines 1, 2, and 5, or 86.8 + (3.4 to 12.8) = 90.2 to 99.6 ton mi^{-2} y^{-1}, depending on what percent of the road network crosses live water during major runoff events.

Thinning effects. From the summary table, line 4, thinning will generate 25.6 tons of sediment the year

following thinning, and when averaged over the thinning period of once in 20 years, will average about 1.3 ton mi^{-2} y^{-1}. This is an increase of about 1 percent above background without roads.

In order to carry out the thinning operation, however, traffic on the roads will have to be increased to the high access level to support the traffic associated with an ongoing thinning operation in the watershed. The total sediment yield from the watershed will then be the background value plus that from thinning and from high access roads for a total of 86.8 + 1.3 + (11.4 to 18.9) = 99.5 to 107 ton mi^{-2} y^{-1}. This is an increase of 15 to 23 percent above the background rate, if roads are not considered in the background, or 7 to 10 percent if the road network is considered in the background rate.

Further comparisons can be made by assuming that thinning will eliminate wildfire from the watershed, thus reducing the wildfire sedimentation value, or that thinning will lead to a less severe wildfire, and the moderate or low severity fire sedimentation rate from the table below can be substituted for the wildfire erosion rate in line 2.

Prescribed fire effects. From the summary table, line 3, prescribed fire will generate 640 ton mi^{-2} the year of the prescribed fire, or when averaged over the prescribed fire return period of 100 y, it will generate 6.4 ton mi^{-2} y^{-1}. This is an increase of 7 percent above background. As there will be no need for heavy traffic to carry out the prescribed burn, there is no increase in sedimentation from the road network. For a watershed with an active prescribed fire program, the total erosion will then be the background rate plus the low access road rate and the average erosion from prescribed fire, or 86.8 + 6.4 + (3.4 to 12.8) = 96.6 to 106 tons mi^{-2} y^{-1}, or an increase of 11 to 22 percent above background, if roads are not included in the background value.

If the prescribed fire eliminates the risk of wildfire, the background erosion rate will need to be set to 19.2 (line 1 of the outputs summary) for the analysis. Alternatively, the impact of the prescribed fire program may be to reduce the intensity of the wildfire, in which case, the sedimentation associated with a moderate or low severity fire from the following table can be substituted for the wildfire prediction for the analysis.

Combined thinning and prescribed fire effects. The combined effects of thinning and prescribed fire can be determined by summing up the background rate, the thinning rate, the prescribed fire rate, and the high access road rate. In this case, this leads to a total predicted erosion rate of 86.8 + 1.3 + 6.4 + (11.4 to 18.9) = 105.9 to 113.4 ton mi^{-2} y^{-1}, an increase of 22 to 31 percent above the background erosion rate without roads.

If this intensive fuel management scenario can reduce the severity of wildfire in the watershed, then the moderate severity fire sedimentation value of 1868.8 ton mi^{-2} can be substituted for the wildfire erosion rate once every 100 years to give an average value of 18.69 ton mi^{-2} y^{-1}. Using this value to determine the total impact of fuel management gives 18.69 + 20.5 + 6.4 + (11.4 to 18.9) = 56.99 to 64.49 ton mi^{-2} y^{-1}, a decrease of 35 to 37 percent compared to background with roads or 26 to 34 percent compared to background without roads.

Road Impacts. The range of values given for road sedimentation represent the amount of sediment delivered across the buffer, and the amount delivered to a stream crossing. Roads with buffers greater than 10 ft will generate less sediment. The summary table shows that roads generate significant amounts of sediment within a watershed, even when traffic is low. Road management strategies -- including minimizing rutting, minimizing stream crossings, and maximizing the use of buffers between the road and the stream -- are well established to minimize sedimentation. The WEPP:Road interface can be used to evaluate the impacts of some of these improved practices. Another alternative to reduce sedimentation from the road network is to reduce the road density within the watershed by removing roads that are no longer needed with modern timber operations. Watershed managers may wish to offset the increase in sediment associated with fuel management with a decrease in sediment from improved road management or a reduction in road density.

Multiple Hillslopes. This analysis was for a single hillslope. Users are advised to run this simulation for a number of different hillslopes within the watershed, and to report a range of sedimentation rates in the output table before completing the analysis. Results from each hillslope can be copied and pasted into a word processor or spreadsheet to serve as a log for a series of runs.

For further information, refer to the documentation.

Details of Inputs and Outputs

Refer to the documentation for details on the applications for the five additional runs listed in this table, but not used in the initial analyses.

Inputs (blue) and results (green) for individual Disturbed WEPP runs

Disturbed WEPP

Upper element treatment	Lower element treatment	Upper cover (%)	Lower cover (%)	Upper length (ft)	Lower length (ft)	Upper rock (%)	Lower rock (%)	Upper top gradient (%)	Upper mid gradient (%)	Lower mid gradient (%)	Lower toe gradient (%)	Sediment yield (t mi^{-2})	Con
20 year old trees	20 year old trees	100	100	490	10	20	20	77	77	77	77	19.2	Undist forest
5 year old trees	20 year old trees	85	100	490	10	20	20	77	77	77	77	25.6	Thinne forest
low severity fire	20 year old trees	85	100	490	10	20	20	77	77	77	77	640	Prescr burn
high severity fire	high severity fire	30	40	490	10	20	20	77	77	77	77	6758.4	Wildfi
5 year old trees	20 year old trees	95	100	490	10	20	20	77	77	77	77	25.6	Lower thinni
low severity fire	low severity fire	75	85	490	10	20	20	77	77	77	77	883.2	Highe fire
low severity fire	20 year old trees	90	100	490	10	20	20	77	77	77	77	518.4	Lower
low severity fire	low severity fire	50	60	490	10	20	20	77	77	77	77	1868.8	Moder wildfir
low severity fire	low severity fire	70	80	490	10	20	20	77	77	77	77	1075.2	Low w

Inputs (blue) and results (green) for individual WEPP:Road runs

WEPP:Road

Design ('ib', 'iv', 'or', 'ou')	Road surface ('n', 'g', 'p')	Traffic level ('h', 'l', 'n')	Road gradient (%)	Road length (ft)	Road width (ft)	Fill gradient (%)	Fill length (ft)	Buffer gradient (%)	Buffer length (ft)	Rock fragment (%)	Sediment yield from road (t mi^{-2}y^{-1})	Sediment yield from buffer (t mi^{-2} y^{-1})	Con
inveg	native	none	7.7	300	13	150	13	77	10	20	3.4	3.5	No t
inveg	native	low	7.7	300	13	150	13	77	10	20	12.8	11.4	Low
outrut	graveled	high	7.7	300	13	150	13	77	10	20	18.9	17.9	High

WEPP FuME v. 2006.04.27 (for review only) Interface by David Hall and Elena Velasquez Model by Bill Elliot and Pete Robichaud
USDA Forest Service, Rocky Mountain Research Station, Moscow, ID 83843
10:26 am Friday March 4, 2011 Pacific Time
129 WEPP FuME runs since release, December 2004

Disturbed WEPP Results

User inputs

Location	NEWARK CA				
Soil texture	loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	20 year old trees	77	490	100	20
		77			
Lower	20 year old trees	77	10	100	20
		77			

Mean annual averages for 50 years

14.76	in.	precipitation from	2654	storms
0.20	in.	runoff from rainfall from	54	events
0.00	in.	runoff from snowmelt or winter rainstorm from	0	events
0.32	t ac^{-1}	upland erosion rate (0.072 kg m^{-2})		
0.32	t ac^{-1}	sediment leaving profile (10.993 kg m^{-1} width)		

Return period analysis based on 50 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
50 year	24.11	1.57	2.31	2.31
25 year	20.89	1.33	2.28	2.28
10 year	20.60	0.77	1.11	1.11
5 year	18.55	0.34	0.57	0.57
2.5 year	16.02	0.05	0.11	0.11
Average	14.76	0.20	0.32	0.32

Probabilities of occurrence first year following disturbance based on 50 years of climate

Probability there is runoff	64 %	
Probability there is erosion	64 %	
Probability there is sediment delivery	64 %	

Return to Input Screen

[slope | soil | vegetation | weather | extended | response]

Disturbed WEPP Results v. 2004.07.01
based on WEPP version 2000.100, CLIGEN * version 4.31 *
`http://forest.moscowfsl.wsu.edu/fswepp`
02:12 pm Friday March 4, 2011 Pacific Time

WEPP FuME **
Fuel Management Erosion Analysis Results

Climate	**NEWARK CA**
Soil texture	clay loam
Hillslope length	500 ft
Hillslope gradient	90 90 90 % *
Buffer length	10 ft
Wildfire cycle	100 y
Prescribed fire cycle	100 y
Thinning cycle	20 y
Road density	1 mi mi^{-2}

* Hillslopes with greater than 50% gradient may be prone to mass failure.

Running **Disturbed WEPP** for Undisturbed forest ... Thinned forest ... Prescribed burn ... Wildfire ... Lower thinning ... Higher Rx fire ... Lower Rx fire ... Moderate wildfire ... Low wildfire ...
Running **WEPP:Road** for No traffic ... Low traffic ... High traffic ...

Output summary based on 50 years of possible weather

Line	Source of sediment	Sediment delivery in year of disturbance (ton mi^{-2})	Return period of disturbance (y)	"Average" annual hillslope sedimentation (ton mi^{-2} y^{-1})
1	Undisturbed forest		1	51.2
2	Wildfire	4979.2	100	49.8
3	Prescribed fire	672	100	6.7
4	Thinning	51.2	20	2.6
5	Low access roads	3.1 to 11.5	1	3.1 to 11.5
6	High access roads	10.2 to 15.1	1	10.2 to 15.1

Summary of Analysis

The output summary table presents the predicted sediment yield rates from seven runs with the WEPP model. The outputs from those runs were converted to common units of ton mi^{-2} y^{-1}. From these runs, several key watershed sedimentation values can be estimated.

Background sedimentation. The background sedimentation rate -- the rate that will occur with no action -- can be estimated either with or without roads. In the absence of roads, the background sedimentation rate is erosion from undisturbed forest plus erosion from wildfire. This value is the sum of lines 1 and 2, or 51.2 + 49.8 = 101 ton mi^{-2} y^{-1}. If the existing low access road network is included in the background sediment rate, then the background rate will be the sum of lines 1, 2, and 5, or 101 + (3.1 to 11.5) = 104.1 to 112.5 ton mi^{-2} y^{-1}, depending on what percent of the road network crosses live water during major runoff events.

Thinning effects. From the summary table, line 4, thinning will generate 51.2 tons of sediment the year

following thinning, and when averaged over the thinning period of once in 20 years, will average about 2.6 ton mi^{-2} y^{-1}. This is an increase of about 3 percent above background without roads.

In order to carry out the thinning operation, however, traffic on the roads will have to be increased to the high access level to support the traffic associated with an ongoing thinning operation in the watershed. The total sediment yield from the watershed will then be the background value plus that from thinning and from high access roads for a total of 101 + 2.6 + (10.2 to 15.1) = 113.8 to 118.7 ton mi^{-2} y^{-1}. This is an increase of 13 to 18 percent above the background rate, if roads are not considered in the background, or 6 to 9 percent if the road network is considered in the background rate.

Further comparisons can be made by assuming that thinning will eliminate wildfire from the watershed, thus reducing the wildfire sedimentation value, or that thinning will lead to a less severe wildfire, and the moderate or low severity fire sedimentation rate from the table below can be substituted for the wildfire erosion rate in line 2.

Prescribed fire effects. From the summary table, line 3, prescribed fire will generate 672 ton mi^{-2} the year of the prescribed fire, or when averaged over the prescribed fire return period of 100 y, it will generate 6.7 ton mi^{-2} y^{-1}. This is an increase of 7 percent above background. As there will be no need for heavy traffic to carry out the prescribed burn, there is no increase in sedimentation from the road network. For a watershed with an active prescribed fire program, the total erosion will then be the background rate plus the low access road rate and the average erosion from prescribed fire, or 101 + 6.7 + (3.1 to 11.5) = 110.8 to 119.2 tons mi^{-2} y^{-1}, or an increase of 10 to 18 percent above background, if roads are not included in the background value.

If the prescribed fire eliminates the risk of wildfire, the background erosion rate will need to be set to 51.2 (line 1 of the outputs summary) for the analysis. Alternatively, the impact of the prescribed fire program may be to reduce the intensity of the wildfire, in which case, the sedimentation associated with a moderate or low severity fire from the following table can be substituted for the wildfire prediction for the analysis.

Combined thinning and prescribed fire effects. The combined effects of thinning and prescribed fire can be determined by summing up the background rate, the thinning rate, the prescribed fire rate, and the high access road rate. In this case, this leads to a total predicted erosion rate of 101 + 2.6 + 6.7 + (10.2 to 15.1) = 120.5 to 125.4 ton mi^{-2} y^{-1}, an increase of 19 to 24 percent above the background erosion rate without roads.

If this intensive fuel management scenario can reduce the severity of wildfire in the watershed, then the moderate severity fire sedimentation value of 1888 ton mi^{-2} can be substituted for the wildfire erosion rate once every 100 years to give an average value of 18.88 ton mi^{-2} y^{-1}. Using this value to determine the total impact of fuel management gives 18.88 + 53.8 + 6.7 + (10.2 to 15.1) = 89.58 to 94.48 ton mi^{-2} y^{-1}, a decrease of 16 to 14 percent compared to background with roads or 6 to 11 percent compared to background without roads.

Road Impacts. The range of values given for road sedimentation represent the amount of sediment delivered across the buffer, and the amount delivered to a stream crossing. Roads with buffers greater than 10 ft will generate less sediment. The summary table shows that roads generate significant amounts of sediment within a watershed, even when traffic is low. Road management strategies -- including minimizing rutting, minimizing stream crossings, and maximizing the use of buffers between the road and the stream -- are well established to minimize sedimentation. The WEPP:Road interface can be used to evaluate the impacts of some of these improved practices. Another alternative to reduce sedimentation from the road network is to reduce the road density within the watershed by removing roads that are no longer needed with modern timber operations. Watershed managers may wish to offset the increase in sediment associated with fuel management with a decrease in sediment from improved road management or a reduction in road density.

Multiple Hillslopes. This analysis was for a single hillslope. Users are advised to run this simulation for a number of different hillslopes within the watershed, and to report a range of sedimentation rates in the output table before completing the analysis. Results from each hillslope can be copied and pasted into a word processor or spreadsheet to serve as a log for a series of runs.

For further information, refer to the documentation.

Details of Inputs and Outputs

Refer to the documentation for details on the applications for the five additional runs listed in this table, but not used in the initial analyses.

Inputs (blue) and results (green) for individual Disturbed WEPP runs

Disturbed WEPP

Upper element treatment	Lower element treatment	Upper cover (%)	Lower cover (%)	Upper length (ft)	Lower length (ft)	Upper rock (%)	Lower rock (%)	Upper top gradient (%)	Upper mid gradient (%)	Lower mid gradient (%)	Lower toe gradient (%)	Sediment yield (t mi^{-2})	Conc
20 year old trees	20 year old trees	100	100	490	10	20	20	90	90	90	90	51.2	Undist forest
5 year old trees	20 year old trees	85	100	490	10	20	20	90	90	90	90	51.2	Thinne forest
low severity fire	20 year old trees	85	100	490	10	20	20	90	90	90	90	672	Prescr burn
high severity fire	high severity fire	30	40	490	10	20	20	90	90	90	90	4979.2	Wildfi
5 year old trees	20 year old trees	95	100	490	10	20	20	90	90	90	90	32	Lower thinni
low severity fire	low severity fire	75	85	490	10	20	20	90	90	90	90	934.4	Higher fire
low severity fire	20 year old trees	90	100	490	10	20	20	90	90	90	90	563.2	Lower
low severity fire	low severity fire	50	60	490	10	20	20	90	90	90	90	1888	Moder wildfir
low severity fire	low severity fire	70	80	490	10	20	20	90	90	90	90	1100.8	Low w

Inputs (blue) and results (green) for individual WEPP:Road runs

WEPP:Road

Design ('ib', 'iv', 'or', 'ou')	Road surface ('n', 'g', 'p')	Traffic level ('h', 'l', 'n')	Road gradient (%)	Road length (ft)	Road width (ft)	Fill gradient (%)	Fill length (ft)	Buffer gradient (%)	Buffer length (ft)	Rock fragment (%)	Sediment yield from road (t mi^{-2}y^{-1})	Sediment yield from buffer (t mi^{-2} y^{-1})	Cor
inveg	native	none	9	300	13	150	13	90	10	20	3.1	3.2	No t
inveg	native	low	9	300	13	150	13	90	10	20	11.5	10.2	Low
outrut	graveled	high	9	300	13	150	13	90	10	20	15.1	14.2	High

WEPP FuME v. 2006.04.27 (for review only) Interface by David Hall and Elena Velasquez Model by Bill Elliot and Pete Robichaud
USDA Forest Service, Rocky Mountain Research Station, Moscow, ID 83843
02:14 pm Friday March 4, 2011 Pacific Time
136 WEPP FuME runs since release, December 2004

Disturbed WEPP Results

User inputs

Location	NEWARK CA				
Soil texture	clay loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	20 year old trees	90	490	100	20
		90			
Lower	20 year old trees	90	10	100	20
		90			

Mean annual averages for 50 years

14.76	in.	precipitation from	2654	storms
0.22	in.	runoff from rainfall from	41	events
0.01	in.	runoff from snowmelt or winter rainstorm from	1	events
0.25	t ac^{-1}	upland erosion rate (0.056 kg m^{-2})		
0.25	t ac^{-1}	sediment leaving profile (8.569 kg m^{-1} width)		

Return period analysis based on 50 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
50 year	24.11	2.58	3.24	3.24
25 year	20.89	2.36	2.06	2.06
10 year	20.60	0.81	0.88	0.88
5 year	18.55	0.28	0.36	0.36
2.5 year	16.02	0.02	0.03	0.02
Average	14.76	0.22	0.25	0.25

Probabilities of occurrence first year following disturbance based on 50 years of climate

Probability there is runoff	56 %	
Probability there is erosion	50 %	
Probability there is sediment delivery	56 %	

Return to Input Screen

[slope | soil | vegetation | weather | extended | response]

Disturbed WEPP Results v. 2004.07.01
based on WEPP version 2000.100, CLIGEN * version 4.31 *
`http://forest.moscowfsl.wsu.edu/fswepp`
01:44 pm Friday March 4, 2011 Pacific Time

WEPP FuME **
Fuel Management Erosion Analysis Results

Climate	**NEWARK CA**
Soil texture	loam
Hillslope length	500 ft
Hillslope gradient	90 90 90 % *
Buffer length	10 ft
Wildfire cycle	100 y
Prescribed fire cycle	100 y
Thinning cycle	20 y
Road density	1 mi mi^{-2}

* Hillslopes with greater than 50% gradient may be prone to mass failure.

Running **Disturbed WEPP** for Undisturbed forest ... Thinned forest ... Prescribed burn ... Wildfire ... Lower thinning ... Higher Rx fire ... Lower Rx fire ... Moderate wildfire ... Low wildfire ...
Running **WEPP:Road** for No traffic ... Low traffic ... High traffic ...

Output summary based on 50 years of possible weather

Line	Source of sediment	Sediment delivery in year of disturbance (ton mi^{-2})	Return period of disturbance (y)	"Average" annual hillslope sedimentation (ton mi^{-2} y^{-1})
1	Undisturbed forest		1	25.6
2	Wildfire	7148.8	100	71.5
3	Prescribed fire	672	100	6.7
4	Thinning	32	20	1.6
5	Low access roads	3.9 to 13.6	1	3.9 to 13.6
6	High access roads	12.2 to 21.1	1	12.2 to 21.1

Summary of Analysis

The output summary table presents the predicted sediment yield rates from seven runs with the WEPP model. The outputs from those runs were converted to common units of ton mi^{-2} y^{-1}. From these runs, several key watershed sedimentation values can be estimated.

Background sedimentation. The background sedimentation rate -- the rate that will occur with no action -- can be estimated either with or without roads. In the absence of roads, the background sedimentation rate is erosion from undisturbed forest plus erosion from wildfire. This value is the sum of lines 1 and 2, or 25.6 + 71.5 = 97.1 ton mi^{-2} y^{-1}. If the existing low access road network is included in the background sediment rate, then the background rate will be the sum of lines 1, 2, and 5, or 97.1 + (3.9 to 13.6) = 101 to 110.7 ton mi^{-2} y^{-1}, depending on what percent of the road network crosses live water during major runoff events.

Thinning effects. From the summary table, line 4, thinning will generate 32 tons of sediment the year following

thinning, and when averaged over the thinning period of once in 20 years, will average about 1.6 ton mi^{-2} y^{-1}. This is an increase of about 2 percent above background without roads.

In order to carry out the thinning operation, however, traffic on the roads will have to be increased to the high access level to support the traffic associated with an ongoing thinning operation in the watershed. The total sediment yield from the watershed will then be the background value plus that from thinning and from high access roads for a total of 97.1 + 1.6 + (12.2 to 21.1) = 110.9 to 119.8 ton mi^{-2} y^{-1}. This is an increase of 14 to 23 percent above the background rate, if roads are not considered in the background, or 8 to 10 percent if the road network is considered in the background rate.

Further comparisons can be made by assuming that thinning will eliminate wildfire from the watershed, thus reducing the wildfire sedimentation value, or that thinning will lead to a less severe wildfire, and the moderate or low severity fire sedimentation rate from the table below can be substituted for the wildfire erosion rate in line 2.

Prescribed fire effects. From the summary table, line 3, prescribed fire will generate 672 ton mi^{-2} the year of the prescribed fire, or when averaged over the prescribed fire return period of 100 y, it will generate 6.7 ton mi^{-2} y^{-1}. This is an increase of 7 percent above background. As there will be no need for heavy traffic to carry out the prescribed burn, there is no increase in sedimentation from the road network. For a watershed with an active prescribed fire program, the total erosion will then be the background rate plus the low access road rate and the average erosion from prescribed fire, or 97.1 + 6.7 + (3.9 to 13.6) = 107.7 to 117.4 tons mi^{-2} y^{-1}, or an increase of 11 to 21 percent above background, if roads are not included in the background value.

If the prescribed fire eliminates the risk of wildfire, the background erosion rate will need to be set to 25.6 (line 1 of the outputs summary) for the analysis. Alternatively, the impact of the prescribed fire program may be to reduce the intensity of the wildfire, in which case, the sedimentation associated with a moderate or low severity fire from the following table can be substituted for the wildfire prediction for the analysis.

Combined thinning and prescribed fire effects. The combined effects of thinning and prescribed fire can be determined by summing up the background rate, the thinning rate, the prescribed fire rate, and the high access road rate. In this case, this leads to a total predicted erosion rate of 97.1 + 1.6 + 6.7 + (12.2 to 21.1) = 117.6 to 126.5 ton mi^{-2} y^{-1}, an increase of 21 to 30 percent above the background erosion rate without roads.

If this intensive fuel management scenario can reduce the severity of wildfire in the watershed, then the moderate severity fire sedimentation value of 1984 ton mi^{-2} can be substituted for the wildfire erosion rate once every 100 years to give an average value of 19.84 ton mi^{-2} y^{-1}. Using this value to determine the total impact of fuel management gives 19.84 + 27.2 + 6.7 + (12.2 to 21.1) = 65.94 to 74.84 ton mi^{-2} y^{-1}, a decrease of 32 to 35 percent compared to background with roads or 23 to 32 percent compared to background without roads.

Road Impacts. The range of values given for road sedimentation represent the amount of sediment delivered across the buffer, and the amount delivered to a stream crossing. Roads with buffers greater than 10 ft will generate less sediment. The summary table shows that roads generate significant amounts of sediment within a watershed, even when traffic is low. Road management strategies -- including minimizing rutting, minimizing stream crossings, and maximizing the use of buffers between the road and the stream -- are well established to minimize sedimentation. The WEPP:Road interface can be used to evaluate the impacts of some of these improved practices. Another alternative to reduce sedimentation from the road network is to reduce the road density within the watershed by removing roads that are no longer needed with modern timber operations. Watershed managers may wish to offset the increase in sediment associated with fuel management with a decrease in sediment from improved road management or a reduction in road density.

Multiple Hillslopes. This analysis was for a single hillslope. Users are advised to run this simulation for a number of different hillslopes within the watershed, and to report a range of sedimentation rates in the output table before completing the analysis. Results from each hillslope can be copied and pasted into a word processor or spreadsheet to serve as a log for a series of runs.

For further information, refer to the documentation.

Details of Inputs and Outputs

Refer to the documentation for details on the applications for the five additional runs listed in this table, but not used in the initial analyses.

Inputs (blue) and results (green) for individual Disturbed WEPP runs

Disturbed WEPP

Upper element treatment	Lower element treatment	Upper cover (%)	Lower cover (%)	Upper length (ft)	Lower length (ft)	Upper rock (%)	Lower rock (%)	Upper top gradient (%)	Upper mid gradient (%)	Lower mid gradient (%)	Lower toe gradient (%)	Sediment yield (t mi^{-2})	Conc
20 year old trees	20 year old trees	100	100	490	10	20	20	90	90	90	90	25.6	Undist forest
5 year old trees	20 year old trees	85	100	490	10	20	20	90	90	90	90	32	Thinne forest
low severity fire	20 year old trees	85	100	490	10	20	20	90	90	90	90	672	Prescr burn
high severity fire	high severity fire	30	40	490	10	20	20	90	90	90	90	7148.8	Wildfi
5 year old trees	20 year old trees	95	100	490	10	20	20	90	90	90	90	19.2	Lower thinni
low severity fire	low severity fire	75	85	490	10	20	20	90	90	90	90	972.8	Highe fire
low severity fire	20 year old trees	90	100	490	10	20	20	90	90	90	90	556.8	Lower
low severity fire	low severity fire	50	60	490	10	20	20	90	90	90	90	1984	Moder wildfir
low severity fire	low severity fire	70	80	490	10	20	20	90	90	90	90	1152	Low w

Inputs (blue) and results (green) for individual WEPP:Road runs

WEPP:Road

Design ('ib', 'iv', 'or', 'ou')	Road surface ('n', 'g', 'p')	Traffic level ('h', 'l', 'n')	Road gradient (%)	Road length (ft)	Road width (ft)	Fill gradient (%)	Fill length (ft)	Buffer gradient (%)	Buffer length (ft)	Rock fragment (%)	Sediment yield from road (t mi^{-2}y^{-1})	Sediment yield from buffer (t mi^{-2} y^{-1})	Cor
inveg	native	none	9	300	13	150	13	90	10	20	3.9	4.1	No t
inveg	native	low	9	300	13	150	13	90	10	20	13.6	12.2	Low
outrut	graveled	high	9	300	13	150	13	90	10	20	21.1	19.9	High

WEPP FuME v. 2006.04.27 (for review only) Interface by David Hall and Elena Velasquez Model by Bill Elliot and Pete Robichaud
USDA Forest Service, Rocky Mountain Research Station, Moscow, ID 83843
02:15 pm Friday March 4, 2011 Pacific Time
137 WEPP FuME runs since release, December 2004

Disturbed WEPP Results

User inputs

Location	NEWARK CA				
Soil texture	loam				
Element	Treatment	Gradient (%)	Length (ft)	Cover (%)	Rock (%)
Upper	20 year old trees	90	490	100	20
		90			
Lower	20 year old trees	90	10	100	20
		90			

Mean annual averages for 50 years

14.76	in.	precipitation from	2654	storms
0.20	in.	runoff from rainfall from	54	events
0.00	in.	runoff from snowmelt or winter rainstorm from	0	events
0.35	t ac^{-1}	upland erosion rate (0.078 kg m^{-2})		
0.35	t ac^{-1}	sediment leaving profile (11.862 kg m^{-1} width)		

Return period analysis based on 50 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
50 year	24.11	1.58	2.48	2.48
25 year	20.89	1.33	2.34	2.34
10 year	20.60	0.77	1.17	1.18
5 year	18.55	0.34	0.60	0.60
2.5 year	16.02	0.06	0.12	0.12
Average	14.76	0.20	0.35	0.35

Probabilities of occurrence first year following disturbance based on 50 years of climate

Probability there is runoff	64 %	
Probability there is erosion	64 %	
Probability there is sediment delivery	64 %	

Return to Input Screen

[slope | soil | vegetation | weather | extended | response]

Disturbed WEPP Results v. 2004.07.01
based on WEPP version 2000.100, CLIGEN * version 4.31 *
`http://forest.moscowfsl.wsu.edu/fswepp`
02:16 pm Friday March 4, 2011 Pacific Time

WEPP FuME **
Fuel Management Erosion Analysis Results

Climate	**NEWARK CA**
Soil texture	silt loam
Hillslope length	500 ft
Hillslope gradient	90 90 90 % *
Buffer length	10 ft
Wildfire cycle	100 y
Prescribed fire cycle	100 y
Thinning cycle	20 y
Road density	1 mi mi^{-2}

* Hillslopes with greater than 50% gradient may be prone to mass failure.

Running **Disturbed WEPP** for Undisturbed forest ... Thinned forest ... Prescribed burn ... Wildfire ... Lower thinning ... Higher Rx fire ... Lower Rx fire ... Moderate wildfire ... Low wildfire ...
Running **WEPP:Road** for No traffic ... Low traffic ... High traffic ...

Output summary based on 50 years of possible weather

Line	Source of sediment	Sediment delivery in year of disturbance (ton mi^{-2})	Return period of disturbance (y)	"Average" annual hillslope sedimentation (ton mi^{-2} y^{-1})
1	Undisturbed forest		1	44.8
2	Wildfire	7641.6	100	76.4
3	Prescribed fire	1452.8	100	14.5
4	Thinning	76.8	20	3.8
5	Low access roads	3.7 to 12.2	1	3.7 to 12.2
6	High access roads	10.6 to 20.2	1	10.6 to 20.2

Summary of Analysis

The output summary table presents the predicted sediment yield rates from seven runs with the WEPP model. The outputs from those runs were converted to common units of ton mi^{-2} y^{-1}. From these runs, several key watershed sedimentation values can be estimated.

Background sedimentation. The background sedimentation rate -- the rate that will occur with no action -- can be estimated either with or without roads. In the absence of roads, the background sedimentation rate is erosion from undisturbed forest plus erosion from wildfire. This value is the sum of lines 1 and 2, or 44.8 + 76.4 = 121.2 ton mi^{-2} y^{-1}. If the existing low access road network is included in the background sediment rate, then the background rate will be the sum of lines 1, 2, and 5, or 121.2 + (3.7 to 12.2) = 124.9 to 133.4 ton mi^{-2} y^{-1}, depending on what percent of the road network crosses live water during major runoff events.

Thinning effects. From the summary table, line 4, thinning will generate 76.8 tons of sediment the year

following thinning, and when averaged over the thinning period of once in 20 years, will average about 3.8 ton mi^{-2} y^{-1}. This is an increase of about 3 percent above background without roads.

In order to carry out the thinning operation, however, traffic on the roads will have to be increased to the high access level to support the traffic associated with an ongoing thinning operation in the watershed. The total sediment yield from the watershed will then be the background value plus that from thinning and from high access roads for a total of 121.2 + 3.8 + (10.6 to 20.2) = 135.6 to 145.2 ton mi^{-2} y^{-1}. This is an increase of 12 to 20 percent above the background rate, if roads are not considered in the background, or 9 to 9 percent if the road network is considered in the background rate.

Further comparisons can be made by assuming that thinning will eliminate wildfire from the watershed, thus reducing the wildfire sedimentation value, or that thinning will lead to a less severe wildfire, and the moderate or low severity fire sedimentation rate from the table below can be substituted for the wildfire erosion rate in line 2.

Prescribed fire effects. From the summary table, line 3, prescribed fire will generate 1452.8 ton mi^{-2} the year of the prescribed fire, or when averaged over the prescribed fire return period of 100 y, it will generate 14.5 ton mi^{-2} y^{-1}. This is an increase of 12 percent above background. As there will be no need for heavy traffic to carry out the prescribed burn, there is no increase in sedimentation from the road network. For a watershed with an active prescribed fire program, the total erosion will then be the background rate plus the low access road rate and the average erosion from prescribed fire, or 121.2 + 14.5 + (3.7 to 12.2) = 139.4 to 147.9 tons mi^{-2} y^{-1}, or an increase of 15 to 22 percent above background, if roads are not included in the background value.

If the prescribed fire eliminates the risk of wildfire, the background erosion rate will need to be set to 44.8 (line 1 of the outputs summary) for the analysis. Alternatively, the impact of the prescribed fire program may be to reduce the intensity of the wildfire, in which case, the sedimentation associated with a moderate or low severity fire from the following table can be substituted for the wildfire prediction for the analysis.

Combined thinning and prescribed fire effects. The combined effects of thinning and prescribed fire can be determined by summing up the background rate, the thinning rate, the prescribed fire rate, and the high access road rate. In this case, this leads to a total predicted erosion rate of 121.2 + 3.8 + 14.5 + (10.6 to 20.2) = 150.1 to 159.7 ton mi^{-2} y^{-1}, an increase of 24 to 32 percent above the background erosion rate without roads.

If this intensive fuel management scenario can reduce the severity of wildfire in the watershed, then the moderate severity fire sedimentation value of 3872 ton mi^{-2} can be substituted for the wildfire erosion rate once every 100 years to give an average value of 38.72 ton mi^{-2} y^{-1}. Using this value to determine the total impact of fuel management gives 38.72 + 48.6 + 14.5 + (10.6 to 20.2) = 112.42 to 122.02 ton mi^{-2} y^{-1}, a decrease of 9 to 10 percent compared to background with roads or -1 to 7 percent compared to background without roads.

Road Impacts. The range of values given for road sedimentation represent the amount of sediment delivered across the buffer, and the amount delivered to a stream crossing. Roads with buffers greater than 10 ft will generate less sediment. The summary table shows that roads generate significant amounts of sediment within a watershed, even when traffic is low. Road management strategies -- including minimizing rutting, minimizing stream crossings, and maximizing the use of buffers between the road and the stream -- are well established to minimize sedimentation. The WEPP:Road interface can be used to evaluate the impacts of some of these improved practices. Another alternative to reduce sedimentation from the road network is to reduce the road density within the watershed by removing roads that are no longer needed with modern timber operations. Watershed managers may wish to offset the increase in sediment associated with fuel management with a decrease in sediment from improved road management or a reduction in road density.

Multiple Hillslopes. This analysis was for a single hillslope. Users are advised to run this simulation for a number of different hillslopes within the watershed, and to report a range of sedimentation rates in the output table before completing the analysis. Results from each hillslope can be copied and pasted into a word processor or spreadsheet to serve as a log for a series of runs.

For further information, refer to the documentation.

Details of Inputs and Outputs

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Inputs (blue) and results (green) for individual Disturbed WEPP runs

Disturbed WEPP

Upper element treatment	Lower element treatment	Upper cover (%)	Lower cover (%)	Upper length (ft)	Lower length (ft)	Upper rock (%)	Lower rock (%)	Upper top gradient (%)	Upper mid gradient (%)	Lower mid gradient (%)	Lower toe gradient (%)	Sediment yield (t mi^{-2})	Conc
20 year old trees	20 year old trees	100	100	490	10	20	20	90	90	90	90	44.8	Undist forest
5 year old trees	20 year old trees	85	100	490	10	20	20	90	90	90	90	76.8	Thinne forest
low severity fire	20 year old trees	85	100	490	10	20	20	90	90	90	90	1452.8	Prescr burn
high severity fire	high severity fire	30	40	490	10	20	20	90	90	90	90	7641.6	Wildfi
5 year old trees	20 year old trees	95	100	490	10	20	20	90	90	90	90	57.6	Lower thinni
low severity fire	low severity fire	75	85	490	10	20	20	90	90	90	90	2028.8	Highe fire
low severity fire	20 year old trees	90	100	490	10	20	20	90	90	90	90	1273.6	Lower
low severity fire	low severity fire	50	60	490	10	20	20	90	90	90	90	3872	Moder wildfir
low severity fire	low severity fire	70	80	490	10	20	20	90	90	90	90	2259.2	Low w

Inputs (blue) and results (green) for individual WEPP:Road runs

WEPP:Road

Design ('ib', 'iv', 'or', 'ou')	Road surface ('n', 'g', 'p')	Traffic level ('h', 'l', 'n')	Road gradient (%)	Road length (ft)	Road width (ft)	Fill gradient (%)	Fill length (ft)	Buffer gradient (%)	Buffer length (ft)	Rock fragment (%)	Sediment yield from road (t mi^{-2}y^{-1})	Sediment yield from buffer (t mi^{-2} y^{-1})	Cor
inveg	native	none	9	300	13	150	13	90	10	20	3.7	3.7	No t
inveg	native	low	9	300	13	150	13	90	10	20	12.2	10.6	Low
outrut	graveled	high	9	300	13	150	13	90	10	20	20.2	18.7	High

WEPP FuME v. 2006.04.27 (for review only) Interface by David Hall and Elena Velasquez Model by Bill Elliot and Pete Robichaud
USDA Forest Service, Rocky Mountain Research Station, Moscow, ID 83843
02:17 pm Friday March 4, 2011 Pacific Time
138 WEPP FuME runs since release, December 2004

Disturbed WEPP Results

User inputs

Location	NEWARK CA				
Soil texture	silt loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	20 year old trees	90	490	100	20
		90			
Lower	20 year old trees	90	10	100	20
		90			

Mean annual averages for 50 years

14.76	in.	precipitation from	2654	storms
0.18	in.	runoff from rainfall from	43	events
0.00	in.	runoff from snowmelt or winter rainstorm from	0	events
0.45	t ac^{-1}	upland erosion rate (0.1 kg m^{-2})		
0.45	t ac^{-1}	sediment leaving profile (15.282 kg m^{-1} width)		

Return period analysis based on 50 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
50 year	24.11	1.70	4.42	4.42
25 year	20.89	1.59	3.22	3.22
10 year	20.60	0.69	1.57	1.57
5 year	18.55	0.30	0.78	0.78
2.5 year	16.02	0.02	0.07	0.07
Average	14.76	0.18	0.45	0.45

Probabilities of occurrence first year following disturbance based on 50 years of climate

Probability there is runoff	58 %	
Probability there is erosion	58 %	
Probability there is sediment delivery	58 %	

Return to Input Screen

[slope | soil | vegetation | weather | extended | response]

Disturbed WEPP Results v. 2004.07.01
based on WEPP version 2000.100, CLIGEN * version 4.31 *
`http://forest.moscowfsl.wsu.edu/fswepp`
02:17 pm Friday March 4, 2011 Pacific Time

WEPP FuME **
Fuel Management Erosion Analysis Results

Climate	**NEWARK CA**
Soil texture	loam
Hillslope length	500 ft
Hillslope gradient	90 90 90 % *
Buffer length	10 ft
Wildfire cycle	100 y
Prescribed fire cycle	100 y
Thinning cycle	20 y
Road density	1 mi mi^{-2}

* Hillslopes with greater than 50% gradient may be prone to mass failure.

Running **Disturbed WEPP** for Undisturbed forest ... Thinned forest ... Prescribed burn ... Wildfire ... Lower thinning ... Higher Rx fire ... Lower Rx fire ... Moderate wildfire ... Low wildfire ...
Running **WEPP:Road** for No traffic ... Low traffic ... High traffic ...

Output summary based on 50 years of possible weather

Line	Source of sediment	Sediment delivery in year of disturbance (ton mi^{-2})	Return period of disturbance (y)	"Average" annual hillslope sedimentation (ton mi^{-2} y^{-1})
1	Undisturbed forest		1	25.6
2	Wildfire	7148.8	100	71.5
3	Prescribed fire	672	100	6.7
4	Thinning	32	20	1.6
5	Low access roads	3.9 to 13.6	1	3.9 to 13.6
6	High access roads	12.2 to 21.1	1	12.2 to 21.1

Summary of Analysis

The output summary table presents the predicted sediment yield rates from seven runs with the WEPP model. The outputs from those runs were converted to common units of ton mi^{-2} y^{-1}. From these runs, several key watershed sedimentation values can be estimated.

Background sedimentation. The background sedimentation rate -- the rate that will occur with no action -- can be estimated either with or without roads. In the absence of roads, the background sedimentation rate is erosion from undisturbed forest plus erosion from wildfire. This value is the sum of lines 1 and 2, or 25.6 + 71.5 = 97.1 ton mi^{-2} y^{-1}. If the existing low access road network is included in the background sediment rate, then the background rate will be the sum of lines 1, 2, and 5, or 97.1 + (3.9 to 13.6) = 101 to 110.7 ton mi^{-2} y^{-1}, depending on what percent of the road network crosses live water during major runoff events.

Thinning effects. From the summary table, line 4, thinning will generate 32 tons of sediment the year following

thinning, and when averaged over the thinning period of once in 20 years, will average about 1.6 ton mi^{-2} y^{-1}. This is an increase of about 2 percent above background without roads.

In order to carry out the thinning operation, however, traffic on the roads will have to be increased to the high access level to support the traffic associated with an ongoing thinning operation in the watershed. The total sediment yield from the watershed will then be the background value plus that from thinning and from high access roads for a total of 97.1 + 1.6 + (12.2 to 21.1) = 110.9 to 119.8 ton mi^{-2} y^{-1}. This is an increase of 14 to 23 percent above the background rate, if roads are not considered in the background, or 8 to 10 percent if the road network is considered in the background rate.

Further comparisons can be made by assuming that thinning will eliminate wildfire from the watershed, thus reducing the wildfire sedimentation value, or that thinning will lead to a less severe wildfire, and the moderate or low severity fire sedimentation rate from the table below can be substituted for the wildfire erosion rate in line 2.

Prescribed fire effects. From the summary table, line 3, prescribed fire will generate 672 ton mi^{-2} the year of the prescribed fire, or when averaged over the prescribed fire return period of 100 y, it will generate 6.7 ton mi^{-2} y^{-1}. This is an increase of 7 percent above background. As there will be no need for heavy traffic to carry out the prescribed burn, there is no increase in sedimentation from the road network. For a watershed with an active prescribed fire program, the total erosion will then be the background rate plus the low access road rate and the average erosion from prescribed fire, or 97.1 + 6.7 + (3.9 to 13.6) = 107.7 to 117.4 tons mi^{-2} y^{-1}, or an increase of 11 to 21 percent above background, if roads are not included in the background value.

If the prescribed fire eliminates the risk of wildfire, the background erosion rate will need to be set to 25.6 (line 1 of the outputs summary) for the analysis. Alternatively, the impact of the prescribed fire program may be to reduce the intensity of the wildfire, in which case, the sedimentation associated with a moderate or low severity fire from the following table can be substituted for the wildfire prediction for the analysis.

Combined thinning and prescribed fire effects. The combined effects of thinning and prescribed fire can be determined by summing up the background rate, the thinning rate, the prescribed fire rate, and the high access road rate. In this case, this leads to a total predicted erosion rate of 97.1 + 1.6 + 6.7 + (12.2 to 21.1) = 117.6 to 126.5 ton mi^{-2} y^{-1}, an increase of 21 to 30 percent above the background erosion rate without roads.

If this intensive fuel management scenario can reduce the severity of wildfire in the watershed, then the moderate severity fire sedimentation value of 1984 ton mi^{-2} can be substituted for the wildfire erosion rate once every 100 years to give an average value of 19.84 ton mi^{-2} y^{-1}. Using this value to determine the total impact of fuel management gives 19.84 + 27.2 + 6.7 + (12.2 to 21.1) = 65.94 to 74.84 ton mi^{-2} y^{-1}, a decrease of 32 to 35 percent compared to background with roads or 23 to 32 percent compared to background without roads.

Road Impacts. The range of values given for road sedimentation represent the amount of sediment delivered across the buffer, and the amount delivered to a stream crossing. Roads with buffers greater than 10 ft will generate less sediment. The summary table shows that roads generate significant amounts of sediment within a watershed, even when traffic is low. Road management strategies -- including minimizing rutting, minimizing stream crossings, and maximizing the use of buffers between the road and the stream -- are well established to minimize sedimentation. The WEPP:Road interface can be used to evaluate the impacts of some of these improved practices. Another alternative to reduce sedimentation from the road network is to reduce the road density within the watershed by removing roads that are no longer needed with modern timber operations. Watershed managers may wish to offset the increase in sediment associated with fuel management with a decrease in sediment from improved road management or a reduction in road density.

Multiple Hillslopes. This analysis was for a single hillslope. Users are advised to run this simulation for a number of different hillslopes within the watershed, and to report a range of sedimentation rates in the output table before completing the analysis. Results from each hillslope can be copied and pasted into a word processor or spreadsheet to serve as a log for a series of runs.

For further information, refer to the documentation.

Details of Inputs and Outputs

Refer to the documentation for details on the applications for the five additional runs listed in this table, but not used in the initial analyses.

Inputs (blue) and results (green) for individual Disturbed WEPP runs

Disturbed WEPP

Upper element treatment	Lower element treatment	Upper cover (%)	Lower cover (%)	Upper length (ft)	Lower length (ft)	Upper rock (%)	Lower rock (%)	Upper top gradient (%)	Upper mid gradient (%)	Lower mid gradient (%)	Lower toe gradient (%)	Sediment yield (t mi^{-2})	Conc
20 year old trees	20 year old trees	100	100	490	10	20	20	90	90	90	90	25.6	Undist forest
5 year old trees	20 year old trees	85	100	490	10	20	20	90	90	90	90	32	Thinne forest
low severity fire	20 year old trees	85	100	490	10	20	20	90	90	90	90	672	Prescr burn
high severity fire	high severity fire	30	40	490	10	20	20	90	90	90	90	7148.8	Wildfi
5 year old trees	20 year old trees	95	100	490	10	20	20	90	90	90	90	19.2	Lower thinni
low severity fire	low severity fire	75	85	490	10	20	20	90	90	90	90	972.8	Highe fire
low severity fire	20 year old trees	90	100	490	10	20	20	90	90	90	90	556.8	Lower
low severity fire	low severity fire	50	60	490	10	20	20	90	90	90	90	1984	Moder wildfir
low severity fire	low severity fire	70	80	490	10	20	20	90	90	90	90	1152	Low w

Inputs (blue) and results (green) for individual WEPP:Road runs

WEPP:Road

Design ('ib', 'iv', 'or', 'ou')	Road surface ('n', 'g', 'p')	Traffic level ('h', 'l', 'n')	Road gradient (%)	Road length (ft)	Road width (ft)	Fill gradient (%)	Fill length (ft)	Buffer gradient (%)	Buffer length (ft)	Rock fragment (%)	Sediment yield from road (t mi^{-2}y^{-1})	Sediment yield from buffer (t mi^{-2} y^{-1})	Cor
inveg	native	none	9	300	13	150	13	90	10	20	3.9	4.1	No t
inveg	native	low	9	300	13	150	13	90	10	20	13.6	12.2	Low
outrut	graveled	high	9	300	13	150	13	90	10	20	21.1	19.9	High

WEPP FuME v. 2006.04.27 (for review only) Interface by David Hall and Elena Velasquez Model by Bill Elliot and Pete Robichaud
USDA Forest Service, Rocky Mountain Research Station, Moscow, ID 83843
02:15 pm Friday March 4, 2011 Pacific Time
137 WEPP FuME runs since release, December 2004

Disturbed WEPP Results

User inputs

Location	NEWARK CA				
Soil texture	loam				
Element	Treatment	Gradient (%)	Length (ft)	Cover (%)	Rock (%)
Upper	20 year old trees	90	490	100	20
		90			
Lower	20 year old trees	90	10	100	20
		90			

Mean annual averages for 50 years

14.76	in.	precipitation from	2654	storms
0.20	in.	runoff from rainfall from	54	events
0.00	in.	runoff from snowmelt or winter rainstorm from	0	events
0.35	t ac^{-1}	upland erosion rate (0.078 kg m^{-2})		
0.35	t ac^{-1}	sediment leaving profile (11.862 kg m^{-1} width)		

Return period analysis based on 50 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
50 year	24.11	1.58	2.48	2.48
25 year	20.89	1.33	2.34	2.34
10 year	20.60	0.77	1.17	1.18
5 year	18.55	0.34	0.60	0.60
2.5 year	16.02	0.06	0.12	0.12
Average	14.76	0.20	0.35	0.35

Probabilities of occurrence first year following disturbance based on 50 years of climate

Probability there is runoff	64 %	
Probability there is erosion	64 %	
Probability there is sediment delivery	64 %	

Return to Input Screen

[slope | soil | vegetation | weather | extended | response]

Disturbed WEPP Results v. 2004.07.01
based on WEPP version 2000.100, CLIGEN * version 4.31 *
`http://forest.moscowfsl.wsu.edu/fswepp`
02:16 pm Friday March 4, 2011 Pacific Time

WEPP FuME **
Fuel Management Erosion Analysis Results

Climate	**NEWARK CA**
Soil texture	silt loam
Hillslope length	500 ft
Hillslope gradient	66 66 66 % *
Buffer length	10 ft
Wildfire cycle	100 y
Prescribed fire cycle	100 y
Thinning cycle	20 y
Road density	1 mi mi^{-2}

* Hillslopes with greater than 50% gradient may be prone to mass failure.

Running **Disturbed WEPP** for Undisturbed forest ... Thinned forest ... Prescribed burn ... Wildfire ... Lower thinning ... Higher Rx fire ... Lower Rx fire ... Moderate wildfire ... Low wildfire ...
Running **WEPP:Road** for No traffic ... Low traffic ... High traffic ...

Output summary based on 50 years of possible weather

Line	Source of sediment	Sediment delivery in year of disturbance (ton mi^{-2})	Return period of disturbance (y)	"Average" annual hillslope sedimentation (ton mi^{-2} y^{-1})
1	Undisturbed forest		1	38.4
2	Wildfire	6764.8	100	67.6
3	Prescribed fire	1248	100	12.5
4	Thinning	70.4	20	3.5
5	Low access roads	2.7 to 10.1	1	2.7 to 10.1
6	High access roads	8.9 to 16.0	1	8.9 to 16.0

Summary of Analysis

The output summary table presents the predicted sediment yield rates from seven runs with the WEPP model. The outputs from those runs were converted to common units of ton mi^{-2} y^{-1}. From these runs, several key watershed sedimentation values can be estimated.

Background sedimentation. The background sedimentation rate -- the rate that will occur with no action -- can be estimated either with or without roads. In the absence of roads, the background sedimentation rate is erosion from undisturbed forest plus erosion from wildfire. This value is the sum of lines 1 and 2, or 38.4 + 67.6 = 106 ton mi^{-2} y^{-1}. If the existing low access road network is included in the background sediment rate, then the background rate will be the sum of lines 1, 2, and 5, or 106 + (2.7 to 10.1) = 108.7 to 116.1 ton mi^{-2} y^{-1}, depending on what percent of the road network crosses live water during major runoff events.

Thinning effects. From the summary table, line 4, thinning will generate 70.4 tons of sediment the year

following thinning, and when averaged over the thinning period of once in 20 years, will average about 3.5 ton mi^{-2} y^{-1}. This is an increase of about 3 percent above background without roads.

In order to carry out the thinning operation, however, traffic on the roads will have to be increased to the high access level to support the traffic associated with an ongoing thinning operation in the watershed. The total sediment yield from the watershed will then be the background value plus that from thinning and from high access roads for a total of 106 + 3.5 + (8.9 to 16.0) = 118.4 to 125.5 ton mi^{-2} y^{-1}. This is an increase of 12 to 18 percent above the background rate, if roads are not considered in the background, or 8 to 9 percent if the road network is considered in the background rate.

Further comparisons can be made by assuming that thinning will eliminate wildfire from the watershed, thus reducing the wildfire sedimentation value, or that thinning will lead to a less severe wildfire, and the moderate or low severity fire sedimentation rate from the table below can be substituted for the wildfire erosion rate in line 2.

Prescribed fire effects. From the summary table, line 3, prescribed fire will generate 1248 ton mi^{-2} the year of the prescribed fire, or when averaged over the prescribed fire return period of 100 y, it will generate 12.5 ton mi^{-2} y^{-1}. This is an increase of 12 percent above background. As there will be no need for heavy traffic to carry out the prescribed burn, there is no increase in sedimentation from the road network. For a watershed with an active prescribed fire program, the total erosion will then be the background rate plus the low access road rate and the average erosion from prescribed fire, or 106 + 12.5 + (2.7 to 10.1) = 121.2 to 128.6 tons mi^{-2} y^{-1}, or an increase of 14 to 21 percent above background, if roads are not included in the background value.

If the prescribed fire eliminates the risk of wildfire, the background erosion rate will need to be set to 38.4 (line 1 of the outputs summary) for the analysis. Alternatively, the impact of the prescribed fire program may be to reduce the intensity of the wildfire, in which case, the sedimentation associated with a moderate or low severity fire from the following table can be substituted for the wildfire prediction for the analysis.

Combined thinning and prescribed fire effects. The combined effects of thinning and prescribed fire can be determined by summing up the background rate, the thinning rate, the prescribed fire rate, and the high access road rate. In this case, this leads to a total predicted erosion rate of 106 + 3.5 + 12.5 + (8.9 to 16.0) = 130.9 to 138 ton mi^{-2} y^{-1}, an increase of 23 to 30 percent above the background erosion rate without roads.

If this intensive fuel management scenario can reduce the severity of wildfire in the watershed, then the moderate severity fire sedimentation value of 3424 ton mi^{-2} can be substituted for the wildfire erosion rate once every 100 years to give an average value of 34.24 ton mi^{-2} y^{-1}. Using this value to determine the total impact of fuel management gives 34.24 + 41.9 + 12.5 + (8.9 to 16.0) = 97.54 to 104.64 ton mi^{-2} y^{-1}, a decrease of 10 to 10 percent compared to background with roads or 1 to 8 percent compared to background without roads.

Road Impacts. The range of values given for road sedimentation represent the amount of sediment delivered across the buffer, and the amount delivered to a stream crossing. Roads with buffers greater than 10 ft will generate less sediment. The summary table shows that roads generate significant amounts of sediment within a watershed, even when traffic is low. Road management strategies -- including minimizing rutting, minimizing stream crossings, and maximizing the use of buffers between the road and the stream -- are well established to minimize sedimentation. The WEPP:Road interface can be used to evaluate the impacts of some of these improved practices. Another alternative to reduce sedimentation from the road network is to reduce the road density within the watershed by removing roads that are no longer needed with modern timber operations. Watershed managers may wish to offset the increase in sediment associated with fuel management with a decrease in sediment from improved road management or a reduction in road density.

Multiple Hillslopes. This analysis was for a single hillslope. Users are advised to run this simulation for a number of different hillslopes within the watershed, and to report a range of sedimentation rates in the output table before completing the analysis. Results from each hillslope can be copied and pasted into a word processor or spreadsheet to serve as a log for a series of runs.

For further information, refer to the documentation.

Details of Inputs and Outputs

Refer to the documentation for details on the applications for the five additional runs listed in this table, but not used in the initial analyses.

Inputs (blue) and results (green) for individual Disturbed WEPP runs

Disturbed WEPP

Upper element treatment	Lower element treatment	Upper cover (%)	Lower cover (%)	Upper length (ft)	Lower length (ft)	Upper rock (%)	Lower rock (%)	Upper top gradient (%)	Upper mid gradient (%)	Lower mid gradient (%)	Lower toe gradient (%)	Sediment yield (t mi^{-2})	Conc
20 year old trees	20 year old trees	100	100	490	10	20	20	66	66	66	66	38.4	Undist forest
5 year old trees	20 year old trees	85	100	490	10	20	20	66	66	66	66	70.4	Thinne forest
low severity fire	20 year old trees	85	100	490	10	20	20	66	66	66	66	1248	Prescr burn
high severity fire	high severity fire	30	40	490	10	20	20	66	66	66	66	6764.8	Wildfi
5 year old trees	20 year old trees	95	100	490	10	20	20	66	66	66	66	51.2	Lower thinni
low severity fire	low severity fire	75	85	490	10	20	20	66	66	66	66	1785.6	Highe fire
low severity fire	20 year old trees	90	100	490	10	20	20	66	66	66	66	1100.8	Lower
low severity fire	low severity fire	50	60	490	10	20	20	66	66	66	66	3424	Moder wildfi
low severity fire	low severity fire	70	80	490	10	20	20	66	66	66	66	1990.4	Low w

Inputs (blue) and results (green) for individual WEPP:Road runs

WEPP:Road

Design ('ib', 'iv', 'or', 'ou')	Road surface ('n', 'g', 'p')	Traffic level ('h', 'l', 'n')	Road gradient (%)	Road length (ft)	Road width (ft)	Fill gradient (%)	Fill length (ft)	Buffer gradient (%)	Buffer length (ft)	Rock fragment (%)	Sediment yield from road (t mi^{-2}y^{-1})	Sediment yield from buffer (t mi^{-2} y^{-1})	Cor
inveg	native	none	6.6	300	13	132	13	66	10	20	2.7	2.7	No t
inveg	native	low	6.6	300	13	132	13	66	10	20	10.1	8.9	Low
outrut	graveled	high	6.6	300	13	132	13	66	10	20	16.0	14.9	High

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WEPP FuME v. 2006.04.27 (for review only) Interface by David Hall and Elena Velasquez Model by Bill Elliot and Pete Robichaud
USDA Forest Service, Rocky Mountain Research Station, Moscow, ID 83843
02:22 pm Friday March 4, 2011 Pacific Time
139 WEPP FuME runs since release, December 2004

Disturbed WEPP Results

User inputs

Location	NEWARK CA				
Soil texture	silt loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	20 year old trees	66	490	100	20
		66			
Lower	20 year old trees	66	10	100	20
		66			

Mean annual averages for 50 years

14.76	in.	precipitation from	2654	storms
0.17	in.	runoff from rainfall from	43	events
0.00	in.	runoff from snowmelt or winter rainstorm from	0	events
0.38	t ac^{-1}	upland erosion rate (0.086 kg m^{-2})		
0.38	t ac^{-1}	sediment leaving profile (13.096 kg m^{-1} width)		

Return period analysis based on 50 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
50 year	24.11	1.70	4.02	4.02
25 year	20.89	1.58	2.87	2.87
10 year	20.60	0.68	1.39	1.39
5 year	18.55	0.29	0.72	0.72
2.5 year	16.02	0.02	0.06	0.06
Average	14.76	0.17	0.38	0.38

Probabilities of occurrence first year following disturbance based on 50 years of climate

Probability there is runoff	58 %	
Probability there is erosion	58 %	
Probability there is sediment delivery	58 %	

Return to Input Screen

[slope | soil | vegetation | weather | extended | response]

Disturbed WEPP Results v. 2004.07.01
based on WEPP version 2000.100, CLIGEN * version 4.31 *
`http://forest.moscowfsl.wsu.edu/fswepp`
02:22 pm Friday March 4, 2011 Pacific Time

WEPP FuME **
Fuel Management Erosion Analysis Results

Climate	**NEWARK CA**
Soil texture	silt loam
Hillslope length	500 ft
Hillslope gradient	5 5 5 %
Buffer length	10 ft
Wildfire cycle	100 y
Prescribed fire cycle	100 y
Thinning cycle	20 y
Road density	1 mi mi^{-2}

Running **Disturbed WEPP** for Undisturbed forest ... Thinned forest ... Prescribed burn ... Wildfire ... Lower thinning ... Higher Rx fire ... Lower Rx fire ... Moderate wildfire ... Low wildfire ...
Running **WEPP:Road** for No traffic ... Low traffic ... High traffic ...

Output summary based on 50 years of possible weather

Line	Source of sediment	Sediment delivery in year of disturbance (ton mi^{-2})	Return period of disturbance (y)	"Average" annual hillslope sedimentation (ton mi^{-2} y^{-1})
1	Undisturbed forest		1	0
2	Wildfire	716.8	100	7.2
3	Prescribed fire	70.4	100	0.7
4	Thinning	6.4	20	0.3
5	Low access roads	0.8 to 1.0	1	0.8 to 1.0
6	High access roads	0.9 to 2.8	1	0.9 to 2.8

Summary of Analysis

The output summary table presents the predicted sediment yield rates from seven runs with the WEPP model. The outputs from those runs were converted to common units of ton mi^{-2} y^{-1}. From these runs, several key watershed sedimentation values can be estimated.

Background sedimentation. The background sedimentation rate -- the rate that will occur with no action -- can be estimated either with or without roads. In the absence of roads, the background sedimentation rate is erosion from undisturbed forest plus erosion from wildfire. This value is the sum of lines 1 and 2, or 0 + 7.2 = 7.2 ton mi^{-2} y^{-1}. If the existing low access road network is included in the background sediment rate, then the background rate will be the sum of lines 1, 2, and 5, or 7.2 + (0.8 to 1.0) = 8 to 8.2 ton mi^{-2} y^{-1}, depending on what percent of the road network crosses live water during major runoff events.

Thinning effects. From the summary table, line 4, thinning will generate 6.4 tons of sediment the year following thinning, and when averaged over the thinning period of once in 20 years, will average about 0.3 ton mi^{-2} y^{-1}. This is an increase of about 4 percent above background without roads.

In order to carry out the thinning operation, however, traffic on the roads will have to be increased to the high access level to support the traffic associated with an ongoing thinning operation in the watershed. The total sediment yield from the watershed will then be the background value plus that from thinning and from high access roads for a total of 7.2 + 0.3 + (0.9 to 2.8) = 8.4 to 10.3 ton mi^{-2} y^{-1}. This is an increase of 17 to 43 percent above the background rate, if roads are not considered in the background, or 26 to 5 percent if the road network is considered in the background rate.

Further comparisons can be made by assuming that thinning will eliminate wildfire from the watershed, thus reducing the wildfire sedimentation value, or that thinning will lead to a less severe wildfire, and the moderate or low severity fire sedimentation rate from the table below can be substituted for the wildfire erosion rate in line 2.

Prescribed fire effects. From the summary table, line 3, prescribed fire will generate 70.4 ton mi^{-2} the year of the prescribed fire, or when averaged over the prescribed fire return period of 100 y, it will generate 0.7 ton mi^{-2} y^{-1}. This is an increase of 10 percent above background. As there will be no need for heavy traffic to carry out the prescribed burn, there is no increase in sedimentation from the road network. For a watershed with an active prescribed fire program, the total erosion will then be the background rate plus the low access road rate and the average erosion from prescribed fire, or 7.2 + 0.7 + (0.8 to 1.0) = 8.7 to 8.9 tons mi^{-2} y^{-1}, or an increase of 21 to 24 percent above background, if roads are not included in the background value.

If the prescribed fire eliminates the risk of wildfire, the background erosion rate will need to be set to 0 (line 1 of the outputs summary) for the analysis. Alternatively, the impact of the prescribed fire program may be to reduce the intensity of the wildfire, in which case, the sedimentation associated with a moderate or low severity fire from the following table can be substituted for the wildfire prediction for the analysis.

Combined thinning and prescribed fire effects. The combined effects of thinning and prescribed fire can be determined by summing up the background rate, the thinning rate, the prescribed fire rate, and the high access road rate. In this case, this leads to a total predicted erosion rate of 7.2 + 0.3 + 0.7 + (0.9 to 2.8) = 9.1 to 11 ton mi^{-2} y^{-1}, an increase of 26 to 53 percent above the background erosion rate without roads.

If this intensive fuel management scenario can reduce the severity of wildfire in the watershed, then the moderate severity fire sedimentation value of 307.2 ton mi^{-2} can be substituted for the wildfire erosion rate once every 100 years to give an average value of 3.07 ton mi^{-2} y^{-1}. Using this value to determine the total impact of fuel management gives 3.07 + 0.3 + 0.7 + (0.9 to 2.8) = 4.97 to 6.87 ton mi^{-2} y^{-1}, a decrease of 16 to 38 percent compared to background with roads or 5 to 31 percent compared to background without roads.

Road Impacts. The range of values given for road sedimentation represent the amount of sediment delivered across the buffer, and the amount delivered to a stream crossing. Roads with buffers greater than 10 ft will generate less sediment. The summary table shows that roads generate significant amounts of sediment within a watershed, even when traffic is low. Road management strategies -- including minimizing rutting, minimizing stream crossings, and maximizing the use of buffers between the road and the stream -- are well established to minimize sedimentation. The WEPP:Road interface can be used to evaluate the impacts of some of these improved practices. Another alternative to reduce sedimentation from the road network is to reduce the road density within the watershed by removing roads that are no longer needed with modern timber operations. Watershed managers may wish to offset the increase in sediment associated with fuel management with a decrease in sediment from improved road management or a reduction in road density.

Multiple Hillslopes. This analysis was for a single hillslope. Users are advised to run this simulation for a number of different hillslopes within the watershed, and to report a range of sedimentation rates in the output table before completing the analysis. Results from each hillslope can be copied and pasted into a word processor or spreadsheet to serve as a log for a series of runs.

For further information, refer to the documentation.

Details of Inputs and Outputs

Refer to the documentation for details on the applications for the five additional runs listed in this table, but not used in the initial analyses.

Inputs (blue) and results (green) for individual Disturbed WEPP runs

Disturbed WEPP

Upper element treatment	Lower element treatment	Upper cover (%)	Lower cover (%)	Upper length (ft)	Lower length (ft)	Upper rock (%)	Lower rock (%)	Upper top gradient (%)	Upper mid gradient (%)	Lower mid gradient (%)	Lower toe gradient (%)	Sediment yield (t mi^{-2})	Con
20 year old trees	20 year old trees	100	100	490	10	20	20	5	5	5	5	0	Undist forest
5 year old trees	20 year old trees	85	100	490	10	20	20	5	5	5	5	6.4	Thinne forest
low severity fire	20 year old trees	85	100	490	10	20	20	5	5	5	5	70.4	Prescr burn
high severity fire	high severity fire	30	40	490	10	20	20	5	5	5	5	716.8	Wildfi
5 year old trees	20 year old trees	95	100	490	10	20	20	5	5	5	5	0	Lower thinni
low severity fire	low severity fire	75	85	490	10	20	20	5	5	5	5	108.8	Highe fire
low severity fire	20 year old trees	90	100	490	10	20	20	5	5	5	5	51.2	Lower
low severity fire	low severity fire	50	60	490	10	20	20	5	5	5	5	307.2	Moder wildfi
low severity fire	low severity fire	70	80	490	10	20	20	5	5	5	5	134.4	Low w

Inputs (blue) and results (green) for individual WEPP:Road runs

WEPP:Road

Design ('ib', 'iv', 'or', 'ou')	Road surface ('n', 'g', 'p')	Traffic level ('h', 'l', 'n')	Road gradient (%)	Road length (ft)	Road width (ft)	Fill gradient (%)	Fill length (ft)	Buffer gradient (%)	Buffer length (ft)	Rock fragment (%)	Sediment yield from road (t mi^{-2}y^{-1})	Sediment yield from buffer (t mi^{-2} y^{-1})	Cor
inveg	native	none	0.5	300	13	10	13	5	10	20	0.9	0.8	No t
inveg	native	low	0.5	300	13	10	13	5	10	20	1.0	0.9	Low
outrut	graveled	high	0.5	300	13	10	13	5	10	20	2.8	2.6	High

WEPP FuME v. 2006.04.27 (for review only) Interface by David Hall and Elena Velasquez Model by Bill Elliot and Pete Robichaud
USDA Forest Service, Rocky Mountain Research Station, Moscow, ID 83843
02:23 pm Friday March 4, 2011 Pacific Time
140 WEPP FuME runs since release, December 2004

Disturbed WEPP Results

User inputs

Location	NEWARK CA				
Soil texture	silt loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	20 year old trees	5 5	490	100	20
Lower	20 year old trees	5 5	10	100	20

Mean annual averages for 50 years

14.76	in.	precipitation from	2654	storms
0.08	in.	runoff from rainfall from	37	events
0.00	in.	runoff from snowmelt or winter rainstorm from	0	events
0.02	t ac^{-1}	upland erosion rate (0.004 kg m^{-2})		
0.02	t ac^{-1}	sediment leaving profile (0.675 kg m^{-1} width)		

Return period analysis based on 50 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
50 year	24.11	1.68	0.38	0.38
25 year	20.89	0.79	0.20	0.20
10 year	20.60	0.28	0.07	0.07
5 year	18.55	0.03	0.00	0.00
2.5 year	16.02	0.00	0.00	0.00
Average	14.76	0.08	0.02	0.02

Probabilities of occurrence first year following disturbance based on 50 years of climate

Probability there is runoff	52 %	
Probability there is erosion	24 %	
Probability there is sediment delivery	50 %	

Return to Input Screen

[slope | soil | vegetation | weather | extended | response]

Disturbed WEPP Results v. 2004.07.01
based on WEPP version 2000.100, CLIGEN * version 4.31 *
`http://forest.moscowfsl.wsu.edu/fswepp`
02:24 pm Friday March 4, 2011 Pacific Time

APPENDIX C EXCERPT FROM THE SAN FRANCISCO BASIN PLAN

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Table 2-1: Existing and Potential Beneficial Uses of Water Bodies in the San Francisco Bay Region

MARIN COASTAL BASIN

	Human Consumptive Uses						Aquatic Life Uses									Wildlife Use	Recreational Uses		
COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
MARIN COUNTY																			
Pacific Ocean (Marin)					E		E	E			E	E	E	E		E	E	E	E
Abbotts Lagoon											E					E	E	E	
Drakes Estero							E	E			E	E	E	E		E	E	E	
East Schooner Creek								E	E			E	E	E	E	E	E	E	
Home Ranch Creek									E			E	E	E	E	E	E	E	
Limantour Estero							E	E			E	E	E	E		E	E	E	
Glenbrook Creek									E			E	E		E	E	E	E	
Muddy Hollow Creek									E			E	E	E	E	E	E	E	
Santa Maria Creek (Marin)									E			E	E	E	E	E	E	E	
Coast Creek								E	E			E	E	E	E	E	E	E	
Alamere Creek									E							E	E	E	
Wildcat Lake															E	E	E	E	
Crystal Lake									E					E	E	E	E	E	
Bass Lake							E								E	E	E	E	
Pelican Lake															E	E	E	E	
Arroyo Hondo (Marin)		E							E						E	E	E	E	
Bolinas Lagoon							E	E			E	E	E	E		E	E	E	E
Pine Gulch Creek		E							E			E	E	E	E	E	E	E	
Copper Mine Gulch Creek									E			E	E	E	E	E	E	E	
Wilkins Gulch Creek									E			E	E		E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

MARIN COASTAL BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
MARIN COUNTY, continued																			
Pike County Gulch Creek									E						E	E	E	E	
Morses Gulch Creek									E			E	E	E	E	E	E	E	
McKinnan Gulch Creek									E			E	E	E	E	E	E	E	
Stinson Gulch Creek		E							E			E	E	E	E	E	E	E	
Easkoot Creek									E			E	E	E	E	E	E	E	
Webb Creek		E							E				E		E	E	E	E	
Lone Tree Creek															E	E	E	E	
Redwood Creek (Marin)	E	E	E					E	E			E	E	E	E	E	E	E	
Green Gulch Creek									E			E	E	E	E	E	E	E	
Tennessee Valley Creek															E	E	E	E	
Rodeo Lagoon							E		E		E		E			E	E	E	
Rodeo Creek									E				E	E	E	E	E	E	
Tomales Bay							E	E			E	E	E	E		E	E	E	E
Millerton Gulch									E				E		E	E	E	E	
Grand Canyon Creek															E	E	E	E	
Tomasini Canyon Creek									E			E	E	E	E	E	E	E	
Walker Creek							E		E			E	E	E	E	E	E	E	
Chileno Creek									E			E	E		E	E	E	E	
Laguna Lake															E	E	E*	E	
Frink Canyon Creek									E			E	E		E	E	E	E	
Verde Canyon Creek									E			E	E		E	E	E	E	
Salmon Creek (Marin)									E			E	E		E	E	E	E	
Soulajule Reservoir		E	E				E								E	E	E*	E	
Arroyo Sausal			E						E				E		E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
MARIN COUNTY, continued																			
Lagunitas Creek	E	E	E						E			E	E	E	E	E	E	E	
Haggerty Gulch Creek			E						E			E	E	E	E	E	E	E	
Bear Valley Creek			E						E			E	E	E	E	E	E	E	
Olema Creek			E						E			E	E	E	E	E	E	E	
Nicasio Creek		E	E						E			E		E	E	E	E	E	
Nicasio Reservoir		E	E				E		P					E	E	E	E*	E	
Halleck Creek			E						E						E	E	E	E	
Devils Gulch Creek									E			E	E	E	E	E	E	E	
San Geronimo Creek									E			E	E	E	E	E	E	E	
Woodacre Creek									E			E	E		E	E	E	E	
Kent Lake		E					E		E					E	E	E	E*	E	
Big Carson Creek			E						E							E	E	E	
Alpine Lake		E					E		E					E	E	E	E*	E	
Cataract Creek			E						E							E	E	E	
Bon Tempe Lake		E							E					E	E	E	E*	E	
Lake Lagunitas		E					E		E					E	E	E	E*	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SAN MATEO COASTAL BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
	← Human Consumptive Uses →						← Aquatic Life Uses →									Wildlife Use	Recreational Uses		
SAN FRANCISCO COUNTY																			
Pacific Ocean (San Mateo, San Francisco Counties)					E		E	E			E	E	E	E		E	E[1]	E	E
Lake Merced		P					E		E					E	E	E	E	E	
SAN MATEO COUNTY																			
Milagra Creek												E	E		E	E	E	E	
Calera Creek (San Mateo)													E		E	E	E	E	
San Pedro Creek		E							E			E	E	E	E	E	E	E	
San Vicente Creek	E	E							E			E	E	E	E	E	E	E	
Denniston Creek	E	E							E			E	E	E	E	E	E	E	
Arroyo de en Medio									E						E	E	E	E	
Frenchmans Creek	E								E			E	E	E	E	E	E	E	
Pilarcitos Creek	E	E							E			E	E	E	E	E	E	E	
Arroyo Leon Creek									E						E	E	E	E	
Mills Creek (San Mateo)									E				E		E	E	E	E	
Apanolio Creek									E				E	E	E	E	E	E	
Corinda Los Trancos Creek									E				E		E	E	E	E	
Pilarcitos Reservoir		E							E				E	E	E	E	E*	E	
Purisima Creek	E								E			E	E	E		E	E	E	
Lobitos Creek	E								E			E	E	E		E	E	E	
Tunitas Creek	E	E							E			E	E	E	E	E	E	E	
San Gregorio Creek	E								E			E	E	E	E	E	E	E	
Clear Creek									E						E	E	E	E	
El Corte de Madera Creek									E			P	E	P	E	E	E	E	
Bogess Creek									E			E	E	E	E	E	E	E	
Harrington Creek									E			E	E	E	E	E	E	E	
La Honda Creek									E			E	E	E	E	E	E	E	

[1] REC-1 applies within a zone bounded by the shoreline and a distance of 1000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline. This distance is consistent with the applicability of water-contact standards in the Water Quality Plan for the Ocean Waters of California.

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SAN MATEO COASTAL BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PRO	COMM	SHELL	COLD	EST	MAR	MIG	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SAN MATEO COUNTY, continued																			
Woodruff Creek									E						E	E	E	E	
Woodhams Creek									E						E	E	E	E	
Mindego Creek									E				E	E	E	E	E	E	
Alpine Creek									E			E	E	E	E	E	E	E	
Pomponio Creek	E								E			E	E	E	E	E	E	E	
Pomponio Reservoir									E						E	E	E	E	
Pescadero Creek	E	E							E			E	E	E	E	E	E	E	
Honsinger Creek									E				E		E	E	E	E	
McCormick Creek									E			E	E	E	E	E	E	E	
Hoffman Creek									E				E			E	E	E	
Jones Gulch Creek									E						E	E	E	E	
Tarwater Creek									E			E	E	E	E	E	E	E	
Peters Creek									E				E	E	E	E	E	E	
Lambert Creek									E				E	E	E	E	E	E	
Fall Creek									E						E	E	E	E	
Slate Creek									E				E	E	E	E	E	E	
Oil Creek									E			E	E	E	E	E	E	E	
Little Boulder Creek									E				E		E	E	E	E	
Waterman Creek									E				E	E	E	E	E	E	
Butano Creek									E			E	E		E	E	E	E	
Little Butano Creek									E				E	E	E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

CENTRAL BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-1	NAV
	Human Consumptive Uses								Aquatic Life Uses							Wildlife Use	Recreational Uses		
SAN FRANCISCO COUNTY																			
Golden Gate Channel							E				E	E	E	E		E	E	E	E
San Francisco Bay Central					E	E	E	E		E		E	E	E		E	E	E	E
Crissy Field Lagoon										E						E	E	E	
Golden Gate Park Lakes															E	E		E	
Lobos Creek		E												E	E	E	E	E	
Mountain Lake															E	E	E	E	
MARIN COUNTY																			
San Rafael Creek									E						E	E	E	E	E
Corte Madera Creek							E		E			E	E	E	E	E	E	E	E
Larkspur Creek									E				E	E	E	E	E	E	
Tamalpais Creek									E			E	E	E	E	E	E	E	
Ross Creek (Marin)									E			E	E	E	E	E	E	E	
Phoenix Lake		E					E		E				E	E	E	E	E*	E	
Phoenix Creek			E						E						E	E	E	E	
Bill Williams Creek			E						E					E	E	E	E	E	
Sleepy Hollow Creek									E			E	E	E	E	E	E	E	
San Anselmo Creek									E			E	E	E	E	E	E	E	
Fairfax Creek									E					E	E	E	E	E	
Cascade Creek									E			E	E	E		E	E	E	
Richardson Bay					E		E	E		E		E	E	E		E	E	E	E
Arroyo Corte Madera Del Presidio								E	E			E	E	E	E	E	E	E	
Warner Creek (Mill Valley, Marin)									E			E	E	E	E	E	E	E	
Old Mill Creek									E			E	E	E	E	E	E	E	
Willow Reed Creek									E				E	E	E	E	E	E	
Coyote Creek (Marin)									E						E	E	E	E	
Nyhan Creek									E						E	E	E	E	
ALAMEDA COUNTY																			
Berkeley Aquatic Park Lagoon										E		E		P		E	E	E	
Lake Temscal							E		E					E	E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

CENTRAL BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	RED-2	NAV
ALAMEDA COUNTY, continued																			
Temescal Creek									E						E	E	E	E	
Claremont Creek															E	E	E	E	
Strawberry Creek															E	E	E	E	
Codornices Creek									E			E	E	E	E	E	E	E	
Village Creek															E	E	E	E	
Capistrano Creek															E	E	E	E	
CONTRA COSTA COUNTY																			
Cerrito Creek															E	E	E	E	
Baxter Creek															E	E	E	E	
Richmond Inner Harbor							E			E						E	E	E	E

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SOUTH BAY BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
	Human Consumptive Uses						Aquatic Life Uses									Wildlife Use	Recreational Uses		
SAN FRANCISCO COUNTY																			
San Francisco Bay Lower					E		E	E		E		E	E	E		E	E	E	E
Mission Creek (San Francisco)							E			E						E	E	E	E
Central Basin							E			E						E	E	E	E
Islais Creek, tidal							E			E						E	E	E	E
India Basin							E			E						E	E	E	E
South Basin							E			E						E	E	E	E
Yosemite Creek							E			E						E	E	E	
SAN MATEO COUNTY																			
Brisbane Lagoon										E						E	E	E	
Guadalupe Canyon Creek															E	E	E	E	
Colma Creek															E	E	E	E	
San Bruno Creek															E	E	E	E	
Mills Creek															E	E	E	E	
Easton Creek															E	E	E	E	
Burlingame Lagoon										E						E	E	E	
Anza Lagoon										E						E	E	E	
Sanchez Creek															E	E	E	E	
Cherry Canyon Creek															E	E	E	E	
San Mateo Creek			E						E			E	E	E	E	E	E	E	
Polhemus Creek									E						E	E	E	E	
Lower Crystal Springs Reservoir		E							E				E	E	E	E	E*	E	
Upper Crystal Springs Reservoir		E							E				E	E	E	E	E*	E	
San Andreas Creek			E						E						E	E	E	E	
San Andreas Reservoir		E							E				E	E	E	E	E*	E	
Marina Lagoon										E						E	E	E	
Seal Slough										E			E			E	E	E	
Leslie Creek															E	E	E	E	
Borel Creek															E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SOUTH BAY BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SAN MATEO COUNTY, continued																			
O'Neill Slough										E						E	E	E	
Foster City Lagoon										E						E	E	E	
Belmont Slough										E			E	E		E	E	E	
Belmont Creek															E	E	E	E	
Laurel Creek (San Mateo)															E	E	E	E	
Bay Slough (San Mateo)										E			E			E	E	E	
Steinberger Slough										E			E			E	E	E	
Corkscrew Slough										E			E			E	E	E	
Smith Slough (San Mateo)										E			E			E	E	E	
Pulgas Creek															E	E	E	E	
Cordilleras Creek															E	E	E	E	
Redwood Slough										E			E			E	E	E	E
Redwood Creek (San Mateo)															E	E	E	E	
Arroyo Ojo de Agua															E	E	E	E	
Westpoint Slough										E			E			E	E	E	
Atherton Creek															E	E	E	E	
Ravenswood Slough										E			E			E	E	E	
ALAMEDA COUNTY																			
Oakland Inner Harbor										E						E	E	E	E
Merritt Channel							E			E						E	E	E	
Lake Merritt							E	E		E				E	E	E	E	E	
Glen Echo Creek															E	E	E	E	
Sausal Creek (Alameda)									E				E	E	E	E	E	E	
Peralta Creek															E	E	E	E	
Lion Creek									E						E	E	E	E	
Arroyo Viejo									E						E	E	E	E	
Rifle Range Creek															E	E	E	E	
San Leandro Bay							E			E		E	E			E	E	E	E
Lower San Leandro Creek			E						E			E	E	E	E	E	E	E	
Lake Chabot (Alameda)		E					E		E					E	E	E	E*	E	
Grass Valley Creek			E						E						E	E	E	E	
Upper San Leandro Creek			E						E			P		P	E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SOUTH BAY BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
ALAMEDA COUNTY, continued																			
Upper San Leandro Reservoir		E							E					E	E	E	E*	P	
Kaiser Creek			E						E					E	E	E	E	E	
Buckhorn Creek			E						E					E	E	E	E	E	
Redwood Creek (Alameda)			E						E					E	E	E	E	E	
Moraga Creek (in Contra Costa Co.)			E						E					E	E	E	E	E	
Estudillo Canal															E	E	E	E	
San Lorenzo Creek		E	E	E					E			E		E	E	E	E	E	
Don Castro Reservoir							E		E					E	E	E	E	E	
Castro Valley Creek									E				E		E	E	E	E	
Crow Creek									E			E	E	E	E	E	E	E	
Cull Creek									E				E	E	E	E	E	E	
Cull Canyon Reservoir							E		E					E	E	E	E	E	
Bolinas Creek									E						E	E	E	E	
Norris Creek									E						E	E	E	E	
Palomares Creek									E			E		E	E	E	E	E	
Eden Canyon Creek									E						E	E	E	E	
Hollis Creek									E				E		E	E	E	E	
Sulphur Creek (west Alameda)															E	E	E	E	
Mount Eden Creek										E						E	E	E	
Old Alameda Creek										E						E	E	E	
Ward Creek															E	E	E	E	
Zeile Creek															E	E	E	E	
Alameda Creek Quarry Ponds				E			E		E						E	E	E	E	
Coyote Hills Slough										E		E	E	E		E	E	E	
Alameda Creek	E			E			E		E			E	E	E	E	E	E	E	
Crandall Creek															E	E	E	E	
Dry Creek (Alameda, low in watershed)													E		E	E	E	E	
Stonybrook Creek									E			E	E	E	E	E	E	E	
Sinbad Creek									E			E	E	E	E	E	E	E	
San Antonio Creek (Alameda)			E						E				E	E	E	E	E*	E	
San Antonio Reservoir		E							E				E	E	E	E	E*	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SOUTH BAY BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
ALAMEDA COUNTY, continued																			
Indian Creek (central Alameda)			E						E				E	E	E	E	E*	E	
La Costa Creek			E						E				E	E	E	E	E	E	
Arroyo de la Laguna				E					E			E		E	E	E	E	E	
Vallecitos Creek															E	E	E	E	
Happy Valley Creek															E	E	E	E	
Sycamore Creek															E	E	E	E	
Arroyo del Valle		E		E					E			P	E	E	E	E	E	E	
Shadow Cliffs Reservoir				E			E		E					E	E	E	E	E	
Del Valle Reservoir		E					E		E					E	E	E	E	E	
Arroyo Mocho				E					E			E		E	E	E	E	E	
Tassajara Creek				E					P			E	E	E	E	E	E	E	
Arroyo las Positas				E					E			E	E	E	E	E	E	E	
Cottonwood Creek													E		E	E	E	E	
Collier Canyon Creek													E		E	E	E	E	
Cayetano Creek													E		E	E	E	E	
Arroyo Seco (Alameda)				E					E			E	E	E	E	E	E	E	
Altamont Creek				E					E				E		E	E	E	E	
Alamo Canal				E					P			E		E	E	E	E	E	
Alamo Creek				E					P			E	E	E	E	E	E	E	
Dublin Creek															E	E	E	E	
Martin Canyon Creek															E	E	E	E	
South San Ramon Creek															E	E	E	E	
SANTA CLARA COUNTY																			
Tributary to Alameda Creek:																			
Calaveras Creek			E						E				E	E	E	E	E	E	
Calaveras Reservoir		E							E				E	E	E	E	E*	E	
Arroyo Hondo		E	E						E				E	E	E	E	E	E	
Isabel Creek		E	E						E					E	E	E	E	E	
Smith Creek		E	E						E					E	E	E	E	E	
Sulphur Creek (Santa Clara)		E	E						E					E	E	E	E	E	
Colorado Creek *Trib. To Arroyo del Val*			E						E						E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SANTA CLARA BASIN

COUNTY Waterbody	Human Consumptive Uses						Aquatic Life Uses									Wildlife Use	Recreational Uses		
	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
San Francisco Bay South					E		E	E		E		E	E	E		E	E	E	E
ALAMEDA & SANTA CLARA COUNTIES																			
Newark Slough										E			E			E	E	E	
Plummer Creek (Zone 5 Line F-1)										E			E			E	E	E	
Mowry Slough										E			E			E	E	E	
Coyote Slough										E			E			E	E	E	
Mud Slough										E			E			E	E	E	
Laguna Creek (Arroyo la Laguna, or Zone 6 Line E)															E	E	E	E	
Mission Creek (Zone 6 Line L)															E	E	E	E	
Lake Elizabeth									E					E	E	E	E*	E	
Sabrecat Creek (Zone 6 Line K)															E	E	E	E	
Canada del Aliso (Zone 6 Line j)															E	E	E	E	
Agua Caliente Creek (Alameda) (Zone 6 Line F)															E	E	E	E	
Agua Fria Creek (Zone 6 Line D)															E	E	E	E	
Stivers Lagoon (Fremont Lagoon)			E												E	E	E	E	
Mallard (Artesian) Slough										E			E			E	E	E	
Scott Creek (Zone 6 Line A)															E	E	E	E	
Toroges Creek (Zone 6 Line C)													E		E	E	E	E	
SAN MATEO AND SANTA CLARA COUNTIES																			
San Francisquito Creek									E			E		E	E	E	E	E	
Lake Lagunita													E		E	E	E	E	
Los Trancos Creek									E			E	E	E	E	E	E	E	
Felt Lake	E													E	E	E	E	E	
Bear Creek (San Mateo)									E			E	E	E	E	E	E	E	
Bear Gulch Creek (San Mateo)		E							E			E	E	E	E	E	E	E	
West Union Creek									E			E	E	E	E	E	E	E	
Searsville Lake	E								E					E	E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SANTA CLARA BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SAN MATEO AND SANTA CLARA COUNTIES, continued																			
Alambique Creek									E						E	E	E	E	
Sausal Creek (San Mateo)									E						E	E	E	E	
SANTA CLARA COUNTY ONLY																			
Palo Alto Harbor & Baylands										E		E	E			E	E	E	
Mayfield Slough										E		E	E			E	E	E	
Matadero Creek									E			E	E	E	E	E	E	E	
Deer Creek (Santa Clara)									E				E		E	E	E	E	
Arastradero Creek									E				E		E	E	E	E	
Charleston Slough										E		E	E			E	E	E	
Barron Creek															E	E	E	E	
Adobe Creek (Santa Clara)									E						E	E	E	E	
Mountain View Slough										E			E			E	E	E	
Permanente Creek				E					E				E	E	E	E	E	E	
Hale Creek									E						E	E	E	E	
Stevens Creek			E	E					E			E	E	E	E	E	E	E	
Stevens Creek Reservoir		E		E			E		E			E		E	E	E	E	E	
Swiss Creek			E						E						E	E	E	E	
Guadalupe Slough										E			E			E	E	E	
Moffett Channel										E						E	E	E	
Calabazas Creek	E			E					E						E	E	E	E	
San Tomas Aquino Creek									E				E		E	E	E	E	
Saratoga Creek	E		E	E					E						E	E	E	E	
Bonjetti Creek									E						E	E	E	E	
McElroy Creek									E						E	E	E	E	
Alviso Slough										E		E	E			E	E	E	
Guadalupe River				E					E				E	E	E	E	E	E	
Los Gatos Creek		E	E	E					E			P	E	P	E	E	E	P	
Campbell Percolation Pond				E			E		E					E	E	E	E	E	
Vasona Reservoir		E		E			E		E					E	E	E	E	E	
Lexington Reservoir		E		E			E		E					E	E	E	E	E	
Soda Springs Creek			E						E						E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SANTA CLARA BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SANTA CLARA COUNTY ONLY, continued																			
Lake Elsman		E							E						E	E	E*	E	
Austrian Gulch Creek			E						E					E	E	E	E	E	
Ross Creek				E											E	E	E	E	
Canoas Creek															E	E	E	E	
Guadalupe Creek			E	E					E			E	E	E	E	E	E	E	
Los Capitancillos Percolation Ponds				E											E	E	E	E	
Guadalupe Percolation Ponds				E											E	E	E	E	
Pheasant Creek			E						E					E	E	E	E	E	
Guadalupe Reservoir		E		E					E					E	E	E	E	E	
Los Capitancillos Creek			E	E					E						E	E	E	E	
Rincon Creek			E	E					E			E	E		E	E	E	E	
Alamitos Creek			E	E					E			E	E	E	E	E	E	E	
Arroyo Calero			E						E			E	E	E	E	E	E	E	
Calero Reservoir		E		E										E	E	E	E*	E	
Almaden Reservoir		E		E					E				E	E	E	E	E*	E	
Herbert Creek			E						E						E	E	E	E	
Barrett Canyon Creek			E						E						E	E	E	E	
Coyte Creek (nontidal)				E			E		E			E	E	E	E	E	E	E	
Upper Penitencia Creek			E	E					E			E	E	E	E	E	E	E	
Arroyo Aguague Creek									E			E	E	E	E	E	E	E	
Halls Valley Lake (Grant Lake)									E					E	E	E	E	E	
Cherry Flat Reservoir	E	E												E	E	E	E*	E	
Lower Silver Creek															E	E	E	E	
Babb Creek															E	E	E	E	
South Babb Creek															E	E	E	E	
Flint Creek															E	E	E	E	
Thompson Creek															E	E	E	E	
Quimby Creek															E	E	E	E	
Yerba Buena Creek															E	E	E	E	
Upper Silver Creek													E		E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SANTA CLARA BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SANTA CLARA COUNTY ONLY, continued																			
Cottonwood Lake							E		E					E	E	E	E	E	
Fisher Creek															E	E	E	E	
Anderson Reservoir		E		E			E		E					E	E	E	E*	E	
San Felipe Creek			E						E					E	E	E	E	E	
Las Animas Creek			E						E						E	E	E	E	
Packwood Creek			E						E					E	E	E	E	E	
Hoover Creek			E						E					E	E	E	E	E	
Otis Canyon Creek			E						E						E	E	E	E	
Coyote Reservoir	E	E					E		E					E	E	E	E*	E	
Canada de los Osos Creek			E												E	E	E	E	
Soda Springs Canyon Creek									E						E	E	E	E	
Lower Penitencia Creek															E	E	E	E	
Berryessa Creek															E	E	E	E	
Calera Creek (Santa Clara)															E	E	E	E	
Tularcitos Creek															E	E	E	E	
Arroyo de los Coches													E		E	E	E	E	
Sandy Wool Lake							E		E					E	E	E	E*	E	

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SAN PABLO BASIN

	Human Consumptive Uses						Aquatic Life Uses									Wildlife Use	Recreational Uses		
COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
San Pablo Bay					E		E	E		E		E	E	E		E	E	E	E
SOLANO COUNTY																			
Mare Island Strait							E			E		E	E			E	E	E	E
White Slough							E			E		E	E	E		E	E	E	
South Slough							E			E		E	E			E	E	E	
Dutchman Slough							E			E		E	E			E	E	E	
Lake Chabot (Solano)	E	E							E					E	E	E	E	E	
Rindler Creek			E												E	E	E	E	
Blue Rock Springs Creek			E												E	E	E	E	
Lake Dalwigk															E	E	E	E	
CONTRA COSTA COUNTY																			
Rodeo Creek									E					E	E	E	E	E	
Refugio Creek															E	E	E	E	
Pinole Creek									E			E	E	E	E	E	E	E	
Garrity Creek															E	E	E	E	
Rheem Creek															E	E	E	E	
San Pablo Creek			E						E			E	E	E	E	E	E*	E	
San Pablo Reservoir		E					E		E					E	E	E	E*	E	
Lauterwasser Creek			E												E	E	E	E	
Briones Reservoir		E							E					E	E	E	E*	P	
Bear Creek (Contra Costa)			E										E		E	E	E	E	
Wildcat Creek			E						E			E	E	E	E	E	E	E	
Jewel Lake									E						E	E	E	E	
Lake Anza			E				E		E						E	E	E	E	
MARIN COUNTY																			
Black John Slough										E		E	E			E	E	E	
Rush Creek										E			E			E	E	E	
Bahia Lagoon										E						E	E	E	
Novato Creek		E					E		E			E	E	E	E	E	E	E	
Stafford Lake		E					E		E					E	E	E	E	E	

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SAN PABLO BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
MARIN COUNTY, continued																			
Bowman Canyon Creek									E			E	E	E	E	E	E	E	
Warner Creek (Novato)									E			E	E		E	E	E	E	
Arroyo Avichi									E				E		E	E	E	E	
Pacheco Pond							E		E			P	E	P	E	E	E	E	
Arroyo San Jose									E				E		E	E	E	E	
Miller Creek									E			E	E	E	E	E	E	E	
Gallinas Creek									E				E		E	E	E	E	
SONOMA COUNTY																			
Petaluma River									E	E		E	E	E	E	E	E	E	E
San Antonio Creek									E			P		P	E	E	E	E	
Adobe Creek (Sonoma)									E			E	E	E	E	E	E	E	
Lynch Creek									E			E	E	E	E	E	E	E	
Willow Creek (Willow Canyon Creek)									E			E	E	E	E	E	E	E	
Lichau Creek									E			E		E	E	E	E	E	
Tolay Creek													E		E	E	E	E	
Second Napa Slough							E			E		E	E			E	E	E	
Third Napa Slough							E			E			E			E	E	E	
Steamboat Slough							E			E			E			E	E	E	
Hudeman Slough							E			E		E	E			E	E	E	
Rainbow Slough							E			E			E			E	E	E	
Sonoma Creek							E		E			E	E	E	E	E	E	E	
Fowler Creek									E			E	E		E	E	E	E	
Felder Creek									E						E	E	E	E	
Carriger Creek									E			E	E	E	E	E	E	E	
Rodgers Creek									E				E	E	E	E	E	E	
Schell Creek									E			E	E		E	E	E	E	
Arroyo Seco Creek (Sonoma)									E			E	E	E	E	E	E	E	
Nathanson Creek									E			E	E	E	E	E	E	E	
Agua Caliente Creek (Sonoma)									E			E	E	E	E	E	E	E	
Hooker Creek									E			E	E	E	E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SAN PABLO BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SONOMA COUNTY, continued																			
Mill Creek (Sonoma)									E			E	E	E	E	E	E	E	
Calabazas Creek (Sonoma)									E			E	E	E	E	E	E	E	
Stuart Creek									E			E	E	E	E	E	E	E	
Graham Creek									E			E	E	E	E	E	E	E	
Yulupa Creek									E			E	E	E	E	E	E	E	
Bear Creek (Sonoma)									E			E	E	E	E	E	E	E	
NAPA COUNTY																			
Napa Slough							E			E		E	E			E	E	E	
China Slough							E			E		E	E			E	E	E	
Napa River – tidal							E			E		E	E			E	E	E	E
American Canyon Creek															E	E	E	E	
Mud Slough (Napa)							E			E		E	E			E	E	E	
Devils Slough							E			E		E	E			E	E	E	
Huichica Creek									E			E	E	E	E	E	E	E	
Carneros Creek									E			E	E	E	E	E	E	E	
Fagan Creek															E	E	E	E	
Suscol Creek									E			E	E	E	E	E	E	E	
Bedford Slough (Napa)										E						E	E	E	
Lake Marie	E	E							P					E	P	E	E	E	
Tulucay Creek									E			E	E	E	E	E	E	E	
Spencer Creek									E			E	E	E	E	E	E	E	
Murphy Creek									E			E	E	E	E	E	E	E	
Napa River – nontidal	E	E		E			E		E			E	E	E	E	E	E	E	E
Napa Creek									E			E	E	E	E	E	E	E	
Browns Valley Creek									E			E	E	E	E	E	E	E	
Redwood Creek (Napa)									E			E	E	E	E	E	E	E	
Pickle Canyon Creek									E			E	E	E	E	E	E	E	
Milliken Creek			E						E			E	E	E	E	E	E	E	
Milliken Reservoir		E							E					E	E	E	E*	E	
Sarco Creek									E			E	E	E	E	E	E	E	
Salvador Creek									E				E	E	E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SAN PABLO BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
NAPA COUNTY, continued																			
Soda Creek									E			E	E	E	E	E	E	E	
Dry Creek (Napa)	E	E							E			E	E	E	E	E	E	E	
Segassia Canyon Creek									E			E	E	E	E	E	E	E	
Montgomery Creek									E			E	E	E	E	E	E	E	
Hopper Creek									E						E	E	E	E	
Conn Creek		E	E						E			E	E	E	E	E	E	E	
Rector Creek			E						E			E	E	E	E	E	E	E	
Rector Reservoir		E							E					E	E	E	E*	E	
Lake Hennessey		E					E		E					E	E	E	E	E	
Chiles Creek		E	E						E					E	E	E	E	E	
Moore Creek			E						E						E	E	E	E	
Sage Creek		E	E						E					E	E	E	E	E	
Angwin Lakes		E													E	E	E	E	
Bale Slough									E			E	E	E	E	E	E	E	
Bear Canyon Creek									E				E		E	E	E	E	
Sulphur Creek (Napa)									E			E	E	E	E	E	E	E	
Heath Canyon Creek									E			E	E	E	E	E	E	E	
Iron Mine Creek									E			E	E	E	E	E	E	E	
York Creek									E			E	E	E		E	E	E	
Bell Canyon Creek									E			E	E	E	E	E	E	E	
Bell Canyon Reservoir		E													E	E	E	E	
Mill Creek (Napa)									E			E	E	E	E	E	E	E	
Ritchey Creek (Ritchie Creek)									E			E	E	E	E	E	E	E	
Selby Creek									E			E	E	E	E	E	E	E	
Dutch Henry Creek									E			E	E	E	E	E	E	E	
Diamond Mountain Creek									E					E	E	E	E	E	
Cyrus Creek									E			E	E	E	E	E	E	E	
Garnett Creek									E			E	E	E	E	E	E	E	
Jericho Canyon Creek									E				E	E	E	E	E	E	
Kimball Canyon Creek		E							E				E		E	E	E	E	
Kimball Reservoir		E													E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SUISUN BASIN

	Human Consumptive Uses									Aquatic Life Uses						Wildlife Use	Recreational Uses		
COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
Carquinez Strait					E		E			E		E	E	E		E	E	E	E
Suisun Bay					E	E	E			E		E	E	E		E	E	E	E
Sacramento-San Joaquin Delta	E	E		E	E	E	E			E		E	E	E		E	E	E	E
SOLANO COUNTY																			
Grizzly Bay							E			E		E	E			E	E	E	
Honker Bay							E			E		E	E			E	E	E	
Sulphur Springs Creek			E												E	E	E	E	
Lake Herman		E			E				E					E	E	E	E*	E	
Goodyear Slough							E			E		E	E			E	E	E	
Cordelia Slough							E			E		E	E			E	E	E	
Green Valley Creek			E						E			E	E	E	E	E	E	E	
Dan Wilson Creek									E						E	E	E	E	
Wild Horse Creek			E						E						E	E	E	E	
Lake Frey		E							E					E	E	E	E*	E	
Lake Madigan	E	E							E					E	E	E	E*	E	
Suisun Slough							E			E		E	E	E	E	E	E	E	E
Suisun Creek			E						E			E	E	E	E	E	E	E	
Suisun Reservoir			E						E						E	E	E	E	
Wooden Valley Creek									E			E	E	E	E	E	E	E	
Lake Curry		E												E	E	E	E	E	
Sheldrake Slough							E			E			E			E	E	E	
Boynton Slough							E			E			E			E	E	E	
Peytonia Slough							E			E			E			E	E	E	
Ledgewood Creek			E						E			E		E	E	E	E	E	
Gordon Valley Creek									E						E	E	E	E	
Laurel Creek (Solano)			E						E			E		E	E	E	E	E	
Hill Slough							E			E			E			E	E	E	
Cutoff Slough							E			E		E	E			E	E	E	
Spring Branch															E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SUISUN BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SOLANO COUNTY																			
Volanti Slough							E			E			E			E	E	E	
Montezuma Slough							E			E		E	E	E	E	E	E	E	E
Nurse Slough							E			E		E	E			E	E	E	
Denverton Slough							E			E		E	E			E	E	E	
Denverton Creek													E	E	E	E	E	E	
CONTRA COSTA COUNTY																			
Alhambra Creek									E			E	E		E	E	E	E	
Franklin Creek									E			E	E	E	E	E	E	E	
Arroyo del Hambre									E						E	E	E	E	
Peyton Slough					E		E			E		E	E			E	E	E	
Pacheco Creek															E	E	E	E	
Walnut Creek									E			E	E	E	E	E	E	E	
Grayson Creek									E			E	E		E	E	E	E	
Pine Creek									E			E	E	E	E	E	E	E	
Galindo Creek									E						E	E	E	E	
San Ramon Creek															E	E	E	E	
Bollinger Canyon Creek									E					E	E	E	E	E	
Las Trampas Creek									E				E		E	E	E	E	
Tice Creek													E		E	E	E	E	
Lafayette Creek									E						E	E	E	E	
Lafayette Reservoir		E					E		E					E	E	E	E*	E	
Hastings Slough										E			E			E	E	E	
Mt. Diablo Creek									E			E	E	E	E	E	E	E	
Mitchell Creek									E			E	E	E	E	E	E	E	
Donner Creek									E					E	E	E	E	E	
Mallard Slough (Contra Costa)							E			E		E	E			E	E	E	
Kirker Creek													E		E	E	E	E	
New York Slough							E			E		E	E			E	E	E	E

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

APPENDIX D EMISSION FACTORS AND TOTAL EMISSIONS

- Emission Factors (6 pages)
- No Action (Alternative 1) Emissions (31 pages)
- Proposed, Connected and Cumulative Action (Alternative 2) Emissions (91 pages)

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On-Road Vehicle Emission Rates from EMFAC2011 for Bay Area Air Quality Management District

Trip Type	VMT/Trip(a)	No. of Trips(b)	VMT/day	ROG (lbs/day)(c)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)(d)	PM2.5 (lbs/day)(e)	SO2 (lbs/day)	CO2 (lbs/day) Pavley+LCFS	N2O (lbs/day)	CH4 (lbs/day)
Worker Trips-Paved Roads	30	2	60	0.030	0.316	0.032	0.023	0.007	0.001	46.439	0.0023	0.0027
Worker Trips-Unpaved Roads	1	2	2	0.009	0.068	0.005	0.527	0.053	0.000	2.550	0.0001	0.0001
Dump Truck Trips-Paved Roads	40	2	80	0.089	0.405	2.204	0.434	0.148	0.003	310.735	0.0029	0.0077
Dump Truck Trips-Unpaved Roads	1	2	2	0.010	0.044	0.117	1.784	0.180	0.000	13.448	0.0001	0.0003
Water Truck-Paved Roads	20	2	40	0.048	0.219	1.134	0.217	0.074	0.002	158.280	0.0015	0.0039
Water Truck-Unpaved Roads	1	2	2	0.010	0.044	0.117	1.784	0.180	0.000	13.448	0.0001	0.0003
Log/Chip Haul Truck Trips-Paved Roads	75	2	150	0.230	1.037	4.137	0.849	0.311	0.006	578.071	0.0053	0.0143
Log/Chip Haul Truck Trips-Unpaved Roa	1	2	2	0.011	0.049	0.118	1.784	0.181	0.000	13.614	0.0001	0.0003
Firewood Haul Truck Trips-Paved Roads	40	2	80	0.126	0.570	2.236	0.453	0.166	0.003	311.098	0.0029	0.0077
Firewood Haul Truck Trips-Unpaved Roa	1	2	2	0.011	0.049	0.118	1.784	0.181	0.000	13.614	0.0001	0.0003

Daily emissions in this table are per round trip (2 one-way trips = 1 round trip).

Notes:

a. Distance based on one-way trips.

b. Two one-way trips = one round trip, emissions are for a round trip.

c. Does not include diurnal losses - not applicable to project impacts.

d. Includes paved road dust of 0.129 g/VMT for cars and 2.04 g/VMT for trucks (USEPA 2011b); and unpaved road dust of 119 g/VMT for cars and 404 g/VMT for trucks (USEPA 2006).

e. Includes paved road dust of 0.032 g/VMT for cars and 0.510 g/VMT for trucks (USEPA 2011b); and unpaved road dust of 12 g/VMT for cars and 40 g/VMT for trucks (USEPA 2006).

f. For travel on paved roads. Silt loading = 0.06 g/m2; vehicle weight = 2 tons for worker vehicles and 30 tons for all trucks.

g. For travel on unpaved (access) roads. Silt content = 8.4%, vehicle weight = 2 tons for worker vehicles and 30 tons for all trucks.

									(tot hr/day)	(tot gal/day)
Equipment	**Fuel**	**MaxHP**	**Class**	**C/R**	**Pre**	**Hand**	**Port**	**Population**	**Activity**	**Consumption**
Air Compressors	G4	15	Light Commercial Equipment	C	P	NHH	P	1,990.15	2,395.21	924.23
Chainsaws	G2	2	Lawn and Garden Equipment	C	N	HH	NP	84,321.02	93,543.89	5,578.49
Chainsaws Preempt	G2	15	Lawn and Garden Equipment	C	P	HH	NP	73,930.96	82,017.42	11,824.14
Chippers/Stump Grinders-Trailer	G4	25	Lawn and Garden Equipment	C	P	NHH	P	752.45	3,641.42	5,222.41
Chippers/Stump Grinders	D	500	Lawn and Garden Equipment	U	N	NHH	P	43.77	54.95	614.56
Dozers (Crawler Tractors)	D	120	Construction and Mining Equipment	U	P	NHH	NP	9,964.61	32,832.70	99,124.44
Fellers/Bunchers	D	250	Logging Equipment	U	N	NHH	NP	446.00	1,791.48	15,800.90
Loaders, Rubber Tired	D	120	Construction and Mining Equipment	U	P	NHH	NP	9,277.15	28,477.54	76,825.60
Loaders, Skid Steer	D	50	Construction and Mining Equipment	U	P	NHH	NP	21,847.39	58,396.69	68,538.28
Mowers, Rear Engine Riding	G4	15	Lawn and Garden Equipment	C	N	NHH	NP	152,649.90	158,868.50	52,602.74
Skidders	D	175	Logging Equipment	U	P	NHH	NP	435.00	1,974.60	12,601.44
Trimmers/Edgers/Brush Cutters	G2	2	Lawn and Garden Equipment	C	N	HH	NP	274,930.80	127,989.20	5,676.90
Trimmers/Edgers/Brush Cutters	G4	5	Lawn and Garden Equipment	C	P	NHH	NP	50,891.20	26,482.19	812.16

			Emissions in total tons per day (tpd)							
Equipment	**Fuel**	**MaxHP**	**ROG Exhaust**	**CO Exhaust**	**NOX Exhaust**	**SO2 Exhaust**	**PM Exhaust**	**CO2 Exhaust**	**N2O Exhaust**	**CH4 Exhaust**
Air Compressors	G4	15	0.07	2.67	0.05	0.00	0.04	4.44	0.01	0.00
Chainsaws	G2	2	4.66	8.44	0.07	0.00	0.01	22.80	0.04	0.29
Chainsaws Preempt	G2	15	9.89	17.88	0.16	0.00	0.03	48.34	0.05	0.61
Chippers/Stump Grinders-Trailer	G4	25	0.42	15.65	0.27	0.00	0.20	24.20	0.02	0.02
Chippers/Stump Grinders	D	500	0.00	0.02	0.05	0.00	0.00	6.79	-	0.00
Dozers (Crawler Tractors)	D	120	2.12	7.97	12.61	0.01	1.11	1,079.40	-	0.19
Fellers/Bunchers	D	250	0.11	0.34	1.01	0.00	0.03	174.50	-	0.01
Loaders, Rubber Tired	D	120	1.38	5.91	8.56	0.01	0.75	838.10	-	0.12
Loaders, Skid Steer	D	50	1.51	6.60	6.65	0.01	0.46	744.45	-	0.14
Mowers, Rear Engine Riding	G4	15	2.45	153.42	1.76	0.01	0.12	257.20	0.26	0.14
Skidders	D	175	0.11	0.79	0.90	0.00	0.05	138.22	-	0.01
Trimmers/Edgers/Brush Cutters	G2	2	3.06	10.09	0.09	0.00	0.02	27.26	0.05	0.19
Trimmers/Edgers/Brush Cutters	G4	5	0.11	1.86	0.05	0.00	0.00	4.51	0.02	0.01

			Fuel Consumed	Engine Exhaust Emission Rates in lbs/day/unit							
Equipment	**Fuel**	**MaxHP**	**(gal/day/unit)**	**VOC**	**CO**	**NOx**	**SO_2**	**PM**	**CO_2**	**N_2O**	**CH_4**
Air Compressors	G4	15	0.4644	0.0731	2.6843	0.0537	0.0001	0.0374	4.4666	0.0056	0.0041
Chainsaws	G2	2	0.0662	0.1106	0.2001	0.0017	0.0000	0.0003	0.5409	0.0009	0.0069
Chainsaws Preempt	G2	15	0.1599	0.2675	0.4838	0.0042	0.0001	0.0008	1.3076	0.0014	0.0166
Chippers/Stump Grinders-Trailer	G4	25	6.9405	1.1238	41.5865	0.7193	0.0016	0.5393	64.3272	0.0429	0.0621
Chippers/Stump Grinders	D	500	14.0392	0.1771	0.6863	2.1410	0.0030	0.0664	309.9953	0.0000	0.0160
Dozers (Crawler Tractors)	D	120	9.9476	0.4258	1.5991	2.5304	0.0025	0.2230	216.6465	0.0000	0.0384
Fellers/Bunchers	D	250	35.4280	0.4717	1.5164	4.5438	0.0088	0.1442	782.5101	0.0000	0.0426
Loaders, Rubber Tired	D	120	8.2812	0.2977	1.2734	1.8450	0.0021	0.1610	180.6812	0.0000	0.0269
Loaders, Skid Steer	D	50	3.1371	0.1381	0.6042	0.6085	0.0009	0.0419	68.1499	0.0000	0.0125
Mowers, Rear Engine Riding	G4	15	0.3446	0.0321	2.0101	0.0230	0.0001	0.0016	3.3698	0.0034	0.0018
Skidders	D	175	28.9688	0.5193	3.6528	4.1158	0.0072	0.2287	635.4924	0.0000	0.0469
Trimmers/Edgers/Brush Cutters	G2	2	0.0206	0.0223	0.0734	0.0006	0.0000	0.0001	0.1983	0.0004	0.0014
Trimmers/Edgers/Brush Cutters	G4	5	0.0160	0.0042	0.0730	0.0019	0.0000	0.0001	0.1774	0.0006	0.0002

			(unit gal/day)	Emissions in lbs/day/unit							
Equipment	**Fuel**	**MaxHP**	**Consumption**	**ROG Exhaust**	**CO Exhaust**	**NOX Exhaust**	**SO2 Exhaust**	**PM Exhaust**	**CO2 Exhaust**	**N2O Exhaust**	**CH4 Exhaust**
Air Compressors	G4	15	0.3119	0.0481	1.8031	0.0353	0.0001	0.0252	3.0038	0.0037	0.0027
Asphalt Pavers	G4	25	1.8302	0.2843	10.8853	0.1831	0.0004	0.1437	17.1365	0.0110	0.0159
Cement and Mortar Mixers	G4	15	0.1425	0.0274	0.8599	0.0129	0.0000	0.0106	1.2942	0.0014	0.0015
Chainsaws	G2	2	0.0008	0.0008	0.0033	0.0000	0.0000	0.0000	0.0069	0.0000	0.0001
Concrete/Industrial Saws	G4	15	0.6715	0.1008	3.8762	0.0742	0.0002	0.0544	6.4858	0.0061	0.0057
Cranes	D	120	9.2678	0.3702	1.4573	2.2189	0.0024	0.1985	202.0031	0.0000	0.0334
Crawler Tractors	D	120	9.9476	0.4258	1.5991	2.5304	0.0025	0.2230	216.6465	0.0000	0.0384
Generator Sets	G4	15	0.1740	0.0242	1.0233	0.0151	0.0000	0.0009	1.6573	0.0015	0.0014
Other Construction Equipment	D	15	1.0019	0.0255	0.1339	0.1599	0.0003	0.0062	21.9342	0.0000	0.0023
Pavers	D	120	8.3284	0.3636	1.3255	2.1905	0.0021	0.1911	181.3736	0.0000	0.0328
Paving Equipment	G4	15	0.3643	0.0547	2.1037	0.0401	0.0001	0.0295	3.5168	0.0036	0.0031
Pumps	G4	5	0.0689	0.0260	0.3226	0.0080	0.0000	0.0012	0.7241	0.0012	0.0015
Rollers	D	120	5.9658	0.2176	0.8967	1.3801	0.0015	0.1178	130.1818	0.0000	0.0196
Rubber Tired Loaders	D	120	8.2812	0.2977	1.2734	1.8450	0.0021	0.1610	180.6812	0.0000	0.0269
Skid Steer Loaders	G4	50	1.8705	0.0473	2.9564	0.0726	0.0004	0.0024	31.2772	0.0058	0.0027
Tractors/Loaders/Backhoes	D	120	7.1979	0.2112	1.0730	1.3882	0.0018	0.1165	157.2990	0.0000	0.0191
Trenchers	G4	50	2.8087	0.2188	6.4320	0.3085	0.0005	0.0033	43.2692	0.0138	0.0123
Welders	G4	25	0.3925	0.0644	2.3523	0.0380	0.0001	0.0304	3.6337	0.0029	0.0036

Prescribed Burning Estimates

From: U.S. EPA. 1996. "Wildfires and Prescribed Burning," (October) in *Compilation of Air Pollutant Emission Factors - Volume I: Stationary Point and Area Sources (AP-42) Fifth Edition.* Office of Air Quality Planning & Standards, Research Triangle Park, NC.

	EBH Equivalent	Estimated Average Fuel Loading		Pollutant Emission Factors, grams pollutant per kilogram fuel (g/kg)[a]								
Fire/Fuel Configuration	Fuel Type	Mg/hectare	kg/acre	CO	ROG	NOx	SO2	PM10	PM2.5	CO2	N2O	CH4
90% Pile Burn + 10% Broadcast Burn[b]	Eucalyptus/Acacia	58.67	23,743	44.5	6.4	3.85	NA	4.8	4.7	NA	0.23	2.23
90% Pile Burn + 10% Broadcast Burn[b]	Oak/Bay	19.27	7,799	44.5	6.4	3.85	NA	4.8	4.7	NA	0.23	2.23
90% Pile Burn + 10% Broadcast Burn[b]	Pine	42.99	17,396	50.8	4.2	3.85	NA	4.9	4.9	NA	0.23	2.19
Piled Logging Slash[c]	Piled	14.07	5,693	37	NA	4	NA	4	4	NA	0.23	1.8
90% Pile Burn + 10% Broadcast Burn[b]	Scrub	12.49	5,055	43.6	6.9	4	NA	5.1	4.9	NA	NA	2.24
90% Pile Burn + 10% Broadcast Burn[b]	Chaparral	28.25	11,433	43.4	12.5	4	NA	4.7	4.6	NA	NA	2.07
90% Pile Burn + 10% Broadcast Burn[b]	Grass	1.46	591	40.8	0	3.7	NA	4.6	4.6	NA	NA	NA
Broadcast Logging Slash - Hardwood[c]	Eucalyptus-Acacia	58.67	23,743	112	6.4	2.5	NA	12	11	NA	0.23	6.1
Broadcast Logging Slash - Hardwood[d]	Oak-Bay	19.27	7,799	112	6.4	2.5	NA	12	11	NA	0.23	6.1
Broadcast Logging Slash - Coniferous[d]	Pine_	42.99	17,396	175	4.2	2.5	NA	13	13	NA	0.23	5.7
Range Sagebrush[d]	Scrub_	12.49	5,055	103	6.9	4	NA	15	13	NA	NA	6.2
Range Chaparral[d]	Chaparral_	28.25	11,433	101	12.5	4	NA	11	10	NA	NA	4.5
Grassland[d]	Grass_	1.46	591	75	0	1	NA	10	10	NA	NA	NA

Notes:

a. Source for emission factors: U.S. EPA. 1996. "Wildfires and Prescribed Burning," (October) in Compilation of Air Pollutant Emission Factors - Volume I: Stationary Point and Area Sources (AP-42) Fifth Edition. Office of Air Quality Planning & Standards, Research Triangle Park, NC. Tables 13.1-3 and 13.1-5.

b. Per conversation with EBRPD, FEMA and CDM Smith (3/20/2013), 90% of fuel will be piled burned with 10% broadcast burned.

c. Fuel loading values for eucalyptus are averages from the following sources: Agee, J.K., Wakimoto, R.H., Darley, E.F., and Biswell, H.H. 1973. Eucalyptus Fuel Dynamics and Fire Hazard in the Oakland Hills. *California Agriculture* , September, pp. 13-15. Table 2; and National Park Services. 2006. Eucalyptus - A Complex Challenge: Fire Management, Resource Protection, and the Legacy of Tasmanian Blue Gum. U.S. Department of the Interior.

d. Fuel loading values are averages from the following sources: Clinton, N.E., Gong, P. & Scott, K. 2006. Quantification of pollutants emitted from very large wildland fires in Southern California, USA. *Atmospheric Environment* , 40: 3686-3695. Table 2; National Park Services. 2006. Eucalyptus - A Complex Challenge: Fire Management, Resource Protection, and the Legacy of Tasmanian Blue Gum. U.S. Department of the Interior; and Russell, W.H. and J.R. McBride. 2003. Landscape scale vegetation-type conversion and fire hazard in the San Francisco bay area open spaces. Landscape and Urban Planning, 64: 201-208.

	EBH Equivalent	Effective Loading,	Pollutant Emission Factors for Thinning/Clearing, pounds of pollutant per acre (lbs/acre)[a]								
Fire/Fuel Configuration	Fuel Type	kg/acre	CO	ROG	NOx	SO2	PM10	PM2.5	CO2	N2O	CH4
90% Pile Burn + 10% Broadcast Burn[b]	Eucalyptus/Acacia	23,743	2329	335	202	NA	251	246	NA	12	117
90% Pile Burn + 10% Broadcast Burn[b]	Oak/Bay	7,799	765	110	66	NA	83	81	NA	4	38
90% Pile Burn + 10% Broadcast Burn[b]	Pine	17,396	1948	161	148	NA	188	188	NA	9	84
Piled Logging Slash[c]	Piled	5,693	464	NA	50	NA	50	50	NA	3	23
90% Pile Burn + 10% Broadcast Burn[b]	Scrub	5,055	486	77	45	NA	57	55	NA	NA	25
90% Pile Burn + 10% Broadcast Burn[b]	Chaparral	11,433	1094	315	101	NA	118	116	NA	NA	52
90% Pile Burn + 10% Broadcast Burn[b]	Grass	591	53	0	5	NA	6	6	NA	NA	NA
Broadcast Logging Slash - Hardwood[c]	Eucalyptus-Acacia	23,743	5863	335	131	NA	628	576	NA	12	319
Broadcast Logging Slash - Hardwood[d]	Oak-Bay	7,799	1926	110	43	NA	206	189	NA	4	105
Broadcast Logging Slash - Coniferous[d]	Pine_	17,396	6711	161	96	NA	499	499	NA	9	219
Range Sagebrush[d]	Scrub_	5,055	1148	77	45	NA	167	145	NA	NA	69
Range Chaparral[d]	Chaparral_	11,433	2546	315	101	NA	277	252	NA	NA	113
Grassland[d]	Grass_	591	98	0	1	NA	13	13	NA	NA	NA

No Action Alternative: Totals-Summary

Site	Total Emission (tons)						Total Emissions (tonnes)				Fuel (gal)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
No Action												
UCB-Claremont Canyon	0.07	0.02	0.14	0.00	0.02	0.01	20.08	0.000	0.001	20.20	10.61	603.69
UCB-Strawberry Canyon	0.10	0.03	0.18	0.00	0.03	0.01	26.15	0.000	0.002	26.30	13.82	786.20
UCB-Frowning Ridge	0.15	0.04	0.27	0.00	0.04	0.02	39.69	0.001	0.002	39.92	20.97	1,193.33
Oakland - North Hills Skyline	0.07	0.02	0.13	0.00	0.02	0.01	19.61	0.000	0.001	19.73	10.36	589.65
Oakland - Caldecott Tunnel	0.06	0.02	0.11	0.00	0.02	0.01	16.81	0.000	0.001	16.91	8.88	505.41
EBRPD - Anthony Chabot Regional Park	0.41	0.07	0.48	0.00	0.07	0.03	70.90	0.001	0.005	71.39	199.45	2,218.19
EBRPD - Claremont Canyon Regional Preserve	0.06	0.01	0.07	0.00	0.01	0.00	10.68	0.000	0.001	10.75	180.94	224.63
EBRPD - Huckleberry Botanic Regional Preserve	0.02	0.01	0.02	0.00	0.00	0.00	3.74	0.000	0.000	3.77	4.19	238.67
EBRPD - Kennedy Grove Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Lake Chabot Regional Park	0.01	0.00	0.01	0.00	0.00	0.00	1.02	0.000	0.000	1.03	1.23	70.20
EBRPD - Leona Canyon Regional Open Space	0.01	0.00	0.01	0.00	0.00	0.00	1.02	0.000	0.000	1.03	1.23	70.20
EBRPD - Miller/Knox Regional Shoreline	0.02	0.01	0.03	0.00	0.00	0.00	4.33	0.000	0.000	4.37	32.48	210.63
EBRPD - Redwood Regional Park	0.09	0.02	0.15	0.00	0.02	0.01	22.59	0.000	0.001	22.73	153.72	617.73
EBRPD - Sibley Volcanic Regional Preserve	0.07	0.02	0.12	0.00	0.02	0.01	17.40	0.000	0.001	17.50	179.33	449.25
EBRPD - Sobrante Ridge Regional Preserve	0.01	0.00	0.01	0.00	0.00	0.00	1.87	0.000	0.000	1.88	0.99	56.16
EBRPD - Temescal Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Tilden Regional Park	0.22	0.05	0.39	0.00	0.06	0.02	56.98	0.001	0.003	57.31	74.29	1,670.67
EBRPD - Wildcat Canyon Regional Park	0.09	0.02	0.11	0.00	0.03	0.01	17.72	0.000	0.002	17.86	776.07	126.35
No Action	**1.44**	**0.34**	**2.22**	**0.00**	**0.35**	**0.14**	**330.59**	**0.005**	**0.022**	**332.68**	**1,668.57**	**9,630.94**

Category	Total Emission (tons)						Total Emissions (tonnes)				Fuel (gal)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
No Action												
Offroad	0.73	0.23	0.85	0.00	0.03	0.02	111.64	0.001	0.015	112.33	1,668.57	9,630.94
Onroad	0.71	0.11	1.37	0.00	0.32	0.11	218.95	0.004	0.007	220.36	-	-
Dust	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-
Burn	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-
No Action Totals	**1.44**	**0.34**	**2.22**	**0.00**	**0.35**	**0.14**	**330.59**	**0.005**	**0.022**	**332.68**	**1,668.57**	**9,630.94**

NO ACTION (Alternative 1) Treated Area (acres) --> 42.81

UCB-Claremont Canyon

	Treated Area (acres) -->	42.81	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	0	43	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	43	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	8.605	4.758	0.075	0.001	0.014	0.012	23	0.039	0.296	2.845
Offroad	Chainsaws Preempt	G	1	43	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	20.803	11.502	0.181	0.002	0.033	0.030	56	0.062	0.715	6.877
Offroad	Chippers/Stump Grinders	D	1	43	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	29.513	7.614	92.063	0.131	2.854	2.626	13330	0.000	0.687	603.686
Offroad	Fellers/Bunchers	D	0	43	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	43	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	43	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	3.155	0.958	0.027	0.000	0.005	0.005	9	0.015	0.060	0.888
Onroad	Worker Trips-Paved Roads	G	3	43	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	40.827	3.831	4.102	0.065	3.017	0.897	5991	0.303	0.344	NA
Onroad	Worker Trips-Unpaved Roads	G	0	43	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roads	D	1	43	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	44.588	9.882	177.908	0.240	36.519	13.361	24857	0.229	0.614	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Roads	D	0	43	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**				**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**147.490**	**38.545**	**274.355**	**0.439**	**42.442**	**16.931**	**44266**	**0.647**	**2.715**	**614.296**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 56.34

UCB-Strawberry Canyon

	Treated Area (acres) -->	56.34	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	0	56	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	56	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	11.207	6.196	0.097	0.001	0.018	0.016	30	0.050	0.385	3.705
Offroad	Chainsaws Preempt	G	1	56	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	27.092	14.979	0.235	0.003	0.043	0.039	73	0.080	0.931	8.956
Offroad	Chippers/Stump Grinders	D	1	56	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	38.435	9.916	119.896	0.170	3.717	3.420	17360	0.000	0.895	786.196
Offroad	Fellers/Bunchers	D	0	56	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	56	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	56	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	4.109	1.248	0.036	0.000	0.006	0.006	11	0.020	0.078	1.156
Onroad	Worker Trips-Paved Roads	G	3	56	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	53.170	4.990	5.342	0.085	3.929	1.168	7802	0.395	0.448	NA
Onroad	Worker Trips-Unpaved Roads	G	0	56	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	5	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	58.068	12.869	231.694	0.312	47.560	17.400	32372	0.298	0.800	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**192.080**	**50.198**	**357.300**	**0.572**	**55.273**	**22.049**	**57648**	**0.843**	**3.536**	**800.013**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 85.10

UCB - Frowning Ridge (Oakland)

	Treated Area (acres) -->	85.10	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	0	85	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	85	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	17.010	9.405	0.148	0.002	0.027	0.025	46	0.076	0.585	5.623
Offroad	Chainsaws Preempt	G	1	85	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	41.122	22.736	0.357	0.005	0.065	0.060	111	0.122	1.413	13.594
Offroad	Chippers/Stump Grinders	D	1	85	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	58.339	15.051	181.985	0.259	5.642	5.191	26350	0.000	1.358	1193.333
Offroad	Fellers/Bunchers	D	0	85	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	85	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	85	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	6.237	1.894	0.054	0.001	0.010	0.009	17	0.030	0.118	1.755
Onroad	Worker Trips-Paved Roads	G	3	85	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	80.704	7.574	8.108	0.129	5.964	1.772	11842	0.599	0.679	NA
Onroad	Worker Trips-Unpaved Roads	G	0	85	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	85	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	88.138	19.533	351.678	0.474	72.189	26.411	49136	0.452	1.214	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	85	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**291.550**	**76.193**	**542.330**	**0.868**	**83.896**	**33.468**	**87502**	**1.279**	**5.367**	**1214.306**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 41.57

Oakland - North Hills Skyline

	Treated Area (acres) -->	41.57	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	0	42	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	42	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	8.405	4.647	0.073	0.001	0.013	0.012	23	0.038	0.289	2.779
Offroad	Chainsaws Preempt	G	1	42	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	20.319	11.234	0.176	0.002	0.032	0.029	55	0.060	0.698	6.717
Offroad	Chippers/Stump Grinders	D	1	42	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	28.826	7.437	89.922	0.128	2.788	2.565	13020	0.000	0.671	589.647
Offroad	Fellers/Bunchers	D	0	42	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	42	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	42	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	3.082	0.936	0.027	0.000	0.005	0.004	8	0.015	0.058	0.867
Onroad	Worker Trips-Paved Roads	G	3	42	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	39.877	3.742	4.006	0.064	2.947	0.876	5851	0.296	0.336	NA
Onroad	Worker Trips-Unpaved Roads	G	0	42	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	42	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	43.551	9.652	173.770	0.234	35.670	13.050	24279	0.224	0.600	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	42	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**144.060**	**37.648**	**267.975**	**0.429**	**41.455**	**16.537**	**43236**	**0.632**	**2.652**	**600.010**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 35.54

Oakland - Caldecott Tunnel

	Treated Area (acres) -->	35.54	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	0	36	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	36	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	7.204	3.983	0.063	0.001	0.011	0.010	19	0.032	0.248	2.382
Offroad	Chainsaws Preempt	G	1	36	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	17.416	9.629	0.151	0.002	0.027	0.025	47	0.052	0.599	5.758
Offroad	Chippers/Stump Grinders	D	1	36	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	24.708	6.375	77.076	0.110	2.390	2.198	11160	0.000	0.575	505.411
Offroad	Fellers/Bunchers	D	0	36	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	36	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	36	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	2.642	0.802	0.023	0.000	0.004	0.004	7	0.013	0.050	0.743
Onroad	Worker Trips-Paved Roads	G	3	36	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	34.180	3.208	3.434	0.055	2.526	0.751	5015	0.254	0.288	NA
Onroad	Worker Trips-Unpaved Roads	G	0	36	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	36	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	37.329	8.273	148.946	0.201	30.574	11.186	20811	0.192	0.514	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	36	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**123.480**	**32.270**	**229.693**	**0.368**	**35.533**	**14.175**	**37060**	**0.542**	**2.273**	**514.294**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 164.86

EBRPD - Anthony Chabot Regional Park

AC001	Treated Area (acres) -->	3.86	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																								
Offroad	Air Compressors	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	4	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1	4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders	D	1	4	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Trimmers/Edgers/Brush Cutters	G	1	4	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	3	4	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**9.572**	**2.666**	**8.972**	**0.019**	**0.551**	**0.332**	**1805**	**0.039**	**0.195**	**57.144**

AC002	Treated Area (acres) -->	1.89	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	2	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1	2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	D	1	2	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Trimmers/Edgers/Brush Cutters	G	1	2	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	3	2	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA
Onroad	Worker Trips-Unpaved Roads	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**6.860**	**1.793**	**12.761**	**0.020**	**1.974**	**0.787**	**2059**	**0.030**	**0.126**	**28.572**

AC003	Treated Area (acres) -->	3.58	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	4	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1	4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders	D	1	4	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Trimmers/Edgers/Brush Cutters	G	1	4	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	3	4	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	4	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	4.148	0.919	16.550	0.022	3.397	1.243	2312	0.021	0.057	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**13.720**	**3.586**	**25.521**	**0.041**	**3.948**	**1.575**	**4118**	**0.060**	**0.253**	**57.144**

AC006	Treated Area (acres) -->	22.04	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																								
Offroad	Air Compressors	G	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	22	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	4.403	2.434	0.038	0.000	0.007	0.006	12	0.020	0.151	1.455
Offroad	Chainsaws Preempt	G	1	22	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	10.643	5.885	0.092	0.001	0.017	0.015	29	0.032	0.366	3.519
Offroad	Chippers/Stump Grinders	D	1	22	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	15.100	3.896	47.102	0.067	1.460	1.343	6820	0.000	0.351	308.863
Offroad	Chippers/Stump Grinders	D	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Fellers/Bunchers	D	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	22	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.614	0.490	0.014	0.000	0.003	0.002	4	0.008	0.030	0.454
Onroad	Worker Trips-Paved Roads	G	3	22	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	20.888	1.960	2.099	0.033	1.544	0.459	3065	0.155	0.176	NA
Onroad	Worker Trips-Unpaved Roads	G	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.23	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	9.44	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.26	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	6.16	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.44	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**52.648**	**14.665**	**49.345**	**0.102**	**3.030**	**1.826**	**9930**	**0.214**	**1.075**	**314.291**

AC007	Treated Area (acres) -->	7.86	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	8	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.601	0.885	0.014	0.000	0.003	0.002	4	0.007	0.055	0.529
Offroad	Chainsaws Preempt	G	1	8	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.870	2.140	0.034	0.000	0.006	0.006	10	0.011	0.133	1.279
Offroad	Chippers/Stump Grinders	G	1	8	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	5.491	1.417	17.128	0.024	0.531	0.489	2480	0.000	0.128	112.314
Offroad	Loaders, Skid Steer	D	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Mowers, Rear Engine Riding	G	1	8	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	16.081	0.257	0.184	0.001	0.013	0.012	27	0.027	0.014	2.757
Offroad	Trimmers/Edgers/Brush Cutters	G	1	8	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.587	0.178	0.005	0.000	0.001	0.001	2	0.003	0.011	0.165
Onroad	Worker Trips-Paved Roads	G	3	8	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.064	NA
Onroad	Worker Trips-Unpaved Roads	G	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	1.45	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.52	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	1.50	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.46	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	8	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	8.295	1.838	33.099	0.045	6.794	2.486	4625	0.043	0.114	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**43.521**	**7.428**	**51.227**	**0.082**	**7.909**	**3.161**	**8262**	**0.147**	**0.520**	**117.044**

AC011	Treated Area (acres) -->	20.91	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	21	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	21	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	4.203	2.324	0.036	0.000	0.007	0.006	11	0.019	0.144	1.389
Offroad	Chainsaws Preempt	G	1	21	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	10.159	5.617	0.088	0.001	0.016	0.015	27	0.030	0.349	3.359
Offroad	Chippers/Stump Grinders	D	1	21	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	14.413	3.719	44.961	0.064	1.394	1.282	6510	0.000	0.336	294.823
Offroad	Fellers/Bunchers	D	0	21	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	21	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Mowers, Rear Engine Riding	G	1	21	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	42.213	0.675	0.483	0.002	0.033	0.030	71	0.070	0.038	7.237
Offroad	Skidders	D	0	21	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	21	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.541	0.468	0.013	0.000	0.002	0.002	4	0.007	0.029	0.434
Onroad	Worker Trips-Paved Roads	G	3	21	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	19.939	1.871	2.003	0.032	1.474	0.438	2926	0.148	0.168	NA
Onroad	Worker Trips-Unpaved Roads	G	0	21	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	5.97	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.94	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	6.88	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.15	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	21	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	21.775	4.826	86.885	0.117	17.835	6.525	12139	0.112	0.300	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	21	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**114.243**	**19.499**	**134.470**	**0.217**	**20.760**	**8.299**	**21689**	**0.387**	**1.364**	**307.241**

AC012	Treated Area (acres) -->	15.10	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1																								
Offroad	Air Compressors	G	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	15	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	3.002	1.660	0.026	0.000	0.005	0.004	8	0.013	0.103	0.992
Offroad	Chainsaws Preempt	G	1	15	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.257	4.012	0.063	0.001	0.011	0.011	20	0.022	0.249	2.399
Offroad	Chippers/Stump Grinders	D	1	15	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	10.295	2.656	32.115	0.046	0.996	0.916	4650	0.000	0.240	210.588
Offroad	Fellers/Bunchers	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Mowers, Rear Engine Riding	G	1	15	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	30.152	0.482	0.345	0.001	0.023	0.022	51	0.050	0.027	5.169
Offroad	Skidders	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	15	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.101	0.334	0.010	0.000	0.002	0.002	3	0.005	0.021	0.310
Onroad	Worker Trips-Paved Roads	G	3	15	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	14.242	1.337	1.431	0.023	1.053	0.313	2090	0.106	0.120	NA
Onroad	Worker Trips-Unpaved Roads	G	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	4.37	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	4.39	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	1.31	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	15	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	15.554	3.447	62.061	0.084	12.739	4.661	8671	0.080	0.214	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**81.602**	**13.928**	**96.050**	**0.155**	**14.829**	**5.928**	**15492**	**0.276**	**0.974**	**219.458**

AC013	Treated Area (acres) -->	14.75	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	15	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	3.002	1.660	0.026	0.000	0.005	0.004	8	0.013	0.103	0.992
Offroad	Chainsaws Preempt	G	1	15	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.257	4.012	0.063	0.001	0.011	0.011	20	0.022	0.249	2.399
Offroad	Chippers/Stump Grinders	D	1	15	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	10.295	2.656	32.115	0.046	0.996	0.916	4650	0.000	0.240	210.588
Offroad	Fellers/Bunchers	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Mowers, Rear Engine Riding	G	1	15	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	30.152	0.482	0.345	0.001	0.023	0.022	51	0.050	0.027	5.169
Offroad	Skidders	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	15	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.101	0.334	0.010	0.000	0.002	0.002	3	0.005	0.021	0.310
Onroad	Worker Trips-Paved Roads	G	3	15	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	14.242	1.337	1.431	0.023	1.053	0.313	2090	0.106	0.120	NA
Onroad	Worker Trips-Unpaved Roads	G	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.05	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	6.89	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	7.81	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	15	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	15.554	3.447	62.061	0.084	12.739	4.661	8671	0.080	0.214	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**81.602**	**13.928**	**96.050**	**0.155**	**14.829**	**5.928**	**15492**	**0.276**	**0.974**	**219.458**

AC014	Treated Area (acres) -->	78.87	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 2 years																								
Offroad	Air Compressors	G	0	75	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	75	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	15.009	8.298	0.130	0.002	0.024	0.022	41	0.067	0.516	4.962
Offroad	Chainsaws Preempt	G	1	75	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	36.284	20.061	0.315	0.004	0.057	0.053	98	0.108	1.247	11.995
Offroad	Chippers/Stump Grinders	D	1	75	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	51.476	13.280	160.575	0.228	4.978	4.580	23250	0.000	1.198	1052.941
Offroad	Fellers/Bunchers	D	0	75	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	75	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Mowers, Rear Engine Riding	G	1	75	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	150.761	2.411	1.725	0.007	0.117	0.108	253	0.252	0.135	25.845
Offroad	Skidders	D	0	75	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	75	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	5.503	1.671	0.048	0.001	0.009	0.008	15	0.026	0.104	1.549
Onroad	Worker Trips-Paved Roads	G	3	75	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	71.209	6.683	7.154	0.114	5.263	1.564	10449	0.529	0.600	NA
Onroad	Worker Trips-Unpaved Roads	G	0	75	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.01	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	10.90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	43.88	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	20.08	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	75	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	77.769	17.235	310.304	0.418	63.696	23.304	43355	0.399	1.071	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	75	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**408.012**	**69.640**	**480.251**	**0.773**	**74.144**	**29.638**	**77460**	**1.381**	**4.871**	**1097.291**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 30.82

EBRPD - Claremont Canyon Regional Preserve

CC001	Treated Area (acres) -->	13.86	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																								
Offroad	Air Compressors	G	0	14	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	14	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	2.802	1.549	0.024	0.000	0.004	0.004	8	0.013	0.096	0.926
Offroad	Chainsaws Preempt	G	1	14	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.773	3.745	0.059	0.001	0.011	0.010	18	0.020	0.233	2.239
Offroad	Chippers/Stump Grinders	D	1	14	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	9.609	2.479	29.974	0.043	0.929	0.855	4340	0.000	0.224	196.549
Offroad	Fellers/Bunchers	D	0	14	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	14	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	14	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	14	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.027	0.312	0.009	0.000	0.002	0.001	3	0.005	0.019	0.289
Onroad	Worker Trips-Paved Roads	G	3	14	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	13.292	1.247	1.335	0.021	0.982	0.292	1950	0.099	0.112	NA
Onroad	Worker Trips-Unpaved Roads	G	0	14	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	2.23	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.53	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	0.43	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.27	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	14	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	14.517	3.217	57.923	0.078	11.890	4.350	8093	0.075	0.200	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	14	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**48.020**	**12.549**	**89.325**	**0.143**	**13.818**	**5.512**	**14412**	**0.211**	**0.884**	**200.003**

CC003	Treated Area (acres) -->	1.88	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	2	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1	2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	G	1	2	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Mowers, Rear Engine Riding	G	1	2	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	4.020	0.064	0.046	0.000	0.003	0.003	7	0.007	0.004	0.689
Offroad	Trimmers/Edgers/Brush Cutters	G	1	2	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	3	2	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA
Onroad	Worker Trips-Unpaved Roads	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	1.41	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**10.880**	**1.857**	**12.807**	**0.021**	**1.977**	**0.790**	**2066**	**0.037**	**0.130**	**29.261**

CC006	Treated Area (acres) -->	3.04	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	3	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.600	0.332	0.005	0.000	0.001	0.001	2	0.003	0.021	0.198
Offroad	Chainsaws Preempt	G	1	3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Trimmers/Edgers/Brush Cutters	G	1	3	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.220	0.067	0.002	0.000	0.000	0.000	1	0.001	0.004	0.062
Onroad	Worker Trips-Paved Roads	G	3	3	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	2.848	0.267	0.286	0.005	0.211	0.063	418	0.021	0.024	NA
Onroad	Worker Trips-Unpaved Roads	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**1.707**	**0.490**	**0.102**	**0.002**	**0.071**	**0.022**	**141**	**0.010**	**0.033**	**0.247**	**5.120**	**1.469**	**0.306**	**0.005**	**0.214**	**0.066**	**424**	**0.029**	**0.099**	**0.740**

CC007	Treated Area (acres) -->	1.72	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mo		s																						
Offroad	Air Compressors	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	2	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1	2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	D	1	2	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Mowers, Rear Engine Riding	G	1	2	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	4.020	0.064	0.046	0.000	0.003	0.003	7	0.007	0.004	0.689
Offroad	Trimmers/Edgers/Brush Cutters	G	1	2	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	3	2	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA
Onroad	Worker Trips-Unpaved Roads	G	4	2	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**4.674**	**0.734**	**2.286**	**0.005**	**2.247**	**0.296**	**465**	**0.014**	**0.051**	**14.631**	**9.347**	**1.469**	**4.572**	**0.010**	**4.493**	**0.591**	**930**	**0.027**	**0.102**	**29.261**

CC008	Treated Area (acres) -->	3.56	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mo		s																						
Offroad	Air Compressors	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	4	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1	4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders	G	1	4	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Mowers, Rear Engine Riding	G	1	4	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	8.041	0.129	0.092	0.000	0.006	0.006	13	0.013	0.007	1.378
Offroad	Trimmers/Edgers/Brush Cutters	G	1	4	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	3	4	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**4.403**	**0.699**	**2.266**	**0.005**	**0.139**	**0.084**	**455**	**0.013**	**0.051**	**14.631**	**17.613**	**2.795**	**9.064**	**0.019**	**0.557**	**0.338**	**1819**	**0.052**	**0.203**	**58.522**

CC010	Treated Area (acres) -->	4.36	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	4	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1	4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders	G	1	4	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Mowers, Rear Engine Riding	G	1	4	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	8.041	0.129	0.092	0.000	0.006	0.006	13	0.013	0.007	1.378
Offroad	Trimmers/Edgers/Brush Cutters	G	1	4	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	3	4	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	3.17	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	0.10	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**4.403**	**0.699**	**2.266**	**0.005**	**0.139**	**0.084**	**455**	**0.013**	**0.051**	**14.631**	**17.613**	**2.795**	**9.064**	**0.019**	**0.557**	**0.338**	**1819**	**0.052**	**0.203**	**58.522**

CC012	Treated Area (acres) -->	2.40	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mo	s																							
Offroad	Air Compressors	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	2	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1	2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	G	1	2	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Mowers, Rear Engine Riding	G	1	2	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	4.020	0.064	0.046	0.000	0.003	0.003	7	0.007	0.004	0.689
Offroad	Trimmers/Edgers/Brush Cutters	G	1	2	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	3	2	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA
Onroad	Worker Trips-Unpaved Roads	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**10.880**	**1.857**	**12.807**	**0.021**	**1.977**	**0.790**	**2066**	**0.037**	**0.130**	**29.261**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 16.71

EBRPD - Huckleberry Botanic Regional Preserve

HP001	Treated Area (acres) -->	1.06	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6		s																						
Offroad	Air Compressors	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	1	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066
Offroad	Chainsaws Preempt	G	1	1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	1	1	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039
Offroad	Fellers/Bunchers	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	1	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021
Onroad	Worker Trips-Paved Roads	G	3	1	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA
Onroad	Worker Trips-Unpaved Roads	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**

HP002	Treated Area (acres) -->	13.62	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	14	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	14	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	2.802	1.549	0.024	0.000	0.004	0.004	8	0.013	0.096	0.926
Offroad	Chainsaws Preempt	G	1	14	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.773	3.745	0.059	0.001	0.011	0.010	18	0.020	0.233	2.239
Offroad	Chippers/Stump Grinders	D	1	14	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	9.609	2.479	29.974	0.043	0.929	0.855	4340	0.000	0.224	196.549
Offroad	Trimmers/Edgers/Brush Cutters	G	1	14	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.027	0.312	0.009	0.000	0.002	0.001	3	0.005	0.019	0.289
Onroad	Worker Trips-Paved Roads	G	3	14	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	13.292	1.247	1.335	0.021	0.982	0.292	1950	0.099	0.112	NA
Onroad	Worker Trips-Unpaved Roads	G	0	14	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**33.503**	**9.332**	**31.401**	**0.065**	**1.928**	**1.162**	**6319**	**0.136**	**0.684**	**200.003**

HP003	Treated Area (acres) -->	0.78	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3		s																						
Offroad	Air Compressors	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	1	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066
Offroad	Chainsaws Preempt	G	1	1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	1	1	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039
Offroad	Trimmers/Edgers/Brush Cutters	G	1	1	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021
Onroad	Worker Trips-Paved Roads	G	3	1	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA
Onroad	Worker Trips-Unpaved Roads	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**

HP004	Treated Area (acres) -->	1.25	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mo		s																						
Offroad	Air Compressors	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	1	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066
Offroad	Chainsaws Preempt	G	1	1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	1	1	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039
Offroad	Trimmers/Edgers/Brush Cutters	G	1	1	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021
Onroad	Worker Trips-Paved Roads	G	3	1	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA
Onroad	Worker Trips-Unpaved Roads	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 4.72

EBRPD - Lake Chabot Regional Park

LC010	Treated Area (acres) -->	4.72	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	5	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.001	0.553	0.009	0.000	0.002	0.001	3	0.004	0.034	0.331
Offroad	Chainsaws Preempt	G	1	5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	1	5	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	3.432	0.885	10.705	0.015	0.332	0.305	1550	0.000	0.080	70.196
Offroad	Trimmers/Edgers/Brush Cutters	G	1	5	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.367	0.111	0.003	0.000	0.001	0.001	1	0.002	0.007	0.103
Onroad	Worker Trips-Paved Roads	G	3	5	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	4.747	0.446	0.477	0.008	0.351	0.104	697	0.035	0.040	NA
Onroad	Worker Trips-Unpaved Roads	G	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**11.965**	**3.333**	**11.215**	**0.023**	**0.689**	**0.415**	**2257**	**0.049**	**0.244**	**71.430**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 4.72

EBRPD - Leona Canyon Regional Open Space

LC010	Treated Area (acres) -->	4.72	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	5	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.001	0.553	0.009	0.000	0.002	0.001	3	0.004	0.034	0.331
Offroad	Chainsaws Preempt	G	1	5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	1	5	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	3.432	0.885	10.705	0.015	0.332	0.305	1550	0.000	0.080	70.196
Offroad	Trimmers/Edgers/Brush Cutters	G	1	5	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.367	0.111	0.003	0.000	0.001	0.001	1	0.002	0.007	0.103
Onroad	Worker Trips-Paved Roads	G	3	5	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	4.747	0.446	0.477	0.008	0.351	0.104	697	0.035	0.040	NA
Onroad	Worker Trips-Unpaved Roads	G	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**11.965**	**3.333**	**11.215**	**0.023**	**0.689**	**0.415**	**2257**	**0.049**	**0.244**	**71.430**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 17.706

EBRPD - Miller/Knox Regional Shoreline

MK001	Treated Area (acres) -->	4.94	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																								
Offroad	Air Compressors	G	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	5	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.001	0.553	0.009	0.000	0.002	0.001	3	0.004	0.034	0.331
Offroad	Chainsaws Preempt	G	1	5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	1	5	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	3.432	0.885	10.705	0.015	0.332	0.305	1550	0.000	0.080	70.196
Offroad	Chippers/Stump Grinders-Trailer	G	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Fellers/Bunchers	D	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	5	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.367	0.111	0.003	0.000	0.001	0.001	1	0.002	0.007	0.103
Onroad	Worker Trips-Paved Roads	G	3	5	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	4.747	0.446	0.477	0.008	0.351	0.104	697	0.035	0.040	NA
Onroad	Worker Trips-Unpaved Roads	G	0	5	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.26	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.86	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	0.86	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.50	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**11.965**	**3.333**	**11.215**	**0.023**	**0.689**	**0.415**	**2257**	**0.049**	**0.244**	**71.430**

MK002	Treated Area (acres) -->	0.36	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mo		s																						
Offroad	Air Compressors	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	1	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066
Offroad	Chainsaws Preempt	G	1	1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Trimmers/Edgers/Brush Cutters	G	1	1	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021
Onroad	Worker Trips-Paved Roads	G	3	1	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA
Onroad	Worker Trips-Unpaved Roads	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**1.707**	**0.490**	**0.102**	**0.002**	**0.071**	**0.022**	**141**	**0.010**	**0.033**	**0.247**	**1.707**	**0.490**	**0.102**	**0.002**	**0.071**	**0.022**	**141**	**0.010**	**0.033**	**0.247**

MK003	Treated Area (acres) -->	2.42	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mo		s																						
Offroad	Air Compressors	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	2	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1	2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	G	1	2	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Trimmers/Edgers/Brush Cutters	D	1	2	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	3	2	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA
Onroad	Worker Trips-Unpaved Roads	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**4.786**	**1.333**	**4.486**	**0.009**	**0.275**	**0.166**	**903**	**0.019**	**0.098**	**28.572**

MK004	Treated Area (acres) -->	2.66	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	3	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.600	0.332	0.005	0.000	0.001	0.001	2	0.003	0.021	0.198
Offroad	Chainsaws Preempt	G	1	3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders	D	1	3	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.059	0.531	6.423	0.009	0.199	0.183	930	0.000	0.048	42.118
Offroad	Chippers/Stump Grinders-Trailer	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Fellers/Bunchers	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	3	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.220	0.067	0.002	0.000	0.000	0.000	1	0.001	0.004	0.062
Onroad	Worker Trips-Paved Roads	G	3	3	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	2.848	0.267	0.286	0.005	0.211	0.063	418	0.021	0.024	NA
Onroad	Worker Trips-Unpaved Roads	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.04	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	2.62	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**10.290**	**2.689**	**19.141**	**0.031**	**2.961**	**1.181**	**3088**	**0.045**	**0.189**	**42.858**

MK005	Treated Area (acres) -->	7.33	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																								
Offroad	Air Compressors	G	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	7	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.401	0.775	0.012	0.000	0.002	0.002	4	0.006	0.048	0.463
Offroad	Chainsaws Preempt	G	1	7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.116	1.120
Offroad	Chippers/Stump Grinders	D	1	7	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	4.804	1.240	14.987	0.021	0.465	0.427	2170	0.000	0.112	98.274
Offroad	Chippers/Stump Grinders-Trailer	G	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Fellers/Bunchers	D	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	7	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.514	0.156	0.004	0.000	0.001	0.001	1	0.002	0.010	0.145
Onroad	Worker Trips-Paved Roads	G	3	7	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	6.646	0.624	0.668	0.011	0.491	0.146	975	0.049	0.056	NA
Onroad	Worker Trips-Unpaved Roads	G	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.85	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	6.48	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**16.752**	**4.666**	**15.701**	**0.033**	**0.964**	**0.581**	**3160**	**0.068**	**0.342**	**100.002**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 52.67

EBRPD - Redwood Regional Park

RD001	Treated Area (acres) -->	0.23	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	1	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066
Offroad	Chainsaws Preempt	G	1	1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	1	1	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039
Offroad	Chippers/Stump Grinders-Trailer	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Fellers/Bunchers	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	1	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021
Onroad	Worker Trips-Paved Roads	G	3	1	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA
Onroad	Worker Trips-Unpaved Roads	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**

RD002	Treated Area (acres) -->	4.26	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1		r																						
Offroad	Air Compressors	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	4	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1	4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders	D	1	4	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Fellers/Bunchers	D	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	4	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	3	4	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	4	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	4.148	0.919	16.550	0.022	3.397	1.243	2312	0.021	0.057	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**13.720**	**3.586**	**25.521**	**0.041**	**3.948**	**1.575**	**4118**	**0.060**	**0.253**	**57.144**

RD003	Treated Area (acres) -->	10.45	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1		r																						
Offroad	Air Compressors	G	0	10	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	10	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1	10	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	4.838	2.675	0.042	0.001	0.008	0.007	13	0.014	0.166	1.599
Offroad	Chippers/Stump Grinders	G	1	10	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	6.863	1.771	21.410	0.030	0.664	0.611	3100	0.000	0.160	140.392
Offroad	Trimmers/Edgers/Brush Cutters	G	1	10	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	3	10	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	9.495	0.891	0.954	0.015	0.702	0.208	1393	0.070	0.080	NA
Onroad	Worker Trips-Unpaved Roads	G	0	10	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**23.931**	**6.666**	**22.430**	**0.046**	**1.377**	**0.830**	**4514**	**0.097**	**0.489**	**142.859**

RD004	Treated Area (acres) -->	25.51	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 2 years																								
Offroad	Air Compressors	G	0	26	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	26	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	5.203	2.877	0.045	0.001	0.008	0.008	14	0.023	0.179	1.720
Offroad	Chainsaws Preempt	G	1	26	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	12.578	6.955	0.109	0.001	0.020	0.018	34	0.037	0.432	4.158
Offroad	Chippers/Stump Grinders	D	1	26	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	17.845	4.604	55.666	0.079	1.726	1.588	8060	0.000	0.415	365.019
Offroad	Fellers/Bunchers	D	0	26	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	26	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	26	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	26	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.908	0.579	0.017	0.000	0.003	0.003	5	0.009	0.036	0.537
Onroad	Worker Trips-Paved Roads	G	3	26	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	24.686	2.317	2.480	0.039	1.824	0.542	3622	0.183	0.208	NA
Onroad	Worker Trips-Unpaved Roads	G	0	26	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	26	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	26.960	5.975	107.572	0.145	22.081	8.079	15030	0.138	0.371	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	26	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**89.180**	**23.306**	**165.889**	**0.266**	**25.662**	**10.237**	**26765**	**0.391**	**1.642**	**371.435**

RD005a	Treated Area (acres) -->	25.51	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	1	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066
Offroad	Chainsaws Preempt	G	1	1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	1	1	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039
Offroad	Fellers/Bunchers	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	1	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021
Onroad	Worker Trips-Paved Roads	G	3	1	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA
Onroad	Worker Trips-Unpaved Roads	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**

RD005b	Treated Area (acres) -->	7.95	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1		r																						
Offroad	Air Compressors	G	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	8	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.601	0.885	0.014	0.000	0.003	0.002	4	0.007	0.055	0.529
Offroad	Chainsaws Preempt	G	1	8	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.870	2.140	0.034	0.000	0.006	0.006	10	0.011	0.133	1.279
Offroad	Chippers/Stump Grinders	D	1	8	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	5.491	1.417	17.128	0.024	0.531	0.489	2480	0.000	0.128	112.314
Offroad	Fellers/Bunchers	D	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	8	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.587	0.178	0.005	0.000	0.001	0.001	2	0.003	0.011	0.165
Onroad	Worker Trips-Paved Roads	G	3	8	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.064	NA
Onroad	Worker Trips-Unpaved Roads	G	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	8	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	8.295	1.838	33.099	0.045	6.794	2.486	4625	0.043	0.114	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	8	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**27.440**	**7.171**	**51.043**	**0.082**	**7.896**	**3.150**	**8235**	**0.120**	**0.505**	**114.288**

RD009	Treated Area (acres) -->	2.66	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	3	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.600	0.332	0.005	0.000	0.001	0.001	2	0.003	0.021	0.198
Offroad	Chainsaws Preempt	G	1	3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders	D	1	3	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.059	0.531	6.423	0.009	0.199	0.183	930	0.000	0.048	42.118
Offroad	Fellers/Bunchers	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	3	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.220	0.067	0.002	0.000	0.000	0.000	1	0.001	0.004	0.062
Onroad	Worker Trips-Paved Roads	G	3	3	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	2.848	0.267	0.286	0.005	0.211	0.063	418	0.021	0.024	NA
Onroad	Worker Trips-Unpaved Roads	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**10.290**	**2.689**	**19.141**	**0.031**	**2.961**	**1.181**	**3088**	**0.045**	**0.189**	**42.858**

RD011	Treated Area (acres) -->	0.76	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mo		s																						
Offroad	Air Compressors	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	1	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066
Offroad	Chainsaws Preempt	G	1	1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	1	1	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039
Offroad	Fellers/Bunchers	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	1	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021
Onroad	Worker Trips-Paved Roads	G	3	1	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA
Onroad	Worker Trips-Unpaved Roads	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 44.56

EBRPD - Sibley Volcanic Regional Preserve

SR001	Treated Area (acres) -->	7.32	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	7	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.401	0.775	0.012	0.000	0.002	0.002	4	0.006	0.048	0.463
Offroad	Chainsaws Preempt	G	1	7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.116	1.120
Offroad	Chippers/Stump Grinders	D	1	7	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	4.804	1.240	14.987	0.021	0.465	0.427	2170	0.000	0.112	98.274
Offroad	Loaders, Skid Steer	D	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	7	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.514	0.156	0.004	0.000	0.001	0.001	1	0.002	0.010	0.145
Onroad	Worker Trips-Paved Roads	G	3	7	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	6.646	0.624	0.668	0.011	0.491	0.146	975	0.049	0.056	NA
Onroad	Worker Trips-Unpaved Roads	G	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	3.12	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	1.97	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	0.41	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	7	1.037	0.230	4.137	0.006	0.849	0.311	578	NA	NA	NA	7.258	1.609	28.962	0.039	5.945	2.175	4046	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	NA	NA	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	NA	NA	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.010**	**0.049**	**14.286**	**24.010**	**6.275**	**44.662**	**0.071**	**6.909**	**2.756**	**7206**	**0.068**	**0.342**	**100.002**

SR003	Treated Area (acres) -->	3.39	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	3	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.600	0.332	0.005	0.000	0.001	0.001	2	0.003	0.021	0.198
Offroad	Chainsaws Preempt	G	1	3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders	D	1	3	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.059	0.531	6.423	0.009	0.199	0.183	930	0.000	0.048	42.118
Offroad	Fellers/Bunchers	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	3	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.220	0.067	0.002	0.000	0.000	0.000	1	0.001	0.004	0.062
Onroad	Worker Trips-Paved Roads	G	3	3	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	2.848	0.267	0.286	0.005	0.211	0.063	418	0.021	0.024	NA
Onroad	Worker Trips-Unpaved Roads	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**10.290**	**2.689**	**19.141**	**0.031**	**2.961**	**1.181**	**3088**	**0.045**	**0.189**	**42.858**

SR004	Treated Area (acres) -->	11.77	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	12	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	12	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	2.401	1.328	0.021	0.000	0.004	0.003	6	0.011	0.083	0.794
Offroad	Chainsaws Preempt	G	1	12	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.805	3.210	0.050	0.001	0.009	0.008	16	0.017	0.200	1.919
Offroad	Chippers/Stump Grinders	G	1	12	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	8.236	2.125	25.692	0.037	0.797	0.733	3720	0.000	0.192	168.470
Offroad	Trimmers/Edgers/Brush Cutters	G	1	12	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.881	0.267	0.008	0.000	0.001	0.001	2	0.004	0.017	0.248
Onroad	Worker Trips-Paved Roads	G	3	12	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	11.393	1.069	1.145	0.018	0.842	0.250	1672	0.085	0.096	NA
Onroad	Worker Trips-Unpaved Roads	G	0	12	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**28.717**	**7.999**	**26.916**	**0.056**	**1.653**	**0.996**	**5416**	**0.117**	**0.586**	**171.431**

SR005	Treated Area (acres) -->	22.08	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 yea		r																						
Offroad	Air Compressors	G	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	22	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	4.403	2.434	0.038	0.000	0.007	0.006	12	0.020	0.151	1.455
Offroad	Chainsaws Preempt	G	1	22	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	10.643	5.885	0.092	0.001	0.017	0.015	29	0.032	0.366	3.519
Offroad	Chippers/Stump Grinders	D	1	22	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	15.100	3.896	47.102	0.067	1.460	1.343	6820	0.000	0.351	308.863
Offroad	Fellers/Bunchers	D	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	22	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.614	0.490	0.014	0.000	0.003	0.002	4	0.008	0.030	0.454
Onroad	Worker Trips-Paved Roads	G	3	22	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	20.888	1.960	2.099	0.033	1.544	0.459	3065	0.155	0.176	NA
Onroad	Worker Trips-Unpaved Roads	G	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	22	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	22.812	5.056	91.023	0.123	18.684	6.836	12718	0.117	0.314	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	22	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**75.460**	**19.721**	**140.368**	**0.225**	**21.714**	**8.662**	**22647**	**0.331**	**1.389**	**314.291**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 3.8

EBRPD - Sobrante Ridge Regional Preserve

SO001	Treated Area (acres) -->	3.80	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	4	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1	4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders	D	1	4	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Trimmers/Edgers/Brush Cutters	G	1	4	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	3	4	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	1.65	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Chaparral	acres->	0.25	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	4	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	4.148	0.919	16.550	0.022	3.397	1.243	2312	0.021	0.057	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	4	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**13.720**	**3.586**	**25.521**	**0.041**	**3.948**	**1.575**	**4118**	**0.060**	**0.253**	**57.144**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 122.09

EBRPD - Tilden Regional Park

TI006	Treated Area (acres) -->	3.47	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 yea		r																						
Offroad	Air Compressors	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	3	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.600	0.332	0.005	0.000	0.001	0.001	2	0.003	0.021	0.198
Offroad	Chainsaws Preempt	G	1	3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders	G	1	3	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	2.059	0.531	6.423	0.009	0.199	0.183	930	0.000	0.048	42.118
Offroad	Trimmers/Edgers/Brush Cutters	G	1	3	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.220	0.067	0.002	0.000	0.000	0.000	1	0.001	0.004	0.062
Onroad	Worker Trips-Paved Roads	G	3	3	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	2.848	0.267	0.286	0.005	0.211	0.063	418	0.021	0.024	NA
Onroad	Worker Trips-Unpaved Roads	G	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**10.290**	**2.689**	**19.141**	**0.031**	**2.961**	**1.181**	**3088**	**0.045**	**0.189**	**42.858**

TI012	Treated Area (acres) -->	51.12	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																								
Offroad	Air Compressors	G	0	51	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	51	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	10.206	5.643	0.089	0.001	0.016	0.015	28	0.046	0.351	3.374
Offroad	Chainsaws Preempt	G	1	51	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	24.673	13.642	0.214	0.003	0.039	0.036	67	0.073	0.848	8.157
Offroad	Chippers/Stump Grinders	D	1	51	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	35.003	9.031	109.191	0.155	3.385	3.114	15810	0.000	0.815	716.000
Offroad	Fellers/Bunchers	D	0	51	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	51	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	51	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	51	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	3.742	1.136	0.032	0.000	0.006	0.005	10	0.018	0.071	1.053
Onroad	Worker Trips-Paved Roads	G	3	51	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	48.422	4.544	4.865	0.077	3.579	1.063	7105	0.359	0.408	NA
Onroad	Worker Trips-Unpaved Roads	G	0	51	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	2.20	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	4.03	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	1.72	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	2.73	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	2.11	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	51	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	52.883	11.720	211.007	0.284	43.313	15.847	29482	0.271	0.729	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	51	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**174.930**	**45.716**	**325.398**	**0.521**	**50.338**	**20.081**	**52501**	**0.768**	**3.220**	**728.583**

TI013	Treated Area (acres) -->	14.70	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 yea		r																						
Offroad	Air Compressors	G	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	15	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	3.002	1.660	0.026	0.000	0.005	0.004	8	0.013	0.103	0.992
Offroad	Chainsaws Preempt	G	1	15	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.257	4.012	0.063	0.001	0.011	0.011	20	0.022	0.249	2.399
Offroad	Chippers/Stump Grinders	D	1	15	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	10.295	2.656	32.115	0.046	0.996	0.916	4650	0.000	0.240	210.588
Offroad	Fellers/Bunchers	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	15	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	1.101	0.334	0.010	0.000	0.002	0.002	3	0.005	0.021	0.310
Onroad	Worker Trips-Paved Roads	G	3	15	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	14.242	1.337	1.431	0.023	1.053	0.313	2090	0.106	0.120	NA
Onroad	Worker Trips-Unpaved Roads	G	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	15	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	15.554	3.447	62.061	0.084	12.739	4.661	8671	0.080	0.214	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**51.450**	**13.446**	**95.705**	**0.153**	**14.805**	**5.906**	**15441**	**0.226**	**0.947**	**214.289**

TI014	Treated Area (acres) -->	2.23	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	2	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1	2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	D	1	2	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Fellers/Bunchers	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	2	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	3	2	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA
Onroad	Worker Trips-Unpaved Roads	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**6.860**	**1.793**	**12.761**	**0.020**	**1.974**	**0.787**	**2059**	**0.030**	**0.126**	**28.572**

TI015	Treated Area (acres) -->	43.79	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 yea		r																						
Offroad	Air Compressors	G	0	44	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	44	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	8.805	4.868	0.076	0.001	0.014	0.013	24	0.039	0.303	2.911
Offroad	Chainsaws Preempt	G	1	44	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	21.287	11.769	0.185	0.002	0.033	0.031	58	0.063	0.732	7.037
Offroad	Chippers/Stump Grinders	D	1	44	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	30.199	7.791	94.204	0.134	2.921	2.687	13640	0.000	0.703	617.725
Offroad	Fellers/Bunchers	D	0	44	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	44	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	44	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	44	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	3.229	0.980	0.028	0.000	0.005	0.005	9	0.015	0.061	0.909
Onroad	Worker Trips-Paved Roads	G	3	44	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	41.776	3.920	4.197	0.067	3.087	0.917	6130	0.310	0.352	NA
Onroad	Worker Trips-Unpaved Roads	G	0	44	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	44	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	45.625	10.111	182.045	0.245	37.368	13.672	25435	0.234	0.629	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	44	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**150.920**	**39.441**	**280.735**	**0.449**	**43.429**	**17.324**	**45295**	**0.662**	**2.778**	**628.582**

TI016	Treated Area (acres) -->	1.11	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo		s																						
Offroad	Air Compressors	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	1	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066
Offroad	Chainsaws Preempt	G	1	1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	1	1	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039
Offroad	Fellers/Bunchers	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	1	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021
Onroad	Worker Trips-Paved Roads	G	3	1	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA
Onroad	Worker Trips-Unpaved Roads	G	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**

TI022	Treated Area (acres) -->	5.67	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	6	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	6	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1	6	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.903	1.605	0.025	0.000	0.005	0.004	8	0.009	0.100	0.960
Offroad	Chippers/Stump Grinders	D	1	6	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	4.118	1.062	12.846	0.018	0.398	0.366	1860	0.000	0.096	84.235
Offroad	Fellers/Bunchers	D	0	6	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Skid Steer	D	0	6	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Mowers, Rear Engine Riding	G	1	6	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	12.061	0.193	0.138	0.001	0.009	0.009	20	0.020	0.011	2.068
Offroad	Skidders	D	0	6	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	6	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	3	6	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	5.697	0.535	0.572	0.009	0.421	0.125	836	0.042	0.048	NA
Onroad	Worker Trips-Unpaved Roads	G	0	6	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	1.82	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	2.21	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.23	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	6	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	6.222	1.379	24.824	0.033	5.096	1.864	3468	0.032	0.086	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	6	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**32.641**	**5.571**	**38.420**	**0.062**	**5.931**	**2.371**	**6197**	**0.110**	**0.390**	**87.783**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

NO ACTION (Alternative 1) Treated Area (acres) --> 61.47

EBRPD - Wildcat Canyon Regional Park

WC003	Treated Area (acres) -->	1.67	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																								
Offroad	Air Compressors	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	2	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1	2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	D	1	2	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Fellers/Bunchers	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Skidders	D	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	2	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	3	2	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA
Onroad	Worker Trips-Unpaved Roads	G	0	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Burn	Eucalyptus/Acacia	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Oak/Bay	acres->	0.19	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Pine	acres->	0.00	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Scrub	acres->	0.30	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Burn	Grass	acres->	0.06	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**4.786**	**1.333**	**4.486**	**0.009**	**0.275**	**0.166**	**903**	**0.019**	**0.098**	**28.572**

WC004	Treated Area (acres) -->	6.95	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																								
Offroad	Air Compressors	G	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	7	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.401	0.775	0.012	0.000	0.002	0.002	4	0.006	0.048	0.463
Offroad	Chainsaws Preempt	G	1	7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.116	1.120
Offroad	Chippers/Stump Grinders	D	1	7	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	4.804	1.240	14.987	0.021	0.465	0.427	2170	0.000	0.112	98.274
Offroad	Fellers/Bunchers	D	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Mowers, Rear Engine Riding	G	1	7	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	14.071	0.225	0.161	0.001	0.011	0.010	24	0.023	0.013	2.412
Offroad	Skidders	D	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	7	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.514	0.156	0.004	0.000	0.001	0.001	1	0.002	0.010	0.145
Onroad	Worker Trips-Paved Roads	G	3	7	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	6.646	0.624	0.668	0.011	0.491	0.146	975	0.049	0.056	NA
Onroad	Worker Trips-Unpaved Roads	G	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	7	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	7.258	1.609	28.962	0.039	5.945	2.175	4046	0.037	0.100	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	7	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**5.440**	**0.929**	**6.403**	**0.010**	**0.989**	**0.395**	**1033**	**0.018**	**0.065**	**14.631**	**38.081**	**6.500**	**44.823**	**0.072**	**6.920**	**2.766**	**7230**	**0.129**	**0.455**	**102.414**

WC009	Treated Area (acres) -->	8.61	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																								
Offroad	Air Compressors	G	0	9	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	9	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	1.801	0.996	0.016	0.000	0.003	0.003	5	0.008	0.062	0.595
Offroad	Chainsaws Preempt	G	1	9	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	4.354	2.407	0.038	0.000	0.007	0.006	12	0.013	0.150	1.439
Offroad	Chippers/Stump Grinders	G	1	9	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	6.177	1.594	19.269	0.027	0.597	0.550	2790	0.000	0.144	126.353
Offroad	Trimmers/Edgers/Brush Cutters	G	1	9	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.660	0.201	0.006	0.000	0.001	0.001	2	0.003	0.012	0.186
Onroad	Worker Trips-Paved Roads	G	3	9	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	8.545	0.802	0.859	0.014	0.632	0.188	1254	0.063	0.072	NA
Onroad	Worker Trips-Unpaved Roads	G	9	9	0.609	0.080	0.045	0.000	4.742	0.475	23	0.001	0.001	NA	5.477	0.722	0.407	0.002	42.675	4.276	207	0.010	0.012	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.002**	**0.747**	**2.288**	**0.005**	**4.879**	**0.558**	**474**	**0.011**	**0.050**	**14.286**	**27.014**	**6.722**	**20.594**	**0.044**	**43.915**	**5.023**	**4269**	**0.098**	**0.452**	**128.574**

WC010	Treated Area (acres) -->	10.54	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	11	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	11	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	2.201	1.217	0.019	0.000	0.003	0.003	6	0.010	0.076	0.728
Offroad	Chainsaws Preempt	G	1	11	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.322	2.942	0.046	0.001	0.008	0.008	14	0.016	0.183	1.759
Offroad	Chippers/Stump Grinders	G	1	11	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	7.550	1.948	23.551	0.033	0.730	0.672	3410	0.000	0.176	154.431
Offroad	Loaders, Skid Steer	D	0	11	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Trimmers/Edgers/Brush Cutters	G	1	11	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	0.807	0.245	0.007	0.000	0.001	0.001	2	0.004	0.015	0.227
Onroad	Worker Trips-Paved Roads	G	3	11	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	10.444	0.980	1.049	0.017	0.772	0.229	1532	0.078	0.088	NA
Onroad	Worker Trips-Unpaved Roads	G	0	11	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	11	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	11.406	2.528	45.511	0.061	9.342	3.418	6359	0.059	0.157	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	11	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**3.430**	**0.896**	**6.380**	**0.010**	**0.987**	**0.394**	**1029**	**0.015**	**0.063**	**14.286**	**37.730**	**9.860**	**70.184**	**0.112**	**10.857**	**4.331**	**11324**	**0.166**	**0.695**	**157.145**

WC011	Treated Area (acres) -->	33.70	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																								
Offroad	Air Compressors	G	0	34	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Chainsaws	G	1	34	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	6.804	3.762	0.059	0.001	0.011	0.010	18	0.030	0.234	2.249
Offroad	Chainsaws Preempt	G	1	34	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	16.449	9.094	0.143	0.002	0.026	0.024	44	0.049	0.565	5.438
Offroad	Chippers/Stump Grinders	G	1	34	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	23.336	6.020	72.794	0.103	2.257	2.076	10540	0.000	0.543	477.333
Offroad	Trimmers/Edgers/Brush Cutters	G	1	34	0.073	0.022	0.001	0.000	0.000	0.000	0	0.000	0.001	0.021	2.495	0.758	0.022	0.000	0.004	0.004	7	0.012	0.047	0.702
Onroad	Worker Trips-Paved Roads	G	3	34	0.949	0.089	0.095	0.002	0.070	0.021	139	0.007	0.008	NA	32.282	3.029	3.243	0.052	2.386	0.709	4737	0.240	0.272	NA
Onroad	Worker Trips-Unpaved Roads	G	0	34	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	34	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	34	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming					**2.393**	**0.667**	**2.243**	**0.005**	**0.138**	**0.083**	**451**	**0.010**	**0.049**	**14.286**	**81.365**	**22.664**	**76.261**	**0.158**	**4.683**	**2.822**	**15346**	**0.331**	**1.661**	**485.722**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

Proposed Action: Totals-Summary

Site	Total Emissions (tons)						Total Emissions (tonnes)				Fuel Use (gal)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Proposed Action												
UCB-Claremont Canyon	1.13	0.19	1.23	0.00	0.42	0.09	193.40	0.002	0.014	194.26	102.14	15,672.44
UCB-Strawberry Canyon	1.30	0.22	1.43	0.00	0.46	0.10	224.09	0.002	0.016	225.08	119.69	18,216.61
UCB-Frowning Ridge	2.60	0.43	2.80	0.01	0.90	0.20	441.92	0.004	0.032	443.89	239.38	36,469.67
Oakland - North Hills Skyline	1.21	0.20	1.31	0.00	0.42	0.09	206.39	0.002	0.015	207.31	111.71	17,002.17
Oakland - Caldecott Tunnel	0.95	0.16	1.03	0.00	0.33	0.07	162.97	0.002	0.012	163.70	87.77	13,358.85
EBRPD - Anthony Chabot Regional Park	25.66	3.69	6.15	0.01	3.59	2.45	696.18	0.042	0.945	729.15	1,088.68	58,996.19
EBRPD - Claremont Canyon Regional Preserve	3.92	0.51	0.61	0.00	0.48	0.35	56.69	0.010	0.138	62.83	264.73	4,308.68
EBRPD - Huckleberry Botanic Regional Preserve	2.68	0.53	0.24	0.00	0.28	0.25	6.51	0.005	0.101	10.14	133.95	364.33
EBRPD - Kennedy Grove Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Lake Chabot Regional Park	0.07	0.01	0.01	0.00	0.01	0.01	0.39	0.000	0.002	0.48	7.74	-
EBRPD - Leona Canyon Regional Open Space	0.82	0.08	0.05	0.00	0.07	0.05	1.94	0.001	0.021	2.62	123.82	-
EBRPD - Miller/Knox Regional Shoreline	5.96	0.62	0.78	0.00	0.62	0.50	65.67	0.012	0.194	73.60	426.41	5,429.85
EBRPD - Redwood Regional Park	7.55	0.88	1.19	0.00	0.91	0.72	102.95	0.025	0.286	116.75	200.49	8,509.03
EBRPD - Sibley Volcanic Regional Preserve	7.50	0.76	1.05	0.00	0.85	0.68	87.71	0.024	0.266	100.67	284.58	7,080.83
EBRPD - Sobrante Ridge Regional Preserve	0.35	0.06	0.02	0.00	0.03	0.02	1.12	0.000	0.008	1.40	54.17	-
EBRPD - Temescal Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Tilden Regional Park	19.71	2.56	3.41	0.00	2.45	1.95	305.35	0.073	0.788	344.55	302.70	25,931.12
EBRPD - Wildcat Canyon Regional Park	6.62	0.70	0.58	0.00	0.66	0.46	44.38	0.006	0.174	49.83	969.53	2,188.85
Proposed Action Totals	**88.03**	**11.60**	**21.88**	**0.03**	**12.46**	**8.00**	**2,597.66**	**0.211**	**3.011**	**2,726.28**	**4,517.49**	**213,528.61**

Site	Total Emission (tons)						Total Emissions (tonnes)				Fuel (gal)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Connected Actions												
UCB-Claremont Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
UCB-Strawberry Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
UCB-Frowning Ridge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
Oakland - North Hills Skyline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
Oakland - Caldecott Tunnel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Anthony Chabot Regional Park	84.19	12.02	15.92	0.02	10.82	8.45	1,500.68	0.358	3.456	1,684.11	1,257.61	127,609.70
EBRPD - Claremont Canyon Regional Preserve	20.12	2.12	1.31	0.00	1.87	1.41	58.55	0.023	0.546	77.22	2,879.20	321.06
EBRPD - Huckleberry Botanic Regional Preserve	0.07	0.01	0.00	0.00	0.01	0.01	0.12	0.000	0.002	0.18	7.74	-
EBRPD - Kennedy Grove Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Lake Chabot Regional Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Leona Canyon Regional Open Space	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Miller/Knox Regional Shoreline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Redwood Regional Park	19.00	1.79	1.68	0.00	1.86	1.56	86.37	0.066	0.621	120.00	1,364.42	5,063.91
EBRPD - Sibley Volcanic Regional Preserve	22.62	3.26	4.29	0.00	2.95	2.30	404.15	0.092	0.940	452.45	246.64	34,412.16
EBRPD - Sobrante Ridge Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Temescal Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Tilden Regional Park	26.40	3.71	3.97	0.00	3.21	2.65	307.29	0.111	1.097	364.73	462.67	25,524.72
EBRPD - Wildcat Canyon Regional Park	10.05	1.38	1.51	0.00	1.21	1.02	114.65	0.044	0.422	137.08	102.53	9,715.52
Connected Actions Totals	**182.45**	**24.28**	**28.67**	**0.03**	**21.93**	**17.40**	**2,471.82**	**0.694**	**7.084**	**2,835.78**	**6,320.81**	**202,647.08**
Combined Proposed & Connect Action Totals	**270.48**	**35.88**	**50.54**	**0.06**	**34.39**	**25.40**	**5,069.47**	**0.905**	**10.095**	**5,562.06**	**10,838.30**	**416,175.68**

Site	Total Emission (tons)						Total Emissions (tonnes)				Fuel (gal)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Cumulative Actions												
UCB-Claremont Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
UCB-Strawberry Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
UCB-Frowning Ridge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
Oakland - North Hills Skyline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
Oakland - Caldecott Tunnel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Anthony Chabot Regional Park	100.61	14.60	16.42	0.02	12.50	10.29	1,337.36	0.417	4.261	1,556.21	1,109.31	114,064.70
EBRPD - Claremont Canyon Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Huckleberry Botanic Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Kennedy Grove Regional Recreation Area	1.89	0.21	0.14	0.00	0.18	0.15	4.33	0.007	0.061	7.75	185.72	34.51
EBRPD - Lake Chabot Regional Park	22.75	3.05	2.53	0.00	2.50	2.18	134.08	0.095	0.910	182.50	837.61	10,201.30
EBRPD - Leona Canyon Regional Open Space	4.11	0.41	0.26	0.00	0.38	0.27	13.01	0.004	0.103	16.28	650.03	-
EBRPD - Miller/Knox Regional Shoreline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Redwood Regional Park	1.92	0.26	0.31	0.00	0.24	0.19	24.83	0.008	0.079	29.04	28.24	2,029.76
EBRPD - Sibley Volcanic Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Sobrante Ridge Regional Preserve	0.13	0.01	0.01	0.00	0.01	0.01	0.51	0.000	0.004	0.74	15.48	-
EBRPD - Temescal Regional Recreation Area	0.02	0.00	0.00	0.00	0.00	0.00	0.39	0.000	0.000	0.40	8.08	-
EBRPD - Tilden Regional Park	63.55	8.49	9.81	0.01	7.70	6.41	772.15	0.270	2.639	911.27	602.49	65,621.86
EBRPD - Wildcat Canyon Regional Park	0.58	0.08	0.12	0.00	0.09	0.06	11.43	0.002	0.023	12.58	12.53	795.90
Cumulative Actions Totals	**195.57**	**27.12**	**29.59**	**0.03**	**23.61**	**19.57**	**2,298.09**	**0.803**	**8.080**	**2,716.75**	**3,449.49**	**192,748.03**

Proposed Action: Totals-Summary

	Total Emission (tons)						Total Emissions (tonnes)				Fuel (gal)	
Category	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO_2**	**N_2O**	**CH_4**	**CO_2eq**	**Gasoline**	**Diesel**
Proposed Action												
Offroad	21.58	2.53	15.30	0.03	0.81	0.74	2,150.61	0.017	0.184	2,159.82	4,517.49	213,528.61
Onroad	3.15	0.34	1.13	0.01	4.76	0.56	447.04	0.018	0.022	453.13	-	-
Dust	0.00	0.00	0.00	0.00	0.03	0.00	-	-	-	-	-	-
Burn	63.30	8.72	5.44	0.00	6.86	6.70	-	0.176	2.805	113.32	-	-
Proposed Action Totals	**88.03**	**11.60**	**21.88**	**0.03**	**12.46**	**8.00**	**2,597.66**	**0.211**	**3.011**	**2,726.28**	**4,517.49**	**213,528.61**

	Total Emission (tons)						Total Emissions (tonnes)				Fuel (gal)	
Category	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO_2**	**N_2O**	**CH_4**	**CO_2eq**	**Gasoline**	**Diesel**
Connected Actions												
Offroad	26.41	2.65	14.64	0.03	0.83	0.76	2,049.5	0.02	0.19	2,060.6	6,320.81	202,647.08
Onroad	3.15	0.33	0.89	0.00	4.66	0.54	422.3	0.02	0.02	428.4	-	-
Dust	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-
Burn	152.89	21.29	13.14	0.00	16.44	16.10	-	0.65	6.87	346.7	-	-
Connected Actions Totals	**182.45**	**24.28**	**28.67**	**0.03**	**21.93**	**17.40**	**2,471.8**	**0.69**	**7.08**	**2,835.8**	**6,320.81**	**202,647.08**
Combined Proposed & Connect Action Totals	**270.48**	**35.88**	**50.54**	**0.06**	**34.39**	**25.40**	**5,069.5**	**0.91**	**10.09**	**5,562.1**	**10,838.30**	**416,175.68**

	Total Emission (tons)						Total Emissions (tonnes)				Fuel (gal)	
Category	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO_2**	**N_2O**	**CH_4**	**CO_2eq**	**Gasoline**	**Diesel**
Cumulative Actions												
Offroad	17.66	2.26	13.82	0.02	0.71	0.66	1938.51	0.014	0.165	1946.18	3,449.49	192,748.03
Onroad	2.73	0.29	0.70	0.00	4.04	0.46	359.57	0.016	0.019	364.87	-	-
Dust	-	-	-	-	0.02	0.00	0.00	0.000	0.000	0.00	-	-
Burn	175.18	24.58	15.07	-	18.84	18.45	0.00	0.774	7.897	405.71	-	-
Cumulative Actions Totals	**195.57**	**27.12**	**29.59**	**0.03**	**23.61**	**19.57**	**2298.09**	**0.803**	**8.080**	**2716.75**	**3,449.49**	**192,748.03**

Proposed Action: Totals-Summary

Site	Total Emissions (tons)						Total Emissions (tonnes)				Fuel Use (gal)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Proposed and Connected Actions												
UCB-Claremont Canyon	1.13	0.19	1.23	0.00	0.42	0.09	193.40	0.002	0.014	194.26	102.14	15,672.44
UCB-Strawberry Canyon	1.30	0.22	1.43	0.00	0.46	0.10	224.09	0.002	0.016	225.08	119.69	18,216.61
UCB-Frowning Ridge	2.60	0.43	2.80	0.01	0.90	0.20	441.92	0.004	0.032	443.89	239.38	36,469.67
Oakland - North Hills Skyline	1.21	0.20	1.31	0.00	0.42	0.09	206.39	0.002	0.015	207.31	111.71	17,002.17
Oakland - Caldecott Tunnel	0.95	0.16	1.03	0.00	0.33	0.07	162.97	0.002	0.012	163.70	87.77	13,358.85
EBRPD - Anthony Chabot Regional Park	109.84	15.72	22.06	0.03	14.41	10.90	2,196.86	0.400	4.401	2,413.26	2,346.29	186,605.89
EBRPD - Claremont Canyon Regional Preserve	24.04	2.63	1.92	0.00	2.35	1.76	115.25	0.034	0.684	140.05	3,143.93	4,629.74
EBRPD - Huckleberry Botanic Regional Preserve	2.75	0.54	0.24	0.00	0.28	0.25	6.63	0.005	0.103	10.32	141.69	364.33
EBRPD - Kennedy Grove Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Lake Chabot Regional Park	0.07	0.01	0.01	0.00	0.01	0.01	0.39	0.000	0.002	0.48	7.74	-
EBRPD - Leona Canyon Regional Open Space	0.82	0.08	0.05	0.00	0.07	0.05	1.94	0.001	0.021	2.62	123.82	-
EBRPD - Miller/Knox Regional Shoreline	5.96	0.62	0.78	0.00	0.62	0.50	65.67	0.012	0.194	73.60	426.41	5,429.85
EBRPD - Redwood Regional Park	26.56	2.67	2.86	0.00	2.77	2.28	189.32	0.092	0.907	236.75	1,564.91	13,572.94
EBRPD - Sibley Volcanic Regional Preserve	30.12	4.02	5.34	0.01	3.80	2.98	491.86	0.116	1.206	553.12	531.22	41,493.00
EBRPD - Sobrante Ridge Regional Preserve	0.35	0.06	0.02	0.00	0.03	0.02	1.12	0.000	0.008	1.40	54.17	-
EBRPD - Temescal Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Tilden Regional Park	46.11	6.27	7.38	0.01	5.66	4.60	612.63	0.184	1.886	709.28	765.36	51,455.84
EBRPD - Wildcat Canyon Regional Park	16.67	2.08	2.08	0.00	1.87	1.48	159.04	0.050	0.595	186.91	1,072.06	11,904.37
Proposed Action Totals	**270.48**	**35.88**	**50.54**	**0.06**	**34.39**	**25.40**	**5,069.47**	**0.905**	**10.095**	**5,562.06**	**10,838.30**	**416,175.68**

Proposed Action: Totals-Summary

Category	Total Emission (tons)						Total Emissions (tonnes)				Fuel (gal)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Proposed and Connected Actions												
Offroad	47.99	5.18	29.94	0.05	1.64	1.51	4,200.14	0.04	0.37	4,220.47	10,838.30	416,175.68
Onroad	6.29	0.68	2.02	0.01	9.42	1.09	869.33	0.04	0.04	881.53	0.00	0.00
Dust	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burn	216.19	30.02	18.58	0.00	23.30	22.80	0.00	0.83	9.68	460.06	0.00	0.00
Proposed Action Totals	**270.48**	**35.88**	**50.54**	**0.06**	**34.39**	**25.40**	**5,069.47**	**0.91**	**10.09**	**5,562.06**	**10,838.30**	**416,175.68**

Proposed Action: Totals-Summary

Site	Annual Emissions (tons/year)						Annual Emissions (tonnes/year)				Annual Fuel Use (gal/yr)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Proposed Action												
UCB-Claremont Canyon	0.11	0.02	0.12	0.00	0.04	0.01	19.34	0.000	0.001	19.43	10.21	1,567.24
UCB-Strawberry Canyon	0.13	0.02	0.14	0.00	0.05	0.01	22.41	0.000	0.002	22.51	11.97	1,821.66
UCB-Frowning Ridge	0.26	0.04	0.28	0.00	0.09	0.02	44.19	0.000	0.003	44.39	23.94	3,646.97
Oakland - North Hills Skyline	0.12	0.02	0.13	0.00	0.04	0.01	20.64	0.000	0.001	20.73	11.17	1,700.22
Oakland - Caldecott Tunnel	0.10	0.02	0.10	0.00	0.03	0.01	16.30	0.000	0.001	16.37	8.78	1,335.88
EBRPD - Anthony Chabot Regional Park	2.57	0.37	0.61	0.00	0.36	0.25	69.62	0.004	0.095	72.92	108.87	5,899.62
EBRPD - Claremont Canyon Regional Preserve	0.39	0.05	0.06	0.00	0.05	0.03	5.67	0.001	0.014	6.28	26.47	430.87
EBRPD - Huckleberry Botanic Regional Preserve	0.27	0.05	0.02	0.00	0.03	0.02	0.65	0.000	0.010	1.01	13.39	36.43
EBRPD - Kennedy Grove Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Lake Chabot Regional Park	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.000	0.000	0.05	0.77	-
EBRPD - Leona Canyon Regional Open Space	0.08	0.01	0.00	0.00	0.01	0.01	0.19	0.000	0.002	0.26	12.38	-
EBRPD - Miller/Knox Regional Shoreline	0.60	0.06	0.08	0.00	0.06	0.05	6.57	0.001	0.019	7.36	42.64	542.98
EBRPD - Redwood Regional Park	0.76	0.09	0.12	0.00	0.09	0.07	10.29	0.003	0.029	11.68	20.05	850.90
EBRPD - Sibley Volcanic Regional Preserve	0.75	0.08	0.11	0.00	0.09	0.07	8.77	0.002	0.027	10.07	28.46	708.08
EBRPD - Sobrante Ridge Regional Preserve	0.03	0.01	0.00	0.00	0.00	0.00	0.11	0.000	0.001	0.14	5.42	-
EBRPD - Temescal Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Tilden Regional Park	1.97	0.26	0.34	0.00	0.24	0.20	30.53	0.007	0.079	34.45	30.27	2,593.11
EBRPD - Wildcat Canyon Regional Park	0.66	0.07	0.06	0.00	0.07	0.05	4.44	0.001	0.017	4.98	96.95	218.88
Proposed Action Totals	**8.80**	**1.16**	**2.19**	**0.00**	**1.25**	**0.80**	**259.77**	**0.021**	**0.301**	**272.63**	**451.75**	**21,352.86**

Site	Annual Emissions (tons/year)						Annual Emissions (tonnes/year)				Annual Fuel Use (gal/yr)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Connected Actions												
UCB-Claremont Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
UCB-Strawberry Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
UCB-Frowning Ridge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
Oakland - North Hills Skyline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
Oakland - Caldecott Tunnel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Anthony Chabot Regional Park	8.42	1.20	1.59	0.00	1.08	0.84	150.07	0.036	0.346	168.41	125.76	12,760.97
EBRPD - Claremont Canyon Regional Preserve	2.01	0.21	0.13	0.00	0.19	0.14	5.86	0.002	0.055	7.72	287.92	32.11
EBRPD - Huckleberry Botanic Regional Preserve	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.000	0.000	0.02	0.77	-
EBRPD - Kennedy Grove Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Lake Chabot Regional Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Leona Canyon Regional Open Space	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Miller/Knox Regional Shoreline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Redwood Regional Park	1.90	0.18	0.17	0.00	0.19	0.16	8.64	0.007	0.062	12.00	136.44	506.39
EBRPD - Sibley Volcanic Regional Preserve	2.26	0.33	0.43	0.00	0.29	0.23	40.42	0.009	0.094	45.25	24.66	3,441.22
EBRPD - Sobrante Ridge Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Temescal Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	-	-
EBRPD - Tilden Regional Park	2.64	0.37	0.40	0.00	0.32	0.27	30.73	0.011	0.110	36.47	46.27	2,552.47
EBRPD - Wildcat Canyon Regional Park	1.00	0.14	0.15	0.00	0.12	0.10	11.47	0.004	0.042	13.71	10.25	971.55
Connected Actions Totals	**18.24**	**2.43**	**2.87**	**0.00**	**2.19**	**1.74**	**247.18**	**0.069**	**0.708**	**283.58**	**632.08**	**20,264.71**
Combined Proposed & Connect Action Totals	**27.05**	**3.59**	**5.05**	**0.01**	**3.44**	**2.54**	**506.95**	**0.09**	**1.01**	**556.21**	**1,083.83**	**41,617.57**

Site	Annual Emissions (tons/year)						Annual Emissions (tonnes/year)				Annual Fuel Use (gal/yr)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Cumulative Actions												
UCB-Claremont Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
UCB-Strawberry Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
UCB-Frowning Ridge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
Oakland - North Hills Skyline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
Oakland - Caldecott Tunnel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
EBRPD - Anthony Chabot Regional Park	10.06	1.46	1.64	0.00	1.25	1.03	133.74	0.042	0.426	155.62	110.93	11406.47
EBRPD - Claremont Canyon Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
EBRPD - Huckleberry Botanic Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
EBRPD - Kennedy Grove Regional Recreation Area	0.19	0.02	0.01	0.00	0.02	0.02	0.43	0.001	0.006	0.78	18.57	3.45
EBRPD - Lake Chabot Regional Park	2.28	0.31	0.25	0.00	0.25	0.22	13.41	0.009	0.091	18.25	83.76	1020.13
EBRPD - Leona Canyon Regional Open Space	0.41	0.04	0.03	0.00	0.04	0.03	1.30	0.000	0.010	1.63	65.00	0.00
EBRPD - Miller/Knox Regional Shoreline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
EBRPD - Redwood Regional Park	0.19	0.03	0.03	0.00	0.02	0.02	2.48	0.001	0.008	2.90	2.82	202.98
EBRPD - Sibley Volcanic Regional Preserve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.00	0.00	0.00
EBRPD - Sobrante Ridge Regional Preserve	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.000	0.000	0.07	1.55	0.00
EBRPD - Temescal Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.000	0.000	0.04	0.81	0.00
EBRPD - Tilden Regional Park	6.36	0.85	0.98	0.00	0.77	0.64	77.21	0.027	0.264	91.13	60.25	6562.19
EBRPD - Wildcat Canyon Regional Park	0.06	0.01	0.01	0.00	0.01	0.01	1.14	0.000	0.002	1.26	1.25	79.59
Cumulative Actions Totals	**19.56**	**2.71**	**2.96**	**0.00**	**2.36**	**1.96**	**229.81**	**0.080**	**0.808**	**271.68**	**344.95**	**19274.80**

Proposed Action: Totals-Summary

Category	Annual Emissions (tons/year)						Annual Emissions (tonnes/year)				Annual Fuel Use (gal/yr)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Proposed Action												
Offroad	2.16	0.25	1.53	0.00	0.08	0.07	215.06	0.00	0.02	215.98	451.75	21,352.86
Onroad	0.31	0.03	0.11	0.00	0.48	0.06	44.70	0.00	0.00	45.31	-	-
Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-
Burn	6.33	0.87	0.54	0.00	0.69	0.67	0.00	0.02	0.28	11.33	-	-
Proposed Action Totals	**8.80**	**1.16**	**2.19**	**0.00**	**1.25**	**0.80**	**259.77**	**0.02**	**0.30**	**272.63**	**451.75**	**21,352.86**

Category	Annual Emissions (tons/year)						Annual Emissions (tonnes/year)				Annual Fuel Use (gal/yr)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Connected Actions												
Offroad	2.64	0.26	1.46	0.00	0.08	0.08	204.95	0.00	0.02	206.06	632.08	20,264.71
Onroad	0.31	0.03	0.09	0.00	0.47	0.05	42.23	0.00	0.00	42.84	-	-
Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-
Burn	15.29	2.13	1.31	0.00	1.64	1.61	0.00	0.07	0.69	34.67	-	-
Connected Actions Totals	**18.24**	**2.43**	**2.87**	**0.00**	**2.19**	**1.74**	**247.18**	**0.07**	**0.71**	**283.58**	**632.08**	**20,264.71**
Combined Proposed & Connect Action Totals	**27.05**	**3.59**	**5.05**	**0.01**	**3.44**	**2.54**	**506.95**	**0.09**	**1.01**	**556.21**	**1,083.83**	**41,617.57**

Category	Annual Emissions (tons/year)						Annual Emissions (tonnes/year)				Annual Fuel Use (gal/yr)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Cumulative Actions												
Offroad	1.77	0.23	1.38	0.00	0.07	0.07	193.85	0.00	0.02	194.62	344.95	19,274.80
Onroad	0.27	0.03	0.07	0.00	0.40	0.05	35.96	0.00	0.00	36.49	-	-
Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-
Burn	17.52	2.46	1.51	0.00	1.88	1.84	0.00	0.08	0.79	40.57	-	-
Cumulative Actions Totals	**19.56**	**2.71**	**2.96**	**0.00**	**2.36**	**1.96**	**229.81**	**0.08**	**0.81**	**271.68**	**344.95**	**19,274.80**

Proposed Action: Totals-Summary

Site	Annual Emissions (tons/year)						Annual Emissions (tonnes/year)				Annual Fuel Use (gal/yr)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Proposed and Connected Actions												
UCB-Claremont Canyon	0.11	0.02	0.12	0.00	0.04	0.01	19.34	0.00	0.00	19.43	10.21	1,567.24
UCB-Strawberry Canyon	0.13	0.02	0.14	0.00	0.05	0.01	22.41	0.00	0.00	22.51	11.97	1,821.66
UCB-Frowning Ridge	0.26	0.04	0.28	0.00	0.09	0.02	44.19	0.00	0.00	44.39	23.94	3,646.97
Oakland - North Hills Skyline	0.12	0.02	0.13	0.00	0.04	0.01	20.64	0.00	0.00	20.73	11.17	1,700.22
Oakland - Caldecott Tunnel	0.10	0.02	0.10	0.00	0.03	0.01	16.30	0.00	0.00	16.37	8.78	1,335.88
EBRPD - Anthony Chabot Regional Park	10.98	1.57	2.21	0.00	1.44	1.09	219.69	0.04	0.44	241.33	234.63	18,660.59
EBRPD - Claremont Canyon Regional Preserve	2.40	0.26	0.19	0.00	0.24	0.18	11.52	0.00	0.07	14.01	314.39	462.97
EBRPD - Huckleberry Botanic Regional Preserve	0.28	0.05	0.02	0.00	0.03	0.03	0.66	0.00	0.01	1.03	14.17	36.43
EBRPD - Kennedy Grove Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-
EBRPD - Lake Chabot Regional Park	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.05	0.77	-
EBRPD - Leona Canyon Regional Open Space	0.08	0.01	0.00	0.00	0.01	0.01	0.19	0.00	0.00	0.26	12.38	-
EBRPD - Miller/Knox Regional Shoreline	0.60	0.06	0.08	0.00	0.06	0.05	6.57	0.00	0.02	7.36	42.64	542.98
EBRPD - Redwood Regional Park	2.66	0.27	0.29	0.00	0.28	0.23	18.93	0.01	0.09	23.67	156.49	1,357.29
EBRPD - Sibley Volcanic Regional Preserve	3.01	0.40	0.53	0.00	0.38	0.30	49.19	0.01	0.12	55.31	53.12	4,149.30
EBRPD - Sobrante Ridge Regional Preserve	0.03	0.01	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.14	5.42	-
EBRPD - Temescal Regional Recreation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-
EBRPD - Tilden Regional Park	4.61	0.63	0.74	0.00	0.57	0.46	61.26	0.02	0.19	70.93	76.54	5,145.58
EBRPD - Wildcat Canyon Regional Park	1.67	0.21	0.21	0.00	0.19	0.15	15.90	0.00	0.06	18.69	107.21	1,190.44
Proposed Action Totals	**27.05**	**3.59**	**5.05**	**0.01**	**3.44**	**2.54**	**506.95**	**0.09**	**1.01**	**556.21**	**1,083.83**	**41,617.57**

Proposed Action: Totals-Summary

Category	Annual Emissions (tons/year)						Annual Emissions (tonnes/year)				Annual Fuel Use (gal/yr)	
	CO	VOC	NOx	SOx	PM10	PM2.5	CO_2	N_2O	CH_4	CO_2eq	Gasoline	Diesel
Proposed and Connected Actions												
Offroad	4.80	0.52	2.99	0.01	0.16	0.15	420.01	0.00	0.04	422.05	1,083.83	41,617.57
Onroad	0.63	0.07	0.20	0.00	0.94	0.11	86.93	0.00	0.00	88.15	0.00	0.00
Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burn	21.62	3.00	1.86	0.00	2.33	2.28	0.00	0.08	0.97	46.01	0.00	0.00
Proposed Action Totals	**27.05**	**3.59**	**5.05**	**0.01**	**3.44**	**2.54**	**506.95**	**0.09**	**1.01**	**556.21**	**1,083.83**	**41,617.57**

PROPOSED ACTION Treated Area (acres) --> 42.81

UCB-Claremont Canyon

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: 1 year (1st year of action)																								
Offroad	Dozers (Crawler Tractors)	D	1	7	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	11.194	2.980	17.713	0.018	1.561	1.436	1517	0.000	0.269	69.634
Offroad	Loaders, Rubber Tired	D	1	7	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	8.913	2.084	12.915	0.015	1.127	1.037	1265	0.000	0.188	57.968
Onroad	Dump Truck Trips-Paved Roads	D	1	7	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	2.832	0.625	15.431	0.021	3.035	1.036	2175	0.020	0.054	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	7	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.305	0.068	0.822	0.001	12.487	1.262	94	0.001	0.002	NA
Onroad	Water Truck-Paved Roads	D	1	7	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	1.536	0.339	7.939	0.011	1.521	0.521	1108	0.010	0.027	NA
Onroad	Water Truck-Unpaved Roads	D	1	7	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.305	0.068	0.822	0.001	12.487	1.262	94	0.001	0.002	NA
Onroad	Worker Trips-Paved Roads	G	4	7	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	8.862	0.832	0.890	0.014	0.655	0.195	1300	0.066	0.075	NA
Onroad	Worker Trips-Unpaved Roads	G	4	7	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.893	0.250	0.141	0.001	14.752	1.478	71	0.004	0.004	NA
Dust	Treated Area (acres) --> (acres)		0.19	7	NA	NA	NA	NA	1.900	0.190	NA	NA	NA	NA	NA	NA	NA	NA	13.300	1.330	NA	NA	NA	NA
Totals For Access Road Construction					**5.120**	**1.035**	**8.096**	**0.012**	**8.704**	**1.365**	**1089**	**0.014**	**0.089**	**18.229**	**35.840**	**7.245**	**56.672**	**0.081**	**60.926**	**9.557**	**7624**	**0.101**	**0.621**	**127.602**

Activity	Treated Area (acres) --> Equipment Type	42.81 Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	1	128	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	343.586	9.362	6.878	0.016	4.793	4.409	572	0.721	0.523	59.443
Offroad	Chainsaws	G	2	128	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	51.231	28.325	0.445	0.006	0.081	0.074	138	0.230	1.761	16.936
Offroad	Chainsaws Preempt	G	1	128	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	61.924	34.238	0.538	0.007	0.097	0.090	167	0.184	2.128	20.472
Offroad	Chippers/Stump Grinders	D	2	128	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	175.704	45.331	548.095	0.779	16.993	15.633	79359	0.000	4.090	3594.037
Offroad	Fellers/Bunchers	D	1	128	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	194.093	60.380	581.600	1.127	18.462	16.985	100161	0.000	5.448	4534.786
Offroad	Skidders	D	2	128	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	935.128	132.940	1053.655	1.830	58.538	53.855	162686	0.000	11.995	7416.015
Offroad	Trimmers/Edgers/Brush Cutters	G	2	128	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	18.785	5.705	0.163	0.002	0.030	0.027	51	0.090	0.355	5.286
Onroad	Worker Trips-Paved Roads	G	8	128	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	324.082	30.413	32.560	0.517	23.951	7.117	47554	2.406	2.729	NA
Onroad	Worker Trips-Unpaved Roads	G	8	128	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	69.235	9.132	5.148	0.029	539.501	54.060	2611	0.131	0.149	NA
Onroad	Log/Chip Haul Truck Trips-Paved	1		43	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	44.588	9.882	177.908	0.240	36.519	13.361	24857	0.229	0.614	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved R	D	1	43	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	2.099	0.458	5.065	0.006	76.727	7.772	585	0.005	0.014	NA
Totals For Cutting/Skidding/Chipping/Trimming					**18.019**	**3.010**	**21.552**	**0.039**	**6.025**	**1.500**	**3651**	**0.035**	**0.242**	**122.242**	**2218.355**	**365.706**	**2406.989**	**4.554**	**698.964**	**165.611**	**418157**	**3.990**	**29.791**	**15646.976**

Offroad Source: CARB OFFROAD 2007

Onroad Source: CARB EMFAC 2011

Dust Source: MRI 1996

No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.

No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.

Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.

Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.

*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 56.34

UCB-Strawberry Canyon

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: (none)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

Activity	Treated Area (acres) --> 56.34 Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	1	150	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	402.640	10.971	8.060	0.019	5.617	5.167	670	0.845	0.613	69.660
Offroad	Chainsaws	G	2	150	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	60.036	33.194	0.521	0.007	0.094	0.087	162	0.269	2.063	19.847
Offroad	Chainsaws Preempt	G	1	150	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	72.568	40.122	0.630	0.008	0.114	0.105	196	0.215	2.494	23.990
Offroad	Chippers/Stump Grinders	D	2	150	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	205.903	53.122	642.299	0.913	19.913	18.320	92999	0.000	4.793	4211.762
Offroad	Fellers/Bunchers	D	1	150	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	227.453	70.758	681.563	1.321	21.635	19.904	117377	0.000	6.384	5314.203
Offroad	Skidders	D	2	150	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	1095.853	155.789	1234.752	2.145	68.599	63.111	190648	0.000	14.057	8690.642
Offroad	Trimmers/Edgers/Brush Cutters	G	2	150	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	22.013	6.685	0.191	0.002	0.035	0.032	60	0.105	0.416	6.195
Onroad	Worker Trips-Paved Roads	G	8	150	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	379.783	35.641	38.156	0.606	28.068	8.340	55727	2.819	3.198	NA
Onroad	Worker Trips-Unpaved Roads	G	8	150	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	81.135	10.702	6.033	0.034	632.228	63.352	3060	0.154	0.175	NA
Onroad	Log/Chip Haul Truck Trips-Paved	1		56	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	58.068	12.869	231.694	0.312	47.560	17.400	32372	0.298	0.800	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	56	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	2.733	0.597	6.596	0.007	99.924	10.122	762	0.007	0.019	NA
Totals For Cutting/Skidding/Chipping/Trimming					**18.068**	**3.020**	**21.670**	**0.039**	**7.809**	**1.681**	**3664**	**0.035**	**0.243**	**122.242**	**2608.184**	**430.448**	**2850.495**	**5.375**	**923.786**	**205.941**	**494032**	**4.712**	**35.010**	**18336.300**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 85.10

UCB - Frowning Ridge (Oakland)

					Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**No. of Units or No. of Trips**	**Total No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Access Road Construction: 1 year (1st year of action)																								
Offroad	Dozers (Crawler Tractors)	D	1	2	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	3.198	0.852	5.061	0.005	0.446	0.410	433	0.000	0.077	19.895
Offroad	Loaders, Rubber Tired	D	1	2	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	2.547	0.595	3.690	0.004	0.322	0.296	361	0.000	0.054	16.562
Onroad	Dump Truck Trips-Paved Roads	D	1	2	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	0.809	0.179	4.409	0.006	0.867	0.296	621	0.006	0.015	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	2	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.087	0.019	0.235	0.000	3.568	0.361	27	0.000	0.001	NA
Onroad	Water Truck-Paved Roads	D	1	2	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.439	0.097	2.268	0.003	0.434	0.149	317	0.003	0.008	NA
Onroad	Water Truck-Unpaved Roads	D	1	2	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.087	0.019	0.235	0.000	3.568	0.361	27	0.000	0.001	NA
Onroad	Worker Trips-Paved Roads	G	4	2	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	4	2	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Dust	Treated Area (acres) --> (acres)		0.06	2	NA	NA	NA	NA	0.600	0.060	NA	NA	NA	NA	NA	NA	NA	NA	1.200	0.120	NA	NA	NA	NA
Totals For Access Road Construction					**5.120**	**1.035**	**8.096**	**0.012**	**7.404**	**1.235**	**1089**	**0.014**	**0.089**	**18.229**	**10.240**	**2.070**	**16.192**	**0.023**	**14.807**	**2.470**	**2178**	**0.029**	**0.178**	**36.458**

	Treated Area (acres) -->	85.10	**No. of Units**	**Total**	**Emission Rates (lbs/day), based on 8 hrs/day**									**(gal/day)**	**Activity Total Emission (lbs)**									**(gal)**
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	1	300	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	805.279	21.941	16.121	0.038	11.233	10.334	1340	1.690	1.226	139.320
Offroad	Chainsaws	G	2	300	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	120.072	66.387	1.042	0.013	0.189	0.174	325	0.538	4.126	39.695
Offroad	Chainsaws Preempt	G	1	300	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	145.136	80.245	1.260	0.016	0.228	0.210	392	0.431	4.988	47.980
Offroad	Chippers/Stump Grinders	D	2	300	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	411.806	106.244	1284.598	1.826	39.827	36.641	185997	0.000	9.586	8423.525
Offroad	Fellers/Bunchers	D	1	300	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	454.906	141.515	1363.126	2.641	43.270	39.808	234753	0.000	12.769	10628.406
Offroad	Skidders	D	2	300	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	2191.706	311.577	2469.503	4.290	137.199	126.223	381295	0.000	28.113	17381.285
Offroad	Trimmers/Edgers/Brush Cutters	G	2	300	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	44.027	13.370	0.382	0.005	0.069	0.064	119	0.210	0.831	12.389
Onroad	Worker Trips-Paved Roads	G	8	300	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	759.567	71.281	76.311	1.213	56.136	16.680	111454	5.638	6.395	NA
Onroad	Worker Trips-Unpaved Roads	G	8	300	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	162.269	21.403	12.066	0.068	1264.456	126.704	6120	0.308	0.349	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	85	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	88.138	19.533	351.678	0.474	72.189	26.411	49136	0.452	1.214	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	85	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	4.149	0.906	10.012	0.011	151.670	15.364	1157	0.011	0.029	NA
Totals For Cutting/Skidding/Chipping/Trimming					**18.068**	**3.020**	**21.670**	**0.039**	**7.809**	**1.681**	**3664**	**0.035**	**0.243**	**122.242**	**5187.054**	**854.403**	**5586.100**	**10.596**	**1776.465**	**398.612**	**972089**	**9.278**	**69.626**	**36672.599**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 41.57

Oakland - North Hills Skyline

			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Access Road Construction: (none)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

	Treated Area (acres) -->	41.57	**No. of Units**	**Total**	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	1	140	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	375.797	10.239	7.523	0.018	5.242	4.823	625	0.789	0.572	65.016
Offroad	Chainsaws	G	2	140	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	56.034	30.981	0.486	0.006	0.088	0.081	151	0.251	1.926	18.524
Offroad	Chainsaws Preempt	G	1	140	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	67.730	37.448	0.588	0.008	0.107	0.098	183	0.201	2.328	22.391
Offroad	Chippers/Stump Grinders	D	2	140	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	192.176	49.580	599.479	0.852	18.586	17.099	86799	0.000	4.474	3930.978
Offroad	Fellers/Bunchers	D	1	140	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	212.290	66.040	636.125	1.233	20.192	18.577	109551	0.000	5.959	4959.923
Offroad	Skidders	D	2	140	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	1022.796	145.403	1152.435	2.002	64.026	58.904	177938	0.000	13.119	8111.266
Offroad	Trimmers/Edgers/Brush Cutters	G	2	140	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	20.546	6.239	0.178	0.002	0.032	0.030	56	0.098	0.388	5.782
Onroad	Worker Trips-Paved Roads	G	8	140	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	354.464	33.265	35.612	0.566	26.197	7.784	52012	2.631	2.984	NA
Onroad	Worker Trips-Unpaved Roads	G	8	140	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	75.726	9.988	5.631	0.032	590.080	59.128	2856	0.144	0.163	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	42	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	43.551	9.652	173.770	0.234	35.670	13.050	24279	0.224	0.600	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	42	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	2.050	0.448	4.947	0.006	74.943	7.591	572	0.005	0.014	NA
Totals For Cutting/Skidding/Chipping/Trimming					**18.068**	**3.020**	**21.670**	**0.039**	**7.809**	**1.681**	**3664**	**0.035**	**0.243**	**122.242**	**2423.159**	**399.283**	**2616.775**	**4.958**	**835.162**	**187.166**	**455022**	**4.342**	**32.526**	**17113.880**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 35.54

Oakland - Caldecott Tunnel

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: (none)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

Activity	Treated Area (acres) --> Equipment Type	35.54 Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Cutting/Skidding/Chipping/Trimming: 3 years (1st, 2nd & 3rd year of action)																								
Offroad	Air Compressors	G	1	110	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	295.269	8.045	5.911	0.014	4.119	3.789	491	0.620	0.450	51.084
Offroad	Chainsaws	G	2	110	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	44.026	24.342	0.382	0.005	0.069	0.064	119	0.197	1.513	14.555
Offroad	Chainsaws Preempt	G	1	110	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	53.216	29.423	0.462	0.006	0.084	0.077	144	0.158	1.829	17.593
Offroad	Chippers/Stump Grinders	D	2	110	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	150.995	38.956	471.019	0.669	14.603	13.435	68199	0.000	3.515	3088.626
Offroad	Fellers/Bunchers	D	1	110	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	166.799	51.889	499.813	0.969	15.866	14.596	86076	0.000	4.682	3897.082
Offroad	Skidders	D	2	110	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	803.626	114.245	905.484	1.573	50.306	46.282	139808	0.000	10.308	6373.138
Offroad	Trimmers/Edgers/Brush Cutters	G	2	110	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	16.143	4.902	0.140	0.002	0.025	0.023	44	0.077	0.305	4.543
Onroad	Worker Trips-Paved Roads	G	8	110	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	278.508	26.136	27.981	0.445	20.583	6.116	40866	2.067	2.345	NA
Onroad	Worker Trips-Unpaved Roads	G	8	110	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	59.499	7.848	4.424	0.025	463.634	46.458	2244	0.113	0.128	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	36	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	37.329	8.273	148.946	0.201	30.574	11.186	20811	0.192	0.514	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	36	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	1.757	0.384	4.240	0.005	64.237	6.507	490	0.005	0.012	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**				**18.068**	**3.020**	**21.670**	**0.039**	**7.809**	**1.681**	**3664**	**0.035**	**0.243**	**122.242**	**1907.168**	**314.443**	**2068.803**	**3.913**	**664.100**	**148.533**	**359292**	**3.428**	**25.600**	**13446.620**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 102.37

EBRPD - Anthony Chabot Regional Park

					Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	1	8	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	12.793	3.406	20.244	0.020	1.784	1.641	1733	0.000	0.31	79.58
Offroad	Loaders, Rubber Tired	D	1	8	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	10.187	2.382	14.760	0.017	1.288	1.185	1445	0.000	0.21	66.25
Onroad	Dump Truck Trips-Paved Roads	D	1	8	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	3.236	0.714	17.635	0.024	3.469	1.184	2486	0.023	0.06	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	8	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.349	0.077	0.939	0.001	14.271	1.443	108	0.001	0.00	NA
Onroad	Water Truck-Paved Roads	D	1	8	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	1.755	0.388	9.073	0.012	1.738	0.595	1266	0.012	0.03	NA
Onroad	Water Truck-Unpaved Roads	D	1	8	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.349	0.077	0.939	0.001	14.271	1.443	108	0.001	0.00	NA
Onroad	Worker Trips-Paved Roads	G	4	8	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	10.128	0.950	1.017	0.016	0.748	0.222	1486	0.075	0.09	NA
Onroad	Worker Trips-Unpaved Roads	G	4	8	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.164	0.285	0.161	0.001	16.859	1.689	82	0.004	0.00	NA
Dust	Treated Area (acres) --> (acres)		0.25	8	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	20.000	2.000	NA	NA	NA	NA
Totals For Access Road Construction (AC003, 006, 007, 010, 011, 012, 013, & 014)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**40.960**	**8.280**	**64.768**	**0.093**	**74.429**	**11.402**	**8714**	**0.116**	**0.71**	**145.83**

AC001	**Treated Area (acres) -->**	1.21	**No. of Units**	**% Burned or**	**Total**	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		6	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	16.106	0.439	0.322	0.001	0.225	0.207	27	0.034	0.02	2.79
Offroad	Chainsaws	G	2		6	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.401	1.328	0.021	0.000	0.004	0.003	6	0.011	0.08	0.79
Offroad	Chainsaws Preempt	G	1		6	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.903	1.605	0.025	0.000	0.005	0.004	8	0.009	0.10	0.96
Offroad	Chippers/Stump Grinders-Trailer	G	1		6	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	249.519	6.743	4.316	0.010	3.236	2.977	386	0.257	0.37	41.64
Offroad	Trimmers/Edgers/Brush Cutters	G	2		6	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.881	0.267	0.008	0.000	0.001	0.001	2	0.004	0.02	0.25
Onroad	Worker Trips-Paved Roads	G	4		6	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.06	NA
Onroad	Worker Trips-Unpaved Roads	G	4		6	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.623	0.214	0.121	0.001	12.645	1.267	61	0.003	0.00	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Oak/Bay	acres->	0.14	100%	1	106.718	15.348	9.233	NA	11.511	11.271	NA	0.552	5.348	NA	106.718	15.348	9.233	NA	11.511	11.271	NA	0.552	5.35	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	1.07	100%	1	518.360	82.034	47.556	NA	60.634	58.256	NA	NA	26.631	NA	518.360	82.034	47.556	NA	60.634	58.256	NA	NA	26.63	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.00	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**671.916**	**99.267**	**57.718**	**0.004**	**74.924**	**70.298**	**268**	**0.614**	**32.090**	**7.738**	**906.106**	**108.691**	**62.364**	**0.024**	**88.821**	**74.154**	**1605**	**0.926**	**32.64**	**46.43**

AC002	**Treated Area (acres) -->**	1.89	**No. of Units**	**% Burned or**	**Total**	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		9	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	24.158	0.658	0.484	0.001	0.337	0.310	40	0.051	0.04	4.18
Offroad	Chainsaws	G	2		9	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	3.602	1.992	0.031	0.000	0.006	0.005	10	0.016	0.12	1.19
Offroad	Chainsaws Preempt	G	1		9	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	4.354	2.407	0.038	0.000	0.007	0.006	12	0.013	0.15	1.44
Offroad	Chippers/Stump Grinders-Trailer	G	1		9	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	374.278	10.114	6.473	0.015	4.853	4.465	579	0.386	0.56	62.46
Offroad	Trimmers/Edgers/Brush Cutters	G	2		9	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.321	0.401	0.011	0.000	0.002	0.002	4	0.006	0.02	0.37
Onroad	Worker Trips-Paved Roads	G	4		9	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	11.393	1.069	1.145	0.018	0.842	0.250	1672	0.085	0.10	NA
Onroad	Worker Trips-Unpaved Roads	G	4		9	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.434	0.321	0.181	0.001	18.967	1.901	92	0.005	0.01	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	100%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.03	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	100%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**423.713**	**17.444**	**16.873**	**0.047**	**30.281**	**7.922**	**3591**	**0.572**	**1.02**	**69.65**

AC003	**Treated Area (acres) -->**	2.31	**No. of Units**	**% Burned or**	**Total**	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		12	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	32.211	0.878	0.645	0.002	0.449	0.413	54	0.068	0.05	5.57
Offroad	Chainsaws	G	2		12	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.803	2.655	0.042	0.001	0.008	0.007	13	0.022	0.17	1.59
Offroad	Chainsaws Preempt	G	1		12	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.805	3.210	0.050	0.001	0.009	0.008	16	0.017	0.20	1.92
Offroad	Chippers/Stump Grinders-Trailer	G	1		12	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	499.038	13.486	8.631	0.020	6.471	5.953	772	0.515	0.75	83.29
Offroad	Trimmers/Edgers/Brush Cutters	G	2		12	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.761	0.535	0.015	0.000	0.003	0.003	5	0.008	0.03	0.50
Onroad	Worker Trips-Paved Roads	G	4		12	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	15.191	1.426	1.526	0.024	1.123	0.334	2229	0.113	0.13	NA
Onroad	Worker Trips-Unpaved Roads	G	4		12	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	3.245	0.428	0.241	0.001	25.289	2.534	122	0.006	0.01	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.159	0.023	0.014	NA	0.017	0.017	NA	0.001	0.008	NA	0.159	0.023	0.014	NA	0.017	0.017	NA	0.001	0.01	NA
Burn	Oak/Bay	acres->	0.08	50%	1	29.759	4.280	2.575	NA	3.210	3.143	NA	0.154	1.491	NA	29.759	4.280	2.575	NA	3.210	3.143	NA	0.154	1.49	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	2.24	50%	1	543.447	86.004	49.857	NA	63.568	61.075	NA	NA	27.920	NA	543.447	86.004	49.857	NA	63.568	61.075	NA	NA	27.92	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.01	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**621.289**	**92.432**	**57.630**	**0.010**	**72.208**	**65.498**	**859**	**0.222**	**29.545**	**7.738**	**1136.506**	**113.165**	**67.852**	**0.054**	**102.781**	**73.979**	**3802**	**0.908**	**30.76**	**92.86**

AC006	Treated Area (acres) -->	8.45	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		42	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	112.739	3.072	2.257	0.005	1.573	1.447	188	0.237	0.17	19.50
Offroad	Chainsaws	G	2		42	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	16.810	9.294	0.146	0.002	0.026	0.024	45	0.075	0.58	5.56
Offroad	Chainsaws Preempt	G	1		42	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	20.319	11.234	0.176	0.002	0.032	0.029	55	0.060	0.70	6.72
Offroad	Chippers/Stump Grinders	D	1		42	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	28.826	7.437	89.922	0.128	2.788	2.565	13020	0.000	0.67	589.65
Offroad	Chippers/Stump Grinders-Trailer	G	1		42	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	1746.631	47.200	30.209	0.068	22.649	20.837	2702	1.801	2.61	291.50
Offroad	Fellers/Bunchers	D	1		42	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	63.687	19.812	190.838	0.370	6.058	5.573	32865	0.000	1.79	1487.98
Offroad	Skidders	D	2		42	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	306.839	43.621	345.730	0.601	19.208	17.671	53381	0.000	3.94	2433.38
Offroad	Trimmers/Edgers/Brush Cutters	G	2		42	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	6.164	1.872	0.054	0.001	0.010	0.009	17	0.029	0.12	1.73
Onroad	Worker Trips-Paved Roads	G	8		42	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	106.339	9.979	10.684	0.170	7.859	2.335	15604	0.789	0.90	NA
Onroad	Worker Trips-Unpaved Roads	G	8		42	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	22.718	2.996	1.689	0.010	177.024	17.738	857	0.043	0.05	NA
Burn	Eucalyptus/Acacia	acres->	0.16	75%	6	46.240	6.650	4.001	NA	4.988	4.884	NA	0.239	2.317	NA	277.442	39.902	24.003	NA	29.926	29.303	NA	1.434	13.90	NA
Burn	Oak/Bay	acres->	0.63	75%	6	60.245	8.664	5.212	NA	6.498	6.363	NA	0.311	3.019	NA	361.469	51.987	31.273	NA	38.990	38.178	NA	1.868	18.11	NA
Burn	Pine	acres->	0.18	75%	6	43.816	3.623	3.321	NA	4.226	4.226	NA	0.198	1.889	NA	262.897	21.736	19.924	NA	25.358	25.358	NA	1.190	11.33	NA
Burn	Scrub	acres->	7.48	75%	6	454.480	71.925	41.695	NA	53.162	51.077	NA	NA	23.349	NA	2726.879	431.547	250.172	NA	318.970	306.461	NA	NA	140.10	NA
Burn	Grass	acres->	0.00	75%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	25%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.03	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	25%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**663.750**	**94.829**	**74.477**	**0.038**	**77.156**	**68.666**	**3419**	**0.826**	**30.863**	**115.143**	**6061.931**	**702.170**	**1005.588**	**1.368**	**655.737**	**468.512**	**119917**	**7.539**	**194.99**	**4836.02**

AC007	Treated Area (acres) -->	1.44	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		7	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	18.790	0.512	0.376	0.001	0.262	0.241	31	0.039	0.03	3.25
Offroad	Chainsaws	G	2		7	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.802	1.549	0.024	0.000	0.004	0.004	8	0.013	0.10	0.93
Offroad	Chainsaws Preempt	G	1		7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.12	1.12
Offroad	Chippers/Stump Grinders-Trailer	G	1		7	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	291.105	7.867	5.035	0.011	3.775	3.473	450	0.300	0.44	48.58
Offroad	Loaders, Skid Steer	D	1		7	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	4.230	0.966	4.260	0.006	0.293	0.270	477	0.000	0.09	21.96
Offroad	Mowers, Rear Engine Riding	G	1		7	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	14.071	0.225	0.161	0.001	0.011	0.010	24	0.023	0.01	2.41
Offroad	Trimmers/Edgers/Brush Cutters	G	2		7	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.027	0.312	0.009	0.000	0.002	0.001	3	0.005	0.02	0.29
Onroad	Worker Trips-Paved Roads	G	4		7	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	8.862	0.832	0.890	0.014	0.655	0.195	1300	0.066	0.07	NA
Onroad	Worker Trips-Unpaved Roads	G	4		7	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.893	0.250	0.141	0.001	14.752	1.478	71	0.004	0.00	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Oak/Bay	acres->	0.14	50%	1	55.469	7.978	4.799	NA	5.983	5.858	NA	0.287	2.780	NA	55.469	7.978	4.799	NA	5.983	5.858	NA	0.287	2.78	NA
Burn	Pine	acres->	0.52	50%	1	510.936	42.243	38.723	NA	49.283	49.283	NA	2.313	22.027	NA	510.936	42.243	38.723	NA	49.283	49.283	NA	2.313	22.03	NA
Burn	Scrub	acres->	0.77	50%	1	187.076	29.606	17.163	NA	21.883	21.025	NA	NA	9.611	NA	187.076	29.606	17.163	NA	21.883	21.025	NA	NA	9.61	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.01	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**804.019**	**82.122**	**66.500**	**0.011**	**82.606**	**77.469**	**931**	**2.671**	**34.557**	**11.220**	**1100.733**	**94.452**	**75.865**	**0.041**	**99.542**	**82.335**	**2965**	**3.065**	**35.31**	**78.54**

AC011	Treated Area (acres) -->	13.97	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		70	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	187.898	5.120	3.761	0.009	2.621	2.411	313	0.394	0.29	32.51
Offroad	Chainsaws	G	2		70	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	28.017	15.490	0.243	0.003	0.044	0.041	76	0.126	0.96	9.26
Offroad	Chainsaws Preempt	G	1		70	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	33.865	18.724	0.294	0.004	0.053	0.049	92	0.101	1.16	11.20
Offroad	Chippers/Stump Grinders	D	2		70	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	96.088	24.790	299.739	0.426	9.293	8.550	43399	0.000	2.24	1965.49
Offroad	Fellers/Bunchers	D	1		70	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	106.145	33.020	318.063	0.616	10.096	9.289	54776	0.000	2.98	2479.96
Offroad	Loaders, Skid Steer	D	1		70	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	42.297	9.664	42.598	0.062	2.934	2.699	4770	0.000	0.87	219.60
Offroad	Mowers, Rear Engine Riding	G	1		70	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	140.710	2.250	1.610	0.007	0.109	0.101	236	0.235	0.13	24.12
Offroad	Skidders	D	2		70	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	511.398	72.701	576.217	1.001	32.013	29.452	88969	0.000	6.56	4055.63
Offroad	Trimmers/Edgers/Brush Cutters	G	2		70	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	10.273	3.120	0.089	0.001	0.016	0.015	28	0.049	0.19	2.89
Onroad	Worker Trips-Paved Roads	G	8		70	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	177.232	16.632	17.806	0.283	13.098	3.892	26006	1.316	1.49	NA
Onroad	Worker Trips-Unpaved Roads	G	8		70	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	37.863	4.994	2.815	0.016	295.040	29.564	1428	0.072	0.08	NA
Burn	Eucalyptus/Acacia	acres->	4.47	67%	9	744.313	107.047	64.396	NA	80.285	78.613	NA	3.847	37.299	NA	6946.918	999.107	601.025	NA	749.330	733.719	NA	35.905	348.13	NA
Burn	Oak/Bay	acres->	0.07	67%	9	3.841	0.552	0.332	NA	0.414	0.406	NA	0.020	0.192	NA	35.848	5.156	3.101	NA	3.867	3.786	NA	0.185	1.80	NA
Burn	Pine	acres->	0.00	67%	9	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	9.43	67%	9	327.122	51.769	30.011	NA	38.264	36.764	NA	NA	16.806	NA	3053.139	483.180	280.104	NA	357.133	343.128	NA	NA	156.86	NA
Burn	Grass	acres->	0.00	67%	9	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	33%	5	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	4.839	1.072	19.308	0.026	3.963	1.450	2698	0.025	0.07	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	33%	5	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.228	0.050	0.550	0.001	8.327	0.843	64	0.001	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1095.958**	**162.559**	**117.040**	**0.040**	**126.816**	**117.503**	**3736**	**3.905**	**54.555**	**125.724**	**11412.757**	**1695.072**	**2167.326**	**2.454**	**1487.939**	**1168.989**	**222853**	**38.408**	**523.80**	**8800.66**

AC012	Treated Area (acres) -->	10.12	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		51	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	136.897	3.730	2.741	0.006	1.910	1.757	228	0.287	0.21	23.68
Offroad	Chainsaws	G	2		51	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	20.412	11.286	0.177	0.002	0.032	0.030	55	0.091	0.70	6.75
Offroad	Chainsaws Preempt	G	1		51	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	24.673	13.642	0.214	0.003	0.039	0.036	67	0.073	0.85	8.16
Offroad	Chippers/Stump Grinders	D	2		51	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	70.007	18.061	218.382	0.310	6.771	6.229	31620	0.000	1.63	1432.00
Offroad	Fellers/Bunchers	D	1		51	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	77.334	24.058	231.731	0.449	7.356	6.767	39908	0.000	2.17	1806.83
Offroad	Loaders, Skid Steer	D	1		51	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	30.816	7.041	31.036	0.045	2.138	1.967	3476	0.000	0.64	159.99
Offroad	Mowers, Rear Engine Riding	G	1		51	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	102.518	1.640	1.173	0.005	0.080	0.073	172	0.171	0.09	17.57
Offroad	Skidders	D	2		51	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	372.590	52.968	419.816	0.729	23.324	21.458	64820	0.000	4.78	2954.82
Offroad	Trimmers/Edgers/Brush Cutters	G	2		51	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	7.485	2.273	0.065	0.001	0.012	0.011	20	0.036	0.14	2.11
Onroad	Worker Trips-Paved Roads	G	8		51	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	129.126	12.118	12.973	0.206	9.543	2.836	18947	0.958	1.09	NA
Onroad	Worker Trips-Unpaved Roads	G	8		51	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	27.586	3.639	2.051	0.012	214.958	21.540	1040	0.052	0.06	NA
Burn	Eucalyptus/Acacia	acres->	3.52	67%	7	820.663	118.028	71.001	NA	88.521	86.677	NA	4.242	41.125	NA	5471.088	786.853	473.341	NA	590.140	577.845	NA	28.278	274.17	NA
Burn	Oak/Bay	acres->	0.00	67%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Pine	acres->	0.00	67%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	6.60	67%	7	320.582	50.734	29.411	NA	37.499	36.029	NA	NA	16.470	NA	2137.214	338.229	196.075	NA	249.995	240.192	NA	NA	109.80	NA
Burn	Grass	acres->	0.00	67%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	33%	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.456	0.766	13.791	0.019	2.831	1.036	1927	0.018	0.05	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	33%	3	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.163	0.036	0.393	0.000	5.948	0.602	45	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1161.928**	**171.953**	**122.714**	**0.040**	**133.873**	**124.426**	**3736**	**4.280**	**57.852**	**125.724**	**8611.366**	**1276.338**	**1603.958**	**1.788**	**1115.074**	**882.377**	**162325**	**29.965**	**396.37**	**6411.91**

AC013	Treated Area (acres) -->	4.35	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		22	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	59.054	1.609	1.182	0.003	0.824	0.758	98	0.124	0.09	10.22
Offroad	Chainsaws	G	2		22	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	8.805	4.868	0.076	0.001	0.014	0.013	24	0.039	0.30	2.91
Offroad	Chainsaws Preempt	G	1		22	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	10.643	5.885	0.092	0.001	0.017	0.015	29	0.032	0.37	3.52
Offroad	Chippers/Stump Grinders	D	2		22	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	30.199	7.791	94.204	0.134	2.921	2.687	13640	0.000	0.70	617.73
Offroad	Fellers/Bunchers	D	1		22	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	33.360	10.378	99.963	0.194	3.173	2.919	17215	0.000	0.94	779.42
Offroad	Loaders, Skid Steer	D	1		22	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	13.293	3.037	13.388	0.019	0.922	0.848	1499	0.000	0.27	69.02
Offroad	Mowers, Rear Engine Riding	G	1		22	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	44.223	0.707	0.506	0.002	0.034	0.032	74	0.074	0.04	7.58
Offroad	Skidders	D	2		22	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	160.725	22.849	181.097	0.315	10.061	9.256	27962	0.000	2.06	1274.63
Offroad	Trimmers/Edgers/Brush Cutters	G	2		22	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	3.229	0.980	0.028	0.000	0.005	0.005	9	0.015	0.06	0.91
Onroad	Worker Trips-Paved Roads	G	8		22	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	55.702	5.227	5.596	0.089	4.117	1.223	8173	0.413	0.47	NA
Onroad	Worker Trips-Unpaved Roads	G	8		22	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	11.900	1.570	0.885	0.005	92.727	9.292	449	0.023	0.03	NA
Burn	Eucalyptus/Acacia	acres->	0.03	50%	2	16.493	2.372	1.427	NA	1.779	1.742	NA	0.085	0.826	NA	32.985	4.744	2.854	NA	3.558	3.484	NA	0.170	1.65	NA
Burn	Oak/Bay	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	4.32	50%	2	525.071	83.096	48.172	NA	61.419	59.010	NA	NA	26.976	NA	1050.142	166.192	96.343	NA	122.838	118.021	NA	NA	53.95	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.03	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**562.246**	**88.659**	**71.900**	**0.040**	**71.050**	**62.473**	**3736**	**0.123**	**28.059**	**125.724**	**1516.431**	**236.319**	**504.725**	**0.774**	**246.477**	**149.535**	**70355**	**0.902**	**60.96**	**2765.92**

AC014	Treated Area (acres) -->	58.63	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 2 years						2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	786.489	21.429	15.744	0.037	10.971	10.093	1309	1.650	1.20	136.07
Offroad	Air Compressors	G	1		293																				
Offroad	Chainsaws	G	2		293	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	117.270	64.838	1.018	0.013	0.185	0.170	317	0.526	4.03	38.77
Offroad	Chainsaws Preempt	G	1		293	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	141.749	78.372	1.231	0.016	0.223	0.205	383	0.421	4.87	46.86
Offroad	Chippers/Stump Grinders	D	2		293	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	402.197	103.765	1254.624	1.783	38.898	35.786	181657	0.000	9.36	8226.98
Offroad	Fellers/Bunchers	D	1		293	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	444.292	138.213	1331.319	2.580	42.260	38.879	229275	0.000	12.47	10380.41
Offroad	Loaders, Skid Steer	D	1		293	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	177.043	40.452	178.303	0.258	12.280	11.298	19968	0.000	3.65	919.18
Offroad	Mowers, Rear Engine Riding	G	1		293	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	588.974	9.419	6.740	0.028	0.458	0.421	987	0.983	0.53	100.97
Offroad	Skidders	D	2		293	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	2140.566	304.307	2411.881	4.190	133.997	123.278	372399	0.000	27.46	16975.72
Offroad	Trimmers/Edgers/Brush Cutters	G	2		293	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	43.000	13.058	0.373	0.005	0.068	0.062	116	0.205	0.81	12.10
Onroad	Worker Trips-Paved Roads	G	8		293	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	741.843	69.618	74.531	1.185	54.826	16.290	108853	5.506	6.25	NA
Onroad	Worker Trips-Unpaved Roads	G	8		293	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	158.483	20.904	11.785	0.067	1234.952	123.747	5977	0.301	0.34	NA
Burn	Eucalyptus/Acacia	acres->	0.01	50%	30	0.413	0.059	0.036	NA	0.045	0.044	NA	0.002	0.021	NA	12.176	1.751	1.053	NA	1.313	1.286	NA	0.063	0.61	NA
Burn	Oak/Bay	acres->	0.55	50%	30	7.150	1.028	0.619	NA	0.771	0.755	NA	0.037	0.358	NA	210.918	30.334	18.248	NA	22.751	22.277	NA	1.090	10.57	NA
Burn	Pine	acres->	0.00	50%	30	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	58.07	50%	30	478.210	75.680	43.872	NA	55.937	53.744	NA	NA	24.569	NA	14107.186	2232.559	1294.237	NA	1650.152	1585.441	NA	NA	724.77	NA
Burn	Grass	acres->	0.00	50%	30	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	30	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	30.589	6.779	122.053	0.164	25.054	9.166	17053	0.157	0.42	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	30	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	1.440	0.314	3.475	0.004	52.638	5.332	402	0.004	0.01	NA
Totals For Cutting/Skidding/Chipping/Trimming						**506.455**	**79.958**	**66.828**	**0.040**	**64.606**	**56.263**	**3736**	**0.077**	**25.204**	**125.724**	**20104.215**	**3136.115**	**6726.615**	**10.330**	**3281.026**	**1983.732**	**938697**	**10.906**	**807.35**	**36837.05**

Offroad Source: CARB OFFROAD 2007 1534824
Onroad Source: CARB EMFAC 2011 696.180924
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION Treated Area (acres) --> 207.05

EBRPD - Anthony Chabot Regional Park

AC001	Treated Area (acres) -->	0.95	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.02	2.32
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.07	0.66
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.08	0.80
Offroad	Chippers/Stump Grinders-Trailer	G	1		5	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	207.932	5.619	3.596	0.008	2.696	2.481	322	0.214	0.31	34.70
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.01	0.21
Onroad	Worker Trips-Paved Roads	G	4		5	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	6.330	0.594	0.636	0.010	0.468	0.139	929	0.047	0.05	NA
Onroad	Worker Trips-Unpaved Roads	G	4		5	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.352	0.178	0.101	0.001	10.537	1.056	51	0.003	0.00	NA
Burn	Eucalyptus/Acacia	acres->	0.66	100%	1	1530.127	220.063	132.382	NA	165.047	161.609	NA	7.909	76.678	NA	1530.127	220.063	132.382	NA	165.047	161.609	NA	7.909	76.68	NA
Burn	Oak/Bay	acres->	0.08	100%	1	61.197	8.801	5.295	NA	6.601	6.464	NA	0.316	3.067	NA	61.197	8.801	5.295	NA	6.601	6.464	NA	0.316	3.07	NA
Burn	Pine	acres->	0.05	100%	1	91.451	7.561	6.931	NA	8.821	8.821	NA	0.414	3.942	NA	91.451	7.561	6.931	NA	8.821	8.821	NA	0.414	3.94	NA
Burn	Scrub	acres->	0.17	100%	1	80.725	12.775	7.406	NA	9.443	9.072	NA	NA	4.147	NA	80.725	12.775	7.406	NA	9.443	9.072	NA	NA	4.15	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.00	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1810.338**	**251.086**	**152.942**	**0.004**	**192.691**	**186.737**	**268**	**8.701**	**87.945**	**7.738**	**1997.690**	**258.625**	**156.659**	**0.020**	**203.809**	**189.821**	**1338**	**8.951**	**88.39**	**38.69**

AC006	Treated Area (acres) -->	1.15	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		6	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	16.106	0.439	0.322	0.001	0.225	0.207	27	0.034	0.02	2.79
Offroad	Chainsaws	G	2		6	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.401	1.328	0.021	0.000	0.004	0.003	6	0.011	0.08	0.79
Offroad	Chainsaws Preempt	G	1		6	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.903	1.605	0.025	0.000	0.005	0.004	8	0.009	0.10	0.96
Offroad	Chippers/Stump Grinders-Trailer	G	1		6	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	249.519	6.743	4.316	0.010	3.236	2.977	386	0.257	0.37	41.64
Offroad	Mowers, Rear Engine Riding	G	1		6	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	12.061	0.193	0.138	0.001	0.009	0.009	20	0.020	0.01	2.07
Offroad	Trimmers/Edgers/Brush Cutters	G	2		6	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.881	0.267	0.008	0.000	0.001	0.001	2	0.004	0.02	0.25
Onroad	Worker Trips-Paved Roads	G	4		6	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.06	NA
Onroad	Worker Trips-Unpaved Roads	G	4		6	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.623	0.214	0.121	0.001	12.645	1.267	61	0.003	0.00	NA
Burn	Eucalyptus/Acacia	acres->	0.06	75%	1	102.960	14.808	8.908	NA	11.106	10.874	NA	0.532	5.160	NA	102.960	14.808	8.908	NA	11.106	10.874	NA	0.532	5.16	NA
Burn	Oak/Bay	acres->	0.09	75%	1	48.965	7.042	4.236	NA	5.282	5.172	NA	0.253	2.454	NA	48.965	7.042	4.236	NA	5.282	5.172	NA	0.253	2.45	NA
Burn	Pine	acres->	0.85	75%	1	1246.284	103.039	94.453	NA	120.212	120.212	NA	5.643	53.728	NA	1246.284	103.039	94.453	NA	120.212	120.212	NA	5.643	53.73	NA
Burn	Scrub	acres->	0.16	75%	1	57.310	9.070	5.258	NA	6.704	6.441	NA	NA	2.944	NA	57.310	9.070	5.258	NA	6.704	6.441	NA	NA	2.94	NA
Burn	Grass	acres->	0.00	75%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	25%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.01	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	25%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1505.452**	**136.116**	**118.062**	**0.010**	**148.718**	**143.963**	**863**	**6.499**	**64.412**	**8.083**	**1749.692**	**145.701**	**122.823**	**0.030**	**162.622**	**147.825**	**2217**	**6.828**	**64.97**	**48.50**

AC007	Treated Area (acres) -->	19.85	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 2 years																									
Offroad	Air Compressors	G	1		99	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	265.742	7.241	5.320	0.013	3.707	3.410	442	0.558	0.40	45.98
Offroad	Chainsaws	G	2		99	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	39.624	21.908	0.344	0.004	0.062	0.057	107	0.178	1.36	13.10
Offroad	Chainsaws Preempt	G	1		99	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	47.895	26.481	0.416	0.005	0.075	0.069	129	0.142	1.65	15.83
Offroad	Chippers/Stump Grinders	D	2		99	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	135.896	35.060	423.917	0.602	13.143	12.091	61379	0.000	3.16	2779.76
Offroad	Fellers/Bunchers	D	1		99	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	150.119	46.700	449.831	0.872	14.279	13.137	77469	0.000	4.21	3507.37
Offroad	Loaders, Skid Steer	D	1		99	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	59.820	13.668	60.246	0.087	4.149	3.817	6747	0.000	1.23	310.58
Offroad	Mowers, Rear Engine Riding	G	1		99	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	199.005	3.183	2.277	0.010	0.155	0.142	334	0.332	0.18	34.12
Offroad	Skidders	D	2		99	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	723.263	102.820	814.936	1.416	45.276	41.654	125828	0.000	9.28	5735.82
Offroad	Trimmers/Edgers/Brush Cutters	G	2		99	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	14.529	4.412	0.126	0.002	0.023	0.021	39	0.069	0.27	4.09
Onroad	Worker Trips-Paved Roads	G	8		99	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	250.657	23.523	25.183	0.400	18.525	5.504	36780	1.861	2.11	NA
Onroad	Worker Trips-Unpaved Roads	G	8		99	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	53.549	7.063	3.982	0.023	417.271	41.812	2020	0.102	0.12	NA
Burn	Eucalyptus/Acacia	acres->	11.56	50%	10	1346.578	193.665	116.502	NA	145.249	142.223	NA	6.960	67.480	NA	13465.781	1936.652	1165.017	NA	1452.489	1422.229	NA	69.598	674.80	NA
Burn	Oak/Bay	acres->	0.22	50%	10	8.300	1.194	0.718	NA	0.895	0.877	NA	0.043	0.416	NA	82.997	11.937	7.181	NA	8.953	8.766	NA	0.429	4.16	NA
Burn	Pine	acres->	3.36	50%	10	327.277	27.058	24.803	NA	31.568	31.568	NA	1.482	14.109	NA	3272.765	270.583	248.034	NA	315.680	315.680	NA	14.818	141.09	NA
Burn	Scrub	acres->	4.71	50%	10	114.371	18.100	10.493	NA	13.378	12.854	NA	NA	5.876	NA	1143.713	181.000	104.928	NA	133.783	128.537	NA	NA	58.76	NA
Burn	Grass	acres->	0.00	50%	10	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	10	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	10.369	2.298	41.374	0.056	8.493	3.107	5781	0.053	0.14	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	10	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.488	0.107	1.178	0.001	17.843	1.807	136	0.001	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1817.208**	**243.208**	**174.817**	**0.040**	**198.943**	**189.242**	**3736**	**8.523**	**88.138**	**125.724**	**19916.211**	**2694.635**	**3354.290**	**3.490**	**2453.905**	**2001.842**	**317190**	**88.140**	**902.94**	**12446.65**

AC010	Treated Area (acres) -->	44.42	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		222	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	595.907	16.237	11.929	0.028	8.313	7.648	992	1.251	0.91	103.10
Offroad	Chainsaws	G	2		222	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	88.853	49.126	0.771	0.010	0.140	0.129	240	0.398	3.05	29.37
Offroad	Chainsaws Preempt	G	1		222	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	107.400	59.381	0.932	0.012	0.169	0.155	290	0.319	3.69	35.51
Offroad	Chippers/Stump Grinders	D	2		222	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	304.736	78.620	950.602	1.351	29.472	27.114	137638	0.000	7.09	6233.41
Offroad	Fellers/Bunchers	D	1		222	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	336.631	104.721	1008.713	1.955	32.019	29.458	173717	0.000	9.45	7865.02
Offroad	Loaders, Skid Steer	D	1		222	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	134.142	30.650	135.096	0.196	9.304	8.560	15129	0.000	2.77	696.44
Offroad	Mowers, Rear Engine Riding	G	1		222	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	446.253	7.137	5.107	0.021	0.347	0.319	748	0.745	0.40	76.50
Offroad	Skidders	D	2		222	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	1621.862	230.567	1827.432	3.175	101.527	93.405	282159	0.000	20.80	12862.15
Offroad	Trimmers/Edgers/Brush Cutters	G	2		222	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	32.580	9.894	0.283	0.004	0.051	0.047	88	0.156	0.61	9.17
Onroad	Worker Trips-Paved Roads	G	8		222	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	562.079	52.748	56.470	0.897	41.540	12.343	82476	4.172	4.73	NA
Onroad	Worker Trips-Unpaved Roads	G	8		222	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	120.079	15.838	8.929	0.051	935.698	93.761	4529	0.228	0.26	NA
Burn	Eucalyptus/Acacia	acres->	44.39	50%	22	2350.238	338.012	203.335	NA	253.509	248.227	NA	12.147	117.776	NA	51705.226	7436.257	4473.373	NA	5577.193	5461.001	NA	267.240	2591.07	NA
Burn	Oak/Bay	acres->	0.02	50%	22	0.391	0.056	0.034	NA	0.042	0.041	NA	0.002	0.020	NA	8.597	1.236	0.744	NA	0.927	0.908	NA	0.044	0.43	NA
Burn	Pine	acres->	0.00	50%	22	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	0.00	50%	22	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.00	NA
Burn	Grass	acres->	0.00	50%	22	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	22	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	22.812	5.056	91.023	0.123	18.684	6.836	12718	0.117	0.31	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	22	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	1.074	0.234	2.591	0.003	39.256	3.976	300	0.003	0.01	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2371.311**	**341.258**	**225.670**	**0.040**	**261.403**	**249.990**	**3736**	**12.187**	**118.052**	**125.724**	**56088.231**	**8097.704**	**8573.997**	**7.825**	**6794.641**	**5745.660**	**711023**	**274.672**	**2645.59**	**27910.67**

AC011	Treated Area (acres) -->	42.98	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		215	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	577.117	15.725	11.553	0.027	8.050	7.406	960	1.211	0.88	99.85
Offroad	Chainsaws	G	2		215	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	86.052	47.577	0.747	0.010	0.135	0.125	233	0.386	2.96	28.45
Offroad	Chainsaws Preempt	G	1		215	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	104.014	57.509	0.903	0.012	0.164	0.151	281	0.309	3.57	34.39
Offroad	Chippers/Stump Grinders	D	2		215	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	295.128	76.141	920.628	1.308	28.543	26.259	133298	0.000	6.87	6036.86
Offroad	Fellers/Bunchers	D	1		215	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	326.016	101.419	976.907	1.893	31.010	28.529	168240	0.000	9.15	7617.02
Offroad	Loaders, Skid Steer	D	1		215	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	129.912	29.684	130.836	0.189	9.011	8.290	14652	0.000	2.68	674.48
Offroad	Mowers, Rear Engine Riding	G	1		215	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	432.182	6.912	4.946	0.021	0.336	0.309	725	0.721	0.39	74.09
Offroad	Skidders	D	2		215	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	1570.723	223.297	1769.811	3.075	98.326	90.460	273262	0.000	20.15	12456.59
Offroad	Trimmers/Edgers/Brush Cutters	G	2		215	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	31.553	9.582	0.274	0.004	0.050	0.046	85	0.151	0.60	8.88
Onroad	Worker Trips-Paved Roads	G	8		215	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	544.356	51.085	54.690	0.869	40.231	11.954	79875	4.040	4.58	NA
Onroad	Worker Trips-Unpaved Roads	G	8		215	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	116.293	15.339	8.648	0.049	906.194	90.804	4386	0.221	0.25	NA
Burn	Eucalyptus/Acacia	acres->	42.98	67%	29	2328.060	334.822	201.416	NA	251.117	245.885	NA	12.033	116.665	NA	66737.727	9598.235	5773.938	NA	7198.676	7048.704	NA	344.937	3344.38	NA
Burn	Oak/Bay	acres->	0.00	67%	29	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Pine	acres->	0.00	67%	29	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	0.00	67%	29	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.00	NA
Burn	Grass	acres->	0.00	67%	29	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	33%	14	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	14.863	3.294	59.303	0.080	12.173	4.454	8286	0.076	0.20	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	33%	14	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.700	0.153	1.688	0.002	25.576	2.591	195	0.002	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2348.743**	**338.013**	**223.718**	**0.040**	**258.969**	**247.606**	**3736**	**12.071**	**116.921**	**125.724**	**70966.633**	**10235.951**	**9714.871**	**7.538**	**8358.474**	**7320.081**	**684478**	**352.053**	**3396.67**	**27030.60**

AC012	Treated Area (acres) -->	4.73	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		24	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	64.422	1.755	1.290	0.003	0.899	0.827	107	0.135	0.10	11.15
Offroad	Chainsaws	G	2		24	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	9.606	5.311	0.083	0.001	0.015	0.014	26	0.043	0.33	3.18
Offroad	Chainsaws Preempt	G	1		24	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	11.611	6.420	0.101	0.001	0.018	0.017	31	0.034	0.40	3.84
Offroad	Chippers/Stump Grinders	D	2		24	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	32.944	8.500	102.768	0.146	3.186	2.931	14880	0.000	0.77	673.88
Offroad	Fellers/Bunchers	D	1		24	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	36.392	11.321	109.050	0.211	3.462	3.185	18780	0.000	1.02	850.27
Offroad	Loaders, Skid Steer	D	1		24	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	14.502	3.314	14.605	0.021	1.006	0.925	1636	0.000	0.30	75.29
Offroad	Mowers, Rear Engine Riding	G	1		24	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	48.244	0.772	0.552	0.002	0.038	0.035	81	0.081	0.04	8.27
Offroad	Skidders	D	2		24	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	175.336	24.926	197.560	0.343	10.976	10.098	30504	0.000	2.25	1390.50
Offroad	Trimmers/Edgers/Brush Cutters	G	2		24	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	3.522	1.070	0.031	0.000	0.006	0.005	10	0.017	0.07	0.99
Onroad	Worker Trips-Paved Roads	G	8		24	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	60.765	5.702	6.105	0.097	4.491	1.334	8916	0.451	0.51	NA
Onroad	Worker Trips-Unpaved Roads	G	8		24	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	12.982	1.712	0.965	0.005	101.156	10.136	490	0.025	0.03	NA
Burn	Eucalyptus/Acacia	acres->	4.73	67%	3	2205.532	317.200	190.816	NA	237.900	232.944	NA	11.399	110.524	NA	7351.775	1057.334	636.052	NA	793.000	776.480	NA	37.998	368.41	NA
Burn	Oak/Bay	acres->	0.00	67%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Pine	acres->	0.00	67%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	0.00	67%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.00	NA
Burn	Grass	acres->	0.00	67%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	33%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.728	0.383	6.896	0.009	1.415	0.518	963	0.009	0.02	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	33%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.081	0.018	0.196	0.000	2.974	0.301	23	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2226.215**	**320.391**	**213.117**	**0.040**	**245.753**	**234.665**	**3736**	**11.438**	**110.781**	**125.724**	**7823.911**	**1128.537**	**1076.254**	**0.842**	**922.642**	**806.806**	**76446**	**38.793**	**374.25**	**3017.37**

AC013	Treated Area (acres) -->	92.57	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		463	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	1242.814	33.863	24.880	0.059	17.336	15.950	2068	2.608	1.89	215.02
Offroad	Chainsaws	G	2		463	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	185.311	102.458	1.609	0.021	0.292	0.268	501	0.831	6.37	61.26
Offroad	Chainsaws Preempt	G	1		463	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	223.993	123.844	1.945	0.025	0.352	0.324	605	0.665	7.70	74.05
Offroad	Chippers/Stump Grinders	D	2		463	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	635.554	163.970	1982.562	2.818	61.466	56.549	287056	0.000	14.79	13000.31
Offroad	Fellers/Bunchers	D	1		463	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	702.072	218.405	2103.757	4.077	66.779	61.437	362302	0.000	19.71	16403.17
Offroad	Loaders, Skid Steer	D	1		463	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	279.764	63.923	281.755	0.408	19.405	17.853	31553	0.000	5.77	1452.49
Offroad	Mowers, Rear Engine Riding	G	1		463	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	930.699	14.885	10.650	0.044	0.724	0.666	1560	1.553	0.84	159.55
Offroad	Skidders	D	2		463	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	3382.533	480.867	3811.266	6.621	211.743	194.804	588466	0.000	43.39	26825.12
Offroad	Trimmers/Edgers/Brush Cutters	G	2		463	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	67.948	20.634	0.590	0.008	0.107	0.098	184	0.324	1.28	19.12
Onroad	Worker Trips-Paved Roads	G	8		463	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	1172.264	110.011	117.774	1.872	86.636	25.742	172011	8.701	9.87	NA
Onroad	Worker Trips-Unpaved Roads	G	8		463	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	250.435	33.033	18.622	0.106	1951.477	195.546	9445	0.475	0.54	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	100%	93	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	96.434	21.372	384.777	0.518	78.983	28.897	53761	0.495	1.33	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	100%	93	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	4.539	0.991	10.954	0.012	165.945	16.810	1266	0.012	0.03	NA
Totals For Cutting/Skidding/Chipping/Trimming						**20.683**	**3.191**	**22.301**	**0.040**	**7.852**	**1.721**	**3736**	**0.038**	**0.257**	**125.724**	**9174.360**	**1388.255**	**8751.142**	**16.588**	**2661.246**	**614.944**	**1510778**	**15.664**	**113.50**	**58210.09**

AC014	Treated Area (acres) -->	0.41	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		2	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	5.369	0.146	0.107	0.000	0.075	0.069	9	0.011	0.01	0.93
Offroad	Chainsaws	G	2		2	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.03	0.26
Offroad	Chainsaws Preempt	G	1		2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.03	0.32
Offroad	Chippers/Stump Grinders	D	1		2	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.03	28.08
Offroad	Fellers/Bunchers	D	1		2	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	3.033	0.943	9.088	0.018	0.288	0.265	1565	0.000	0.09	70.86
Offroad	Loaders, Skid Steer	D	1		2	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	1.208	0.276	1.217	0.002	0.084	0.077	136	0.000	0.02	6.27
Offroad	Skidders	D	1		2	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.09	57.94
Offroad	Trimmers/Edgers/Brush Cutters	G	2		2	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.01	0.08
Onroad	Worker Trips-Paved Roads	G	8		2	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.04	NA
Onroad	Worker Trips-Unpaved Roads	G	8		2	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.00	NA
Burn	Eucalyptus/Acacia	acres->	0.41	67%	1	629.175	90.488	54.434	NA	67.866	66.452	NA	3.252	31.529	NA	629.175	90.488	54.434	NA	67.866	66.452	NA	3.252	31.53	NA
Burn	Oak/Bay	acres->	0.00	67%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Pine	acres->	0.00	67%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	0.00	67%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.00	NA
Burn	Grass	acres->	0.00	67%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	33%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.01	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	33%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**643.509**	**92.950**	**70.456**	**0.030**	**75.422**	**67.900**	**2787**	**3.287**	**31.722**	**82.371**	**656.756**	**95.172**	**82.222**	**0.054**	**80.344**	**68.857**	**4982**	**3.316**	**31.90**	**164.74**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CUMULATIVE ACTION Treated Area (acres) --> 192.93

EBRPD - Anthony Chabot Regional Park

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	1	4	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	6.396	1.703	10.122	0.010	0.892	0.821	867	0.000	0.15	39.79
Offroad	Loaders, Rubber Tired	D	1	4	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	5.093	1.191	7.380	0.008	0.644	0.593	723	0.000	0.11	33.12
Onroad	Dump Truck Trips-Paved Roads	D	1	4	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	1.618	0.357	8.818	0.012	1.735	0.592	1243	0.011	0.03	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	4	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.174	0.039	0.470	0.001	7.136	0.721	54	0.000	0.00	NA
Onroad	Water Truck-Paved Roads	D	1	4	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.878	0.194	4.537	0.006	0.869	0.297	633	0.006	0.02	NA
Onroad	Water Truck-Unpaved Roads	D	1	4	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.174	0.039	0.470	0.001	7.136	0.721	54	0.000	0.00	NA
Onroad	Worker Trips-Paved Roads	G	4	4	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.04	NA
Onroad	Worker Trips-Unpaved Roads	G	4	4	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.00	NA
Dust	Treated Area (acres) --> (acres)		0.25	4	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	10.000	1.000	NA	NA	NA	NA
Totals For Access Road Construction (AC008a, 008b, 008c, & 009)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**20.480**	**4.140**	**32.384**	**0.046**	**37.215**	**5.701**	**4357**	**0.058**	**0.36**	**72.92**

AC004	Treated Area (acres) -->	9.89	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		49	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	131.529	3.584	2.633	0.006	1.835	1.688	219	0.276	0.20	22.76
Offroad	Chainsaws	G	2		49	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	19.612	10.843	0.170	0.002	0.031	0.028	53	0.088	0.67	6.48
Offroad	Chainsaws Preempt	G	1		49	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	23.705	13.107	0.206	0.003	0.037	0.034	64	0.070	0.81	7.84
Offroad	Chippers/Stump Grinders-Trailer	G	1		49	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	2037.737	55.066	35.244	0.080	26.424	24.310	3152	2.102	3.05	340.08
Offroad	Trimmers/Edgers/Brush Cutters	G	2		49	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	7.191	2.184	0.062	0.001	0.011	0.010	19	0.034	0.14	2.02
Onroad	Worker Trips-Paved Roads	G	4		49	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	62.031	5.821	6.232	0.099	4.584	1.362	9102	0.460	0.52	NA
Onroad	Worker Trips-Unpaved Roads	G	4		49	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	13.252	1.748	0.985	0.006	103.264	10.347	500	0.025	0.03	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	5	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Oak/Bay	acres->	0.45	50%	5	34.759	4.999	3.007	NA	3.749	3.671	NA	0.180	1.742	NA	173.796	24.995	15.036	NA	18.747	18.356	NA	0.898	8.71	NA
Burn	Pine	acres->	0.35	50%	5	68.263	5.644	5.174	NA	6.584	6.584	NA	0.309	2.943	NA	341.317	28.219	25.868	NA	32.922	32.922	NA	1.545	14.71	NA
Burn	Scrub	acres->	9.08	50%	5	441.232	69.828	40.480	NA	51.612	49.588	NA	NA	22.669	NA	2206.160	349.140	202.400	NA	258.060	247.940	NA	NA	113.34	NA
Burn	Grass	acres->	0.00	50%	5	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	5	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	5.185	1.149	20.687	0.028	4.246	1.554	2890	0.027	0.07	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	5	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.244	0.053	0.589	0.001	8.922	0.904	68	0.001	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**592.178**	**82.596**	**53.845**	**0.010**	**67.359**	**61.106**	**859**	**0.557**	**27.479**	**7.738**	**5021.759**	**495.910**	**310.112**	**0.225**	**459.083**	**339.456**	**16068**	**5.527**	**142.26**	**379.18**

AC008a	Treated Area (acres) -->	33.60	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		168	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	450.956	12.287	9.028	0.021	6.291	5.787	750	0.946	0.69	78.02
Offroad	Chainsaws	G	2		168	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	67.240	37.177	0.584	0.007	0.106	0.097	182	0.301	2.31	22.23
Offroad	Chainsaws Preempt	G	1		168	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	81.276	44.937	0.706	0.009	0.128	0.118	220	0.241	2.79	26.87
Offroad	Chippers/Stump Grinders	D	2		168	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	230.611	59.497	719.375	1.022	22.303	20.519	104158	0.000	5.37	4717.17
Offroad	Fellers/Bunchers	D	1		168	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	254.747	79.249	763.350	1.479	24.231	22.292	131462	0.000	7.15	5951.91
Offroad	Loaders, Skid Steer	D	1		168	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	101.513	23.195	102.235	0.148	7.041	6.478	11449	0.000	2.09	527.04
Offroad	Skidders	D	2		168	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	1227.355	174.483	1382.922	2.403	76.831	70.685	213525	0.000	15.74	9733.52
Offroad	Trimmers/Edgers/Brush Cutters	G	2		168	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	24.655	7.487	0.214	0.003	0.039	0.036	67	0.118	0.47	6.94
Onroad	Worker Trips-Paved Roads	G	8		168	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	425.357	39.917	42.734	0.679	31.436	9.341	62414	3.157	3.58	NA
Onroad	Worker Trips-Unpaved Roads	G	8		168	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	90.871	11.986	6.757	0.038	708.095	70.954	3427	0.172	0.20	NA
Burn	Eucalyptus/Acacia	acres->	25.00	50%	17	1713.109	246.380	148.213	NA	184.785	180.935	NA	8.854	85.848	NA	29122.846	4188.454	2519.617	NA	3141.341	3075.896	NA	150.523	1459.41	NA
Burn	Oak/Bay	acres->	0.43	50%	17	9.617	1.383	0.832	NA	1.037	1.016	NA	0.050	0.482	NA	163.491	23.513	14.145	NA	17.635	17.268	NA	0.845	8.19	NA
Burn	Pine	acres->	0.00	50%	17	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	8.17	50%	17	116.774	18.480	10.713	NA	13.659	13.124	NA	NA	5.999	NA	1985.158	314.165	182.125	NA	232.209	223.103	NA	NA	101.99	NA
Burn	Grass	acres->	0.00	50%	17	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	17	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	17.628	3.907	70.336	0.095	14.438	5.282	9827	0.090	0.24	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	17	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.830	0.181	2.002	0.002	30.334	3.073	231	0.002	0.01	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1858.172**	**269.401**	**182.036**	**0.040**	**207.332**	**196.794**	**3732**	**8.939**	**92.584**	**125.379**	**34244.535**	**5020.435**	**5816.129**	**5.907**	**4312.457**	**3530.928**	**537713**	**156.396**	**1610.23**	**21063.69**

AC008b	Treated Area (acres) -->	34.28	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		171	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	459.009	12.507	9.189	0.022	6.403	5.891	764	0.963	0.70	79.41
Offroad	Chainsaws	G	2		171	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	68.441	37.841	0.594	0.008	0.108	0.099	185	0.307	2.35	22.63
Offroad	Chainsaws Preempt	G	1		171	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	82.727	45.739	0.718	0.009	0.130	0.120	224	0.246	2.84	27.35
Offroad	Chippers/Stump Grinders	D	2		171	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	234.729	60.559	732.221	1.041	22.701	20.885	106018	0.000	5.46	4801.41
Offroad	Fellers/Bunchers	D	1		171	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	259.297	80.664	776.982	1.506	24.664	22.691	133809	0.000	7.28	6058.19
Offroad	Loaders, Skid Steer	D	1		171	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	103.325	23.609	104.061	0.151	7.167	6.594	11654	0.000	2.13	536.45
Offroad	Skidders	D	2		171	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	1249.272	177.599	1407.617	2.445	78.203	71.947	217338	0.000	16.02	9907.33
Offroad	Trimmers/Edgers/Brush Cutters	G	2		171	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	25.095	7.621	0.218	0.003	0.039	0.036	68	0.120	0.47	7.06
Onroad	Worker Trips-Paved Roads	G	8		171	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	432.953	40.630	43.497	0.691	31.997	9.507	63529	3.214	3.65	NA
Onroad	Worker Trips-Unpaved Roads	G	8		171	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	92.493	12.200	6.878	0.039	720.740	72.221	3489	0.175	0.20	NA
Burn	Eucalyptus/Acacia	acres->	12.71	50%	17	870.624	125.213	75.324	NA	93.910	91.954	NA	4.500	43.629	NA	14800.609	2128.627	1280.502	NA	1596.470	1563.210	NA	76.498	741.69	NA
Burn	Oak/Bay	acres->	0.01	50%	17	0.118	0.017	0.010	NA	0.013	0.013	NA	0.001	0.006	NA	2.012	0.289	0.174	NA	0.217	0.213	NA	0.010	0.10	NA
Burn	Pine	acres->	0.00	50%	17	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	21.56	50%	17	308.160	48.769	28.272	NA	36.046	34.633	NA	NA	15.832	NA	5238.727	829.065	480.617	NA	612.787	588.756	NA	NA	269.15	NA
Burn	Grass	acres->	0.00	50%	17	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	17	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	17.628	3.907	70.336	0.095	14.438	5.282	9827	0.090	0.24	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	17	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.830	0.181	2.002	0.002	30.334	3.073	231	0.002	0.01	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1197.575**	**177.157**	**125.884**	**0.040**	**137.820**	**128.318**	**3732**	**4.535**	**59.722**	**125.379**	**23067.148**	**3461.037**	**4915.605**	**6.011**	**3146.399**	**2370.524**	**547136**	**81.625**	**1052.30**	**21439.83**

AC008c	Treated Area (acres) -->	102.75	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		514	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	1379.712	37.593	27.620	0.065	19.246	17.706	2296	2.895	2.10	238.70
Offroad	Chainsaws	G	2		514	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	205.723	113.743	1.786	0.023	0.324	0.298	556	0.922	7.07	68.01
Offroad	Chainsaws Preempt	G	1		514	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	248.666	137.486	2.159	0.028	0.391	0.360	672	0.738	8.55	82.21
Offroad	Chippers/Stump Grinders	D	2		514	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	705.561	182.031	2200.944	3.128	68.237	62.778	318675	0.000	16.42	14432.31
Offroad	Fellers/Bunchers	D	1		514	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	779.406	242.463	2335.489	4.526	74.135	68.204	402210	0.000	21.88	18210.00
Offroad	Loaders, Skid Steer	D	1		514	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	310.580	70.964	312.790	0.453	21.543	19.819	35029	0.000	6.40	1612.49
Offroad	Skidders	D	2		514	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	3755.123	533.836	4231.082	7.351	235.067	216.262	653286	0.000	48.17	29779.93
Offroad	Trimmers/Edgers/Brush Cutters	G	2		514	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	75.433	22.907	0.655	0.008	0.119	0.109	204	0.360	1.42	21.23
Onroad	Worker Trips-Paved Roads	G	8		514	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	1301.391	122.128	130.747	2.078	96.179	28.578	190958	9.660	10.96	NA
Onroad	Worker Trips-Unpaved Roads	G	8		514	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	278.021	36.671	20.674	0.117	2166.435	217.085	10486	0.527	0.60	NA
Burn	Eucalyptus/Acacia	acres->	96.62	50%	52	2185.008	314.248	189.040	NA	235.686	230.776	NA	11.293	109.496	NA	112527.890	16183.786	9735.559	NA	12137.840	11884.968	NA	581.605	5639.04	NA
Burn	Oak/Bay	acres->	1.44	50%	52	10.678	1.536	0.924	NA	1.152	1.128	NA	0.055	0.535	NA	549.905	79.087	47.576	NA	59.316	58.080	NA	2.842	27.56	NA
Burn	Pine	acres->	0.00	50%	52	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	4.70	50%	52	22.175	3.509	2.034	NA	2.594	2.492	NA	NA	1.139	NA	1142.019	180.732	104.772	NA	133.585	128.346	NA	NA	58.67	NA
Burn	Grass	acres->	0.00	50%	52	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	52	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	53.401	11.835	213.076	0.287	43.738	16.002	29771	0.274	0.74	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	52	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	2.514	0.549	6.066	0.007	91.894	9.308	701	0.006	0.02	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2236.533**	**322.452**	**214.277**	**0.040**	**247.283**	**236.115**	**3732**	**11.383**	**111.425**	**125.379**	**123315.344**	**17955.812**	**19370.994**	**18.070**	**15148.048**	**12727.905**	**1644844**	**599.830**	**5849.59**	**64444.88**

AC009	Treated Area (acres) -->	12.41	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		62	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	166.424	4.535	3.332	0.008	2.322	2.136	277	0.349	0.25	28.79
Offroad	Chainsaws	G	2		62	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	24.815	13.720	0.215	0.003	0.039	0.036	67	0.111	0.85	8.20
Offroad	Chainsaws Preempt	G	1		62	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	29.995	16.584	0.260	0.003	0.047	0.043	81	0.089	1.03	9.92
Offroad	Chippers/Stump Grinders	D	2		62	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	85.107	21.957	265.483	0.377	8.231	7.572	38439	0.000	1.98	1740.86
Offroad	Fellers/Bunchers	D	1		62	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	94.014	29.247	281.713	0.546	8.942	8.227	48516	0.000	2.64	2196.54
Offroad	Loaders, Skid Steer	D	1		62	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	37.463	8.560	37.730	0.055	2.599	2.391	4225	0.000	0.77	194.50
Offroad	Skidders	D	2		62	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	452.953	64.393	510.364	0.887	28.354	26.086	78801	0.000	5.81	3592.13
Offroad	Trimmers/Edgers/Brush Cutters	G	2		62	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	9.099	2.763	0.079	0.001	0.014	0.013	25	0.043	0.17	2.56
Onroad	Worker Trips-Paved Roads	G	8		62	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	156.977	14.731	15.771	0.251	11.601	3.447	23034	1.165	1.32	NA
Onroad	Worker Trips-Unpaved Roads	G	8		62	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	33.536	4.423	2.494	0.014	261.321	26.185	1265	0.064	0.07	NA
Burn	Eucalyptus/Acacia	acres->	12.41	50%	6	2408.681	346.417	208.392	NA	259.813	254.400	NA	12.449	120.705	NA	14452.088	2078.503	1250.349	NA	1558.877	1526.400	NA	74.696	724.23	NA
Burn	Oak/Bay	acres->	0.00	50%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Pine	acres->	0.00	50%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.00	NA
Burn	Scrub	acres->	0.00	50%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.00	NA
Burn	Grass	acres->	0.00	50%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50%	6	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	6.222	1.379	24.824	0.033	5.096	1.864	3468	0.032	0.09	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved Ro	D	1	50%	6	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.293	0.064	0.707	0.001	10.706	1.084	82	0.001	0.00	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2427.354**	**349.575**	**230.670**	**0.040**	**267.664**	**256.120**	**3732**	**12.484**	**120.960**	**125.379**	**15548.984**	**2260.858**	**2393.321**	**2.178**	**1898.149**	**1605.486**	**198280**	**76.551**	**739.22**	**7773.51**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 13.40

EBRPD - Claremont Canyon Regional Preserve

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	1	4	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	6.396	1.703	10.122	0.010	0.892	0.821	867	0.000	0.154	39.791
Offroad	Loaders, Rubber Tired	D	1	4	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	5.093	1.191	7.380	0.008	0.644	0.593	723	0.000	0.107	33.125
Onroad	Dump Truck Trips-Paved Roads	D	1	4	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	1.618	0.357	8.818	0.012	1.735	0.592	1243	0.011	0.031	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	4	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.174	0.039	0.470	0.001	7.136	0.721	54	0.000	0.001	NA
Onroad	Water Truck-Paved Roads	D	1	4	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.878	0.194	4.537	0.006	0.869	0.297	633	0.006	0.016	NA
Onroad	Water Truck-Unpaved Roads	D	1	4	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.174	0.039	0.470	0.001	7.136	0.721	54	0.000	0.001	NA
Onroad	Worker Trips-Paved Roads	G	4	4	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.043	NA
Onroad	Worker Trips-Unpaved Roads	G	4	4	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.002	NA
Dust	Treated Area (acres) --> (acres)		0.25	4	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	10.000	1.000	NA	NA	NA	NA
Totals For Access Road Construction (CC001, 009, 010, & 011)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**20.480**	**4.140**	**32.384**	**0.046**	**37.215**	**5.701**	**4357**	**0.058**	**0.355**	**72.915**

CC001	**Treated Area (acres) -->**	1.34	No. of Units or No. of Trips	% Burned or % Removed	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Activity	Equipment Type	Fuel																							
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		7	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	18.790	0.512	0.376	0.001	0.262	0.241	31	0.039	0.029	3.251
Offroad	Chainsaws	G	2		7	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.802	1.549	0.024	0.000	0.004	0.004	8	0.013	0.096	0.926
Offroad	Chainsaws Preempt	G	1		7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.116	1.120
Offroad	Chippers/Stump Grinders	D	2		7	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	9.609	2.479	29.974	0.043	0.929	0.855	4340	0.000	0.224	196.549
Offroad	Fellers/Bunchers	D	1		7	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	10.614	3.302	31.806	0.062	1.010	0.929	5478	0.000	0.298	247.996
Offroad	Skidders	D	2		7	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	51.140	7.270	57.622	0.100	3.201	2.945	8897	0.000	0.656	405.563
Offroad	Loaders, Skid Steer	D	1		7	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	4.230	0.966	4.260	0.006	0.293	0.270	477	0.000	0.087	21.960
Offroad	Trimmers/Edgers/Brush Cutters	G	2		7	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.027	0.312	0.009	0.000	0.002	0.001	3	0.005	0.019	0.289
Onroad	Worker Trips-Paved Roads	G	8		7	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	17.723	1.663	1.781	0.028	1.310	0.389	2601	0.132	0.149	NA
Onroad	Worker Trips-Unpaved Roads	G	8		7	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	3.786	0.499	0.282	0.002	29.504	2.956	143	0.007	0.008	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	1.34	100%	1	651.055	103.034	59.730	NA	76.155	73.169	NA	NA	33.449	NA	651.055	103.034	59.730	NA	76.155	73.169	NA	NA	33.449	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**668.642**	**105.952**	**77.753**	**0.035**	**81.373**	**74.397**	**3141**	**0.029**	**33.689**	**125.379**	**774.162**	**123.459**	**185.892**	**0.242**	**112.676**	**81.765**	**21986**	**0.206**	**35.131**	**877.654**

CC001-Sto	**Treated Area (acres) -->**	5.48	No. of Units or No. of Trips	% Burned or % Removed	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Activity	Equipment Type	Fuel																							
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		27	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	72.475	1.975	1.451	0.003	1.011	0.930	121	0.152	0.110	12.539
Offroad	Chainsaws	G	2		27	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	10.806	5.975	0.094	0.001	0.017	0.016	29	0.048	0.371	3.573
Offroad	Chainsaws Preempt	G	1		27	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	13.062	7.222	0.113	0.001	0.021	0.019	35	0.039	0.449	4.318
Offroad	Chippers/Stump Grinders	D	2		27	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	37.063	9.562	115.614	0.164	3.584	3.298	16740	0.000	0.863	758.117
Offroad	Fellers/Bunchers	D	1		27	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	40.942	12.736	122.681	0.238	3.894	3.583	21128	0.000	1.149	956.557
Offroad	Skidders	D	2		27	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	197.254	28.042	222.255	0.386	12.348	11.360	34317	0.000	2.530	1564.316
Offroad	Loaders, Skid Steer	D	1		27	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	16.315	3.728	16.431	0.024	1.132	1.041	1840	0.000	0.336	84.703
Offroad	Trimmers/Edgers/Brush Cutters	G	2		27	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	3.962	1.203	0.034	0.000	0.006	0.006	11	0.019	0.075	1.115
Onroad	Worker Trips-Paved Roads	G	8		27	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	68.361	6.415	6.868	0.109	5.052	1.501	10031	0.507	0.576	NA
Onroad	Worker Trips-Unpaved Roads	G	8		27	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	14.604	1.926	1.086	0.006	113.801	11.403	551	0.028	0.031	NA
Burn	Eucalyptus/Acacia	acres->	4.84	25%	1	2253.405	324.085	194.957	NA	243.064	238.000	NA	11.647	112.923	NA	2816.756	405.106	243.697	NA	303.830	297.500	NA	14.559	141.154	NA
Burn	Oak/Bay	acres->	0.11	25%	1	16.360	2.353	1.415	NA	1.765	1.728	NA	0.085	0.820	NA	20.449	2.941	1.769	NA	2.206	2.160	NA	0.106	1.025	NA
Burn	Pine	acres->	0.00	25%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.54	25%	1	52.473	8.304	4.814	NA	6.138	5.897	NA	NA	2.696	NA	65.591	10.380	6.018	NA	7.672	7.372	NA	NA	3.370	NA
Burn	Grass	acres->	0.00	25%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	75%	4	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.888	0.862	15.515	0.021	3.185	1.165	2168	0.020	0.054	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	75%	4	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.183	0.040	0.442	0.000	6.691	0.678	51	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2340.910**	**337.901**	**223.465**	**0.040**	**258.817**	**247.345**	**3732**	**11.766**	**116.694**	**125.379**	**3381.712**	**498.114**	**754.068**	**0.955**	**464.450**	**342.031**	**87020**	**15.478**	**152.095**	**3385.237**

CC003	Treated Area (acres) -->	2.07	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		10	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	26.843	0.731	0.537	0.001	0.374	0.344	45	0.056	0.041	4.644
Offroad	Chainsaws	G	2		10	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.002	2.213	0.035	0.000	0.006	0.006	11	0.018	0.138	1.323
Offroad	Chainsaws Preempt	G	1		10	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	4.838	2.675	0.042	0.001	0.008	0.007	13	0.014	0.166	1.599
Offroad	Chippers/Stump Grinders-Trailer	G	1		10	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	415.865	11.238	7.193	0.016	5.393	4.961	643	0.429	0.621	69.405
Offroad	Mowers, Rear Engine Riding	G	1		10	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	20.101	0.321	0.230	0.001	0.016	0.014	34	0.034	0.018	3.446
Offroad	Trimmers/Edgers/Brush Cutters	G	2		10	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.468	0.446	0.013	0.000	0.002	0.002	4	0.007	0.028	0.413
Onroad	Worker Trips-Paved Roads	G	4		10	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	4		10	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Burn	Eucalyptus/Acacia	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.01	75%	2	2.572	0.370	0.222	NA	0.277	0.272	NA	0.013	0.129	NA	3.857	0.555	0.334	NA	0.416	0.407	NA	0.020	0.193	NA
Burn	Pine	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	1.55	75%	2	375.952	59.497	34.491	NA	43.976	42.251	NA	NA	19.315	NA	563.928	89.245	51.737	NA	65.964	63.377	NA	NA	28.972	NA
Burn	Grass	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	25%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	25%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**428.457**	**62.024**	**39.921**	**0.010**	**49.668**	**43.787**	**863**	**0.084**	**19.571**	**8.083**	**1057.352**	**109.210**	**65.848**	**0.047**	**96.822**	**72.001**	**3301**	**0.683**	**30.305**	**80.830**

CC006	Treated Area (acres) -->	0.81	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		4	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	10.737	0.293	0.215	0.001	0.150	0.138	18	0.023	0.016	1.858
Offroad	Chainsaws	G	2		4	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.601	0.885	0.014	0.000	0.003	0.002	4	0.007	0.055	0.529
Offroad	Chainsaws Preempt	G	1		4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Trimmers/Edgers/Brush Cutters	G	2		4	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.587	0.178	0.005	0.000	0.001	0.001	2	0.003	0.011	0.165
Onroad	Worker Trips-Paved Roads	G	4		4	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.043	NA
Onroad	Worker Trips-Unpaved Roads	G	4		4	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.002	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.12	100%	1	89.887	12.928	7.777	NA	9.696	9.494	NA	0.465	4.504	NA	89.887	12.928	7.777	NA	9.696	9.494	NA	0.465	4.504	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.69	100%	1	336.658	53.278	30.886	NA	39.380	37.835	NA	NA	17.296	NA	336.658	53.278	30.886	NA	39.380	37.835	NA	NA	17.296	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**431.796**	**66.967**	**38.873**	**0.002**	**51.315**	**47.604**	**203**	**0.484**	**21.849**	**0.798**	**447.551**	**69.250**	**39.503**	**0.010**	**58.036**	**48.429**	**813**	**0.542**	**21.995**	**3.192**

CC007	Treated Area (acres) -->	0.91	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mo	s																								
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders-Trailer	G	1		5	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	207.932	5.619	3.596	0.008	2.696	2.481	322	0.214	0.311	34.703
Offroad	Mowers, Rear Engine Riding	G	1		5	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	10.051	0.161	0.115	0.000	0.008	0.007	17	0.017	0.009	1.723
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	4		5	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	6.330	0.594	0.636	0.010	0.468	0.139	929	0.047	0.053	NA
Onroad	Worker Trips-Unpaved Roads	G	4		5	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.352	0.178	0.101	0.001	10.537	1.056	51	0.003	0.003	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**49.934**	**2.157**	**5.207**	**0.010**	**5.414**	**1.264**	**863**	**0.071**	**0.127**	**8.083**	**245.326**	**9.825**	**9.016**	**0.026**	**16.538**	**4.354**	**1946**	**0.334**	**0.577**	**40.415**

CC008	Treated Area (acres) -->	0.61	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders-Trailer	G	1		3	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	124.759	3.371	2.158	0.005	1.618	1.488	193	0.129	0.186	20.822
Offroad	Mowers, Rear Engine Riding	G	1		3	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	6.030	0.096	0.069	0.000	0.005	0.004	10	0.010	0.005	1.034
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	4		3	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	4		3	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.811	0.107	0.060	0.000	6.322	0.634	31	0.002	0.002	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.24	100%	1	181.256	26.068	15.682	NA	19.551	19.144	NA	0.937	9.083	NA	181.256	26.068	15.682	NA	19.551	19.144	NA	0.937	9.083	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.38	100%	1	182.348	28.858	16.729	NA	21.330	20.493	NA	NA	9.368	NA	182.348	28.858	16.729	NA	21.330	20.493	NA	NA	9.368	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**412.452**	**56.843**	**33.363**	**0.004**	**43.662**	**40.410**	**271**	**1.003**	**18.564**	**8.083**	**510.148**	**60.677**	**35.268**	**0.012**	**49.223**	**41.954**	**813**	**1.134**	**18.789**	**24.249**

CC010	Treated Area (acres) -->	1.59	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		8	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	21.474	0.585	0.430	0.001	0.300	0.276	36	0.045	0.033	3.715
Offroad	Chainsaws	G	2		8	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	3.202	1.770	0.028	0.000	0.005	0.005	9	0.014	0.110	1.059
Offroad	Chainsaws Preempt	G	1		8	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.870	2.140	0.034	0.000	0.006	0.006	10	0.011	0.133	1.279
Offroad	Chippers/Stump Grinders-Trailer	G	1		8	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	332.692	8.990	5.754	0.013	4.314	3.969	515	0.343	0.497	55.524
Offroad	Mowers, Rear Engine Riding	G	1		8	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	16.081	0.257	0.184	0.001	0.013	0.012	27	0.027	0.014	2.757
Offroad	Trimmers/Edgers/Brush Cutters	G	2		8	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.174	0.357	0.010	0.000	0.002	0.002	3	0.006	0.022	0.330
Onroad	Worker Trips-Paved Roads	G	4		8	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	10.128	0.950	1.017	0.016	0.748	0.222	1486	0.075	0.085	NA
Onroad	Worker Trips-Unpaved Roads	G	4		8	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.164	0.285	0.161	0.001	16.859	1.689	82	0.004	0.005	NA
Burn	Eucalyptus/Acacia	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	1.32	75%	2	503.907	72.472	43.596	NA	54.354	53.222	NA	2.604	25.252	NA	755.861	108.708	65.395	NA	81.531	79.832	NA	3.907	37.878	NA
Burn	Pine	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.27	75%	2	66.337	10.498	6.086	NA	7.760	7.455	NA	NA	3.408	NA	99.505	15.747	9.129	NA	11.639	11.183	NA	NA	5.112	NA
Burn	Grass	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	25%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	25%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**620.178**	**85.128**	**54.890**	**0.010**	**67.528**	**61.941**	**863**	**2.676**	**28.787**	**8.083**	**1247.236**	**140.031**	**86.397**	**0.039**	**118.051**	**97.687**	**2759**	**4.438**	**43.904**	**64.664**

CC012	Treated Area (acres) -->	0.58	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders-Trailer	G	1		3	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	124.759	3.371	2.158	0.005	1.618	1.488	193	0.129	0.186	20.822
Offroad	Mowers, Rear Engine Riding	G	1		3	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	6.030	0.096	0.069	0.000	0.005	0.004	10	0.010	0.005	1.034
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	4		3	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	4		3	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.811	0.107	0.060	0.000	6.322	0.634	31	0.002	0.002	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**49.934**	**2.157**	**5.207**	**0.010**	**5.414**	**1.264**	**863**	**0.071**	**0.127**	**8.083**	**148.716**	**6.232**	**11.367**	**0.024**	**13.610**	**3.300**	**1996**	**0.208**	**0.367**	**24.249**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION Treated Area (acres) --> 74.28

EBRPD - Claremont Canyon Regional Preserve

CC001	Treated Area (acres) -->	1.91	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		10	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	26.843	0.731	0.537	0.001	0.374	0.344	45	0.056	0.041	4.644
Offroad	Chainsaws	G	2		10	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.002	2.213	0.035	0.000	0.006	0.006	11	0.018	0.138	1.323
Offroad	Chainsaws Preempt	G	1		10	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	4.838	2.675	0.042	0.001	0.008	0.007	13	0.014	0.166	1.599
Offroad	Chippers/Stump Grinders-Trailer	G	1		10	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	415.865	11.238	7.193	0.016	5.393	4.961	643	0.429	0.621	69.405
Offroad	Loaders, Skid Steer	D	1		10	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	6.042	1.381	6.085	0.009	0.419	0.386	681	0.000	0.125	31.371
Offroad	Trimmers/Edgers/Brush Cutters	G	2		10	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.468	0.446	0.013	0.000	0.002	0.002	4	0.007	0.028	0.413
Onroad	Worker Trips-Paved Roads	G	4		10	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	4		10	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Burn	Eucalyptus/Acacia	acres->	1.46	100%	2	1701.575	244.721	147.215	NA	183.541	179.717	NA	8.795	85.270	NA	3403.151	489.442	294.430	NA	367.081	359.434	NA	17.589	170.540	NA
Burn	Oak/Bay	acres->	0.00	100%	2	0.934	0.134	0.081	NA	0.101	0.099	NA	0.005	0.047	NA	1.868	0.269	0.162	NA	0.201	0.197	NA	0.010	0.094	NA
Burn	Pine	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.45	100%	2	108.774	17.214	9.979	NA	12.724	12.225	NA	NA	5.588	NA	217.548	34.428	19.959	NA	25.447	24.449	NA	NA	11.177	NA
Burn	Grass	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1858.725**	**264.092**	**158.813**	**0.005**	**199.186**	**192.850**	**336**	**8.862**	**91.028**	**10.876**	**4096.988**	**544.367**	**329.928**	**0.049**	**420.942**	**392.176**	**3357**	**18.223**	**183.041**	**108.756**

CC002	Treated Area (acres) -->	0.14	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Mowers, Rear Engine Riding	G	1		1	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**8.347**	**1.034**	**4.488**	**0.008**	**4.875**	**0.768**	**798**	**0.028**	**0.065**	**1.143**	**8.347**	**1.034**	**4.488**	**0.008**	**4.875**	**0.768**	**798**	**0.028**	**0.065**	**1.143**

CC003	Treated Area (acres) -->	6.18	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		31	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	83.212	2.267	1.666	0.004	1.161	1.068	138	0.175	0.127	14.396
Offroad	Chainsaws	G	2		31	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	12.407	6.860	0.108	0.001	0.020	0.018	34	0.056	0.426	4.102
Offroad	Chainsaws Preempt	G	1		31	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	14.997	8.292	0.130	0.002	0.024	0.022	41	0.045	0.515	4.958
Offroad	Chippers/Stump Grinders-Trailer	G	1		31	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	1289.180	34.838	22.297	0.051	16.717	15.380	1994	1.330	1.927	215.156
Offroad	Mowers, Rear Engine Riding	G	1		31	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	62.315	0.997	0.713	0.003	0.048	0.045	104	0.104	0.056	10.683
Offroad	Trimmers/Edgers/Brush Cutters	G	2		31	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	4.549	1.382	0.039	0.001	0.007	0.007	12	0.022	0.086	1.280
Onroad	Worker Trips-Paved Roads	G	4		31	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	39.244	3.683	3.943	0.063	2.900	0.862	5758	0.291	0.330	NA
Onroad	Worker Trips-Unpaved Roads	G	4		31	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	8.384	1.106	0.623	0.004	65.330	6.546	316	0.016	0.018	NA
Burn	Eucalyptus/Acacia	acres->	0.20	75%	5	79.006	11.363	6.835	NA	8.522	8.344	NA	0.408	3.959	NA	355.526	51.132	30.759	NA	38.349	37.550	NA	1.838	17.816	NA
Burn	Oak/Bay	acres->	0.00	75%	5	0.048	0.007	0.004	NA	0.005	0.005	NA	0.000	0.002	NA	0.215	0.031	0.019	NA	0.023	0.023	NA	0.001	0.011	NA
Burn	Pine	acres->	0.00	75%	5	0.013	0.001	0.001	NA	0.001	0.001	NA	0.000	0.001	NA	0.057	0.005	0.004	NA	0.006	0.006	NA	0.000	0.002	NA
Burn	Scrub	acres->	5.98	75%	5	484.037	76.602	44.407	NA	56.619	54.399	NA	NA	24.868	NA	2178.166	344.710	199.832	NA	254.785	244.794	NA	NA	111.906	NA
Burn	Grass	acres->	0.00	75%	5	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	25%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	25%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**613.037**	**90.130**	**56.455**	**0.010**	**70.562**	**64.013**	**863**	**0.480**	**28.957**	**8.083**	**4049.883**	**455.662**	**266.516**	**0.136**	**383.321**	**307.056**	**9286**	**3.884**	**133.243**	**250.574**

CC004	Treated Area (acres) -->	2.00	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 years																									
Offroad	Air Compressors	G	1		10	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	26.843	0.731	0.537	0.001	0.374	0.344	45	0.056	0.041	4.644
Offroad	Chainsaws	G	2		10	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.002	2.213	0.035	0.000	0.006	0.006	11	0.018	0.138	1.323
Offroad	Chainsaws Preempt	G	1		10	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	4.838	2.675	0.042	0.001	0.008	0.007	13	0.014	0.166	1.599
Offroad	Skidders	D	1		10	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	36.528	5.193	41.158	0.072	2.287	2.104	6355	0.000	0.469	289.688
Offroad	Trimmers/Edgers/Brush Cutters	G	2		10	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.468	0.446	0.013	0.000	0.002	0.002	4	0.007	0.028	0.413
Onroad	Worker Trips-Paved Roads	G	4		10	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	4		10	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.001	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**9.990**	**1.521**	**8.581**	**0.015**	**5.102**	**0.977**	**1430**	**0.025**	**0.110**	**29.767**	**91.214**	**13.283**	**51.769**	**0.107**	**29.954**	**5.836**	**9570**	**0.206**	**0.983**	**297.668**

CC005	Treated Area (acres) -->	0.64	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders-Trailer	G	1		3	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	124.759	3.371	2.158	0.005	1.618	1.488	193	0.129	0.186	20.822
Offroad	Mowers, Rear Engine Riding	G	1		3	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	6.030	0.096	0.069	0.000	0.005	0.004	10	0.010	0.005	1.034
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	4		3	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	4		3	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.811	0.107	0.060	0.000	6.322	0.634	31	0.002	0.002	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**49.934**	**2.157**	**5.207**	**0.010**	**5.414**	**1.264**	**863**	**0.071**	**0.127**	**8.083**	**147.630**	**5.991**	**7.112**	**0.018**	**10.976**	**2.809**	**1404**	**0.203**	**0.352**	**24.249**

CC008	Treated Area (acres) -->	0.16	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Mowers, Rear Engine Riding	G	1		1	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.16	100%	1	373.076	53.656	32.277	NA	40.242	39.404	NA	1.928	18.696	NA	373.076	53.656	32.277	NA	40.242	39.404	NA	1.928	18.696	NA
Burn	Oak/Bay	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	100%	1	0.004	0.001	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.004	0.001	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**421.928**	**55.573**	**33.230**	**0.004**	**43.023**	**40.176**	**271**	**1.994**	**18.808**	**8.083**	**421.928**	**55.573**	**33.230**	**0.004**	**43.023**	**40.176**	**271**	**1.994**	**18.808**	**8.083**

CC009	Treated Area (acres) -->	37.00	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		185	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	496.589	13.530	9.941	0.024	6.927	6.373	826	1.042	0.756	85.914
Offroad	Chainsaws	G	2		185	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	74.044	40.939	0.643	0.008	0.117	0.107	200	0.332	2.545	24.478
Offroad	Chainsaws Preempt	G	1		185	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	89.500	49.484	0.777	0.010	0.141	0.130	242	0.266	3.076	29.588
Offroad	Chippers/Stump Grinders-Trailer	G	1		185	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	7693.496	207.903	133.062	0.302	99.762	91.781	11901	7.934	11.498	1283.993
Offroad	Mowers, Rear Engine Riding	G	1		185	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	371.878	5.947	4.255	0.018	0.289	0.266	623	0.621	0.334	63.750
Offroad	Trimmers/Edgers/Brush Cutters	G	2		185	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	27.150	8.245	0.236	0.003	0.043	0.039	73	0.130	0.512	7.640
Onroad	Worker Trips-Paved Roads	G	4		185	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	234.200	21.978	23.529	0.374	17.308	5.143	34365	1.738	1.972	NA
Onroad	Worker Trips-Unpaved Roads	G	4		185	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	50.033	6.599	3.720	0.021	389.874	39.067	1887	0.095	0.108	NA
Burn	Eucalyptus/Acacia	acres->	0.14	50%	19	8.793	1.265	0.761	NA	0.948	0.929	NA	0.045	0.441	NA	162.669	23.395	14.074	NA	17.546	17.181	NA	0.841	8.152	NA
Burn	Oak/Bay	acres->	0.62	50%	19	12.767	1.836	1.105	NA	1.377	1.348	NA	0.066	0.640	NA	236.197	33.970	20.435	NA	25.477	24.947	NA	1.221	11.836	NA
Burn	Pine	acres->	0.00	50%	19	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	36.24	50%	19	475.889	75.313	43.660	NA	55.666	53.483	NA	NA	24.449	NA	8803.950	1393.286	807.702	NA	1029.820	989.435	NA	NA	452.313	NA
Burn	Grass	acres->	0.00	50%	19	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	19	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	19.183	4.251	76.542	0.103	15.712	5.748	10694	0.098	0.264	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	19	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.903	0.197	2.179	0.002	33.010	3.344	252	0.002	0.006	NA
Totals For Cutting/Skidding/Chipping/Trimming						**547.383**	**80.571**	**50.732**	**0.010**	**63.406**	**57.024**	**863**	**0.183**	**25.657**	**8.083**	**18259.791**	**1809.726**	**1097.096**	**0.865**	**1636.027**	**1183.561**	**61064**	**14.320**	**493.372**	**1495.364**

CC010	Treated Area (acres) -->	0.40	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		2	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	5.369	0.146	0.107	0.000	0.075	0.069	9	0.011	0.008	0.929
Offroad	Chainsaws	G	2		2	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1		2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders-Trailer	G	1		2	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	83.173	2.248	1.439	0.003	1.079	0.992	129	0.086	0.124	13.881
Offroad	Mowers, Rear Engine Riding	G	1		2	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	4.020	0.064	0.046	0.000	0.003	0.003	7	0.007	0.004	0.689
Offroad	Trimmers/Edgers/Brush Cutters	G	2		2	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	4		2	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	4		2	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.40	75%	1	696.379	100.153	60.249	NA	75.115	73.550	NA	3.599	34.897	NA	696.379	100.153	60.249	NA	75.115	73.550	NA	3.599	34.897	NA
Burn	Oak/Bay	acres->	0.00	75%	1	0.036	0.005	0.003	NA	0.004	0.004	NA	0.000	0.002	NA	0.036	0.005	0.003	NA	0.004	0.004	NA	0.000	0.002	NA
Burn	Pine	acres->	0.00	75%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	75%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	75%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	25%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	25%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**746.349**	**102.316**	**65.459**	**0.010**	**80.533**	**74.818**	**863**	**3.671**	**35.026**	**8.083**	**795.197**	**104.233**	**66.411**	**0.014**	**83.314**	**75.590**	**1133**	**3.736**	**35.139**	**16.166**

CC011	Treated Area (acres) -->	25.85	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		129	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	346.270	9.435	6.932	0.016	4.830	4.444	576	0.727	0.527	59.908
Offroad	Chainsaws	G	2		129	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	51.631	28.546	0.448	0.006	0.081	0.075	140	0.231	1.774	17.069
Offroad	Chainsaws Preempt	G	1		129	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	62.408	34.505	0.542	0.007	0.098	0.090	169	0.185	2.145	20.632
Offroad	Chippers/Stump Grinders-Trailer	G	1		129	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	5364.654	144.970	92.784	0.210	69.564	63.999	8298	5.533	8.017	895.325
Offroad	Trimmers/Edgers/Brush Cutters	G	2		129	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	18.932	5.749	0.164	0.002	0.030	0.027	51	0.090	0.357	5.327
Onroad	Worker Trips-Paved Roads	G	4		129	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	163.307	15.325	16.407	0.261	12.069	3.586	23963	1.212	1.375	NA
Onroad	Worker Trips-Unpaved Roads	G	4		129	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	34.888	4.602	2.594	0.015	271.858	27.241	1316	0.066	0.075	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	13	0.095	0.014	0.008	NA	0.010	0.010	NA	0.000	0.005	NA	1.236	0.178	0.107	NA	0.133	0.131	NA	0.006	0.062	NA
Burn	Oak/Bay	acres->	0.26	50%	13	7.552	1.086	0.653	NA	0.815	0.798	NA	0.039	0.378	NA	98.179	14.120	8.494	NA	10.590	10.369	NA	0.507	4.920	NA
Burn	Pine	acres->	0.00	50%	13	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	25.59	50%	13	478.248	75.686	43.876	NA	55.942	53.748	NA	NA	24.571	NA	6217.222	983.918	570.387	NA	727.244	698.725	NA	NA	319.417	NA
Burn	Grass	acres->	0.00	50%	13	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	13	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	13.480	2.987	53.786	0.072	11.041	4.039	7515	0.069	0.186	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	13	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.634	0.139	1.531	0.002	23.197	2.350	177	0.002	0.004	NA
Totals For Cutting/Skidding/Chipping/Trimming						**533.819**	**78.911**	**49.722**	**0.010**	**62.180**	**55.818**	**859**	**0.107**	**25.079**	**7.738**	**12372.841**	**1244.475**	**754.177**	**0.591**	**1130.735**	**815.076**	**42204**	**8.629**	**338.860**	**998.260**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CUMULATIVE ACTION
EBRPD - Claremont Canyon Regional Preserve
NONE

PROPOSED ACTION Treated Area (acres) --> 4.02

EBRPD - Huckleberry Botanic Regional Preserve

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

HP001	Treated Area (acres) -->	0.65	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders	D	2		3	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	4.118	1.062	12.846	0.018	0.398	0.366	1860	0.000	0.096	84.235
Offroad	Fellers/Bunchers	D	1		3	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	4.549	1.415	13.631	0.026	0.433	0.398	2348	0.000	0.128	106.284
Offroad	Skidders	D	2		3	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	21.917	3.116	24.695	0.043	1.372	1.262	3813	0.000	0.281	173.813
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	8		3	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.064	NA
Onroad	Worker Trips-Unpaved Roads	G	8		3	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.623	0.214	0.121	0.001	12.645	1.267	61	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	0.65	50%	1	760.622	109.393	65.807	NA	82.045	80.335	NA	3.931	38.117	NA	760.622	109.393	65.807	NA	82.045	80.335	NA	3.931	38.117	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**778.690**	**112.413**	**87.476**	**0.039**	**89.854**	**82.016**	**3664**	**3.966**	**38.359**	**122.242**	**812.655**	**117.973**	**122.306**	**0.107**	**100.204**	**84.395**	**9810**	**4.025**	**38.815**	**366.726**

HP002	Treated Area (acres) -->	2.41	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		12	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	32.211	0.878	0.645	0.002	0.449	0.413	54	0.068	0.049	5.573
Offroad	Chainsaws	G	2		12	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.803	2.655	0.042	0.001	0.008	0.007	13	0.022	0.165	1.588
Offroad	Chainsaws Preempt	G	1		12	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.805	3.210	0.050	0.001	0.009	0.008	16	0.017	0.200	1.919
Offroad	Chippers/Stump Grinders-Trailer	G	1		12	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	499.038	13.486	8.631	0.020	6.471	5.953	772	0.515	0.746	83.286
Offroad	Trimmers/Edgers/Brush Cutters	G	2		12	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.761	0.535	0.015	0.000	0.003	0.003	5	0.008	0.033	0.496
Onroad	Worker Trips-Paved Roads	G	4		12	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	15.191	1.426	1.526	0.024	1.123	0.334	2229	0.113	0.128	NA
Onroad	Worker Trips-Unpaved Roads	G	4		12	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	3.245	0.428	0.241	0.001	25.289	2.534	122	0.006	0.007	NA
Burn	Eucalyptus/Acacia	acres->	0.28	100%	2	322.473	46.378	27.899	NA	34.784	34.059	NA	1.667	16.160	NA	644.946	92.756	55.799	NA	69.567	68.118	NA	3.333	32.320	NA
Burn	Oak/Bay	acres->	0.52	100%	2	199.671	28.717	17.275	NA	21.538	21.089	NA	1.032	10.006	NA	399.341	57.433	34.550	NA	43.075	42.178	NA	2.064	20.012	NA
Burn	Pine	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Chaparral	acres->	1.61	100%	2	879.354	253.270	81.046	NA	95.230	93.203	NA	NA	41.942	NA	1758.709	506.540	162.093	NA	190.459	186.407	NA	NA	83.883	NA
Burn	Grass	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1448.336**	**330.250**	**127.150**	**0.004**	**154.330**	**149.122**	**268**	**2.761**	**68.218**	**7.738**	**3365.051**	**679.347**	**263.592**	**0.048**	**336.453**	**305.955**	**3210**	**6.146**	**137.542**	**92.861**

HP003	Treated Area (acres) -->	0.78	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		4	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	10.737	0.293	0.215	0.001	0.150	0.138	18	0.023	0.016	1.858
Offroad	Chainsaws	G	2		4	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.601	0.885	0.014	0.000	0.003	0.002	4	0.007	0.055	0.529
Offroad	Chainsaws Preempt	G	1		4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders-Trailer	G	1		4	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	166.346	4.495	2.877	0.007	2.157	1.984	257	0.172	0.249	27.762
Offroad	Trimmers/Edgers/Brush Cutters	G	2		4	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.587	0.178	0.005	0.000	0.001	0.001	2	0.003	0.011	0.165
Onroad	Worker Trips-Paved Roads	G	4		4	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.043	NA
Onroad	Worker Trips-Unpaved Roads	G	4		4	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.002	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Chaparral	acres->	0.78	100%	1	848.772	244.462	78.228	NA	91.918	89.962	NA	NA	40.483	NA	848.772	244.462	78.228	NA	91.918	89.962	NA	NA	40.483	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**895.610**	**246.347**	**79.157**	**0.004**	**94.697**	**90.733**	**268**	**0.062**	**40.594**	**7.738**	**1036.123**	**252.001**	**81.945**	**0.016**	**103.035**	**93.046**	**1070**	**0.249**	**40.925**	**30.954**

HP004	Treated Area (acres) -->	0.19	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.06	100%	1	42.422	6.101	3.670	NA	4.576	4.481	NA	0.219	2.126	NA	42.422	6.101	3.670	NA	4.576	4.481	NA	0.219	2.126	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.13	100%	1	63.778	10.093	5.851	NA	7.460	7.168	NA	NA	3.277	NA	63.778	10.093	5.851	NA	7.460	7.168	NA	NA	3.277	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**153.038**	**18.079**	**10.451**	**0.004**	**14.815**	**12.419**	**268**	**0.282**	**5.513**	**7.738**	**153.038**	**18.079**	**10.451**	**0.004**	**14.815**	**12.419**	**268**	**0.282**	**5.513**	**7.738**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION Treated Area (acres) --> 0.19

EBRPD - Huckleberry Botanic Regional Preserve

HP004	Treated Area (acres) -->	0.19	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	100%	1	2.130	0.306	0.184	NA	0.230	0.225	NA	0.011	0.107	NA	2.130	0.306	0.184	NA	0.230	0.225	NA	0.011	0.107	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.18	100%	1	88.876	14.065	8.154	NA	10.396	9.988	NA	NA	4.566	NA	88.876	14.065	8.154	NA	10.396	9.988	NA	NA	4.566	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**137.844**	**16.256**	**9.267**	**0.004**	**13.405**	**10.984**	**268**	**0.073**	**4.783**	**7.738**	**137.844**	**16.256**	**9.267**	**0.004**	**13.405**	**10.984**	**268**	**0.073**	**4.783**	**7.738**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CUMULATIVE ACTION

EBRPD - Huckleberry Botanic Regional Preserve

NONE

PROPOSED ACTION
EBRPD - Kennedy Grove Regional Recreational Area
NONE

CONNECTED ACTION
EBRPD - Kennedy Grove Regional Recreational Area
NONE

CUMULATIVE ACTION Treated Area (acres) --> 4.66
EBRPD - Kennedy Grove Regional Recreational Area

			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

KG001	Treated Area (acres) -->	0.58	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders-Trailer	G	1		3	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	124.759	3.371	2.158	0.005	1.618	1.488	193	0.129	0.186	20.822
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	4		3	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	4		3	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.811	0.107	0.060	0.000	6.322	0.634	31	0.002	0.002	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**141.599**	**5.895**	**7.043**	**0.018**	**10.972**	**2.805**	**1394**	**0.193**	**0.347**	**23.215**

KG002	Treated Area (acres) -->	2.27	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 2 years																									
Offroad	Air Compressors	G	1		11	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	29.527	0.805	0.591	0.001	0.412	0.379	49	0.062	0.045	5.108
Offroad	Chainsaws	G	2		11	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.403	2.434	0.038	0.000	0.007	0.006	12	0.020	0.151	1.455
Offroad	Chainsaws Preempt	G	1		11	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.322	2.942	0.046	0.001	0.008	0.008	14	0.016	0.183	1.759
Offroad	Chippers/Stump Grinders-Trailer	G	1		11	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	457.451	12.362	7.912	0.018	5.932	5.457	708	0.472	0.684	76.346
Offroad	Loaders, Skid Steer	D	1		11	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	6.647	1.519	6.694	0.010	0.461	0.424	750	0.000	0.137	34.509
Offroad	Trimmers/Edgers/Brush Cutters	G	2		11	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.614	0.490	0.014	0.000	0.003	0.002	4	0.008	0.030	0.454
Onroad	Worker Trips-Paved Roads	G	4		11	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	13.925	1.307	1.399	0.022	1.029	0.306	2043	0.103	0.117	NA
Onroad	Worker Trips-Unpaved Roads	G	4		11	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.975	0.392	0.221	0.001	23.182	2.323	112	0.006	0.006	NA
Burn	Eucalyptus/Acacia	acres->	2.27	50%	1	2643.835	380.237	228.736	NA	285.178	279.236	NA	13.665	132.489	NA	2643.835	380.237	228.736	NA	285.178	279.236	NA	13.665	132.489	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.239	0.034	0.021	NA	0.026	0.025	NA	0.001	0.012	NA	0.239	0.034	0.021	NA	0.026	0.025	NA	0.001	0.012	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2692.602**	**382.535**	**234.550**	**0.011**	**290.658**	**280.563**	**927**	**13.734**	**132.639**	**10.876**	**3167.024**	**402.763**	**249.928**	**0.059**	**318.871**	**288.659**	**4284**	**14.357**	**133.869**	**119.631**

KG003	Treated Area (acres) -->	0.50	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders-Trailer	G	1		3	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	124.759	3.371	2.158	0.005	1.618	1.488	193	0.129	0.186	20.822
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	4		3	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	4		3	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.811	0.107	0.060	0.000	6.322	0.634	31	0.002	0.002	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**141.599**	**5.895**	**7.043**	**0.018**	**10.972**	**2.805**	**1394**	**0.193**	**0.347**	**23.215**

KG004	Treated Area (acres) -->	1.31	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		7	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	18.790	0.512	0.376	0.001	0.262	0.241	31	0.039	0.029	3.251
Offroad	Chainsaws	G	2		7	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.802	1.549	0.024	0.000	0.004	0.004	8	0.013	0.096	0.926
Offroad	Chainsaws Preempt	G	1		7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.116	1.120
Offroad	Chippers/Stump Grinders-Trailer	G	1		7	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	291.105	7.867	5.035	0.011	3.775	3.473	450	0.300	0.435	48.584
Offroad	Trimmers/Edgers/Brush Cutters	G	2		7	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.027	0.312	0.009	0.000	0.002	0.001	3	0.005	0.019	0.289
Onroad	Worker Trips-Paved Roads	G	4		7	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	8.862	0.832	0.890	0.014	0.655	0.195	1300	0.066	0.075	NA
Onroad	Worker Trips-Unpaved Roads	G	4		7	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.893	0.250	0.141	0.001	14.752	1.478	71	0.004	0.004	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**328.951**	**13.434**	**10.760**	**0.034**	**22.089**	**5.889**	**2464**	**0.442**	**0.789**	**54.169**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 0.30

EBRPD - Lake Chabot Regional Park

	Treated Area (acres) -->	1.31	No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

LC010	Treated Area (acres) -->	0.30	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.14	50%	1	54.304	7.810	4.698	NA	5.858	5.735	NA	0.281	2.721	NA	54.304	7.810	4.698	NA	5.858	5.735	NA	0.281	2.721	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.16	50%	1	37.755	5.975	3.464	NA	4.416	4.243	NA	NA	1.940	NA	37.755	5.975	3.464	NA	4.416	4.243	NA	NA	1.940	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**139.983**	**15.910**	**13.346**	**0.010**	**15.687**	**11.241**	**859**	**0.348**	**4.786**	**7.738**	**139.983**	**15.910**	**13.346**	**0.010**	**15.687**	**11.241**	**859**	**0.348**	**4.786**	**7.738**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION

EBRPD - Lake Chabot Regional Park

NONE

CUMULATIVE ACTION Treated Area (acres) --> 36.64

EBRPD - Lake Chabot Regional Park

			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

LC001	Treated Area (acres) -->	1.74	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		9	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	24.158	0.658	0.484	0.001	0.337	0.310	40	0.051	0.037	4.180
Offroad	Chainsaws	G	2		9	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	3.602	1.992	0.031	0.000	0.006	0.005	10	0.016	0.124	1.191
Offroad	Chainsaws Preempt	G	1		9	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	4.354	2.407	0.038	0.000	0.007	0.006	12	0.013	0.150	1.439
Offroad	Chippers/Stump Grinders	D	2		9	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	12.354	3.187	38.538	0.055	1.195	1.099	5580	0.000	0.288	252.706
Offroad	Fellers/Bunchers	D	1		9	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	13.647	4.245	40.894	0.079	1.298	1.194	7043	0.000	0.383	318.852
Offroad	Skidders	D	2		9	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	65.751	9.347	74.085	0.129	4.116	3.787	11439	0.000	0.843	521.439
Offroad	Trimmers/Edgers/Brush Cutters	G	2		9	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.321	0.401	0.011	0.000	0.002	0.002	4	0.006	0.025	0.372
Onroad	Worker Trips-Paved Roads	G	4		9	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	11.393	1.069	1.145	0.018	0.842	0.250	1672	0.085	0.096	NA
Onroad	Worker Trips-Unpaved Roads	G	4		9	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.434	0.321	0.181	0.001	18.967	1.901	92	0.005	0.005	NA
Burn	Eucalyptus/Acacia	acres->	1.74	50%	1	2028.564	291.748	175.505	NA	218.811	214.253	NA	10.485	101.656	NA	2028.564	291.748	175.505	NA	218.811	214.253	NA	10.485	101.656	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2045.096**	**294.614**	**197.028**	**0.037**	**224.419**	**215.695**	**3468**	**10.510**	**101.887**	**122.242**	**2168.665**	**315.618**	**335.167**	**0.290**	**248.214**	**223.299**	**26482**	**10.665**	**103.621**	**1100.178**

LC002	Treated Area (acres) -->	0.61	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders	D	2		3	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	4.118	1.062	12.846	0.018	0.398	0.366	1860	0.000	0.096	84.235
Offroad	Fellers/Bunchers	D	1		3	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	4.549	1.415	13.631	0.026	0.433	0.398	2348	0.000	0.128	106.284
Offroad	Skidders	D	2		3	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	21.917	3.116	24.695	0.043	1.372	1.262	3813	0.000	0.281	173.813
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	8		3	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.064	NA
Onroad	Worker Trips-Unpaved Roads	G	8		3	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.623	0.214	0.121	0.001	12.645	1.267	61	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	0.61	50%	1	708.698	101.925	61.314	NA	76.444	74.851	NA	3.663	35.515	NA	708.698	101.925	61.314	NA	76.444	74.851	NA	3.663	35.515	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**726.766**	**104.945**	**82.984**	**0.039**	**84.253**	**76.532**	**3664**	**3.698**	**35.757**	**122.242**	**760.732**	**110.505**	**117.814**	**0.107**	**94.604**	**78.911**	**9810**	**3.757**	**36.213**	**366.726**

LC003	Treated Area (acres) -->	0.97	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	2		5	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	6.863	1.771	21.410	0.030	0.664	0.611	3100	0.000	0.160	140.392
Offroad	Fellers/Bunchers	D	1		5	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	7.582	2.359	22.719	0.044	0.721	0.663	3913	0.000	0.213	177.140
Offroad	Skidders	D	2		5	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	36.528	5.193	41.158	0.072	2.287	2.104	6355	0.000	0.469	289.688
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	8		5	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	8		5	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Burn	Eucalyptus/Acacia	acres->	0.97	50%	1	1128.744	162.336	97.655	NA	121.752	119.216	NA	5.834	56.564	NA	1128.744	162.336	97.655	NA	121.752	119.216	NA	5.834	56.564	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**1146.813**	**165.357**	**119.325**	**0.039**	**129.561**	**120.897**	**3664**	**5.869**	**56.807**	**122.242**	**1214.743**	**176.476**	**188.984**	**0.174**	**150.263**	**125.654**	**15955**	**5.986**	**57.718**	**611.210**

LC004	Treated Area (acres) -->	1.07	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	2		5	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	6.863	1.771	21.410	0.030	0.664	0.611	3100	0.000	0.160	140.392
Offroad	Fellers/Bunchers	D	1		5	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	7.582	2.359	22.719	0.044	0.721	0.663	3913	0.000	0.213	177.140
Offroad	Skidders	D	2		5	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	36.528	5.193	41.158	0.072	2.287	2.104	6355	0.000	0.469	289.688
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	8		5	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	8		5	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Burn	Eucalyptus/Acacia	acres->	1.07	50%	1	1250.042	179.781	108.150	NA	134.836	132.027	NA	6.461	62.643	NA	1250.042	179.781	108.150	NA	134.836	132.027	NA	6.461	62.643	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**1268.110**	**182.802**	**129.820**	**0.039**	**142.645**	**133.708**	**3664**	**6.496**	**62.885**	**122.242**	**1336.040**	**193.921**	**199.478**	**0.174**	**163.346**	**138.466**	**15955**	**6.613**	**63.797**	**611.210**

LC005a	Treated Area (acres) -->	1.03	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders-Trailer	G	1		5	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	207.932	5.619	3.596	0.008	2.696	2.481	322	0.214	0.311	34.703
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	4		5	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	6.330	0.594	0.636	0.010	0.468	0.139	929	0.047	0.053	NA
Onroad	Worker Trips-Unpaved Roads	G	4		5	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.352	0.178	0.101	0.001	10.537	1.056	51	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	1.03	50%	1	1201.111	172.744	103.916	NA	129.558	126.859	NA	6.208	60.191	NA	1201.111	172.744	103.916	NA	129.558	126.859	NA	6.208	60.191	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**1249.035**	**174.869**	**109.101**	**0.010**	**134.971**	**128.121**	**859**	**6.276**	**60.316**	**7.738**	**1436.387**	**182.408**	**112.818**	**0.026**	**146.088**	**131.206**	**1929**	**6.525**	**60.758**	**38.692**

LC005b	Treated Area (acres) -->	2.63	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		13	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	34.895	0.951	0.699	0.002	0.487	0.448	58	0.073	0.053	6.037
Offroad	Chainsaws	G	2		13	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	5.203	2.877	0.045	0.001	0.008	0.008	14	0.023	0.179	1.720
Offroad	Chainsaws Preempt	G	1		13	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.289	3.477	0.055	0.001	0.010	0.009	17	0.019	0.216	2.079
Offroad	Chippers/Stump Grinders-Trailer	G	1		13	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	540.624	14.609	9.350	0.021	7.010	6.449	836	0.558	0.808	90.227
Offroad	Trimmers/Edgers/Brush Cutters	G	2		13	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.908	0.579	0.017	0.000	0.003	0.003	5	0.009	0.036	0.537
Onroad	Worker Trips-Paved Roads	G	4		13	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	16.457	1.544	1.653	0.026	1.216	0.361	2415	0.122	0.139	NA
Onroad	Worker Trips-Unpaved Roads	G	4		13	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	3.516	0.464	0.261	0.001	27.397	2.745	133	0.007	0.008	NA
Burn	Eucalyptus/Acacia	acres->	2.63	50%	2	2040.542	293.471	176.541	NA	220.103	215.518	NA	10.547	102.256	NA	3060.813	440.207	264.812	NA	330.155	323.277	NA	15.820	153.385	NA
Burn	Oak/Bay	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2088.465**	**295.596**	**181.726**	**0.010**	**225.516**	**216.780**	**859**	**10.614**	**102.382**	**7.738**	**3671.334**	**465.069**	**283.275**	**0.061**	**370.237**	**334.037**	**4366**	**16.639**	**154.845**	**100.600**

LC006	Treated Area (acres) -->	13.56	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		68	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	182.530	4.973	3.654	0.009	2.546	2.342	304	0.383	0.278	31.579
Offroad	Chainsaws	G	2		68	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	27.216	15.048	0.236	0.003	0.043	0.039	74	0.122	0.935	8.997
Offroad	Chainsaws Preempt	G	1		68	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	32.897	18.189	0.286	0.004	0.052	0.048	89	0.098	1.131	10.876
Offroad	Chippers/Stump Grinders-Trailer	G	1		68	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	2827.879	76.419	48.909	0.111	36.669	33.736	4374	2.916	4.226	471.954
Offroad	Trimmers/Edgers/Brush Cutters	G	2		68	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	9.979	3.031	0.087	0.001	0.016	0.014	27	0.048	0.188	2.808
Onroad	Worker Trips-Paved Roads	G	4		68	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	86.084	8.079	8.649	0.137	6.362	1.890	12631	0.639	0.725	NA
Onroad	Worker Trips-Unpaved Roads	G	4		68	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	18.390	2.426	1.368	0.008	143.305	14.360	694	0.035	0.040	NA
Burn	Eucalyptus/Acacia	acres->	12.59	50%	7	2095.287	301.345	181.278	NA	226.009	221.300	NA	10.830	105.000	NA	14667.012	2109.413	1268.944	NA	1582.060	1549.100	NA	75.807	734.999	NA
Burn	Oak/Bay	acres->	0.25	50%	7	13.446	1.934	1.163	NA	1.450	1.420	NA	0.069	0.674	NA	94.119	13.536	8.143	NA	10.152	9.941	NA	0.486	4.717	NA
Burn	Pine	acres->	0.00	50%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.73	50%	7	25.169	3.983	2.309	NA	2.944	2.829	NA	NA	1.293	NA	176.182	27.882	16.163	NA	20.608	19.800	NA	NA	9.052	NA
Burn	Grass	acres->	0.00	50%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	7	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	7.258	1.609	28.962	0.039	5.945	2.175	4046	0.037	0.100	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	7	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.342	0.075	0.825	0.001	12.490	1.265	95	0.001	0.002	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2181.825**	**309.387**	**189.934**	**0.010**	**235.816**	**226.811**	**859**	**10.967**	**107.092**	**7.738**	**18129.889**	**2280.678**	**1386.224**	**0.312**	**1820.249**	**1634.711**	**22334**	**80.572**	**756.392**	**526.215**

LC007a	Treated Area (acres) -->	2.41	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		12	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	32.211	0.878	0.645	0.002	0.449	0.413	54	0.068	0.049	5.573
Offroad	Chainsaws	G	2		12	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.803	2.655	0.042	0.001	0.008	0.007	13	0.022	0.165	1.588
Offroad	Chainsaws Preempt	G	1		12	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.805	3.210	0.050	0.001	0.009	0.008	16	0.017	0.200	1.919
Offroad	Chippers/Stump Grinders	D	2		12	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	16.472	4.250	51.384	0.073	1.593	1.466	7440	0.000	0.383	336.941
Offroad	Fellers/Bunchers	D	1		12	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	18.196	5.661	54.525	0.106	1.731	1.592	9390	0.000	0.511	425.136
Offroad	Skidders	D	2		12	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	87.668	12.463	98.780	0.172	5.488	5.049	15252	0.000	1.125	695.251
Offroad	Trimmers/Edgers/Brush Cutters	G	2		12	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.761	0.535	0.015	0.000	0.003	0.003	5	0.008	0.033	0.496
Onroad	Worker Trips-Paved Roads	G	8		12	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	30.383	2.851	3.052	0.049	2.245	0.667	4458	0.226	0.256	NA
Onroad	Worker Trips-Unpaved Roads	G	8		12	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	6.491	0.856	0.483	0.003	50.578	5.068	245	0.012	0.014	NA
Burn	Eucalyptus/Acacia	acres->	2.41	50%	1	2806.753	403.668	242.831	NA	302.751	296.444	NA	14.507	140.653	NA	2806.753	403.668	242.831	NA	302.751	296.444	NA	14.507	140.653	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2824.821**	**406.688**	**264.501**	**0.039**	**310.560**	**298.124**	**3664**	**14.542**	**140.896**	**122.242**	**3011.629**	**437.267**	**456.063**	**0.410**	**367.489**	**311.209**	**37464**	**14.865**	**143.403**	**1466.904**

LC007b	Treated Area (acres) -->	2.75	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		14	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	37.580	1.024	0.752	0.002	0.524	0.482	63	0.079	0.057	6.502
Offroad	Chainsaws	G	2		14	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	5.603	3.098	0.049	0.001	0.009	0.008	15	0.025	0.193	1.852
Offroad	Chainsaws Preempt	G	1		14	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.773	3.745	0.059	0.001	0.011	0.010	18	0.020	0.233	2.239
Offroad	Chippers/Stump Grinders	D	2		14	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	19.218	4.958	59.948	0.085	1.859	1.710	8680	0.000	0.447	393.098
Offroad	Fellers/Bunchers	D	1		14	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	21.229	6.604	63.613	0.123	2.019	1.858	10955	0.000	0.596	495.992
Offroad	Skidders	D	2		14	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	102.280	14.540	115.243	0.200	6.403	5.890	17794	0.000	1.312	811.127
Offroad	Trimmers/Edgers/Brush Cutters	G	2		14	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.055	0.624	0.018	0.000	0.003	0.003	6	0.010	0.039	0.578
Onroad	Worker Trips-Paved Roads	G	8		14	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	35.446	3.326	3.561	0.057	2.620	0.778	5201	0.263	0.298	NA
Onroad	Worker Trips-Unpaved Roads	G	8		14	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	7.573	0.999	0.563	0.003	59.008	5.913	286	0.014	0.016	NA
Burn	Eucalyptus/Acacia	acres->	2.75	50%	2	2135.192	307.084	184.730	NA	230.313	225.515	NA	11.036	107.000	NA	3202.788	460.626	277.095	NA	345.469	338.272	NA	16.554	160.499	NA
Burn	Oak/Bay	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2153.260**	**310.104**	**206.400**	**0.039**	**238.122**	**227.196**	**3664**	**11.071**	**107.242**	**122.242**	**3442.173**	**499.905**	**527.284**	**0.480**	**421.875**	**355.662**	**43905**	**16.973**	**163.712**	**1711.388**

LC007c	Treated Area (acres) -->	3.46	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		17	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	45.632	1.243	0.914	0.002	0.637	0.586	76	0.096	0.069	7.895
Offroad	Chainsaws	G	2		17	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.804	3.762	0.059	0.001	0.011	0.010	18	0.030	0.234	2.249
Offroad	Chainsaws Preempt	G	1		17	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	8.224	4.547	0.071	0.001	0.013	0.012	22	0.024	0.283	2.719
Offroad	Chippers/Stump Grinders	D	2		17	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	23.336	6.020	72.794	0.103	2.257	2.076	10540	0.000	0.543	477.333
Offroad	Fellers/Bunchers	D	1		17	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	25.778	8.019	77.244	0.150	2.452	2.256	13303	0.000	0.724	602.276
Offroad	Skidders	D	2		17	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	124.197	17.656	139.939	0.243	7.775	7.153	21607	0.000	1.593	984.939
Offroad	Trimmers/Edgers/Brush Cutters	G	2		17	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.495	0.758	0.022	0.000	0.004	0.004	7	0.012	0.047	0.702
Onroad	Worker Trips-Paved Roads	G	8		17	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	43.042	4.039	4.324	0.069	3.181	0.945	6316	0.319	0.362	NA
Onroad	Worker Trips-Unpaved Roads	G	8		17	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	9.195	1.213	0.684	0.004	71.653	7.180	347	0.017	0.020	NA
Burn	Eucalyptus/Acacia	acres->	3.46	50%	2	2689.593	386.818	232.695	NA	290.113	284.069	NA	13.901	134.782	NA	4034.389	580.227	349.043	NA	435.170	426.104	NA	20.852	202.173	NA
Burn	Oak/Bay	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2707.661**	**389.838**	**254.365**	**0.039**	**297.922**	**285.750**	**3664**	**13.936**	**135.024**	**122.242**	**4324.721**	**627.845**	**651.475**	**0.582**	**527.102**	**447.062**	**53123**	**21.360**	**206.070**	**2078.114**

LC007d	Treated Area (acres) -->	0.80	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		4	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	10.737	0.293	0.215	0.001	0.150	0.138	18	0.023	0.016	1.858
Offroad	Chainsaws	G	2		4	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.601	0.885	0.014	0.000	0.003	0.002	4	0.007	0.055	0.529
Offroad	Chainsaws Preempt	G	1		4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders	D	2		4	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	5.491	1.417	17.128	0.024	0.531	0.489	2480	0.000	0.128	112.314
Offroad	Fellers/Bunchers	D	1		4	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	6.065	1.887	18.175	0.035	0.577	0.531	3130	0.000	0.170	141.712
Offroad	Skidders	D	2		4	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	29.223	4.154	32.927	0.057	1.829	1.683	5084	0.000	0.375	231.750
Offroad	Trimmers/Edgers/Brush Cutters	G	2		4	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.587	0.178	0.005	0.000	0.001	0.001	2	0.003	0.011	0.165
Onroad	Worker Trips-Paved Roads	G	8		4	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	10.128	0.950	1.017	0.016	0.748	0.222	1486	0.075	0.085	NA
Onroad	Worker Trips-Unpaved Roads	G	8		4	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.164	0.285	0.161	0.001	16.859	1.689	82	0.004	0.005	NA
Burn	Eucalyptus/Acacia	acres->	0.80	50%	1	928.374	133.519	80.320	NA	100.139	98.053	NA	4.798	46.523	NA	928.374	133.519	80.320	NA	100.139	98.053	NA	4.798	46.523	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**946.442**	**136.539**	**101.990**	**0.039**	**107.948**	**99.734**	**3664**	**4.833**	**46.766**	**122.242**	**997.390**	**144.879**	**154.234**	**0.141**	**123.474**	**103.302**	**12882**	**4.921**	**47.449**	**488.968**

LC008	Treated Area (acres) -->	3.00	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		15	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	40.264	1.097	0.806	0.002	0.562	0.517	67	0.084	0.061	6.966
Offroad	Chainsaws	G	2		15	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.004	3.319	0.052	0.001	0.009	0.009	16	0.027	0.206	1.985
Offroad	Chainsaws Preempt	G	1		15	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.257	4.012	0.063	0.001	0.011	0.011	20	0.022	0.249	2.399
Offroad	Chippers/Stump Grinders	D	2		15	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	20.590	5.312	64.230	0.091	1.991	1.832	9300	0.000	0.479	421.176
Offroad	Fellers/Bunchers	D	1		15	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	22.745	7.076	68.156	0.132	2.163	1.990	11738	0.000	0.638	531.420
Offroad	Skidders	D	2		15	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	109.585	15.579	123.475	0.215	6.860	6.311	19065	0.000	1.406	869.064
Offroad	Trimmers/Edgers/Brush Cutters	G	2		15	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.201	0.668	0.019	0.000	0.003	0.003	6	0.011	0.042	0.619
Onroad	Worker Trips-Paved Roads	G	8		15	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	37.978	3.564	3.816	0.061	2.807	0.834	5573	0.282	0.320	NA
Onroad	Worker Trips-Unpaved Roads	G	8		15	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	8.113	1.070	0.603	0.003	63.223	6.335	306	0.015	0.017	NA
Burn	Eucalyptus/Acacia	acres->	2.96	50%	2	2299.943	330.778	198.984	NA	248.084	242.915	NA	11.887	115.256	NA	3449.914	496.167	298.476	NA	372.126	364.373	NA	17.831	172.883	NA
Burn	Oak/Bay	acres->	0.04	50%	2	9.370	1.348	0.811	NA	1.011	0.990	NA	0.048	0.470	NA	14.055	2.021	1.216	NA	1.516	1.484	NA	0.073	0.704	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2327.381**	**335.146**	**221.464**	**0.039**	**256.903**	**245.586**	**3664**	**11.971**	**115.968**	**122.242**	**3720.336**	**540.248**	**567.295**	**0.514**	**455.222**	**384.436**	**46977**	**18.353**	**177.029**	**1833.630**

LC009	Treated Area (acres) -->	2.61	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		13	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	34.895	0.951	0.699	0.002	0.487	0.448	58	0.073	0.053	6.037
Offroad	Chainsaws	G	2		13	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	5.203	2.877	0.045	0.001	0.008	0.008	14	0.023	0.179	1.720
Offroad	Chainsaws Preempt	G	1		13	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.289	3.477	0.055	0.001	0.010	0.009	17	0.019	0.216	2.079
Offroad	Chippers/Stump Grinders-Trailer	G	1		13	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	540.624	14.609	9.350	0.021	7.010	6.449	836	0.558	0.808	90.227
Offroad	Mowers, Rear Engine Riding	G	1		13	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	26.132	0.418	0.299	0.001	0.020	0.019	44	0.044	0.023	4.480
Offroad	Trimmers/Edgers/Brush Cutters	G	2		13	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.908	0.579	0.017	0.000	0.003	0.003	5	0.009	0.036	0.537
Onroad	Worker Trips-Paved Roads	G	4		13	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	16.457	1.544	1.653	0.026	1.216	0.361	2415	0.122	0.139	NA
Onroad	Worker Trips-Unpaved Roads	G	4		13	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	3.516	0.464	0.261	0.001	27.397	2.745	133	0.007	0.008	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.17	50%	2	43.954	6.321	3.803	NA	4.741	4.642	NA	0.227	2.203	NA	65.931	9.482	5.704	NA	7.112	6.964	NA	0.341	3.304	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	2.44	50%	2	394.632	62.453	36.205	NA	46.161	44.351	NA	NA	20.275	NA	591.948	93.680	54.307	NA	69.242	66.526	NA	NA	30.412	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**488.520**	**70.932**	**45.215**	**0.010**	**56.317**	**50.257**	**863**	**0.298**	**22.604**	**8.083**	**1294.532**	**128.442**	**78.773**	**0.062**	**116.455**	**84.269**	**4409**	**1.203**	**35.200**	**105.080**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 3.17

EBRPD - Leona Canyon Regional Open Space

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

LE005	Treated Area (acres) -->	3.17	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		16	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	42.948	1.170	0.860	0.002	0.599	0.551	71	0.090	0.065	7.430
Offroad	Chainsaws	G	2		16	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.404	3.541	0.056	0.001	0.010	0.009	17	0.029	0.220	2.117
Offroad	Chainsaws Preempt	G	1		16	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.741	4.280	0.067	0.001	0.012	0.011	21	0.023	0.266	2.559
Offroad	Chippers/Stump Grinders-Trailer	G	1		16	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	665.383	17.981	11.508	0.026	8.628	7.938	1029	0.686	0.994	111.048
Offroad	Trimmers/Edgers/Brush Cutters	G	2		16	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.348	0.713	0.020	0.000	0.004	0.003	6	0.011	0.044	0.661
Onroad	Worker Trips-Paved Roads	G	4		16	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	20.255	1.901	2.035	0.032	1.497	0.445	2972	0.150	0.171	NA
Onroad	Worker Trips-Unpaved Roads	G	4		16	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	4.327	0.571	0.322	0.002	33.719	3.379	163	0.008	0.009	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.01	50%	2	1.780	0.256	0.154	NA	0.192	0.188	NA	0.009	0.089	NA	2.669	0.384	0.231	NA	0.288	0.282	NA	0.014	0.134	NA
Burn	Pine	acres->	0.16	50%	2	103.824	8.584	7.869	NA	10.015	10.015	NA	0.470	4.476	NA	155.737	12.876	11.803	NA	15.022	15.022	NA	0.705	6.714	NA
Burn	Scrub	acres->	3.00	50%	2	485.992	76.912	44.586	NA	56.848	54.618	NA	NA	24.968	NA	728.988	115.367	66.880	NA	85.272	81.928	NA	NA	37.453	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	50%	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	50%	2	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**638.434**	**87.636**	**53.538**	**0.004**	**69.834**	**65.592**	**268**	**0.542**	**29.644**	**7.738**	**1636.800**	**158.783**	**93.781**	**0.064**	**145.050**	**109.568**	**4281**	**1.717**	**46.070**	**123.815**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION

EBRPD - Leona Canyon Regional Open Space

NONE

CUMULATIVE ACTION Treated Area (acres) --> 16.86

EBRPD - Leona Canyon Regional Open Space

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

LE001	Treated Area (acres) -->	0.28	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.28	50%	1	105.687	15.200	9.144	NA	11.400	11.162	NA	0.546	5.296	NA	105.687	15.200	9.144	NA	11.400	11.162	NA	0.546	5.296	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.081	0.000	0.007	NA	0.009	0.009	NA	NA	NA	NA	0.081	0.000	0.007	NA	0.009	0.009	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**153.691**	**17.325**	**14.335**	**0.010**	**16.822**	**12.434**	**859**	**0.614**	**5.421**	**7.738**	**153.691**	**17.325**	**14.335**	**0.010**	**16.822**	**12.434**	**859**	**0.614**	**5.421**	**7.738**

LE002	Treated Area (acres) -->	0.25	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.25	50%	1	59.870	9.475	5.493	NA	7.003	6.729	NA	NA	3.076	NA	59.870	9.475	5.493	NA	7.003	6.729	NA	NA	3.076	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**107.794**	**11.600**	**10.677**	**0.010**	**12.416**	**7.991**	**859**	**0.068**	**3.201**	**7.738**	**107.794**	**11.600**	**10.677**	**0.010**	**12.416**	**7.991**	**859**	**0.068**	**3.201**	**7.738**

LE003	Treated Area (acres) -->	0.91	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders-Trailer	G	1		5	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	207.932	5.619	3.596	0.008	2.696	2.481	322	0.214	0.311	34.703
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	4		5	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	6.330	0.594	0.636	0.010	0.468	0.139	929	0.047	0.053	NA
Onroad	Worker Trips-Unpaved Roads	G	4		5	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.352	0.178	0.101	0.001	10.537	1.056	51	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.12	50%	1	46.780	6.728	4.047	NA	5.046	4.941	NA	0.242	2.344	NA	46.780	6.728	4.047	NA	5.046	4.941	NA	0.242	2.344	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.79	50%	1	192.050	30.393	17.619	NA	22.465	21.584	NA	NA	9.867	NA	192.050	30.393	17.619	NA	22.465	21.584	NA	NA	9.867	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**286.754**	**39.246**	**26.851**	**0.010**	**32.923**	**27.787**	**859**	**0.310**	**12.336**	**7.738**	**474.105**	**46.785**	**30.568**	**0.026**	**44.041**	**30.871**	**1929**	**0.559**	**12.779**	**38.692**

LE004	Treated Area (acres) -->	3.24	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		16	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	42.948	1.170	0.860	0.002	0.599	0.551	71	0.090	0.065	7.430
Offroad	Chainsaws	G	2		16	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.404	3.541	0.056	0.001	0.010	0.009	17	0.029	0.220	2.117
Offroad	Chainsaws Preempt	G	1		16	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.741	4.280	0.067	0.001	0.012	0.011	21	0.023	0.266	2.559
Offroad	Chippers/Stump Grinders-Trailer	G	1		16	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	665.383	17.981	11.508	0.026	8.628	7.938	1029	0.686	0.994	111.048
Offroad	Trimmers/Edgers/Brush Cutters	G	2		16	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.348	0.713	0.020	0.000	0.004	0.003	6	0.011	0.044	0.661
Onroad	Worker Trips-Paved Roads	G	4		16	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	20.255	1.901	2.035	0.032	1.497	0.445	2972	0.150	0.171	NA
Onroad	Worker Trips-Unpaved Roads	G	4		16	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	4.327	0.571	0.322	0.002	33.719	3.379	163	0.008	0.009	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.22	50%	2	55.291	7.952	4.784	NA	5.964	5.840	NA	0.286	2.771	NA	82.937	11.928	7.175	NA	8.946	8.760	NA	0.429	4.156	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	3.03	50%	2	490.255	77.586	44.978	NA	57.346	55.097	NA	NA	25.187	NA	735.383	116.379	67.466	NA	86.020	82.646	NA	NA	37.781	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**593.470**	**87.663**	**54.946**	**0.010**	**68.723**	**62.200**	**859**	**0.354**	**28.083**	**7.738**	**1569.355**	**158.824**	**95.892**	**0.073**	**143.385**	**104.480**	**5168**	**1.435**	**43.729**	**123.815**

LE006	Treated Area (acres) -->	12.18	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		61	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	163.740	4.461	3.278	0.008	2.284	2.101	272	0.344	0.249	28.328
Offroad	Chainsaws	G	2		61	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	24.415	13.499	0.212	0.003	0.038	0.035	66	0.109	0.839	8.071
Offroad	Chainsaws Preempt	G	1		61	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	29.511	16.316	0.256	0.003	0.046	0.043	80	0.088	1.014	9.756
Offroad	Chippers/Stump Grinders-Trailer	G	1		61	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	2536.774	68.552	43.875	0.099	32.895	30.263	3924	2.616	3.791	423.371
Offroad	Trimmers/Edgers/Brush Cutters	G	2		61	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	8.952	2.719	0.078	0.001	0.014	0.013	24	0.043	0.169	2.519
Onroad	Worker Trips-Paved Roads	G	4		61	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	77.223	7.247	7.758	0.123	5.707	1.696	11331	0.573	0.650	NA
Onroad	Worker Trips-Unpaved Roads	G	4		61	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	16.497	2.176	1.227	0.007	128.553	12.882	622	0.031	0.035	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.63	50%	6	40.040	5.759	3.464	NA	4.319	4.229	NA	0.207	2.006	NA	240.240	34.551	20.785	NA	25.914	25.374	NA	1.242	12.039	NA
Burn	Pine	acres->	0.00	50%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	11.55	50%	6	467.668	74.012	42.905	NA	54.704	52.559	NA	NA	24.027	NA	2806.011	444.071	257.432	NA	328.226	315.354	NA	NA	144.162	NA
Burn	Grass	acres->	0.00	50%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	6	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	6.222	1.379	24.824	0.033	5.096	1.864	3468	0.032	0.086	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	6	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.293	0.064	0.707	0.001	10.706	1.084	82	0.001	0.002	NA
Totals For Cutting/Skidding/Chipping/Trimming						**555.632**	**81.896**	**51.554**	**0.010**	**64.436**	**58.051**	**859**	**0.275**	**26.159**	**7.738**	**5909.877**	**595.035**	**360.432**	**0.279**	**539.479**	**390.710**	**19870**	**5.078**	**163.037**	**472.045**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 11.24

EBRPD - Miller/Knox Regional Shoreline

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

MK001	Treated Area (acres) -->	2.23	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		11	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	29.527	0.805	0.591	0.001	0.412	0.379	49	0.062	0.045	5.108
Offroad	Chainsaws	G	2		11	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.403	2.434	0.038	0.000	0.007	0.006	12	0.020	0.151	1.455
Offroad	Chainsaws Preempt	G	1		11	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.322	2.942	0.046	0.001	0.008	0.008	14	0.016	0.183	1.759
Offroad	Chippers/Stump Grinders	D	1		11	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	7.550	1.948	23.551	0.033	0.730	0.672	3410	0.000	0.176	154.431
Offroad	Chippers/Stump Grinders-Trailer	G	1		11	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	457.451	12.362	7.912	0.018	5.932	5.457	708	0.472	0.684	76.346
Offroad	Fellers/Bunchers	D	1		11	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	16.680	5.189	49.981	0.097	1.587	1.460	8608	0.000	0.468	389.708
Offroad	Loaders, Skid Steer	D	1		11	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	6.647	1.519	6.694	0.010	0.461	0.424	750	0.000	0.137	34.509
Offroad	Skidders	D	2		11	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	80.363	11.424	90.548	0.157	5.031	4.628	13981	0.000	1.031	637.314
Offroad	Trimmers/Edgers/Brush Cutters	G	2		11	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.614	0.490	0.014	0.000	0.003	0.002	4	0.008	0.030	0.454
Onroad	Worker Trips-Paved Roads	G	8		11	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	27.851	2.614	2.798	0.044	2.058	0.612	4087	0.207	0.234	NA
Onroad	Worker Trips-Unpaved Roads	G	8		11	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	5.950	0.785	0.442	0.003	46.363	4.646	224	0.011	0.013	NA
Burn	Eucalyptus/Acacia	acres->	0.26	50%	1	297.673	42.811	25.754	NA	32.109	31.440	NA	1.539	14.917	NA	297.673	42.811	25.754	NA	32.109	31.440	NA	1.539	14.917	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.86	50%	1	837.092	69.208	63.441	NA	80.743	80.743	NA	3.790	36.087	NA	837.092	69.208	63.441	NA	80.743	80.743	NA	3.790	36.087	NA
Burn	Scrub	acres->	1.12	50%	1	271.693	42.997	24.926	NA	31.781	30.534	NA	NA	13.959	NA	271.693	42.997	24.926	NA	31.781	30.534	NA	NA	13.959	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1466.031**	**159.122**	**134.977**	**0.039**	**152.956**	**144.872**	**3487**	**5.406**	**65.264**	**118.280**	**2050.900**	**197.769**	**300.992**	**0.371**	**209.858**	**161.502**	**32438**	**6.129**	**68.130**	**1301.085**

MK002	Treated Area (acres) -->	0.21	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.21	100%	1	102.051	16.150	9.363	NA	11.937	11.469	NA	NA	5.243	NA	102.051	16.150	9.363	NA	11.937	11.469	NA	NA	5.243	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**107.303**	**16.911**	**9.572**	**0.002**	**14.177**	**11.744**	**203**	**0.019**	**5.291**	**0.798**	**107.303**	**16.911**	**9.572**	**0.002**	**14.177**	**11.744**	**203**	**0.019**	**5.291**	**0.798**

MK003	Treated Area (acres) -->	1.01	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders-Trailer	G	1		5	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	207.932	5.619	3.596	0.008	2.696	2.481	322	0.214	0.311	34.703
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	4		5	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	6.330	0.594	0.636	0.010	0.468	0.139	929	0.047	0.053	NA
Onroad	Worker Trips-Unpaved Roads	G	4		5	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.352	0.178	0.101	0.001	10.537	1.056	51	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	0.16	100%	1	361.378	51.973	31.265	NA	38.980	38.168	NA	1.868	18.110	NA	361.378	51.973	31.265	NA	38.980	38.168	NA	1.868	18.110	NA
Burn	Oak/Bay	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.85	100%	1	415.293	65.723	38.100	NA	48.578	46.673	NA	NA	21.336	NA	415.293	65.723	38.100	NA	48.578	46.673	NA	NA	21.336	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**823.509**	**119.581**	**70.295**	**0.004**	**90.337**	**85.612**	**268**	**1.930**	**39.556**	**7.738**	**1010.861**	**127.120**	**74.012**	**0.020**	**101.454**	**88.696**	**1338**	**2.180**	**39.999**	**38.692**

MK004	Treated Area (acres) -->	1.68	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		8	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	21.474	0.585	0.430	0.001	0.300	0.276	36	0.045	0.033	3.715
Offroad	Chainsaws	G	2		8	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	3.202	1.770	0.028	0.000	0.005	0.005	9	0.014	0.110	1.059
Offroad	Chainsaws Preempt	G	1		8	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.870	2.140	0.034	0.000	0.006	0.006	10	0.011	0.133	1.279
Offroad	Chippers/Stump Grinders	D	1		8	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	5.491	1.417	17.128	0.024	0.531	0.489	2480	0.000	0.128	112.314
Offroad	Chippers/Stump Grinders-Trailer	G	1		8	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	332.692	8.990	5.754	0.013	4.314	3.969	515	0.343	0.497	55.524
Offroad	Fellers/Bunchers	D	1		8	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	12.131	3.774	36.350	0.070	1.154	1.062	6260	0.000	0.340	283.424
Offroad	Loaders, Skid Steer	D	1		8	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	4.834	1.105	4.868	0.007	0.335	0.308	545	0.000	0.100	25.097
Offroad	Skidders	D	2		8	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	58.445	8.309	65.853	0.114	3.659	3.366	10168	0.000	0.750	463.501
Offroad	Trimmers/Edgers/Brush Cutters	G	2		8	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.174	0.357	0.010	0.000	0.002	0.002	3	0.006	0.022	0.330
Onroad	Worker Trips-Paved Roads	G	8		8	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	20.255	1.901	2.035	0.032	1.497	0.445	2972	0.150	0.171	NA
Onroad	Worker Trips-Unpaved Roads	G	8		8	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	4.327	0.571	0.322	0.002	33.719	3.379	163	0.008	0.009	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	100%	2	1.023	0.147	0.088	NA	0.110	0.108	NA	0.005	0.051	NA	2.045	0.294	0.177	NA	0.221	0.216	NA	0.011	0.102	NA
Burn	Pine	acres->	1.43	100%	2	1393.755	115.232	105.629	NA	134.437	134.437	NA	6.310	60.085	NA	2787.509	230.463	211.258	NA	268.874	268.874	NA	12.621	120.170	NA
Burn	Scrub	acres->	0.25	100%	2	61.048	9.661	5.601	NA	7.141	6.861	NA	NA	3.136	NA	122.096	19.323	11.202	NA	14.282	13.722	NA	NA	6.273	NA
Burn	Grass	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1514.312**	**128.905**	**127.920**	**0.033**	**147.378**	**143.069**	**2895**	**6.388**	**63.559**	**118.280**	**3379.546**	**280.997**	**355.449**	**0.265**	**328.898**	**296.116**	**23161**	**13.209**	**128.838**	**946.243**

MK005	Treated Area (acres) -->	6.10	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		31	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	83.212	2.267	1.666	0.004	1.161	1.068	138	0.175	0.127	14.396
Offroad	Chainsaws	G	2		31	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	12.407	6.860	0.108	0.001	0.020	0.018	34	0.056	0.426	4.102
Offroad	Chainsaws Preempt	G	1		31	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	14.997	8.292	0.130	0.002	0.024	0.022	41	0.045	0.515	4.958
Offroad	Chippers/Stump Grinders	D	1		31	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	21.277	5.489	66.371	0.094	2.058	1.893	9610	0.000	0.495	435.215
Offroad	Chippers/Stump Grinders-Trailer	G	1		31	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	1289.180	34.838	22.297	0.051	16.717	15.380	1994	1.330	1.927	215.156
Offroad	Fellers/Bunchers	D	1		31	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	47.007	14.623	140.856	0.273	4.471	4.113	24258	0.000	1.319	1098.269
Offroad	Skidders	D	2		31	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	226.476	32.196	255.182	0.443	14.177	13.043	39401	0.000	2.905	1796.066
Offroad	Trimmers/Edgers/Brush Cutters	G	2		31	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	4.549	1.382	0.039	0.001	0.007	0.007	12	0.022	0.086	1.280
Onroad	Worker Trips-Paved Roads	G	8		31	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	78.489	7.366	7.886	0.125	5.801	1.724	11517	0.583	0.661	NA
Onroad	Worker Trips-Unpaved Roads	G	8		31	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	16.768	2.212	1.247	0.007	130.660	13.093	632	0.032	0.036	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	100%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.42	100%	6	135.034	11.164	10.234	NA	13.025	13.025	NA	0.611	5.821	NA	810.204	66.985	61.403	NA	78.150	78.150	NA	3.668	34.928	NA
Burn	Scrub	acres->	5.69	100%	6	460.556	72.886	42.253	NA	53.872	51.760	NA	NA	23.662	NA	2763.334	437.317	253.517	NA	323.234	310.558	NA	NA	141.969	NA
Burn	Grass	acres->	0.00	100%	6	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**653.472**	**87.777**	**68.480**	**0.032**	**72.545**	**66.409**	**2827**	**0.684**	**29.757**	**115.143**	**5367.900**	**619.827**	**810.702**	**1.001**	**576.479**	**439.067**	**87636**	**5.909**	**185.395**	**3569.442**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION
EBRPD - Miller/Knox Regional Shoreline
NONE

CUMULATIVE ACTION
EBRPD - Miller/Knox Regional Shoreline
NONE

PROPOSED ACTION Treated Area (acres) --> 17.07

EBRPD - Redwood Regional Park

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	1	3	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	4.797	1.277	7.591	0.008	0.669	0.615	650	0.000	0.115	29.843
Offroad	Loaders, Rubber Tired	D	1	3	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	3.820	0.893	5.535	0.006	0.483	0.444	542	0.000	0.081	24.844
Onroad	Dump Truck Trips-Paved Roads	D	1	3	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	1.214	0.268	6.613	0.009	1.301	0.444	932	0.009	0.023	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	3	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.131	0.029	0.352	0.000	5.352	0.541	40	0.000	0.001	NA
Onroad	Water Truck-Paved Roads	D	1	3	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.658	0.145	3.402	0.005	0.652	0.223	475	0.004	0.012	NA
Onroad	Water Truck-Unpaved Roads	D	1	3	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.131	0.029	0.352	0.000	5.352	0.541	40	0.000	0.001	NA
Onroad	Worker Trips-Paved Roads	G	4	3	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	4	3	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.811	0.107	0.060	0.000	6.322	0.634	31	0.002	0.002	NA
Dust	Treated Area (acres) --> (acres)		0.25	3	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	7.500	0.750	NA	NA	NA	NA
Totals For Access Road Construction (Connected Actions RD001, 003, & 009)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**15.360**	**3.105**	**24.288**	**0.035**	**27.911**	**4.276**	**3268**	**0.043**	**0.266**	**54.686**

RD001	Treated Area (acres) -->	0.11	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	1		1	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Fellers/Bunchers	D	1		1	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428
Offroad	Skidders	D	2		1	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	8		1	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	8		1	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.09	50%	1	85.239	7.047	6.460	NA	8.222	8.222	NA	0.386	3.675	NA	85.239	7.047	6.460	NA	8.222	8.222	NA	0.386	3.675	NA
Burn	Scrub	acres->	0.02	50%	1	4.731	0.749	0.434	NA	0.553	0.532	NA	NA	0.243	NA	4.731	0.749	0.434	NA	0.553	0.532	NA	NA	0.243	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**148.938**	**11.763**	**27.142**	**0.038**	**17.057**	**10.870**	**3419**	**0.464**	**4.206**	**115.143**	**148.938**	**11.763**	**27.142**	**0.038**	**17.057**	**10.870**	**3419**	**0.464**	**4.206**	**115.143**

RD002	Treated Area (acres) -->	2.51	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		13	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	34.895	0.951	0.699	0.002	0.487	0.448	58	0.073	0.053	6.037
Offroad	Chainsaws	G	2		13	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	5.203	2.877	0.045	0.001	0.008	0.008	14	0.023	0.179	1.720
Offroad	Chainsaws Preempt	G	1		13	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.289	3.477	0.055	0.001	0.010	0.009	17	0.019	0.216	2.079
Offroad	Chippers/Stump Grinders	D	2		13	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	17.845	4.604	55.666	0.079	1.726	1.588	8060	0.000	0.415	365.019
Offroad	Fellers/Bunchers	D	1		13	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	19.713	6.132	59.069	0.114	1.875	1.725	10173	0.000	0.553	460.564
Offroad	Loaders, Skid Steer	D	1		13	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	7.855	1.795	7.911	0.011	0.545	0.501	886	0.000	0.162	40.783
Offroad	Skidders	D	2		13	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	94.974	13.502	107.012	0.186	5.945	5.470	16523	0.000	1.218	753.189
Offroad	Trimmers/Edgers/Brush Cutters	G	2		13	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.908	0.579	0.017	0.000	0.003	0.003	5	0.009	0.036	0.537
Onroad	Worker Trips-Paved Roads	G	8		13	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	32.915	3.089	3.307	0.053	2.433	0.723	4830	0.244	0.277	NA
Onroad	Worker Trips-Unpaved Roads	G	8		13	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	7.032	0.927	0.523	0.003	54.793	5.490	265	0.013	0.015	NA
Burn	Eucalyptus/Acacia	acres->	2.51	50%	2	1947.467	280.085	168.489	NA	210.064	205.688	NA	10.066	97.592	NA	2921.201	420.128	252.733	NA	315.096	308.531	NA	15.098	146.388	NA
Burn	Oak/Bay	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1966.140**	**283.244**	**190.767**	**0.040**	**217.915**	**207.407**	**3732**	**10.100**	**97.847**	**125.379**	**3151.458**	**458.422**	**493.418**	**0.458**	**386.871**	**325.233**	**41718**	**15.488**	**149.535**	**1629.929**

RD003	Treated Area (acres) -->	3.61	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		18	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	48.317	1.316	0.967	0.002	0.674	0.620	80	0.101	0.074	8.359
Offroad	Chainsaws	G	2		18	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	7.204	3.983	0.063	0.001	0.011	0.010	19	0.032	0.248	2.382
Offroad	Chainsaws Preempt	G	1		18	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	8.708	4.815	0.076	0.001	0.014	0.013	24	0.026	0.299	2.879
Offroad	Chippers/Stump Grinders-Trailer	G	1		18	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	748.556	20.228	12.947	0.029	9.707	8.930	1158	0.772	1.119	124.929
Offroad	Trimmers/Edgers/Brush Cutters	G	2		18	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.642	0.802	0.023	0.000	0.004	0.004	7	0.013	0.050	0.743
Onroad	Worker Trips-Paved Roads	G	4		18	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	22.787	2.138	2.289	0.036	1.684	0.500	3344	0.169	0.192	NA
Onroad	Worker Trips-Unpaved Roads	G	4		18	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	4.868	0.642	0.362	0.002	37.934	3.801	184	0.009	0.010	NA
Burn	Eucalyptus/Acacia	acres->	0.10	100%	4	56.029	8.058	4.847	NA	6.044	5.918	NA	0.290	2.808	NA	224.117	32.233	19.390	NA	24.174	23.671	NA	1.158	11.231	NA
Burn	Oak/Bay	acres->	0.31	100%	4	59.324	8.532	5.133	NA	6.399	6.266	NA	0.307	2.973	NA	237.296	34.128	20.530	NA	25.596	25.063	NA	1.226	11.891	NA
Burn	Pine	acres->	0.00	100%	4	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	3.21	100%	4	389.496	61.640	35.734	NA	45.560	43.774	NA	NA	20.011	NA	1557.986	246.562	142.934	NA	182.241	175.095	NA	NA	80.043	NA
Burn	Grass	acres->	0.00	100%	4	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**551.688**	**80.115**	**46.643**	**0.004**	**60.782**	**56.728**	**268**	**0.659**	**25.902**	**7.738**	**2862.481**	**346.848**	**199.581**	**0.072**	**282.039**	**237.707**	**4816**	**3.507**	**105.157**	**139.292**

RD004	Treated Area (acres) -->	7.95	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 2 years																									
Offroad	Air Compressors	G	1		40	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	107.371	2.925	2.149	0.005	1.498	1.378	179	0.225	0.163	18.576
Offroad	Chainsaws	G	2		40	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	16.010	8.852	0.139	0.002	0.025	0.023	43	0.072	0.550	5.293
Offroad	Chainsaws Preempt	G	1		40	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	19.351	10.699	0.168	0.002	0.030	0.028	52	0.057	0.665	6.397
Offroad	Chippers/Stump Grinders	D	2		40	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	54.907	14.166	171.280	0.243	5.310	4.885	24800	0.000	1.278	1123.137
Offroad	Fellers/Bunchers	D	1		40	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	60.654	18.869	181.750	0.352	5.769	5.308	31300	0.000	1.702	1417.121
Offroad	Loaders, Skid Steer	D	1		40	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	24.170	5.523	24.342	0.035	1.676	1.542	2726	0.000	0.498	125.486
Offroad	Skidders	D	2		40	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	292.227	41.544	329.267	0.572	18.293	16.830	50839	0.000	3.748	2317.505
Offroad	Trimmers/Edgers/Brush Cutters	G	2		40	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	5.870	1.783	0.051	0.001	0.009	0.008	16	0.028	0.111	1.652
Onroad	Worker Trips-Paved Roads	G	8		40	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	101.276	9.504	10.175	0.162	7.485	2.224	14861	0.752	0.853	NA
Onroad	Worker Trips-Unpaved Roads	G	8		40	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	21.636	2.854	1.609	0.009	168.594	16.894	816	0.041	0.047	NA
Burn	Eucalyptus/Acacia	acres->	0.62	50%	4	181.553	26.111	15.707	NA	19.583	19.175	NA	0.938	9.098	NA	726.212	104.444	62.830	NA	78.333	76.701	NA	3.753	36.392	NA
Burn	Oak/Bay	acres->	0.41	50%	4	39.596	5.695	3.426	NA	4.271	4.182	NA	0.205	1.984	NA	158.383	22.779	13.703	NA	17.084	16.728	NA	0.819	7.937	NA
Burn	Pine	acres->	5.99	50%	4	1458.651	120.597	110.547	NA	140.697	140.697	NA	6.604	62.883	NA	5834.604	482.389	442.189	NA	562.787	562.787	NA	26.417	251.531	NA
Burn	Scrub	acres->	0.92	50%	4	56.068	8.873	5.144	NA	6.558	6.301	NA	NA	2.881	NA	224.271	35.492	20.575	NA	26.234	25.205	NA	NA	11.522	NA
Burn	Grass	acres->	0.00	50%	4	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	4	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	4.148	0.919	16.550	0.022	3.397	1.243	2312	0.021	0.057	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	4	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.195	0.043	0.471	0.001	7.137	0.723	54	0.001	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1754.540**	**164.434**	**157.103**	**0.040**	**178.960**	**172.075**	**3732**	**7.782**	**77.101**	**125.379**	**7651.286**	**762.783**	**1277.248**	**1.406**	**903.662**	**732.507**	**127999**	**32.186**	**317.057**	**5015.165**

RD005a	Treated Area (acres) -->	1.10	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mo	s																								
Offroad	Air Compressors	G	1		6	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	16.106	0.439	0.322	0.001	0.225	0.207	27	0.034	0.025	2.786
Offroad	Chainsaws	G	2		6	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.401	1.328	0.021	0.000	0.004	0.003	6	0.011	0.083	0.794
Offroad	Chainsaws Preempt	G	1		6	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.903	1.605	0.025	0.000	0.005	0.004	8	0.009	0.100	0.960
Offroad	Chippers/Stump Grinders	D	2		6	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	8.236	2.125	25.692	0.037	0.797	0.733	3720	0.000	0.192	168.470
Offroad	Fellers/Bunchers	D	1		6	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	9.098	2.830	27.263	0.053	0.865	0.796	4695	0.000	0.255	212.568
Offroad	Loaders, Skid Steer	D	1		6	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	3.625	0.828	3.651	0.005	0.251	0.231	409	0.000	0.075	18.823
Offroad	Skidders	D	2		6	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	43.834	6.232	49.390	0.086	2.744	2.524	7626	0.000	0.562	347.626
Offroad	Trimmers/Edgers/Brush Cutters	G	2		6	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.881	0.267	0.008	0.000	0.001	0.001	2	0.004	0.017	0.248
Onroad	Worker Trips-Paved Roads	G	8		6	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	15.191	1.426	1.526	0.024	1.123	0.334	2229	0.113	0.128	NA
Onroad	Worker Trips-Unpaved Roads	G	8		6	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	3.245	0.428	0.241	0.001	25.289	2.534	122	0.006	0.007	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**18.673**	**3.158**	**22.278**	**0.040**	**7.851**	**1.719**	**3732**	**0.035**	**0.255**	**125.379**	**106.607**	**17.748**	**112.395**	**0.213**	**33.937**	**7.860**	**19436**	**0.182**	**1.457**	**752.275**

RD005b	Treated Area (acres) -->	0.46	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		2	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	5.369	0.146	0.107	0.000	0.075	0.069	9	0.011	0.008	0.929
Offroad	Chainsaws	G	2		2	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1		2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	D	2		2	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Fellers/Bunchers	D	1		2	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	3.033	0.943	9.088	0.018	0.288	0.265	1565	0.000	0.085	70.856
Offroad	Loaders, Skid Steer	D	1		2	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	1.208	0.276	1.217	0.002	0.084	0.077	136	0.000	0.025	6.274
Offroad	Skidders	D	2		2	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	14.611	2.077	16.463	0.029	0.915	0.841	2542	0.000	0.187	115.875
Offroad	Trimmers/Edgers/Brush Cutters	G	2		2	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	8		2	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.043	NA
Onroad	Worker Trips-Unpaved Roads	G	8		2	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.002	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.02	50%	1	6.090	0.876	0.527	NA	0.657	0.643	NA	0.031	0.305	NA	6.090	0.876	0.527	NA	0.657	0.643	NA	0.031	0.305	NA
Burn	Pine	acres->	0.25	50%	1	242.344	20.036	18.367	NA	23.376	23.376	NA	1.097	10.447	NA	242.344	20.036	18.367	NA	23.376	23.376	NA	1.097	10.447	NA
Burn	Scrub	acres->	0.20	50%	1	48.109	7.614	4.414	NA	5.627	5.407	NA	NA	2.472	NA	48.109	7.614	4.414	NA	5.627	5.407	NA	NA	2.472	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**315.215**	**31.684**	**45.586**	**0.040**	**37.511**	**31.145**	**3732**	**1.164**	**13.479**	**125.379**	**332.802**	**34.602**	**63.609**	**0.075**	**42.728**	**32.373**	**6873**	**1.193**	**13.720**	**250.758**

RD009	Treated Area (acres) -->	0.29	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	2		1	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Fellers/Bunchers	D	1		1	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428
Offroad	Loaders, Skid Steer	D	1		1	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137
Offroad	Skidders	D	2		1	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	8		1	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	8		1	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	5.747	0.827	0.497	NA	0.620	0.607	NA	0.030	0.288	NA	5.747	0.827	0.497	NA	0.620	0.607	NA	0.030	0.288	NA
Burn	Oak/Bay	acres->	0.25	50%	1	94.168	13.543	8.147	NA	10.157	9.946	NA	0.487	4.719	NA	94.168	13.543	8.147	NA	10.157	9.946	NA	0.487	4.719	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.04	50%	1	8.730	1.382	0.801	NA	1.021	0.981	NA	NA	0.449	NA	8.730	1.382	0.801	NA	1.021	0.981	NA	NA	0.449	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**127.318**	**18.910**	**31.724**	**0.040**	**19.649**	**13.253**	**3732**	**0.551**	**5.711**	**125.379**	**127.318**	**18.910**	**31.724**	**0.040**	**19.649**	**13.253**	**3732**	**0.551**	**5.711**	**125.379**

RD011	Treated Area (acres) -->	1.04	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	2		5	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	6.863	1.771	21.410	0.030	0.664	0.611	3100	0.000	0.160	140.392
Offroad	Fellers/Bunchers	D	1		5	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	7.582	2.359	22.719	0.044	0.721	0.663	3913	0.000	0.213	177.140
Offroad	Loaders, Skid Steer	D	1		5	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	3.021	0.690	3.043	0.004	0.210	0.193	341	0.000	0.062	15.686
Offroad	Skidders	D	2		5	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	36.528	5.193	41.158	0.072	2.287	2.104	6355	0.000	0.469	289.688
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	8		5	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	8		5	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.43	100%	1	330.619	47.550	28.604	NA	35.662	34.919	NA	1.709	16.568	NA	330.619	47.550	28.604	NA	35.662	34.919	NA	1.709	16.568	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.61	100%	1	294.869	46.665	27.052	NA	34.492	33.139	NA	NA	15.149	NA	294.869	46.665	27.052	NA	34.492	33.139	NA	NA	15.149	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**643.075**	**97.133**	**73.680**	**0.035**	**75.371**	**69.286**	**3141**	**1.738**	**31.958**	**125.379**	**713.422**	**108.804**	**145.773**	**0.173**	**96.240**	**74.198**	**15704**	**1.856**	**32.919**	**626.896**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION Treated Area (acres) --> 42.47

EBRPD - Redwood Regional Park

RD001	Treated Area (acres) -->	31.53	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		158	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	424.114	11.556	8.490	0.020	5.916	5.443	706	0.890	0.646	73.375
Offroad	Chainsaws	G	2		158	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	63.238	34.964	0.549	0.007	0.100	0.092	171	0.283	2.173	20.906
Offroad	Chainsaws Preempt	G	1		158	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	76.438	42.262	0.664	0.009	0.120	0.111	207	0.227	2.627	25.270
Offroad	Chippers/Stump Grinders-Trailer	G	1		158	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	6570.661	177.561	113.642	0.258	85.202	78.386	10164	6.776	9.820	1096.599
Offroad	Trimmers/Edgers/Brush Cutters	G	2		158	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	23.187	7.042	0.201	0.003	0.036	0.034	63	0.111	0.438	6.525
Onroad	Worker Trips-Paved Roads	G	4		158	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	200.019	18.771	20.095	0.319	14.782	4.392	29350	1.485	1.684	NA
Onroad	Worker Trips-Unpaved Roads	G	4		158	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	42.731	5.636	3.177	0.018	332.973	33.365	1612	0.081	0.092	NA
Burn	Eucalyptus/Acacia	acres->	8.95	50%	16	651.615	93.715	56.376	NA	70.287	68.822	NA	3.368	32.654	NA	10425.841	1499.447	902.011	NA	1124.585	1101.156	NA	53.886	522.464	NA
Burn	Oak/Bay	acres->	0.22	50%	16	5.293	0.761	0.458	NA	0.571	0.559	NA	0.027	0.265	NA	84.694	12.181	7.327	NA	9.136	8.945	NA	0.438	4.244	NA
Burn	Pine	acres->	18.13	50%	16	1103.803	91.259	83.654	NA	106.469	106.469	NA	4.998	47.585	NA	17660.844	1460.149	1338.470	NA	1703.507	1703.507	NA	79.961	761.363	NA
Burn	Scrub	acres->	4.23	50%	16	64.238	10.166	5.893	NA	7.514	7.219	NA	NA	3.300	NA	1027.810	162.658	94.295	NA	120.226	115.511	NA	NA	52.805	NA
Burn	Grass	acres->	0.00	50%	16	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	16	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	16.591	3.677	66.198	0.089	13.588	4.972	9249	0.085	0.229	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	16	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.781	0.171	1.885	0.002	28.550	2.892	218	0.002	0.005	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**1872.873**	**198.027**	**151.566**	**0.010**	**190.254**	**184.332**	**859**	**8.461**	**83.930**	**7.738**	**36616.950**	**3436.073**	**2557.005**	**0.724**	**3438.721**	**3058.805**	**51738**	**144.225**	**1358.589**	**1222.675**

RD003	Treated Area (acres) -->	5.09	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 2 years																									
Offroad	Air Compressors	G	1		25	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	67.107	1.828	1.343	0.003	0.936	0.861	112	0.141	0.102	11.610
Offroad	Chainsaws	G	2		25	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	10.006	5.532	0.087	0.001	0.016	0.014	27	0.045	0.344	3.308
Offroad	Chainsaws Preempt	G	1		25	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	12.095	6.687	0.105	0.001	0.019	0.018	33	0.036	0.416	3.998
Offroad	Chippers/Stump Grinders	D	2		25	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	34.317	8.854	107.050	0.152	3.319	3.053	15500	0.000	0.799	701.960
Offroad	Fellers/Bunchers	D	1		25	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	37.909	11.793	113.594	0.220	3.606	3.317	19563	0.000	1.064	885.700
Offroad	Loaders, Skid Steer	D	1		25	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	15.106	3.452	15.214	0.022	1.048	0.964	1704	0.000	0.311	78.428
Offroad	Skidders	D	2		25	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	182.642	25.965	205.792	0.358	11.433	10.519	31775	0.000	2.343	1448.440
Offroad	Trimmers/Edgers/Brush Cutters	G	2		25	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	3.669	1.114	0.032	0.000	0.006	0.005	10	0.018	0.069	1.032
Onroad	Worker Trips-Paved Roads	G	8		25	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	63.297	5.940	6.359	0.101	4.678	1.390	9288	0.470	0.533	NA
Onroad	Worker Trips-Unpaved Roads	G	8		25	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	13.522	1.784	1.006	0.006	105.371	10.559	510	0.026	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	5	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	5.185	1.149	20.687	0.028	4.246	1.554	2890	0.027	0.071	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	5	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.244	0.053	0.589	0.001	8.922	0.904	68	0.001	0.002	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**18.673**	**3.158**	**22.278**	**0.040**	**7.851**	**1.719**	**3732**	**0.035**	**0.255**	**125.379**	**445.099**	**74.151**	**471.857**	**0.893**	**143.600**	**33.158**	**81478**	**0.762**	**6.083**	**3134.478**

RD004	Treated Area (acres) -->	0.39	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		2	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	5.369	0.146	0.107	0.000	0.075	0.069	9	0.011	0.008	0.929
Offroad	Chainsaws	G	2		2	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1		2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	D	2		2	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Fellers/Bunchers	D	1		2	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	3.033	0.943	9.088	0.018	0.288	0.265	1565	0.000	0.085	70.856
Offroad	Loaders, Skid Steer	D	1		2	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	1.208	0.276	1.217	0.002	0.084	0.077	136	0.000	0.025	6.274
Offroad	Mowers, Rear Engine Riding	G	1		2	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	4.020	0.064	0.046	0.000	0.003	0.003	7	0.007	0.004	0.689
Offroad	Skidders	D	2		2	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	14.611	2.077	16.463	0.029	0.915	0.841	2542	0.000	0.187	115.875
Offroad	Trimmers/Edgers/Brush Cutters	G	2		2	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	8		2	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.043	NA
Onroad	Worker Trips-Unpaved Roads	G	8		2	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.002	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**20.683**	**3.191**	**22.301**	**0.040**	**7.852**	**1.721**	**3736**	**0.038**	**0.257**	**125.724**	**40.280**	**6.141**	**40.348**	**0.075**	**13.071**	**2.950**	**6880**	**0.071**	**0.499**	**251.447**

RD008	Treated Area (acres) -->	2.74	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		14	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	37.580	1.024	0.752	0.002	0.524	0.482	63	0.079	0.057	6.502
Offroad	Chainsaws	G	2		14	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	5.603	3.098	0.049	0.001	0.009	0.008	15	0.025	0.193	1.852
Offroad	Chainsaws Preempt	G	1		14	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.773	3.745	0.059	0.001	0.011	0.010	18	0.020	0.233	2.239
Offroad	Chippers/Stump Grinders-Trailer	G	1		14	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	582.210	15.733	10.070	0.023	7.550	6.946	901	0.600	0.870	97.167
Offroad	Trimmers/Edgers/Brush Cutters	G	2		14	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.055	0.624	0.018	0.000	0.003	0.003	6	0.010	0.039	0.578
Onroad	Worker Trips-Paved Roads	G	4		14	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	17.723	1.663	1.781	0.028	1.310	0.389	2601	0.132	0.149	NA
Onroad	Worker Trips-Unpaved Roads	G	4		14	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	3.786	0.499	0.282	0.002	29.504	2.956	143	0.007	0.008	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	3	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.146	0.032	0.353	0.000	5.353	0.542	41	0.000	0.001	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**658.988**	**27.108**	**25.775**	**0.073**	**46.811**	**12.269**	**5521**	**0.889**	**1.593**	**108.338**

RD009	Treated Area (acres) -->	2.72	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		14	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	37.580	1.024	0.752	0.002	0.524	0.482	63	0.079	0.057	6.502
Offroad	Chainsaws	G	2		14	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	5.603	3.098	0.049	0.001	0.009	0.008	15	0.025	0.193	1.852
Offroad	Chainsaws Preempt	G	1		14	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.773	3.745	0.059	0.001	0.011	0.010	18	0.020	0.233	2.239
Offroad	Chippers/Stump Grinders	D	2		14	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	19.218	4.958	59.948	0.085	1.859	1.710	8680	0.000	0.447	393.098
Offroad	Fellers/Bunchers	D	1		14	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	21.229	6.604	63.613	0.123	2.019	1.858	10955	0.000	0.596	495.992
Offroad	Skidders	D	2		14	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	102.280	14.540	115.243	0.200	6.403	5.890	17794	0.000	1.312	811.127
Offroad	Trimmers/Edgers/Brush Cutters	G	2		14	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.055	0.624	0.018	0.000	0.003	0.003	6	0.010	0.039	0.578
Onroad	Worker Trips-Paved Roads	G	8		14	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	35.446	3.326	3.561	0.057	2.620	0.778	5201	0.263	0.298	NA
Onroad	Worker Trips-Unpaved Roads	G	8		14	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	7.573	0.999	0.563	0.003	59.008	5.913	286	0.014	0.016	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	3	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.146	0.032	0.353	0.000	5.353	0.542	41	0.000	0.001	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**18.068**	**3.020**	**21.670**	**0.039**	**7.809**	**1.681**	**3664**	**0.035**	**0.243**	**122.242**	**241.013**	**39.640**	**256.571**	**0.489**	**80.356**	**18.127**	**44792**	**0.428**	**3.235**	**1711.388**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CUMULATIVE ACTION Treated Area (acres) --> 3.55

EBRPD - Redwood Regional Park

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	1	2	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	3.198	0.852	5.061	0.005	0.446	0.410	433	0.000	0.077	19.895
Offroad	Loaders, Rubber Tired	D	1	2	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	2.547	0.595	3.690	0.004	0.322	0.296	361	0.000	0.054	16.562
Onroad	Dump Truck Trips-Paved Roads	D	1	2	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	0.809	0.179	4.409	0.006	0.867	0.296	621	0.006	0.015	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	2	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.087	0.019	0.235	0.000	3.568	0.361	27	0.000	0.001	NA
Onroad	Water Truck-Paved Roads	D	1	2	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.439	0.097	2.268	0.003	0.434	0.149	317	0.003	0.008	NA
Onroad	Water Truck-Unpaved Roads	D	1	2	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.087	0.019	0.235	0.000	3.568	0.361	27	0.000	0.001	NA
Onroad	Worker Trips-Paved Roads	G	4	2	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	4	2	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Dust	Treated Area (acres) --> (acres)		0.25	2	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	5.000	0.500	NA	NA	NA	NA
Totals For Access Road Construction (RD006 & 007)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**10.240**	**2.070**	**16.192**	**0.023**	**18.607**	**2.850**	**2178**	**0.029**	**0.178**	**36.458**

RD006	Treated Area (acres) -->	0.47	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		2	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	5.369	0.146	0.107	0.000	0.075	0.069	9	0.011	0.008	0.929
Offroad	Chainsaws	G	2		2	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1		2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders-Trailer	G	1		2	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	83.173	2.248	1.439	0.003	1.079	0.992	129	0.086	0.124	13.881
Offroad	Trimmers/Edgers/Brush Cutters	G	2		2	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	4		2	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	4		2	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**94.762**	**4.010**	**6.114**	**0.014**	**8.192**	**2.034**	**1127**	**0.130**	**0.236**	**15.477**

RD007	Treated Area (acres) -->	2.13	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		11	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	29.527	0.805	0.591	0.001	0.412	0.379	49	0.062	0.045	5.108
Offroad	Chainsaws	G	2		11	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.403	2.434	0.038	0.000	0.007	0.006	12	0.020	0.151	1.455
Offroad	Chainsaws Preempt	G	1		11	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.322	2.942	0.046	0.001	0.008	0.008	14	0.016	0.183	1.759
Offroad	Chippers/Stump Grinders	D	2		11	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	15.100	3.896	47.102	0.067	1.460	1.343	6820	0.000	0.351	308.863
Offroad	Fellers/Bunchers	D	1		11	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	16.680	5.189	49.981	0.097	1.587	1.460	8608	0.000	0.468	389.708
Offroad	Loaders, Skid Steer	D	1		11	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	6.647	1.519	6.694	0.010	0.461	0.424	750	0.000	0.137	34.509
Offroad	Skidders	D	2		11	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	80.363	11.424	90.548	0.157	5.031	4.628	13981	0.000	1.031	637.314
Offroad	Trimmers/Edgers/Brush Cutters	G	2		11	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.614	0.490	0.014	0.000	0.003	0.002	4	0.008	0.030	0.454
Onroad	Worker Trips-Paved Roads	G	8		11	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	27.851	2.614	2.798	0.044	2.058	0.612	4087	0.207	0.234	NA
Onroad	Worker Trips-Unpaved Roads	G	8		11	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	5.950	0.785	0.442	0.003	46.363	4.646	224	0.011	0.013	NA
Burn	Eucalyptus/Acacia	acres->	2.13	50%	1	2484.603	357.336	214.960	NA	268.002	262.419	NA	12.842	124.509	NA	2484.603	357.336	214.960	NA	268.002	262.419	NA	12.842	124.509	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2503.276**	**360.495**	**237.238**	**0.040**	**275.853**	**264.138**	**3732**	**12.877**	**124.764**	**125.379**	**2679.144**	**389.674**	**417.471**	**0.386**	**328.026**	**276.418**	**35141**	**13.170**	**127.168**	**1379.170**

RD010	Treated Area (acres) -->	0.95	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	2		5	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	6.863	1.771	21.410	0.030	0.664	0.611	3100	0.000	0.160	140.392
Offroad	Fellers/Bunchers	D	1		5	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	7.582	2.359	22.719	0.044	0.721	0.663	3913	0.000	0.213	177.140
Offroad	Loaders, Skid Steer	D	1		5	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	3.021	0.690	3.043	0.004	0.210	0.193	341	0.000	0.062	15.686
Offroad	Skidders	D	2		5	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	36.528	5.193	41.158	0.072	2.287	2.104	6355	0.000	0.469	289.688
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	8		5	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	8		5	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Burn	Eucalyptus/Acacia	acres->	0.35	50%	1	409.772	58.934	35.452	NA	44.200	43.279	NA	2.118	20.535	NA	409.772	58.934	35.452	NA	44.200	43.279	NA	2.118	20.535	NA
Burn	Oak/Bay	acres->	0.03	50%	1	13.122	1.887	1.135	NA	1.415	1.386	NA	0.068	0.658	NA	13.122	1.887	1.135	NA	1.415	1.386	NA	0.068	0.658	NA
Burn	Pine	acres->	0.56	50%	1	550.004	45.473	41.683	NA	53.052	53.052	NA	2.490	23.711	NA	550.004	45.473	41.683	NA	53.052	53.052	NA	2.490	23.711	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**991.571**	**109.452**	**100.549**	**0.040**	**106.518**	**99.436**	**3732**	**4.711**	**45.158**	**125.379**	**1061.919**	**121.124**	**172.642**	**0.179**	**127.387**	**104.348**	**16296**	**4.828**	**46.120**	**626.896**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 17.40

EBRPD - Sibley Volcanic Regional Preserve

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	% Burned or % Removed	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																									
Offroad	Dozers (Crawler Tractors)	D	1		4	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	6.396	1.703	10.122	0.010	0.892	0.821	867	0.000	0.154	39.791
Offroad	Loaders, Rubber Tired	D	1		4	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	5.093	1.191	7.380	0.008	0.644	0.593	723	0.000	0.107	33.125
Onroad	Dump Truck Trips-Paved Roads	D	1		4	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	1.618	0.357	8.818	0.012	1.735	0.592	1243	0.011	0.031	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1		4	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.174	0.039	0.470	0.001	7.136	0.721	54	0.000	0.001	NA
Onroad	Water Truck-Paved Roads	D	1		4	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.878	0.194	4.537	0.006	0.869	0.297	633	0.006	0.016	NA
Onroad	Water Truck-Unpaved Roads	D	1		4	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.174	0.039	0.470	0.001	7.136	0.721	54	0.000	0.001	NA
Onroad	Worker Trips-Paved Roads	G	4		4	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.043	NA
Onroad	Worker Trips-Unpaved Roads	G	4		4	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.002	NA
Dust	Treated Area (acres) --> (acres)		0.25		4	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	10.000	1.000	NA	NA	NA	NA
Totals For Access Road Construction (Connected Action SR002a, 002b, 006, & 007)						**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**20.480**	**4.140**	**32.384**	**0.046**	**37.215**	**5.701**	**4357**	**0.058**	**0.355**	**72.915**

SR001	**Treated Area (acres) -->** 2.99		**No. of Units**	**% Burned or**	**Total**	**Emission Rates (lbs/day), based on 8 hrs/day**									**(gal/day)**	**Activity Total Emission (lbs)**									**(gal)**
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		15	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	40.264	1.097	0.806	0.002	0.562	0.517	67	0.084	0.061	6.966
Offroad	Chainsaws	G	2		15	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.004	3.319	0.052	0.001	0.009	0.009	16	0.027	0.206	1.985
Offroad	Chainsaws Preempt	G	1		15	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.257	4.012	0.063	0.001	0.011	0.011	20	0.022	0.249	2.399
Offroad	Chippers/Stump Grinders-Trailer	G	1		15	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	623.797	16.857	10.789	0.024	8.089	7.442	965	0.643	0.932	104.108
Offroad	Loaders, Skid Steer	D	1		15	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	9.064	2.071	9.128	0.013	0.629	0.578	1022	0.000	0.187	47.057
Offroad	Trimmers/Edgers/Brush Cutters	G	2		15	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.201	0.668	0.019	0.000	0.003	0.003	6	0.011	0.042	0.619
Onroad	Worker Trips-Paved Roads	G	4		15	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	18.989	1.782	1.908	0.030	1.403	0.417	2786	0.141	0.160	NA
Onroad	Worker Trips-Unpaved Roads	G	4		15	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	4.057	0.535	0.302	0.002	31.611	3.168	153	0.008	0.009	NA
Burn	Eucalyptus/Acacia	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.21	75%	2	52.991	7.621	4.585	NA	5.716	5.597	NA	0.274	2.656	NA	119.230	17.148	10.315	NA	12.861	12.593	NA	0.616	5.975	NA
Burn	Pine	acres->	1.31	75%	2	851.106	70.367	64.503	NA	82.095	82.095	NA	3.853	36.691	NA	1914.989	158.326	145.132	NA	184.714	184.714	NA	8.670	82.556	NA
Burn	Scrub	acres->	0.73	75%	2	117.450	18.587	10.775	NA	13.738	13.200	NA	NA	6.034	NA	264.263	41.821	24.244	NA	30.912	29.699	NA	NA	13.577	NA
Burn	Grass	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	25%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	25%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1070.076**	**98.839**	**85.656**	**0.011**	**107.004**	**102.192**	**927**	**4.195**	**45.519**	**10.876**	**3011.201**	**247.878**	**207.014**	**0.079**	**273.438**	**239.641**	**5627**	**10.227**	**103.968**	**163.134**

SR003-PD	**Treated Area (acres) -->** 1.06		**No. of Units**	**% Burned or**	**Total**	**Emission Rates (lbs/day), based on 8 hrs/day**									**(gal/day)**	**Activity Total Emission (lbs)**									**(gal)**
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	2		5	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	6.863	1.771	21.410	0.030	0.664	0.611	3100	0.000	0.160	140.392
Offroad	Fellers/Bunchers	D	1		5	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	7.582	2.359	22.719	0.044	0.721	0.663	3913	0.000	0.213	177.140
Offroad	Skidders	D	2		5	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	36.528	5.193	41.158	0.072	2.287	2.104	6355	0.000	0.469	289.688
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	8		5	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	8		5	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**18.068**	**3.020**	**21.670**	**0.039**	**7.809**	**1.681**	**3664**	**0.035**	**0.243**	**122.242**	**85.999**	**14.140**	**91.329**	**0.174**	**28.510**	**6.439**	**15955**	**0.152**	**1.154**	**611.210**

SR004	Treated Area (acres) -->	3.20	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		16	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	42.948	1.170	0.860	0.002	0.599	0.551	71	0.090	0.065	7.430
Offroad	Chainsaws	G	2		16	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.404	3.541	0.056	0.001	0.010	0.009	17	0.029	0.220	2.117
Offroad	Chainsaws Preempt	G	1		16	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.741	4.280	0.067	0.001	0.012	0.011	21	0.023	0.266	2.559
Offroad	Chippers/Stump Grinders-Trailer	G	1		16	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	665.383	17.981	11.508	0.026	8.628	7.938	1029	0.686	0.994	111.048
Offroad	Trimmers/Edgers/Brush Cutters	G	2		16	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.348	0.713	0.020	0.000	0.004	0.003	6	0.011	0.044	0.661
Onroad	Worker Trips-Paved Roads	G	4		16	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	20.255	1.901	2.035	0.032	1.497	0.445	2972	0.150	0.171	NA
Onroad	Worker Trips-Unpaved Roads	G	4		16	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	4.327	0.571	0.322	0.002	33.719	3.379	163	0.008	0.009	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.44	100%	3	111.960	16.102	9.686	NA	12.077	11.825	NA	0.579	5.611	NA	335.879	48.306	29.059	NA	36.230	35.475	NA	1.736	16.832	NA
Burn	Pine	acres->	0.00	100%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	2.77	100%	3	447.839	70.874	41.086	NA	52.385	50.331	NA	NA	23.008	NA	1343.518	212.621	123.259	NA	157.155	150.992	NA	NA	69.025	NA
Burn	Grass	acres->	0.00	100%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**606.637**	**88.861**	**51.702**	**0.004**	**67.241**	**62.927**	**268**	**0.641**	**28.729**	**7.738**	**2428.804**	**291.083**	**167.186**	**0.064**	**237.853**	**198.803**	**4281**	**2.734**	**87.627**	**123.815**

SR005	Treated Area (acres) -->	10.15	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		51	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	136.897	3.730	2.741	0.006	1.910	1.757	228	0.287	0.208	23.684
Offroad	Chainsaws	G	2		51	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	20.412	11.286	0.177	0.002	0.032	0.030	55	0.091	0.701	6.748
Offroad	Chainsaws Preempt	G	1		51	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	24.673	13.642	0.214	0.003	0.039	0.036	67	0.073	0.848	8.157
Offroad	Chippers/Stump Grinders	D	2		51	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	70.007	18.061	218.382	0.310	6.771	6.229	31620	0.000	1.630	1431.999
Offroad	Fellers/Bunchers	D	1		51	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	77.334	24.058	231.731	0.449	7.356	6.767	39908	0.000	2.171	1806.829
Offroad	Loaders, Skid Steer	D	1		51	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	30.816	7.041	31.036	0.045	2.138	1.967	3476	0.000	0.635	159.994
Offroad	Skidders	D	2		51	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	372.590	52.968	419.816	0.729	23.324	21.458	64820	0.000	4.779	2954.818
Offroad	Trimmers/Edgers/Brush Cutters	G	2		51	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	7.485	2.273	0.065	0.001	0.012	0.011	20	0.036	0.141	2.106
Onroad	Worker Trips-Paved Roads	G	8		51	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	129.126	12.118	12.973	0.206	9.543	2.836	18947	0.958	1.087	NA
Onroad	Worker Trips-Unpaved Roads	G	8		51	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	27.586	3.639	2.051	0.012	214.958	21.540	1040	0.052	0.059	NA
Burn	Eucalyptus/Acacia	acres->	0.96	50%	5	224.249	32.252	19.401	NA	24.189	23.685	NA	1.159	11.238	NA	1121.244	161.258	97.007	NA	120.943	118.424	NA	5.795	56.188	NA
Burn	Oak/Bay	acres->	0.55	50%	5	42.121	6.058	3.644	NA	4.543	4.449	NA	0.218	2.111	NA	210.605	30.289	18.221	NA	22.717	22.244	NA	1.089	10.554	NA
Burn	Pine	acres->	7.00	50%	5	1364.187	112.787	103.388	NA	131.585	131.585	NA	6.176	58.810	NA	6820.937	563.936	516.941	NA	657.925	657.925	NA	30.882	294.052	NA
Burn	Scrub	acres->	1.63	50%	5	79.215	12.536	7.267	NA	9.266	8.903	NA	NA	4.070	NA	396.077	62.682	36.337	NA	46.330	44.513	NA	NA	20.349	NA
Burn	Grass	acres->	0.00	50%	5	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	5	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	5.185	1.149	20.687	0.028	4.246	1.554	2890	0.027	0.071	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	5	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.244	0.053	0.589	0.001	8.922	0.904	68	0.001	0.002	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1728.445**	**166.791**	**155.980**	**0.040**	**177.434**	**170.341**	**3732**	**7.588**	**76.484**	**125.379**	**9451.219**	**968.182**	**1608.967**	**1.792**	**1127.164**	**908.192**	**163139**	**39.292**	**393.477**	**6394.336**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION Treated Area (acres) --> 56.39

EBRPD - Sibley Volcanic Regional Preserve

SR002a	Treated Area (acres) -->	17.12	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 2 years																									
Offroad	Air Compressors	G	1		86	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	230.847	6.290	4.621	0.011	3.220	2.963	384	0.484	0.351	39.938
Offroad	Chainsaws	G	2		86	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	34.421	19.031	0.299	0.004	0.054	0.050	93	0.154	1.183	11.379
Offroad	Chainsaws Preempt	G	1		86	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	41.606	23.003	0.361	0.005	0.065	0.060	112	0.123	1.430	13.754
Offroad	Chippers/Stump Grinders	D	2		86	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	118.051	30.457	368.251	0.523	11.417	10.504	53319	0.000	2.748	2414.744
Offroad	Fellers/Bunchers	D	1		86	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	130.406	40.568	390.763	0.757	12.404	11.412	67296	0.000	3.660	3046.810
Offroad	Skidders	D	2		86	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	628.289	89.319	707.924	1.230	39.330	36.184	109305	0.000	8.059	4982.635
Offroad	Trimmers/Edgers/Brush Cutters	G	2		86	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	12.621	3.833	0.110	0.001	0.020	0.018	34	0.060	0.238	3.552
Onroad	Worker Trips-Paved Roads	G	8		86	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	217.742	20.434	21.876	0.348	16.092	4.781	31950	1.616	1.833	NA
Onroad	Worker Trips-Unpaved Roads	G	8		86	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	46.517	6.136	3.459	0.020	362.477	36.322	1754	0.088	0.100	NA
Burn	Eucalyptus/Acacia	acres->	11.61	50%	9	1590.828	228.793	137.633	NA	171.595	168.020	NA	8.222	79.720	NA	13522.042	1944.743	1169.885	NA	1458.557	1428.171	NA	69.889	677.621	NA
Burn	Oak/Bay	acres->	0.52	50%	9	23.393	3.364	2.024	NA	2.523	2.471	NA	0.121	1.172	NA	198.843	28.598	17.203	NA	21.448	21.001	NA	1.028	9.965	NA
Burn	Pine	acres->	0.00	50%	9	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	4.99	50%	9	142.668	22.578	13.089	NA	16.688	16.034	NA	NA	7.330	NA	1212.679	191.915	111.255	NA	141.850	136.287	NA	NA	62.303	NA
Burn	Grass	acres->	0.00	50%	9	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	9	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	8.814	1.953	35.168	0.047	7.219	2.641	4914	0.045	0.121	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	9	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.415	0.091	1.001	0.001	15.167	1.536	116	0.001	0.003	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1774.958**	**257.756**	**174.416**	**0.039**	**198.616**	**188.206**	**3664**	**8.378**	**88.465**	**122.242**	**16403.293**	**2406.369**	**2832.176**	**2.947**	**2089.322**	**1691.930**	**269277**	**73.490**	**769.616**	**10512.812**

SR002a	Treated Area (acres) -->	17.12	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		48	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	128.845	3.511	2.579	0.006	1.797	1.654	214	0.270	0.196	22.291
Offroad	Chainsaws	G	2		48	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	19.212	10.622	0.167	0.002	0.030	0.028	52	0.086	0.660	6.351
Offroad	Chainsaws Preempt	G	1		48	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	23.222	12.839	0.202	0.003	0.037	0.034	63	0.069	0.798	7.677
Offroad	Chippers/Stump Grinders	D	2		48	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	65.889	16.999	205.536	0.292	6.372	5.863	29760	0.000	1.534	1347.764
Offroad	Fellers/Bunchers	D	1		48	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	72.785	22.642	218.100	0.423	6.923	6.369	37560	0.000	2.043	1700.545
Offroad	Skidders	D	2		48	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	350.673	49.852	395.120	0.686	21.952	20.196	61007	0.000	4.498	2781.006
Offroad	Trimmers/Edgers/Brush Cutters	G	2		48	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	7.044	2.139	0.061	0.001	0.011	0.010	19	0.034	0.133	1.982
Onroad	Worker Trips-Paved Roads	G	8		48	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	121.531	11.405	12.210	0.194	8.982	2.669	17833	0.902	1.023	NA
Onroad	Worker Trips-Unpaved Roads	G	8		48	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	25.963	3.425	1.931	0.011	202.313	20.273	979	0.049	0.056	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	10	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	10.369	2.298	41.374	0.056	8.493	3.107	5781	0.053	0.143	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	10	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.488	0.107	1.178	0.001	17.843	1.807	136	0.001	0.003	NA
Totals For Cutting/Skidding/Chipping/Trimming						**18.068**	**3.020**	**21.670**	**0.039**	**7.809**	**1.681**	**3664**	**0.035**	**0.243**	**122.242**	**826.020**	**135.839**	**878.457**	**1.675**	**274.753**	**62.009**	**153404**	**1.465**	**11.088**	**5867.616**

SR003	Treated Area (acres) -->	0.63	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders-Trailer	G	1		3	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	124.759	3.371	2.158	0.005	1.618	1.488	193	0.129	0.186	20.822
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	4		3	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	4		3	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.811	0.107	0.060	0.000	6.322	0.634	31	0.002	0.002	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**141.599**	**5.895**	**7.043**	**0.018**	**10.972**	**2.805**	**1394**	**0.193**	**0.347**	**23.215**

SR005	Treated Area (acres) -->	6.92	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		35	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	93.949	2.560	1.881	0.004	1.311	1.206	156	0.197	0.143	16.254
Offroad	Chainsaws	G	2		35	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	14.008	7.745	0.122	0.002	0.022	0.020	38	0.063	0.481	4.631
Offroad	Chainsaws Preempt	G	1		35	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	16.932	9.362	0.147	0.002	0.027	0.025	46	0.050	0.582	5.598
Offroad	Chippers/Stump Grinders	D	2		35	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	48.044	12.395	149.870	0.213	4.646	4.275	21700	0.000	1.118	982.745
Offroad	Fellers/Bunchers	D	1		35	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	53.072	16.510	159.031	0.308	5.048	4.644	27388	0.000	1.490	1239.981
Offroad	Loaders, Skid Steer	D	1		35	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	21.148	4.832	21.299	0.031	1.467	1.350	2385	0.000	0.436	109.800
Offroad	Skidders	D	2		35	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	255.699	36.351	288.109	0.501	16.007	14.726	44484	0.000	3.280	2027.817
Offroad	Trimmers/Edgers/Brush Cutters	G	2		35	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	5.136	1.560	0.045	0.001	0.008	0.007	14	0.025	0.097	1.445
Onroad	Worker Trips-Paved Roads	G	8		35	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	88.616	8.316	8.903	0.141	6.549	1.946	13003	0.658	0.746	NA
Onroad	Worker Trips-Unpaved Roads	G	8		35	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	18.931	2.497	1.408	0.008	147.520	14.782	714	0.036	0.041	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	4	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.26	50%	4	28.893	4.155	2.500	NA	3.117	3.052	NA	0.149	1.448	NA	101.126	14.544	8.749	NA	10.908	10.681	NA	0.523	5.068	NA
Burn	Pine	acres->	2.00	50%	4	555.461	45.924	42.097	NA	53.578	53.578	NA	2.515	23.946	NA	1944.112	160.734	147.339	NA	187.523	187.523	NA	8.802	83.811	NA
Burn	Scrub	acres->	4.66	50%	4	323.728	51.232	29.700	NA	37.867	36.382	NA	NA	16.632	NA	1133.047	179.312	103.949	NA	132.535	127.338	NA	NA	58.212	NA
Burn	Grass	acres->	0.00	50%	4	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	4	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.629	0.804	14.481	0.019	2.972	1.088	2023	0.019	0.050	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	4	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.171	0.037	0.412	0.000	6.245	0.633	48	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**926.754**	**104.470**	**96.575**	**0.040**	**102.413**	**94.731**	**3732**	**2.699**	**42.281**	**125.379**	**3797.623**	**457.560**	**905.744**	**1.230**	**522.788**	**370.242**	**111999**	**10.372**	**155.556**	**4388.270**

SR006	Treated Area (acres) -->	18.99	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		95	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	255.005	6.948	5.105	0.012	3.557	3.273	424	0.535	0.388	44.118
Offroad	Chainsaws	G	2		95	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	38.023	21.023	0.330	0.004	0.060	0.055	103	0.170	1.307	12.570
Offroad	Chainsaws Preempt	G	1		95	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	45.960	25.411	0.399	0.005	0.072	0.067	124	0.136	1.579	15.194
Offroad	Chippers/Stump Grinders	D	2		95	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	130.405	33.644	406.789	0.578	12.612	11.603	58899	0.000	3.036	2667.449
Offroad	Fellers/Bunchers	D	1		95	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	144.054	44.813	431.656	0.836	13.702	12.606	74338	0.000	4.043	3365.662
Offroad	Loaders, Skid Steer	D	1		95	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	57.403	13.116	57.811	0.084	3.982	3.663	6474	0.000	1.183	298.028
Offroad	Skidders	D	2		95	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	694.040	98.666	782.009	1.359	43.446	39.971	120744	0.000	8.902	5504.073
Offroad	Trimmers/Edgers/Brush Cutters	G	2		95	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	13.942	4.234	0.121	0.002	0.022	0.020	38	0.067	0.263	3.923
Onroad	Worker Trips-Paved Roads	G	8		95	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	240.529	22.572	24.165	0.384	17.776	5.282	35294	1.785	2.025	NA
Onroad	Worker Trips-Unpaved Roads	G	8		95	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	51.385	6.778	3.821	0.022	400.411	40.123	1938	0.097	0.111	NA
Burn	Eucalyptus/Acacia	acres->	18.99	50%	10	2327.996	334.813	201.411	NA	251.110	245.878	NA	12.032	116.661	NA	22115.966	3180.723	1913.404	NA	2385.542	2335.844	NA	114.307	1108.283	NA
Burn	Oak/Bay	acres->	0.00	50%	10	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	10	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	10	0.086	0.014	0.008	NA	0.010	0.010	NA	NA	0.004	NA	0.818	0.130	0.075	NA	0.096	0.092	NA	NA	0.042	NA
Burn	Grass	acres->	0.00	50%	10	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	10	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	9.851	2.183	39.305	0.053	8.068	2.952	5492	0.051	0.136	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	10	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.464	0.101	1.119	0.001	16.951	1.717	129	0.001	0.003	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2346.755**	**337.985**	**223.697**	**0.040**	**258.971**	**247.607**	**3732**	**12.067**	**116.921**	**125.379**	**23797.845**	**3460.342**	**3666.111**	**3.340**	**2906.298**	**2457.266**	**303997**	**117.150**	**1131.302**	**11911.018**

SR007	Treated Area (acres) -->	3.17	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		16	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	42.948	1.170	0.860	0.002	0.599	0.551	71	0.090	0.065	7.430
Offroad	Chainsaws	G	2		16	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.404	3.541	0.056	0.001	0.010	0.009	17	0.029	0.220	2.117
Offroad	Chainsaws Preempt	G	1		16	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.741	4.280	0.067	0.001	0.012	0.011	21	0.023	0.266	2.559
Offroad	Chippers/Stump Grinders	D	2		16	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	21.963	5.666	68.512	0.097	2.124	1.954	9920	0.000	0.511	449.255
Offroad	Fellers/Bunchers	D	1		16	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	24.262	7.547	72.700	0.141	2.308	2.123	12520	0.000	0.681	566.848
Offroad	Skidders	D	2		16	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	116.891	16.617	131.707	0.229	7.317	6.732	20336	0.000	1.499	927.002
Offroad	Trimmers/Edgers/Brush Cutters	G	2		16	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.348	0.713	0.020	0.000	0.004	0.003	6	0.011	0.044	0.661
Onroad	Worker Trips-Paved Roads	G	8		16	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	40.510	3.802	4.070	0.065	2.994	0.890	5944	0.301	0.341	NA
Onroad	Worker Trips-Unpaved Roads	G	8		16	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	8.654	1.142	0.644	0.004	67.438	6.758	326	0.016	0.019	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	3	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.146	0.032	0.353	0.000	5.353	0.542	41	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**18.068**	**3.020**	**21.670**	**0.039**	**7.809**	**1.681**	**3664**	**0.035**	**0.243**	**122.242**	**274.978**	**45.199**	**291.401**	**0.556**	**90.707**	**20.506**	**50937**	**0.486**	**3.691**	**1955.872**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CUMULATIVE ACTION
EBRPD - Sibley Volcanic Regional Preserve
NONE

PROPOSED ACTION Treated Area (acres) --> 1.45

EBRPD - Sobrante Ridge Regional Preserve

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

SO001	**Treated Area (acres) -->**	1.45	**No. of Units or No. of Trips**	**% Burned or % Removed**	**Total No. of Days**	**Emission Rates (lbs/day), based on 8 hrs/day CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**(gal/day) Fuel**	**Activity Total Emission (lbs) CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**(gal) Fuel**
Activity	**Equipment Type**	**Fuel**																							
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		7	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	18.790	0.512	0.376	0.001	0.262	0.241	31	0.039	0.029	3.251
Offroad	Chainsaws	G	2		7	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.802	1.549	0.024	0.000	0.004	0.004	8	0.013	0.096	0.926
Offroad	Chainsaws Preempt	G	1		7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.116	1.120
Offroad	Chippers/Stump Grinders-Trailer	G	1		7	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	291.105	7.867	5.035	0.011	3.775	3.473	450	0.300	0.435	48.584
Offroad	Trimmers/Edgers/Brush Cutters	G	2		7	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.027	0.312	0.009	0.000	0.002	0.001	3	0.005	0.019	0.289
Onroad	Worker Trips-Paved Roads	G	4		7	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	8.862	0.832	0.890	0.014	0.655	0.195	1300	0.066	0.075	NA
Onroad	Worker Trips-Unpaved Roads	G	4		7	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.893	0.250	0.141	0.001	14.752	1.478	71	0.004	0.004	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.17	50%	1	64.291	9.246	5.562	NA	6.935	6.790	NA	0.332	3.222	NA	64.291	9.246	5.562	NA	6.935	6.790	NA	0.332	3.222	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Chaparral	acres->	0.56	50%	1	305.609	88.021	28.167	NA	33.096	32.392	NA	NA	14.576	NA	305.609	88.021	28.167	NA	33.096	32.392	NA	NA	14.576	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**417.824**	**99.393**	**38.913**	**0.010**	**45.444**	**40.445**	**859**	**0.400**	**17.923**	**7.738**	**698.851**	**110.701**	**44.489**	**0.034**	**62.119**	**45.071**	**2464**	**0.774**	**18.587**	**54.169**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION
EBRPD - Sobrante Ridge Regional Preserve
NONE

CUMULATIVE ACTION Treated Area (acres) --> 0.44

EBRPD - Sobrante Ridge Regional Preserve

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0	0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction					**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

SO002	**Treated Area (acres) -->**	0.44	No. of Units or No. of Trips	% Burned or % Removed	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Activity	**Equipment Type**	**Fuel**																							
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		2	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	5.369	0.146	0.107	0.000	0.075	0.069	9	0.011	0.008	0.929
Offroad	Chainsaws	G	2		2	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1		2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders-Trailer	G	1		2	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	83.173	2.248	1.439	0.003	1.079	0.992	129	0.086	0.124	13.881
Offroad	Trimmers/Edgers/Brush Cutters	G	2		2	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	4		2	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	4		2	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.44	50%	1	169.015	24.308	14.623	NA	18.231	17.851	NA	0.874	8.470	NA	169.015	24.308	14.623	NA	18.231	17.851	NA	0.874	8.470	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**216.938**	**26.433**	**19.807**	**0.010**	**23.644**	**19.113**	**859**	**0.941**	**8.595**	**7.738**	**263.776**	**28.318**	**20.736**	**0.014**	**26.423**	**19.885**	**1127**	**1.004**	**8.706**	**15.477**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION
EBRPD - Temescal Regional Recreational Area
NONE

CONNECTED ACTION
EBRPD - Temescal Regional Recreational Area
NONE

CUMULATIVE ACTION Treated Area (acres) --> 0.031
EBRPD - Temescal Regional Recreational Area

						Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**No. of Units or No. of Trips**	**% Burned or % Removed**	**Total No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																									
Offroad	Dozers (Crawler Tractors)	D	0		0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Offroad	Loaders, Rubber Tired	D	0		0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000
Onroad	Dump Truck Trips-Paved Roads	D	0		0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	0		0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	0		0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Water Truck-Unpaved Roads	D	0		0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	0		0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Worker Trips-Unpaved Roads	G	0		0	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Dust	Treated Area (acres) --> (acres)		0		0	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA	NA	NA	NA
Totals For Access Road Construction						**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0**	**0.000**	**0.000**	**0.000**

TM001	**Treated Area (acres) -->**	0.03																							
						Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**No. of Units or No. of Trips**	**% Burned or % Removed**	**Total No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Mowers, Rear Engine Riding	G	1		1	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**49.934**	**2.157**	**5.207**	**0.010**	**5.414**	**1.264**	**863**	**0.071**	**0.127**	**8.083**	**49.934**	**2.157**	**5.207**	**0.010**	**5.414**	**1.264**	**863**	**0.071**	**0.127**	**8.083**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 45.34

EBRPD - Tilden Regional Park

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	1	1	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948
Offroad	Loaders, Rubber Tired	D	1	1	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281
Onroad	Dump Truck Trips-Paved Roads	D	1	1	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	1	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA
Onroad	Water Truck-Paved Roads	D	1	1	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA
Onroad	Water Truck-Unpaved Roads	D	1	1	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA
Onroad	Worker Trips-Paved Roads	G	4	1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4	1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Dust	Treated Area (acres) --> (acres)		0.25	1	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA
Totals For Access Road Construction (TI008a)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**

TI006	Treated Area (acres) --> 3.47		No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		17	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	45.632	1.243	0.914	0.002	0.637	0.586	76	0.096	0.069	7.895
Offroad	Chainsaws	G	2		17	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.804	3.762	0.059	0.001	0.011	0.010	18	0.030	0.234	2.249
Offroad	Chainsaws Preempt	G	1		17	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	8.224	4.547	0.071	0.001	0.013	0.012	22	0.024	0.283	2.719
Offroad	Chippers/Stump Grinders-Trailer	G	1		17	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	706.970	19.105	12.227	0.028	9.167	8.434	1094	0.729	1.057	117.989
Offroad	Trimmers/Edgers/Brush Cutters	G	2		17	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.495	0.758	0.022	0.000	0.004	0.004	7	0.012	0.047	0.702
Onroad	Worker Trips-Paved Roads	G	4		17	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	21.521	2.020	2.162	0.034	1.591	0.473	3158	0.160	0.181	NA
Onroad	Worker Trips-Unpaved Roads	G	4		17	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	4.598	0.606	0.342	0.002	35.826	3.590	173	0.009	0.010	NA
Burn	Eucalyptus/Acacia	acres->	3.57	100%	3	2771.319	398.572	239.766	NA	298.929	292.701	NA	14.324	138.877	NA	8313.958	1195.715	719.297	NA	896.786	878.103	NA	42.971	416.632	NA
Burn	Oak/Bay	acres->	0.00	100%	3	0.100	0.014	0.009	NA	0.011	0.011	NA	0.001	0.005	NA	0.300	0.043	0.026	NA	0.032	0.032	NA	0.002	0.015	NA
Burn	Pine	acres->	0.00	100%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	100%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	100%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2818.257**	**400.471**	**240.704**	**0.004**	**301.719**	**293.483**	**268**	**14.387**	**138.993**	**7.738**	**9110.503**	**1227.799**	**735.121**	**0.068**	**944.067**	**891.243**	**4548**	**44.033**	**418.528**	**131.554**

TI012	Treated Area (acres) --> 13.00		No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		65	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	174.477	4.754	3.493	0.008	2.434	2.239	290	0.366	0.266	30.186
Offroad	Chainsaws	G	2		65	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	26.016	14.384	0.226	0.003	0.041	0.038	70	0.117	0.894	8.601
Offroad	Chainsaws Preempt	G	1		65	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	31.446	17.386	0.273	0.004	0.049	0.046	85	0.093	1.081	10.396
Offroad	Chippers/Stump Grinders	D	2		65	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	89.225	23.019	278.329	0.396	8.629	7.939	40299	0.000	2.077	1825.097
Offroad	Fellers/Bunchers	D	1		65	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	98.563	30.662	295.344	0.572	9.375	8.625	50863	0.000	2.767	2302.821
Offroad	Loaders, Skid Steer	D	1		65	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	39.276	8.974	39.555	0.057	2.724	2.506	4430	0.000	0.810	203.914
Offroad	Skidders	D	2		65	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	474.870	67.508	535.059	0.930	29.726	27.348	82614	0.000	6.091	3765.945
Offroad	Trimmers/Edgers/Brush Cutters	G	2		65	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	9.539	2.897	0.083	0.001	0.015	0.014	26	0.046	0.180	2.684
Onroad	Worker Trips-Paved Roads	G	8		65	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	164.573	15.444	16.534	0.263	12.163	3.614	24148	1.222	1.386	NA
Onroad	Worker Trips-Unpaved Roads	G	8		65	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	35.158	4.637	2.614	0.015	273.966	27.452	1326	0.067	0.076	NA
Burn	Eucalyptus/Acacia	acres->	0.33	50%	7	59.130	8.504	5.116	NA	6.378	6.245	NA	0.306	2.963	NA	384.347	55.277	33.252	NA	41.458	40.594	NA	1.987	19.261	NA
Burn	Oak/Bay	acres->	0.81	50%	7	47.381	6.814	4.099	NA	5.111	5.004	NA	0.245	2.374	NA	307.979	44.294	26.645	NA	33.220	32.528	NA	1.592	15.434	NA
Burn	Pine	acres->	6.74	50%	7	1010.092	83.512	76.552	NA	97.430	97.430	NA	4.573	43.545	NA	6565.599	542.825	497.590	NA	633.296	633.296	NA	29.726	283.045	NA
Burn	Scrub	acres->	5.12	50%	7	191.355	30.283	17.555	NA	22.383	21.505	NA	NA	9.831	NA	1243.806	196.841	114.111	NA	145.491	139.786	NA	NA	63.902	NA
Burn	Grass	acres->	0.00	50%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	7	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	6.740	1.494	26.893	0.036	5.520	2.020	3757	0.035	0.093	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	7	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.317	0.069	0.766	0.001	11.598	1.175	88	0.001	0.002	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1326.631**	**132.272**	**125.601**	**0.040**	**139.153**	**131.905**	**3732**	**5.159**	**58.969**	**125.379**	**9651.930**	**1030.466**	**1870.767**	**2.285**	**1209.706**	**929.219**	**207998**	**35.250**	**397.362**	**8149.644**

TI012-Griz	Treated Area (acres) -->	6.51	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		33	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	88.581	2.414	1.773	0.004	1.236	1.137	147	0.186	0.135	15.325
Offroad	Chainsaws	G	2		33	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	13.208	7.303	0.115	0.001	0.021	0.019	36	0.059	0.454	4.366
Offroad	Chainsaws Preempt	G	1		33	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	15.965	8.827	0.139	0.002	0.025	0.023	43	0.047	0.549	5.278
Offroad	Chippers/Stump Grinders	D	2		33	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	45.299	11.687	141.306	0.201	4.381	4.030	20460	0.000	1.054	926.588
Offroad	Fellers/Bunchers	D	1		33	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	50.040	15.567	149.944	0.291	4.760	4.379	25823	0.000	1.405	1169.125
Offroad	Loaders, Skid Steer	D	1		33	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	19.940	4.556	20.082	0.029	1.383	1.272	2249	0.000	0.411	103.526
Offroad	Skidders	D	2		33	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	241.088	34.273	271.645	0.472	15.092	13.885	41943	0.000	3.092	1911.941
Offroad	Trimmers/Edgers/Brush Cutters	G	2		33	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	4.843	1.471	0.042	0.001	0.008	0.007	13	0.023	0.091	1.363
Onroad	Worker Trips-Paved Roads	G	8		33	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	83.552	7.841	8.394	0.133	6.175	1.835	12260	0.620	0.703	NA
Onroad	Worker Trips-Unpaved Roads	G	8		33	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	17.850	2.354	1.327	0.008	139.090	13.937	673	0.034	0.038	NA
Burn	Eucalyptus/Acacia	acres->	4.08	50%	4	1357.027	195.168	117.406	NA	146.376	143.326	NA	7.014	68.004	NA	4749.595	683.088	410.920	NA	512.316	501.643	NA	24.548	238.013	NA
Burn	Oak/Bay	acres->	0.00	50%	4	0.055	0.008	0.005	NA	0.006	0.006	NA	0.000	0.003	NA	0.191	0.028	0.017	NA	0.021	0.020	NA	0.001	0.010	NA
Burn	Pine	acres->	0.09	50%	4	24.214	2.002	1.835	NA	2.336	2.336	NA	0.110	1.044	NA	84.749	7.007	6.423	NA	8.175	8.175	NA	0.384	3.654	NA
Burn	Scrub	acres->	2.34	50%	4	162.417	25.704	14.901	NA	18.998	18.253	NA	NA	8.344	NA	568.458	89.962	52.152	NA	66.494	63.886	NA	NA	29.205	NA
Burn	Grass	acres->	0.00	50%	4	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	4	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.629	0.804	14.481	0.019	2.972	1.088	2023	0.019	0.050	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	4	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.171	0.037	0.412	0.000	6.245	0.633	48	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1562.385**	**226.040**	**156.425**	**0.040**	**175.567**	**165.641**	**3732**	**7.159**	**77.650**	**125.379**	**5987.158**	**877.218**	**1079.172**	**1.161**	**768.393**	**615.968**	**105717**	**25.922**	**278.866**	**4137.511**

TI013-Griz	Treated Area (acres) -->	3.89	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		19	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	51.001	1.390	1.021	0.002	0.711	0.655	85	0.107	0.078	8.824
Offroad	Chainsaws	G	2		19	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	7.605	4.205	0.066	0.001	0.012	0.011	21	0.034	0.261	2.514
Offroad	Chainsaws Preempt	G	1		19	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	9.192	5.082	0.080	0.001	0.014	0.013	25	0.027	0.316	3.039
Offroad	Chippers/Stump Grinders	D	2		19	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	26.081	6.729	81.358	0.116	2.522	2.321	11780	0.000	0.607	533.490
Offroad	Fellers/Bunchers	D	1		19	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	28.811	8.963	86.331	0.167	2.740	2.521	14868	0.000	0.809	673.132
Offroad	Loaders, Skid Steer	D	1		19	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	11.481	2.623	11.562	0.017	0.796	0.733	1295	0.000	0.237	59.606
Offroad	Skidders	D	2		19	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	138.808	19.733	156.402	0.272	8.689	7.994	24149	0.000	1.780	1100.815
Offroad	Trimmers/Edgers/Brush Cutters	G	2		19	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.788	0.847	0.024	0.000	0.004	0.004	8	0.013	0.053	0.785
Onroad	Worker Trips-Paved Roads	G	8		19	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	48.106	4.514	4.833	0.077	3.555	1.056	7059	0.357	0.405	NA
Onroad	Worker Trips-Unpaved Roads	G	8		19	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	10.277	1.356	0.764	0.004	80.082	8.025	388	0.019	0.022	NA
Burn	Eucalyptus/Acacia	acres->	0.72	50%	2	422.154	60.714	36.523	NA	45.536	44.587	NA	2.182	21.155	NA	844.309	121.429	73.047	NA	91.072	89.174	NA	4.364	42.310	NA
Burn	Oak/Bay	acres->	0.37	50%	2	70.370	10.121	6.088	NA	7.590	7.432	NA	0.364	3.526	NA	140.740	20.241	12.176	NA	15.181	14.865	NA	0.727	7.053	NA
Burn	Pine	acres->	0.45	50%	2	220.696	18.247	16.726	NA	21.288	21.288	NA	0.999	9.514	NA	441.392	36.493	33.452	NA	42.575	42.575	NA	1.998	19.029	NA
Burn	Scrub	acres->	2.34	50%	2	284.389	45.007	26.091	NA	33.266	31.961	NA	NA	14.611	NA	568.779	90.013	52.182	NA	66.531	63.922	NA	NA	29.222	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1016.282**	**137.246**	**107.707**	**0.040**	**115.530**	**106.988**	**3732**	**3.580**	**49.062**	**125.379**	**2331.540**	**324.098**	**521.809**	**0.669**	**319.754**	**234.852**	**60859**	**7.659**	**102.210**	**2382.204**

TI014-Griz	Treated Area (acres) -->	2.68	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		13	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	34.895	0.951	0.699	0.002	0.487	0.448	58	0.073	0.053	6.037
Offroad	Chainsaws	G	2		13	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	5.203	2.877	0.045	0.001	0.008	0.008	14	0.023	0.179	1.720
Offroad	Chainsaws Preempt	G	1		13	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.289	3.477	0.055	0.001	0.010	0.009	17	0.019	0.216	2.079
Offroad	Chippers/Stump Grinders	D	2		13	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	17.845	4.604	55.666	0.079	1.726	1.588	8060	0.000	0.415	365.019
Offroad	Fellers/Bunchers	D	1		13	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	19.713	6.132	59.069	0.114	1.875	1.725	10173	0.000	0.553	460.564
Offroad	Loaders, Skid Steer	D	1		13	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	7.855	1.795	7.911	0.011	0.545	0.501	886	0.000	0.162	40.783
Offroad	Skidders	D	2		13	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	94.974	13.502	107.012	0.186	5.945	5.470	16523	0.000	1.218	753.189
Offroad	Trimmers/Edgers/Brush Cutters	G	2		13	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.908	0.579	0.017	0.000	0.003	0.003	5	0.009	0.036	0.537
Onroad	Worker Trips-Paved Roads	G	8		13	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	32.915	3.089	3.307	0.053	2.433	0.723	4830	0.244	0.277	NA
Onroad	Worker Trips-Unpaved Roads	G	8		13	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	7.032	0.927	0.523	0.003	54.793	5.490	265	0.013	0.015	NA
Burn	Eucalyptus/Acacia	acres->	2.48	50%	2	1926.398	277.055	166.666	NA	207.791	203.462	NA	9.957	96.536	NA	2889.597	415.583	249.999	NA	311.687	305.193	NA	14.935	144.805	NA
Burn	Oak/Bay	acres->	0.00	50%	2	0.880	0.127	0.076	NA	0.095	0.093	NA	0.005	0.044	NA	1.321	0.190	0.114	NA	0.142	0.139	NA	0.007	0.066	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.20	50%	2	31.953	5.057	2.931	NA	3.738	3.591	NA	NA	1.642	NA	47.929	7.585	4.397	NA	5.606	5.387	NA	NA	2.462	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1977.904**	**285.397**	**191.952**	**0.040**	**219.475**	**208.866**	**3732**	**9.996**	**98.477**	**125.379**	**3168.561**	**461.531**	**493.068**	**0.455**	**387.894**	**327.175**	**41422**	**15.329**	**150.473**	**1629.929**

TI015	Treated Area (acres) -->	9.89	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		49	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	131.529	3.584	2.633	0.006	1.835	1.688	219	0.276	0.200	22.756
Offroad	Chainsaws	G	2		49	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	19.612	10.843	0.170	0.002	0.031	0.028	53	0.088	0.674	6.483
Offroad	Chainsaws Preempt	G	1		49	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	23.705	13.107	0.206	0.003	0.037	0.034	64	0.070	0.815	7.837
Offroad	Chippers/Stump Grinders	D	2		49	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	67.262	17.353	209.818	0.298	6.505	5.985	30380	0.000	1.566	1375.842
Offroad	Fellers/Bunchers	D	1		49	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	74.301	23.114	222.644	0.431	7.067	6.502	38343	0.000	2.086	1735.973
Offroad	Loaders, Skid Steer	D	1		49	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	29.608	6.765	29.819	0.043	2.054	1.889	3339	0.000	0.610	153.720
Offroad	Skidders	D	2		49	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	357.979	50.891	403.352	0.701	22.409	20.616	62278	0.000	4.592	2838.943
Offroad	Trimmers/Edgers/Brush Cutters	G	2		49	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	7.191	2.184	0.062	0.001	0.011	0.010	19	0.034	0.136	2.024
Onroad	Worker Trips-Paved Roads	G	8		49	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	124.063	11.643	12.464	0.198	9.169	2.724	18204	0.921	1.045	NA
Onroad	Worker Trips-Unpaved Roads	G	8		49	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	26.504	3.496	1.971	0.011	206.528	20.695	1000	0.050	0.057	NA
Burn	Eucalyptus/Acacia	acres->	0.01	25%	3	2.329	0.335	0.202	NA	0.251	0.246	NA	0.012	0.117	NA	5.823	0.838	0.504	NA	0.628	0.615	NA	0.030	0.292	NA
Burn	Oak/Bay	acres->	0.83	25%	3	63.467	9.128	5.491	NA	6.846	6.703	NA	0.328	3.180	NA	158.668	22.820	13.727	NA	17.115	16.758	NA	0.820	7.951	NA
Burn	Pine	acres->	1.87	25%	3	363.623	30.063	27.558	NA	35.074	35.074	NA	1.646	15.676	NA	909.057	75.158	68.895	NA	87.685	87.685	NA	4.116	39.190	NA
Burn	Scrub	acres->	7.18	25%	3	348.830	55.205	32.003	NA	40.804	39.203	NA	NA	17.922	NA	872.076	138.012	80.007	NA	102.009	98.009	NA	NA	44.804	NA
Burn	Grass	acres->	0.00	25%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	75%	8	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	7.777	1.724	31.030	0.042	6.370	2.330	4336	0.040	0.107	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	75%	8	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.366	0.080	0.883	0.001	13.383	1.356	102	0.001	0.003	NA
Totals For Cutting/Skidding/Chipping/Trimming						**796.922**	**97.889**	**87.532**	**0.040**	**90.825**	**82.946**	**3732**	**2.021**	**37.150**	**125.379**	**2815.520**	**381.610**	**1078.186**	**1.737**	**482.835**	**266.925**	**158337**	**6.447**	**104.126**	**6143.578**

TI015-Griz	Treated Area (acres) -->	2.68	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		13	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	34.895	0.951	0.699	0.002	0.487	0.448	58	0.073	0.053	6.037
Offroad	Chainsaws	G	2		13	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	5.203	2.877	0.045	0.001	0.008	0.008	14	0.023	0.179	1.720
Offroad	Chainsaws Preempt	G	1		13	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	6.289	3.477	0.055	0.001	0.010	0.009	17	0.019	0.216	2.079
Offroad	Chippers/Stump Grinders	D	2		13	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	17.845	4.604	55.666	0.079	1.726	1.588	8060	0.000	0.415	365.019
Offroad	Fellers/Bunchers	D	1		13	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	19.713	6.132	59.069	0.114	1.875	1.725	10173	0.000	0.553	460.564
Offroad	Loaders, Skid Steer	D	1		13	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	7.855	1.795	7.911	0.011	0.545	0.501	886	0.000	0.162	40.783
Offroad	Skidders	D	2		13	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	94.974	13.502	107.012	0.186	5.945	5.470	16523	0.000	1.218	753.189
Offroad	Trimmers/Edgers/Brush Cutters	G	2		13	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.908	0.579	0.017	0.000	0.003	0.003	5	0.009	0.036	0.537
Onroad	Worker Trips-Paved Roads	G	8		13	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	32.915	3.089	3.307	0.053	2.433	0.723	4830	0.244	0.277	NA
Onroad	Worker Trips-Unpaved Roads	G	8		13	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	7.032	0.927	0.523	0.003	54.793	5.490	265	0.013	0.015	NA
Burn	Eucalyptus/Acacia	acres->	2.64	50%	2	2049.850	294.810	177.347	NA	221.107	216.501	NA	10.595	102.723	NA	3074.775	442.215	266.020	NA	331.661	324.751	NA	15.892	154.084	NA
Burn	Oak/Bay	acres->	0.04	50%	2	9.309	1.339	0.805	NA	1.004	0.983	NA	0.048	0.466	NA	13.964	2.008	1.208	NA	1.506	1.475	NA	0.072	0.700	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.555	0.345	6.206	0.008	1.274	0.466	867	0.008	0.021	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.073	0.016	0.177	0.000	2.677	0.271	20	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2077.831**	**299.307**	**200.430**	**0.040**	**229.962**	**219.204**	**3732**	**10.678**	**103.444**	**125.379**	**3318.995**	**482.517**	**507.913**	**0.458**	**404.942**	**342.928**	**41718**	**16.354**	**157.931**	**1629.929**

TI016-Griz	Treated Area (acres) -->	0.25	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	2		1	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Fellers/Bunchers	D	1		1	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428
Offroad	Loaders, Skid Steer	D	1		1	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137
Offroad	Skidders	D	2		1	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	8		1	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	8		1	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.25	50%	1	296.677	42.668	25.668	NA	32.001	31.334	NA	1.533	14.867	NA	296.677	42.668	25.668	NA	32.001	31.334	NA	1.533	14.867	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**315.349**	**45.827**	**47.946**	**0.040**	**39.852**	**33.054**	**3732**	**1.568**	**15.122**	**125.379**	**315.349**	**45.827**	**47.946**	**0.040**	**39.852**	**33.054**	**3732**	**1.568**	**15.122**	**125.379**

TI022	Treated Area (acres) -->	2.98	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		15	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	40.264	1.097	0.806	0.002	0.562	0.517	67	0.084	0.061	6.966
Offroad	Chainsaws	G	2		15	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	6.004	3.319	0.052	0.001	0.009	0.009	16	0.027	0.206	1.985
Offroad	Chainsaws Preempt	G	1		15	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	7.257	4.012	0.063	0.001	0.011	0.011	20	0.022	0.249	2.399
Offroad	Chippers/Stump Grinders	D	2		15	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	20.590	5.312	64.230	0.091	1.991	1.832	9300	0.000	0.479	421.176
Offroad	Fellers/Bunchers	D	1		15	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	22.745	7.076	68.156	0.132	2.163	1.990	11738	0.000	0.638	531.420
Offroad	Loaders, Skid Steer	D	1		15	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	9.064	2.071	9.128	0.013	0.629	0.578	1022	0.000	0.187	47.057
Offroad	Mowers, Rear Engine Riding	G	1		15	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	30.152	0.482	0.345	0.001	0.023	0.022	51	0.050	0.027	5.169
Offroad	Skidders	D	2		15	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	109.585	15.579	123.475	0.215	6.860	6.311	19065	0.000	1.406	869.064
Offroad	Trimmers/Edgers/Brush Cutters	G	2		15	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.201	0.668	0.019	0.000	0.003	0.003	6	0.011	0.042	0.619
Onroad	Worker Trips-Paved Roads	G	8		15	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	37.978	3.564	3.816	0.061	2.807	0.834	5573	0.282	0.320	NA
Onroad	Worker Trips-Unpaved Roads	G	8		15	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	8.113	1.070	0.603	0.003	63.223	6.335	306	0.015	0.017	NA
Burn	Eucalyptus/Acacia	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	1.21	75%	2	785.658	64.956	59.543	NA	75.782	75.782	NA	3.557	33.870	NA	1767.731	146.151	133.972	NA	170.509	170.509	NA	8.004	76.207	NA
Burn	Scrub	acres->	1.77	75%	2	286.741	45.379	26.307	NA	33.541	32.226	NA	NA	14.732	NA	645.168	102.102	59.190	NA	75.467	72.507	NA	NA	33.146	NA
Burn	Grass	acres->	0.00	75%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	25%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	25%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1093.082**	**113.525**	**108.151**	**0.040**	**117.175**	**109.728**	**3736**	**3.595**	**48.858**	**125.724**	**2707.939**	**292.745**	**468.110**	**0.526**	**326.892**	**261.950**	**47754**	**8.500**	**113.001**	**1885.856**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION Treated Area (acres) --> 51.81

EBRPD - Tilden Regional Park

TI006	Treated Area (acres) -->	1.10	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders-Trailer	G	1		5	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	207.932	5.619	3.596	0.008	2.696	2.481	322	0.214	0.311	34.703
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	4		5	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	6.330	0.594	0.636	0.010	0.468	0.139	929	0.047	0.053	NA
Onroad	Worker Trips-Unpaved Roads	G	4		5	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.352	0.178	0.101	0.001	10.537	1.056	51	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	0.83	100%	1	1928.728	277.390	166.867	NA	208.043	203.708	NA	9.969	96.653	NA	1928.728	277.390	166.867	NA	208.043	203.708	NA	9.969	96.653	NA
Burn	Oak/Bay	acres->	0.27	100%	1	204.865	29.464	17.724	NA	22.098	21.637	NA	1.059	10.266	NA	204.865	29.464	17.724	NA	22.098	21.637	NA	1.059	10.266	NA
Burn	Pine	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	100%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2180.430**	**308.738**	**185.521**	**0.004**	**232.920**	**226.117**	**268**	**11.090**	**107.030**	**7.738**	**2367.782**	**316.277**	**189.238**	**0.020**	**244.037**	**229.201**	**1338**	**11.339**	**107.472**	**38.692**

TI008a	Treated Area (acres) -->	14.10	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		70	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	187.898	5.120	3.761	0.009	2.621	2.411	313	0.394	0.286	32.508
Offroad	Chainsaws	G	2		70	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	28.017	15.490	0.243	0.003	0.044	0.041	76	0.126	0.963	9.262
Offroad	Chainsaws Preempt	G	1		70	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	33.865	18.724	0.294	0.004	0.053	0.049	92	0.101	1.164	11.195
Offroad	Chippers/Stump Grinders	D	2		70	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	96.088	24.790	299.739	0.426	9.293	8.550	43399	0.000	2.237	1965.489
Offroad	Fellers/Bunchers	D	1		70	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	106.145	33.020	318.063	0.616	10.096	9.289	54776	0.000	2.979	2479.961
Offroad	Loaders, Skid Steer	D	1		70	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	42.297	9.664	42.598	0.062	2.934	2.699	4770	0.000	0.872	219.600
Offroad	Skidders	D	2		70	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	511.398	72.701	576.217	1.001	32.013	29.452	88969	0.000	6.560	4055.633
Offroad	Trimmers/Edgers/Brush Cutters	G	2		70	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	10.273	3.120	0.089	0.001	0.016	0.015	28	0.049	0.194	2.891
Onroad	Worker Trips-Paved Roads	G	8		70	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	177.232	16.632	17.806	0.283	13.098	3.892	26006	1.316	1.492	NA
Onroad	Worker Trips-Unpaved Roads	G	8		70	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	37.863	4.994	2.815	0.016	295.040	29.564	1428	0.072	0.081	NA
Burn	Eucalyptus/Acacia	acres->	14.10	50%	7	2345.205	337.288	202.900	NA	252.966	247.696	NA	12.121	117.524	NA	16416.433	2361.015	1420.298	NA	1770.761	1733.870	NA	84.849	822.666	NA
Burn	Oak/Bay	acres->	0.00	50%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	7	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	7	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	7.258	1.609	28.962	0.039	5.945	2.175	4046	0.037	0.100	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	7	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.342	0.075	0.825	0.001	12.490	1.265	95	0.001	0.002	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2363.877**	**340.446**	**225.178**	**0.040**	**260.817**	**249.415**	**3732**	**12.156**	**117.779**	**125.379**	**17655.109**	**2566.954**	**2711.711**	**2.461**	**2154.405**	**1823.272**	**223998**	**86.944**	**839.597**	**8776.539**

TI008b	Treated Area (acres) -->	0.13	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**

TI009	Treated Area (acres) -->	3.70	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		18	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	48.317	1.316	0.967	0.002	0.674	0.620	80	0.101	0.074	8.359
Offroad	Chainsaws	G	2		18	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	7.204	3.983	0.063	0.001	0.011	0.010	19	0.032	0.248	2.382
Offroad	Chainsaws Preempt	G	1		18	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	8.708	4.815	0.076	0.001	0.014	0.013	24	0.026	0.299	2.879
Offroad	Chippers/Stump Grinders-Trailer	G	1		18	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	748.556	20.228	12.947	0.029	9.707	8.930	1158	0.772	1.119	124.929
Offroad	Trimmers/Edgers/Brush Cutters	G	2		18	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	2.642	0.802	0.023	0.000	0.004	0.004	7	0.013	0.050	0.743
Onroad	Worker Trips-Paved Roads	G	4		18	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	22.787	2.138	2.289	0.036	1.684	0.500	3344	0.169	0.192	NA
Onroad	Worker Trips-Unpaved Roads	G	4		18	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	4.868	0.642	0.362	0.002	37.934	3.801	184	0.009	0.010	NA
Burn	Eucalyptus/Acacia	acres->	0.20	50%	2	115.962	16.678	10.033	NA	12.508	12.248	NA	0.599	5.811	NA	231.925	33.355	20.065	NA	25.017	24.495	NA	1.199	11.622	NA
Burn	Oak/Bay	acres->	0.73	50%	2	139.530	20.067	12.072	NA	15.050	14.737	NA	0.721	6.992	NA	279.059	40.134	24.143	NA	30.101	29.474	NA	1.442	13.984	NA
Burn	Pine	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	2.77	50%	2	336.248	53.214	30.848	NA	39.332	37.789	NA	NA	17.275	NA	672.496	106.427	61.697	NA	78.663	75.579	NA	NA	34.550	NA
Burn	Grass	acres->	0.00	50%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**639.663**	**92.084**	**58.137**	**0.010**	**72.303**	**66.036**	**859**	**1.388**	**30.204**	**7.738**	**2028.733**	**214.323**	**131.142**	**0.084**	**189.076**	**144.409**	**5999**	**3.774**	**62.177**	**139.292**

TI010	Treated Area (acres) -->	1.32	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		7	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	18.790	0.512	0.376	0.001	0.262	0.241	31	0.039	0.029	3.251
Offroad	Chainsaws	G	2		7	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.802	1.549	0.024	0.000	0.004	0.004	8	0.013	0.096	0.926
Offroad	Chainsaws Preempt	G	1		7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.116	1.120
Offroad	Chippers/Stump Grinders-Trailer	G	1		7	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	291.105	7.867	5.035	0.011	3.775	3.473	450	0.300	0.435	48.584
Offroad	Trimmers/Edgers/Brush Cutters	G	2		7	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.027	0.312	0.009	0.000	0.002	0.001	3	0.005	0.019	0.289
Onroad	Worker Trips-Paved Roads	G	4		7	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	8.862	0.832	0.890	0.014	0.655	0.195	1300	0.066	0.075	NA
Onroad	Worker Trips-Unpaved Roads	G	4		7	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.893	0.250	0.141	0.001	14.752	1.478	71	0.004	0.004	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**328.951**	**13.434**	**10.760**	**0.034**	**22.089**	**5.889**	**2464**	**0.442**	**0.789**	**54.169**

TI011	Treated Area (acres) -->	1.21	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		6	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	16.106	0.439	0.322	0.001	0.225	0.207	27	0.034	0.025	2.786
Offroad	Chainsaws	G	2		6	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.401	1.328	0.021	0.000	0.004	0.003	6	0.011	0.083	0.794
Offroad	Chainsaws Preempt	G	1		6	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.903	1.605	0.025	0.000	0.005	0.004	8	0.009	0.100	0.960
Offroad	Chippers/Stump Grinders-Trailer	G	1		6	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	249.519	6.743	4.316	0.010	3.236	2.977	386	0.257	0.373	41.643
Offroad	Trimmers/Edgers/Brush Cutters	G	2		6	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.881	0.267	0.008	0.000	0.001	0.001	2	0.004	0.017	0.248
Onroad	Worker Trips-Paved Roads	G	4		6	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.064	NA
Onroad	Worker Trips-Unpaved Roads	G	4		6	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.623	0.214	0.121	0.001	12.645	1.267	61	0.003	0.003	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**47.924**	**2.125**	**5.184**	**0.010**	**5.413**	**1.262**	**859**	**0.068**	**0.125**	**7.738**	**282.113**	**11.549**	**9.831**	**0.030**	**19.309**	**5.118**	**2197**	**0.380**	**0.678**	**46.431**

TI012	Treated Area (acres) -->	17.44	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 2 years																									
Offroad	Air Compressors	G	1		87	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	233.531	6.363	4.675	0.011	3.258	2.997	389	0.490	0.356	40.403
Offroad	Chainsaws	G	2		87	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	34.821	19.252	0.302	0.004	0.055	0.050	94	0.156	1.197	11.511
Offroad	Chainsaws Preempt	G	1		87	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	42.089	23.271	0.365	0.005	0.066	0.061	114	0.125	1.446	13.914
Offroad	Chippers/Stump Grinders	D	2		87	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	119.424	30.811	372.533	0.529	11.550	10.626	53939	0.000	2.780	2442.822
Offroad	Fellers/Bunchers	D	1		87	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	131.923	41.039	395.306	0.766	12.548	11.544	68078	0.000	3.703	3082.238
Offroad	Loaders, Skid Steer	D	1		87	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	52.569	12.011	52.943	0.077	3.646	3.355	5929	0.000	1.084	272.931
Offroad	Skidders	D	2		87	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	635.595	90.357	716.156	1.244	39.788	36.605	110576	0.000	8.153	5040.573
Offroad	Trimmers/Edgers/Brush Cutters	G	2		87	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	12.768	3.877	0.111	0.001	0.020	0.018	35	0.061	0.241	3.593
Onroad	Worker Trips-Paved Roads	G	8		87	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	220.274	20.672	22.130	0.352	16.279	4.837	32322	1.635	1.855	NA
Onroad	Worker Trips-Unpaved Roads	G	8		87	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	47.058	6.207	3.499	0.020	366.692	36.744	1775	0.089	0.101	NA
Burn	Eucalyptus/Acacia	acres->	13.57	50%	9	1859.331	267.409	160.863	NA	200.557	196.379	NA	9.610	93.175	NA	15804.314	2272.980	1367.340	NA	1704.735	1669.220	NA	81.685	791.991	NA
Burn	Oak/Bay	acres->	0.09	50%	9	3.924	0.564	0.340	NA	0.423	0.414	NA	0.020	0.197	NA	33.358	4.798	2.886	NA	3.598	3.523	NA	0.172	1.672	NA
Burn	Pine	acres->	0.00	50%	9	0.359	0.030	0.027	NA	0.035	0.035	NA	0.002	0.015	NA	3.048	0.252	0.231	NA	0.294	0.294	NA	0.014	0.131	NA
Burn	Scrub	acres->	3.78	50%	9	108.173	17.119	9.924	NA	12.653	12.157	NA	NA	5.558	NA	919.475	145.513	84.355	NA	107.553	103.335	NA	NA	47.239	NA
Burn	Grass	acres->	0.00	50%	9	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	9	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	8.814	1.953	35.168	0.047	7.219	2.641	4914	0.045	0.121	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	9	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.415	0.091	1.001	0.001	15.167	1.536	116	0.001	0.003	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1990.460**	**288.281**	**193.433**	**0.040**	**221.519**	**210.704**	**3732**	**9.667**	**99.200**	**125.379**	**18299.475**	**2679.448**	**3059.003**	**3.057**	**2292.469**	**1887.387**	**278279**	**84.474**	**862.073**	**10907.985**

TI014	Treated Area (acres) -->	0.72	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		4	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	10.737	0.293	0.215	0.001	0.150	0.138	18	0.023	0.016	1.858
Offroad	Chainsaws	G	2		4	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.601	0.885	0.014	0.000	0.003	0.002	4	0.007	0.055	0.529
Offroad	Chainsaws Preempt	G	1		4	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.935	1.070	0.017	0.000	0.003	0.003	5	0.006	0.067	0.640
Offroad	Chippers/Stump Grinders	D	2		4	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	5.491	1.417	17.128	0.024	0.531	0.489	2480	0.000	0.128	112.314
Offroad	Fellers/Bunchers	D	1		4	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	6.065	1.887	18.175	0.035	0.577	0.531	3130	0.000	0.170	141.712
Offroad	Loaders, Skid Steer	D	1		4	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	2.417	0.552	2.434	0.004	0.168	0.154	273	0.000	0.050	12.549
Offroad	Skidders	D	1		4	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	14.611	2.077	16.463	0.029	0.915	0.841	2542	0.000	0.187	115.875
Offroad	Trimmers/Edgers/Brush Cutters	G	2		4	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.587	0.178	0.005	0.000	0.001	0.001	2	0.003	0.011	0.165
Onroad	Worker Trips-Paved Roads	G	8		4	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	10.128	0.950	1.017	0.016	0.748	0.222	1486	0.075	0.085	NA
Onroad	Worker Trips-Unpaved Roads	G	8		4	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.164	0.285	0.161	0.001	16.859	1.689	82	0.004	0.005	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**15.020**	**2.639**	**18.163**	**0.033**	**7.622**	**1.509**	**3097**	**0.035**	**0.208**	**96.410**	**56.822**	**9.835**	**59.885**	**0.115**	**22.588**	**4.562**	**10613**	**0.123**	**0.789**	**385.641**

TI015	Treated Area (acres) -->	2.12	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		11	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	29.527	0.805	0.591	0.001	0.412	0.379	49	0.062	0.045	5.108
Offroad	Chainsaws	G	2		11	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.403	2.434	0.038	0.000	0.007	0.006	12	0.020	0.151	1.455
Offroad	Chainsaws Preempt	G	1		11	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.322	2.942	0.046	0.001	0.008	0.008	14	0.016	0.183	1.759
Offroad	Chippers/Stump Grinders	D	2		11	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	15.100	3.896	47.102	0.067	1.460	1.343	6820	0.000	0.351	308.863
Offroad	Fellers/Bunchers	D	1		11	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	16.680	5.189	49.981	0.097	1.587	1.460	8608	0.000	0.468	389.708
Offroad	Loaders, Skid Steer	D	1		11	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	6.647	1.519	6.694	0.010	0.461	0.424	750	0.000	0.137	34.509
Offroad	Skidders	D	1		11	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	40.181	5.712	45.274	0.079	2.515	2.314	6990	0.000	0.515	318.657
Offroad	Trimmers/Edgers/Brush Cutters	G	2		11	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.614	0.490	0.014	0.000	0.003	0.002	4	0.008	0.030	0.454
Onroad	Worker Trips-Paved Roads	G	8		11	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	27.851	2.614	2.798	0.044	2.058	0.612	4087	0.207	0.234	NA
Onroad	Worker Trips-Unpaved Roads	G	8		11	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	5.950	0.785	0.442	0.003	46.363	4.646	224	0.011	0.013	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	100%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**15.020**	**2.639**	**18.163**	**0.033**	**7.622**	**1.509**	**3097**	**0.035**	**0.208**	**96.410**	**155.445**	**26.866**	**161.492**	**0.313**	**60.142**	**12.177**	**28742**	**0.334**	**2.158**	**1060.514**

TI018	Treated Area (acres) -->	0.61	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders	D	2		3	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	4.118	1.062	12.846	0.018	0.398	0.366	1860	0.000	0.096	84.235
Offroad	Fellers/Bunchers	D	1		3	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	4.549	1.415	13.631	0.026	0.433	0.398	2348	0.000	0.128	106.284
Offroad	Skidders	D	1		3	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	10.959	1.558	12.348	0.021	0.686	0.631	1906	0.000	0.141	86.906
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	8		3	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.064	NA
Onroad	Worker Trips-Unpaved Roads	G	8		3	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.623	0.214	0.121	0.001	12.645	1.267	61	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	0.61	50%	1	707.333	101.729	61.196	NA	76.297	74.707	NA	3.656	35.446	NA	707.333	101.729	61.196	NA	76.297	74.707	NA	3.656	35.446	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**721.748**	**104.230**	**78.750**	**0.032**	**83.877**	**76.178**	**3029**	**3.691**	**35.642**	**93.273**	**748.408**	**108.751**	**105.348**	**0.085**	**93.770**	**78.136**	**7903**	**3.749**	**36.004**	**279.820**

TI019	Treated Area (acres) -->	1.02	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	2		5	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	6.863	1.771	21.410	0.030	0.664	0.611	3100	0.000	0.160	140.392
Offroad	Fellers/Bunchers	D	1		5	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	7.582	2.359	22.719	0.044	0.721	0.663	3913	0.000	0.213	177.140
Offroad	Skidders	D	1		5	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	18.264	2.596	20.579	0.036	1.143	1.052	3177	0.000	0.234	144.844
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	8		5	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	8		5	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Burn	Eucalyptus/Acacia	acres->	1.02	50%	1	1187.088	170.727	102.703	NA	128.045	125.378	NA	6.136	59.488	NA	1187.088	170.727	102.703	NA	128.045	125.378	NA	6.136	59.488	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1201.503**	**173.228**	**120.257**	**0.032**	**135.626**	**126.848**	**3029**	**6.170**	**59.683**	**93.273**	**1254.822**	**182.271**	**173.453**	**0.138**	**155.413**	**130.765**	**12777**	**6.288**	**60.408**	**466.366**

TI020	Treated Area (acres) -->	5.90	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		29	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	77.844	2.121	1.558	0.004	1.086	0.999	130	0.163	0.119	13.468
Offroad	Chainsaws	G	2		29	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	11.607	6.417	0.101	0.001	0.018	0.017	31	0.052	0.399	3.837
Offroad	Chainsaws Preempt	G	1		29	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	14.030	7.757	0.122	0.002	0.022	0.020	38	0.042	0.482	4.638
Offroad	Chippers/Stump Grinders	D	2		29	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	39.808	10.270	124.178	0.176	3.850	3.542	17980	0.000	0.927	814.274
Offroad	Fellers/Bunchers	D	1		29	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	43.974	13.680	131.769	0.255	4.183	3.848	22693	0.000	1.234	1027.413
Offroad	Skidders	D	1		29	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	105.932	15.060	119.359	0.207	6.631	6.101	18429	0.000	1.359	840.095
Offroad	Trimmers/Edgers/Brush Cutters	G	2		29	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	4.256	1.292	0.037	0.000	0.007	0.006	12	0.020	0.080	1.198
Onroad	Worker Trips-Paved Roads	G	8		29	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	73.425	6.891	7.377	0.117	5.426	1.612	10774	0.545	0.618	NA
Onroad	Worker Trips-Unpaved Roads	G	8		29	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	15.686	2.069	1.166	0.007	122.231	12.248	592	0.030	0.034	NA
Burn	Eucalyptus/Acacia	acres->	5.64	50%	3	2190.878	315.093	189.548	NA	236.319	231.396	NA	11.324	109.790	NA	6572.634	945.278	568.644	NA	708.958	694.188	NA	33.971	329.370	NA
Burn	Oak/Bay	acres->	0.21	50%	3	26.673	3.836	2.308	NA	2.877	2.817	NA	0.138	1.337	NA	80.018	11.508	6.923	NA	8.631	8.451	NA	0.414	4.010	NA
Burn	Pine	acres->	0.05	50%	3	14.774	1.221	1.120	NA	1.425	1.425	NA	0.067	0.637	NA	44.323	3.664	3.359	NA	4.275	4.275	NA	0.201	1.911	NA
Burn	Scrub	acres->	0.00	50%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	3	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.146	0.032	0.353	0.000	5.353	0.542	41	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2246.740**	**322.651**	**210.529**	**0.032**	**248.202**	**237.109**	**3029**	**11.563**	**111.959**	**93.273**	**7086.793**	**1026.729**	**977.358**	**0.787**	**873.220**	**736.783**	**72453**	**35.454**	**340.586**	**2704.922**

TI021	Treated Area (acres) -->	2.45	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		12	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	32.211	0.878	0.645	0.002	0.449	0.413	54	0.068	0.049	5.573
Offroad	Chainsaws	G	2		12	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.803	2.655	0.042	0.001	0.008	0.007	13	0.022	0.165	1.588
Offroad	Chainsaws Preempt	G	1		12	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.805	3.210	0.050	0.001	0.009	0.008	16	0.017	0.200	1.919
Offroad	Chippers/Stump Grinders	D	2		12	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	16.472	4.250	51.384	0.073	1.593	1.466	7440	0.000	0.383	336.941
Offroad	Fellers/Bunchers	D	1		12	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	18.196	5.661	54.525	0.106	1.731	1.592	9390	0.000	0.511	425.136
Offroad	Skidders	D	1		12	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	43.834	6.232	49.390	0.086	2.744	2.524	7626	0.000	0.562	347.626
Offroad	Trimmers/Edgers/Brush Cutters	G	2		12	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.761	0.535	0.015	0.000	0.003	0.003	5	0.008	0.033	0.496
Onroad	Worker Trips-Paved Roads	G	8		12	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	30.383	2.851	3.052	0.049	2.245	0.667	4458	0.226	0.256	NA
Onroad	Worker Trips-Unpaved Roads	G	8		12	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	6.491	0.856	0.483	0.003	50.578	5.068	245	0.012	0.014	NA
Burn	Eucalyptus/Acacia	acres->	0.39	50%	1	456.744	65.689	39.516	NA	49.267	48.240	NA	2.361	22.889	NA	456.744	65.689	39.516	NA	49.267	48.240	NA	2.361	22.889	NA
Burn	Oak/Bay	acres->	0.22	50%	1	84.034	12.086	7.270	NA	9.064	8.876	NA	0.434	4.211	NA	84.034	12.086	7.270	NA	9.064	8.876	NA	0.434	4.211	NA
Burn	Pine	acres->	1.84	50%	1	1791.586	148.123	135.780	NA	172.810	172.810	NA	8.112	77.236	NA	1791.586	148.123	135.780	NA	172.810	172.810	NA	8.112	77.236	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2346.780**	**228.399**	**200.120**	**0.032**	**238.722**	**231.397**	**3029**	**10.941**	**104.531**	**93.273**	**2493.407**	**253.266**	**346.408**	**0.324**	**293.136**	**242.167**	**29838**	**11.265**	**106.523**	**1119.278**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CUMULATIVE ACTION Treated Area (acres) --> 110.98

EBRPD - Tilden Regional Park

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	1	10	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	15.991	4.258	25.304	0.025	2.230	2.051	2166	0.000	0.384	99.476
Offroad	Loaders, Rubber Tired	D	1	10	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	12.734	2.977	18.450	0.021	1.610	1.482	1807	0.000	0.269	82.812
Onroad	Dump Truck Trips-Paved Roads	D	1	10	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	4.045	0.893	22.044	0.030	4.336	1.479	3107	0.029	0.077	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	10	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.436	0.097	1.174	0.001	17.839	1.803	134	0.001	0.003	NA
Onroad	Water Truck-Paved Roads	D	1	10	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	2.194	0.485	11.341	0.015	2.172	0.744	1583	0.015	0.039	NA
Onroad	Water Truck-Unpaved Roads	D	1	10	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.436	0.097	1.174	0.001	17.839	1.803	134	0.001	0.003	NA
Onroad	Worker Trips-Paved Roads	G	4	10	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	4	10	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Dust	Treated Area (acres) --> (acres)		0.25	10	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	25.000	2.500	NA	NA	NA	NA
Totals For Access Road Construction (TI001 - TI007c)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**51.200**	**10.350**	**80.960**	**0.116**	**93.037**	**14.252**	**10892**	**0.145**	**0.888**	**182.288**

TI001	**Treated Area (acres) -->**	4.64	**No. of Units**	**% Burned or**	**Total**	**Emission Rates (lbs/day), based on 8 hrs/day**									**(gal/day)**	**Activity Total Emission (lbs)**									**(gal)**
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 2 years																									
Offroad	Air Compressors	G	1		23	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	61.738	1.682	1.236	0.003	0.861	0.792	103	0.130	0.094	10.681
Offroad	Chainsaws	G	2		23	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	9.206	5.090	0.080	0.001	0.014	0.013	25	0.041	0.316	3.043
Offroad	Chainsaws Preempt	G	1		23	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	11.127	6.152	0.097	0.001	0.018	0.016	30	0.033	0.382	3.679
Offroad	Chippers/Stump Grinders-Trailer	G	1		23	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	956.489	25.847	16.543	0.037	12.403	11.411	1480	0.986	1.429	159.632
Offroad	Trimmers/Edgers/Brush Cutters	G	2		23	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	3.375	1.025	0.029	0.000	0.005	0.005	9	0.016	0.064	0.950
Onroad	Worker Trips-Paved Roads	G	4		23	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	29.117	2.732	2.925	0.046	2.152	0.639	4272	0.216	0.245	NA
Onroad	Worker Trips-Unpaved Roads	G	4		23	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	6.220	0.820	0.463	0.003	48.471	4.857	235	0.012	0.013	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	3	0.640	0.092	0.055	NA	0.069	0.068	NA	0.003	0.032	NA	1.599	0.230	0.138	NA	0.173	0.169	NA	0.008	0.080	NA
Burn	Oak/Bay	acres->	0.07	50%	3	10.867	1.563	0.940	NA	1.172	1.148	NA	0.056	0.545	NA	27.168	3.907	2.351	NA	2.931	2.869	NA	0.140	1.361	NA
Burn	Pine	acres->	1.58	50%	3	614.580	50.812	46.577	NA	59.280	59.280	NA	2.783	26.495	NA	1536.450	127.029	116.444	NA	148.201	148.201	NA	6.956	66.237	NA
Burn	Scrub	acres->	2.99	50%	3	290.700	46.005	26.670	NA	34.004	32.670	NA	NA	14.935	NA	726.749	115.013	66.674	NA	85.010	81.676	NA	NA	37.338	NA
Burn	Grass	acres->	0.00	50%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	0	50%	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	50%	3	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**963.625**	**100.357**	**75.172**	**0.004**	**97.305**	**93.937**	**268**	**2.904**	**42.117**	**7.738**	**3369.239**	**289.529**	**206.979**	**0.092**	**300.238**	**250.649**	**6153**	**8.539**	**107.560**	**177.984**

TI002a	**Treated Area (acres) -->**	52.66	**No. of Units**	**% Burned or**	**Total**	**Emission Rates (lbs/day), based on 8 hrs/day**									**(gal/day)**	**Activity Total Emission (lbs)**									**(gal)**
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 3 years						2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	705.961	19.235	14.132	0.033	9.848	9.060	1175	1.482	1.075	122.137
Offroad	Air Compressors	G	1		263																				
Offroad	Chainsaws	G	2		263	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	105.263	58.199	0.914	0.012	0.166	0.152	285	0.472	3.617	34.799
Offroad	Chainsaws Preempt	G	1		263	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	127.235	70.348	1.105	0.014	0.200	0.184	344	0.378	4.372	42.063
Offroad	Chippers/Stump Grinders	D	2		263	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	361.016	93.140	1126.164	1.600	34.915	32.122	163058	0.000	8.404	7384.623
Offroad	Fellers/Bunchers	D	1		263	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	398.801	124.062	1195.007	2.316	37.933	34.898	205800	0.000	11.194	9317.569
Offroad	Skidders	D	2		263	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	1921.396	273.149	2164.931	3.761	120.278	110.655	334269	0.000	24.646	15237.593
Offroad	Trimmers/Edgers/Brush Cutters	G	2		263	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	38.597	11.721	0.335	0.004	0.061	0.056	104	0.184	0.729	10.861
Onroad	Worker Trips-Paved Roads	G	8		263	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	665.887	62.490	66.900	1.063	49.212	14.622	97708	4.943	5.606	NA
Onroad	Worker Trips-Unpaved Roads	G	8		263	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	142.256	18.764	10.578	0.060	1108.507	111.077	5365	0.270	0.306	NA
Burn	Eucalyptus/Acacia	acres->	51.15	50%	27	2248.079	323.319	194.497	NA	242.489	237.438	NA	11.619	112.657	NA	59574.094	8567.960	5154.163	NA	6425.970	6292.095	NA	307.911	2985.398	NA
Burn	Oak/Bay	acres->	0.14	50%	27	1.961	0.282	0.170	NA	0.212	0.207	NA	0.010	0.098	NA	51.976	7.475	4.497	NA	5.606	5.490	NA	0.269	2.605	NA
Burn	Pine	acres->	1.37	50%	27	50.402	4.167	3.820	NA	4.862	4.862	NA	0.228	2.173	NA	1335.646	110.427	101.225	NA	128.832	128.832	NA	6.047	57.580	NA
Burn	Scrub	acres->	0.00	50%	27	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	27	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	27	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	27.478	6.090	109.641	0.148	22.506	8.234	15319	0.141	0.379	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	27	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	1.293	0.282	3.121	0.003	47.285	4.790	361	0.003	0.009	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2318.510**	**330.789**	**220.156**	**0.039**	**255.372**	**244.187**	**3664**	**11.892**	**115.170**	**122.242**	**65456.901**	**9423.343**	**9952.713**	**9.015**	**7991.318**	**6752.268**	**823787**	**322.099**	**3105.920**	**32149.645**

TI002b	Treated Area (acres) -->	0.13	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	2		1	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Fellers/Bunchers	D	1		1	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428
Offroad	Skidders	D	2		1	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	8		1	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	8		1	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.13	50%	1	50.842	7.312	4.399	NA	5.484	5.370	NA	0.263	2.548	NA	50.842	7.312	4.399	NA	5.484	5.370	NA	0.263	2.548	NA
Burn	Pine	acres->	0.00	50%	1	1.838	0.152	0.139	NA	0.177	0.177	NA	0.008	0.079	NA	1.838	0.152	0.139	NA	0.177	0.177	NA	0.008	0.079	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**70.748**	**10.484**	**26.208**	**0.039**	**13.470**	**7.228**	**3664**	**0.306**	**2.870**	**122.242**	**70.748**	**10.484**	**26.208**	**0.039**	**13.470**	**7.228**	**3664**	**0.306**	**2.870**	**122.242**

TI002c	Treated Area (acres) -->	0.70	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		3	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	8.053	0.219	0.161	0.000	0.112	0.103	13	0.017	0.012	1.393
Offroad	Chainsaws	G	2		3	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	1.201	0.664	0.010	0.000	0.002	0.002	3	0.005	0.041	0.397
Offroad	Chainsaws Preempt	G	1		3	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	1.451	0.802	0.013	0.000	0.002	0.002	4	0.004	0.050	0.480
Offroad	Chippers/Stump Grinders	D	2		3	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	4.118	1.062	12.846	0.018	0.398	0.366	1860	0.000	0.096	84.235
Offroad	Fellers/Bunchers	D	1		3	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	4.549	1.415	13.631	0.026	0.433	0.398	2348	0.000	0.128	106.284
Offroad	Skidders	D	2		3	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	21.917	3.116	24.695	0.043	1.372	1.262	3813	0.000	0.281	173.813
Offroad	Trimmers/Edgers/Brush Cutters	G	2		3	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.440	0.134	0.004	0.000	0.001	0.001	1	0.002	0.008	0.124
Onroad	Worker Trips-Paved Roads	G	8		3	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	7.596	0.713	0.763	0.012	0.561	0.167	1115	0.056	0.064	NA
Onroad	Worker Trips-Unpaved Roads	G	8		3	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.623	0.214	0.121	0.001	12.645	1.267	61	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.70	50%	1	677.979	56.053	51.382	NA	65.396	65.396	NA	3.070	29.228	NA	677.979	56.053	51.382	NA	65.396	65.396	NA	3.070	29.228	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**696.047**	**59.074**	**73.052**	**0.039**	**73.205**	**67.077**	**3664**	**3.104**	**29.470**	**122.242**	**730.012**	**64.633**	**107.882**	**0.107**	**83.555**	**69.455**	**9810**	**3.163**	**29.926**	**366.726**

TI003	Treated Area (acres) -->	15.65	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		78	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	209.373	5.705	4.191	0.010	2.921	2.687	348	0.439	0.319	36.223
Offroad	Chainsaws	G	2		78	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	31.219	17.261	0.271	0.003	0.049	0.045	84	0.140	1.073	10.321
Offroad	Chainsaws Preempt	G	1		78	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	37.735	20.864	0.328	0.004	0.059	0.055	102	0.112	1.297	12.475
Offroad	Chippers/Stump Grinders	D	2		78	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	107.070	27.623	333.995	0.475	10.355	9.527	48359	0.000	2.492	2190.116
Offroad	Fellers/Bunchers	D	1		78	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	118.276	36.794	354.413	0.687	11.250	10.350	61036	0.000	3.320	2763.385
Offroad	Loaders, Skid Steer	D	1		78	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	47.131	10.769	47.466	0.069	3.269	3.008	5316	0.000	0.972	244.697
Offroad	Skidders	D	2		78	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	569.844	81.010	642.071	1.115	35.672	32.818	99137	0.000	7.309	4519.134
Offroad	Trimmers/Edgers/Brush Cutters	G	2		78	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	11.447	3.476	0.099	0.001	0.018	0.017	31	0.055	0.216	3.221
Onroad	Worker Trips-Paved Roads	G	8		78	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	197.487	18.533	19.841	0.315	14.595	4.337	28978	1.466	1.663	NA
Onroad	Worker Trips-Unpaved Roads	G	8		78	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	42.190	5.565	3.137	0.018	328.759	32.943	1591	0.080	0.091	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	8	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	50%	8	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	13.65	50%	8	1661.670	137.382	125.934	NA	160.279	160.279	NA	7.523	71.635	NA	13293.356	1099.057	1007.469	NA	1282.233	1282.233	NA	60.186	573.080	NA
Burn	Scrub	acres->	2.00	50%	8	60.779	9.619	5.576	NA	7.110	6.831	NA	NA	3.123	NA	486.235	76.950	44.609	NA	56.876	54.646	NA	NA	24.981	NA
Burn	Grass	acres->	0.00	50%	8	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	8	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	8.295	1.838	33.099	0.045	6.794	2.486	4625	0.043	0.114	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	8	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.390	0.085	0.942	0.001	14.275	1.446	109	0.001	0.003	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1741.121**	**150.159**	**153.788**	**0.040**	**175.240**	**168.829**	**3732**	**7.558**	**75.013**	**125.379**	**15160.047**	**1405.530**	**2491.932**	**2.743**	**1767.125**	**1436.596**	**249716**	**62.522**	**616.929**	**9779.573**

TI004	Treated Area (acres) -->	26.32	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		132	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	354.323	9.654	7.093	0.017	4.943	4.547	590	0.744	0.539	61.301
Offroad	Chainsaws	G	2		132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	52.832	29.210	0.459	0.006	0.083	0.076	143	0.237	1.816	17.466
Offroad	Chainsaws Preempt	G	1		132	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	63.860	35.308	0.554	0.007	0.100	0.092	173	0.190	2.195	21.111
Offroad	Chippers/Stump Grinders	D	2		132	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	181.195	46.747	565.223	0.803	17.524	16.122	81839	0.000	4.218	3706.351
Offroad	Fellers/Bunchers	D	1		132	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	200.159	62.267	599.775	1.162	19.039	17.516	103291	0.000	5.618	4676.499
Offroad	Loaders, Skid Steer	D	1		132	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	79.760	18.224	80.327	0.116	5.532	5.090	8996	0.000	1.644	414.102
Offroad	Skidders	D	2		132	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	964.351	137.094	1086.581	1.888	60.367	55.538	167770	0.000	12.370	7647.765
Offroad	Trimmers/Edgers/Brush Cutters	G	2		132	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	19.372	5.883	0.168	0.002	0.030	0.028	52	0.092	0.366	5.451
Onroad	Worker Trips-Paved Roads	G	8		132	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	334.209	31.364	33.577	0.534	24.700	7.339	49040	2.481	2.814	NA
Onroad	Worker Trips-Unpaved Roads	G	8		132	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	71.398	9.417	5.309	0.030	556.361	55.750	2693	0.135	0.154	NA
Burn	Eucalyptus/Acacia	acres->	21.55	50%	13	1930.877	277.699	167.053	NA	208.274	203.935	NA	9.980	96.761	NA	25101.401	3610.089	2171.694	NA	2707.567	2651.159	NA	129.738	1257.890	NA
Burn	Oak/Bay	acres->	0.02	50%	13	0.672	0.097	0.058	NA	0.072	0.071	NA	0.003	0.034	NA	8.736	1.256	0.756	NA	0.942	0.923	NA	0.045	0.438	NA
Burn	Pine	acres->	4.48	50%	13	335.683	27.753	25.441	NA	32.379	32.379	NA	1.520	14.471	NA	4363.874	360.793	330.727	NA	420.925	420.925	NA	19.758	188.128	NA
Burn	Scrub	acres->	0.26	50%	13	4.866	0.770	0.446	NA	0.569	0.547	NA	NA	0.250	NA	63.259	10.011	5.804	NA	7.400	7.109	NA	NA	3.250	NA
Burn	Grass	acres->	0.00	50%	13	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	13	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	13.480	2.987	53.786	0.072	11.041	4.039	7515	0.069	0.186	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	13	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.634	0.139	1.531	0.002	23.197	2.350	177	0.002	0.004	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2290.770**	**309.478**	**215.277**	**0.040**	**249.146**	**238.652**	**3732**	**11.538**	**111.771**	**125.379**	**31872.843**	**4370.444**	**4943.365**	**4.639**	**3859.750**	**3248.603**	**422278**	**153.490**	**1481.629**	**16550.046**

TI005	Treated Area (acres) -->	4.94	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		25	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	67.107	1.828	1.343	0.003	0.936	0.861	112	0.141	0.102	11.610
Offroad	Chainsaws	G	2		25	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	10.006	5.532	0.087	0.001	0.016	0.014	27	0.045	0.344	3.308
Offroad	Chainsaws Preempt	G	1		25	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	12.095	6.687	0.105	0.001	0.019	0.018	33	0.036	0.416	3.998
Offroad	Chippers/Stump Grinders	D	2		25	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	34.317	8.854	107.050	0.152	3.319	3.053	15500	0.000	0.799	701.960
Offroad	Fellers/Bunchers	D	1		25	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	37.909	11.793	113.594	0.220	3.606	3.317	19563	0.000	1.064	885.700
Offroad	Loaders, Skid Steer	D	1		25	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	15.106	3.452	15.214	0.022	1.048	0.964	1704	0.000	0.311	78.428
Offroad	Skidders	D	2		25	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	182.642	25.965	205.792	0.358	11.433	10.519	31775	0.000	2.343	1448.440
Offroad	Trimmers/Edgers/Brush Cutters	G	2		25	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	3.669	1.114	0.032	0.000	0.006	0.005	10	0.018	0.069	1.032
Onroad	Worker Trips-Paved Roads	G	8		25	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	63.297	5.940	6.359	0.101	4.678	1.390	9288	0.470	0.533	NA
Onroad	Worker Trips-Unpaved Roads	G	8		25	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	13.522	1.784	1.006	0.006	105.371	10.559	510	0.026	0.029	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.01	50%	3	1.255	0.180	0.109	NA	0.135	0.133	NA	0.006	0.063	NA	3.137	0.451	0.271	NA	0.338	0.331	NA	0.016	0.157	NA
Burn	Pine	acres->	1.85	50%	3	721.327	59.637	54.668	NA	69.577	69.577	NA	3.266	31.097	NA	1803.318	149.093	136.669	NA	173.942	173.942	NA	8.165	77.741	NA
Burn	Scrub	acres->	3.08	50%	3	299.340	47.373	27.462	NA	35.015	33.641	NA	NA	15.379	NA	748.350	118.432	68.656	NA	87.536	84.104	NA	NA	38.447	NA
Burn	Grass	acres->	0.00	50%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.592	0.575	10.343	0.014	2.123	0.777	1445	0.013	0.036	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	3	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.122	0.027	0.294	0.000	4.461	0.452	34	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1040.594**	**110.349**	**104.517**	**0.040**	**112.578**	**105.070**	**3732**	**3.307**	**46.793**	**125.379**	**2997.188**	**341.526**	**666.815**	**0.879**	**398.832**	**290.306**	**79999**	**8.929**	**122.393**	**3134.478**

TI007a	Treated Area (acres) -->	2.41	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 1 year																									
Offroad	Air Compressors	G	1		12	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	32.211	0.878	0.645	0.002	0.449	0.413	54	0.068	0.049	5.573
Offroad	Chainsaws	G	2		12	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.803	2.655	0.042	0.001	0.008	0.007	13	0.022	0.165	1.588
Offroad	Chainsaws Preempt	G	1		12	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.805	3.210	0.050	0.001	0.009	0.008	16	0.017	0.200	1.919
Offroad	Chippers/Stump Grinders	D	2		12	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	16.472	4.250	51.384	0.073	1.593	1.466	7440	0.000	0.383	336.941
Offroad	Fellers/Bunchers	D	1		12	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	18.196	5.661	54.525	0.106	1.731	1.592	9390	0.000	0.511	425.136
Offroad	Loaders, Skid Steer	D	1		12	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	7.251	1.657	7.302	0.011	0.503	0.463	818	0.000	0.149	37.646
Offroad	Skidders	D	2		12	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	87.668	12.463	98.780	0.172	5.488	5.049	15252	0.000	1.125	695.251
Offroad	Trimmers/Edgers/Brush Cutters	G	2		12	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.761	0.535	0.015	0.000	0.003	0.003	5	0.008	0.033	0.496
Onroad	Worker Trips-Paved Roads	G	8		12	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	30.383	2.851	3.052	0.049	2.245	0.667	4458	0.226	0.256	NA
Onroad	Worker Trips-Unpaved Roads	G	8		12	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	6.491	0.856	0.483	0.003	50.578	5.068	245	0.012	0.014	NA
Burn	Eucalyptus/Acacia	acres->	2.41	50%	1	2806.468	403.627	242.807	NA	302.720	296.413	NA	14.505	140.639	NA	2806.468	403.627	242.807	NA	302.720	296.413	NA	14.505	140.639	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2825.141**	**406.785**	**265.085**	**0.040**	**310.571**	**298.133**	**3732**	**14.540**	**140.894**	**125.379**	**3018.596**	**438.883**	**463.341**	**0.421**	**367.961**	**311.641**	**38281**	**14.863**	**143.538**	**1504.550**

TI007b	Treated Area (acres) -->	1.32	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		7	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	18.790	0.512	0.376	0.001	0.262	0.241	31	0.039	0.029	3.251
Offroad	Chainsaws	G	2		7	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.802	1.549	0.024	0.000	0.004	0.004	8	0.013	0.096	0.926
Offroad	Chainsaws Preempt	G	1		7	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	3.386	1.872	0.029	0.000	0.005	0.005	9	0.010	0.116	1.120
Offroad	Chippers/Stump Grinders	D	2		7	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	9.609	2.479	29.974	0.043	0.929	0.855	4340	0.000	0.224	196.549
Offroad	Fellers/Bunchers	D	1		7	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	10.614	3.302	31.806	0.062	1.010	0.929	5478	0.000	0.298	247.996
Offroad	Loaders, Skid Steer	D	1		7	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	4.230	0.966	4.260	0.006	0.293	0.270	477	0.000	0.087	21.960
Offroad	Skidders	D	2		7	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	51.140	7.270	57.622	0.100	3.201	2.945	8897	0.000	0.656	405.563
Offroad	Trimmers/Edgers/Brush Cutters	G	2		7	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.027	0.312	0.009	0.000	0.002	0.001	3	0.005	0.019	0.289
Onroad	Worker Trips-Paved Roads	G	8		7	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	17.723	1.663	1.781	0.028	1.310	0.389	2601	0.132	0.149	NA
Onroad	Worker Trips-Unpaved Roads	G	8		7	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	3.786	0.499	0.282	0.002	29.504	2.956	143	0.007	0.008	NA
Burn	Eucalyptus/Acacia	acres->	1.26	50%	1	1466.816	210.958	126.904	NA	158.218	154.922	NA	7.581	73.506	NA	1466.816	210.958	126.904	NA	158.218	154.922	NA	7.581	73.506	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.06	50%	1	59.152	4.891	4.483	NA	5.706	5.706	NA	0.268	2.550	NA	59.152	4.891	4.483	NA	5.706	5.706	NA	0.268	2.550	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1544.641**	**219.007**	**153.666**	**0.040**	**171.775**	**162.347**	**3732**	**7.884**	**76.311**	**125.379**	**1650.162**	**236.514**	**261.805**	**0.248**	**203.078**	**169.715**	**22577**	**8.060**	**77.753**	**877.654**

TI007c	Treated Area (acres) -->	2.22	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 6 mos?																									
Offroad	Air Compressors	G	1		11	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	29.527	0.805	0.591	0.001	0.412	0.379	49	0.062	0.045	5.108
Offroad	Chainsaws	G	2		11	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.403	2.434	0.038	0.000	0.007	0.006	12	0.020	0.151	1.455
Offroad	Chainsaws Preempt	G	1		11	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.322	2.942	0.046	0.001	0.008	0.008	14	0.016	0.183	1.759
Offroad	Chippers/Stump Grinders	D	2		11	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	15.100	3.896	47.102	0.067	1.460	1.343	6820	0.000	0.351	308.863
Offroad	Fellers/Bunchers	D	1		11	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	16.680	5.189	49.981	0.097	1.587	1.460	8608	0.000	0.468	389.708
Offroad	Loaders, Skid Steer	D	1		11	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	6.647	1.519	6.694	0.010	0.461	0.424	750	0.000	0.137	34.509
Offroad	Skidders	D	2		11	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	80.363	11.424	90.548	0.157	5.031	4.628	13981	0.000	1.031	637.314
Offroad	Trimmers/Edgers/Brush Cutters	G	2		11	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.614	0.490	0.014	0.000	0.003	0.002	4	0.008	0.030	0.454
Onroad	Worker Trips-Paved Roads	G	8		11	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	27.851	2.614	2.798	0.044	2.058	0.612	4087	0.207	0.234	NA
Onroad	Worker Trips-Unpaved Roads	G	8		11	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	5.950	0.785	0.442	0.003	46.363	4.646	224	0.011	0.013	NA
Burn	Eucalyptus/Acacia	acres->	1.93	50%	1	2245.218	322.908	194.249	NA	242.181	237.135	NA	11.604	112.513	NA	2245.218	322.908	194.249	NA	242.181	237.135	NA	11.604	112.513	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.30	50%	1	287.418	23.763	21.783	NA	27.723	27.723	NA	1.301	12.391	NA	287.418	23.763	21.783	NA	27.723	27.723	NA	1.301	12.391	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Ro	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**2551.309**	**349.829**	**238.310**	**0.040**	**277.755**	**266.578**	**3732**	**12.941**	**125.159**	**125.379**	**2727.177**	**379.008**	**418.543**	**0.386**	**329.928**	**278.858**	**35141**	**13.234**	**127.563**	**1379.170**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

PROPOSED ACTION Treated Area (acres) --> 28.00

EBRPD - Wildcat Canyon Regional Park

Activity	Equipment Type	Fuel	No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal/day) Fuel	Activity Total Emission (lbs) CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	(gal) Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																								
Offroad	Dozers (Crawler Tractors)	D	1	2	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	3.198	0.852	5.061	0.005	0.446	0.410	433	0.000	0.077	19.895
Offroad	Loaders, Rubber Tired	D	1	2	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	2.547	0.595	3.690	0.004	0.322	0.296	361	0.000	0.054	16.562
Onroad	Dump Truck Trips-Paved Roads	D	1	2	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	0.809	0.179	4.409	0.006	0.867	0.296	621	0.006	0.015	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	2	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.087	0.019	0.235	0.000	3.568	0.361	27	0.000	0.001	NA
Onroad	Water Truck-Paved Roads	D	1	2	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.439	0.097	2.268	0.003	0.434	0.149	317	0.003	0.008	NA
Onroad	Water Truck-Unpaved Roads	D	1	2	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.087	0.019	0.235	0.000	3.568	0.361	27	0.000	0.001	NA
Onroad	Worker Trips-Paved Roads	G	4	2	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	4	2	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Dust	Treated Area (acres) --> (acres)		0.25	2	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	5.000	0.500	NA	NA	NA	NA
Totals For Access Road Construction (WC005, & 006)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**10.240**	**2.070**	**16.192**	**0.023**	**18.607**	**2.850**	**2178**	**0.029**	**0.178**	**36.458**

WC003	**Treated Area (acres) -->**	0.94	**No. of Units**	**% Burned or**	**Total**	**Emission Rates (lbs/day), based on 8 hrs/day**									**(gal/day)**	**Activity Total Emission (lbs)**									**(gal)**
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders	D	2		5	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	6.863	1.771	21.410	0.030	0.664	0.611	3100	0.000	0.160	140.392
Offroad	Fellers/Bunchers	D	1		5	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	7.582	2.359	22.719	0.044	0.721	0.663	3913	0.000	0.213	177.140
Offroad	Skidders	D	2		5	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	36.528	5.193	41.158	0.072	2.287	2.104	6355	0.000	0.469	289.688
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	8		5	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	12.659	1.188	1.272	0.020	0.936	0.278	1858	0.094	0.107	NA
Onroad	Worker Trips-Unpaved Roads	G	8		5	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	2.704	0.357	0.201	0.001	21.074	2.112	102	0.005	0.006	NA
Burn	Eucalyptus/Acacia	acres->	0.00	33%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.03	33%	1	7.235	1.041	0.626	NA	0.780	0.764	NA	0.037	0.363	NA	7.235	1.041	0.626	NA	0.780	0.764	NA	0.037	0.363	NA
Burn	Pine	acres->	0.00	33%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.91	33%	1	147.459	23.336	13.528	NA	17.249	16.572	NA	NA	7.576	NA	147.459	23.336	13.528	NA	17.249	16.572	NA	NA	7.576	NA
Burn	Grass	acres->	0.00	33%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	67%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	67%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**172.763**	**27.397**	**35.824**	**0.039**	**25.838**	**19.017**	**3664**	**0.072**	**8.181**	**122.242**	**240.693**	**38.517**	**105.483**	**0.174**	**46.539**	**23.775**	**15955**	**0.190**	**9.093**	**611.210**

WC004	**Treated Area (acres) -->**	2.40	**No. of Units**	**% Burned or**	**Total**	**Emission Rates (lbs/day), based on 8 hrs/day**									**(gal/day)**	**Activity Total Emission (lbs)**									**(gal)**
Activity	**Equipment Type**	**Fuel**	**or No. of Trips**	**% Removed**	**No. of Days**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**N2O**	**CH4**	**Fuel**
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		12	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	32.211	0.878	0.645	0.002	0.449	0.413	54	0.068	0.049	5.573
Offroad	Chainsaws	G	2		12	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.803	2.655	0.042	0.001	0.008	0.007	13	0.022	0.165	1.588
Offroad	Chainsaws Preempt	G	1		12	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.805	3.210	0.050	0.001	0.009	0.008	16	0.017	0.200	1.919
Offroad	Chippers/Stump Grinders	D	2		12	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	16.472	4.250	51.384	0.073	1.593	1.466	7440	0.000	0.383	336.941
Offroad	Fellers/Bunchers	D	1		12	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	18.196	5.661	54.525	0.106	1.731	1.592	9390	0.000	0.511	425.136
Offroad	Mowers, Rear Engine Riding	G	1		12	2.010	0.032	0.023	0.000	0.002	0.001	3	0.003	0.002	0.345	24.122	0.386	0.276	0.001	0.019	0.017	40	0.040	0.022	4.135
Offroad	Skidders	D	2		12	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	87.668	12.463	98.780	0.172	5.488	5.049	15252	0.000	1.125	695.251
Offroad	Trimmers/Edgers/Brush Cutters	G	2		12	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.761	0.535	0.015	0.000	0.003	0.003	5	0.008	0.033	0.496
Onroad	Worker Trips-Paved Roads	G	8		12	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	30.383	2.851	3.052	0.049	2.245	0.667	4458	0.226	0.256	NA
Onroad	Worker Trips-Unpaved Roads	G	8		12	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	6.491	0.856	0.483	0.003	50.578	5.068	245	0.012	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	100%	2	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	2.074	0.460	8.275	0.011	1.699	0.621	1156	0.011	0.029	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	100%	2	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.098	0.021	0.236	0.000	3.569	0.361	27	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**20.078**	**3.052**	**21.693**	**0.040**	**7.811**	**1.682**	**3668**	**0.038**	**0.244**	**122.587**	**230.084**	**34.225**	**217.763**	**0.417**	**67.390**	**15.274**	**38096**	**0.404**	**2.786**	**1471.039**

WC009	Treated Area (acres) -->	2.48	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		12	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	32.211	0.878	0.645	0.002	0.449	0.413	54	0.068	0.049	5.573
Offroad	Chainsaws	G	2		12	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	4.803	2.655	0.042	0.001	0.008	0.007	13	0.022	0.165	1.588
Offroad	Chainsaws Preempt	G	1		12	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	5.805	3.210	0.050	0.001	0.009	0.008	16	0.017	0.200	1.919
Offroad	Chippers/Stump Grinders-Trailer	G	1		12	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	499.038	13.486	8.631	0.020	6.471	5.953	772	0.515	0.746	83.286
Offroad	Trimmers/Edgers/Brush Cutters	G	2		12	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	1.761	0.535	0.015	0.000	0.003	0.003	5	0.008	0.033	0.496
Onroad	Worker Trips-Paved Roads	G	4		12	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	15.191	1.426	1.526	0.024	1.123	0.334	2229	0.113	0.128	NA
Onroad	Worker Trips-Unpaved Roads	G	4		12	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	3.245	0.428	0.241	0.001	25.289	2.534	122	0.006	0.007	NA
Burn	Eucalyptus/Acacia	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.41	100%	2	157.230	22.613	13.603	NA	16.960	16.606	NA	0.813	7.879	NA	314.461	45.226	27.206	NA	33.919	33.213	NA	1.625	15.758	NA
Burn	Pine	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	2.07	100%	2	501.702	79.398	46.028	NA	58.685	56.384	NA	NA	25.776	NA	1003.404	158.796	92.055	NA	117.371	112.768	NA	NA	51.551	NA
Burn	Grass	acres->	0.00	100%	2	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	0	0%	1	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**705.770**	**103.895**	**60.560**	**0.004**	**78.424**	**73.761**	**268**	**0.875**	**33.765**	**7.738**	**1879.920**	**226.639**	**130.412**	**0.048**	**184.642**	**155.233**	**3210**	**2.374**	**68.637**	**92.861**

WC010	Treated Area (acres) -->	5.59	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos						2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	75.159	2.048	1.505	0.004	1.048	0.965	125	0.158	0.114	13.003
Offroad	Air Compressors	G	1		28																				
Offroad	Chainsaws	G	2		28	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	11.207	6.196	0.097	0.001	0.018	0.016	30	0.050	0.385	3.705
Offroad	Chainsaws Preempt	G	1		28	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	13.546	7.490	0.118	0.002	0.021	0.020	37	0.040	0.466	4.478
Offroad	Chippers/Stump Grinders-Trailer	G	1		28	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	1164.421	31.466	20.139	0.046	15.099	13.891	1801	1.201	1.740	194.334
Offroad	Loaders, Skid Steer	D	1		28	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	16.919	3.866	17.039	0.025	1.174	1.080	1908	0.000	0.349	87.840
Offroad	Trimmers/Edgers/Brush Cutters	G	2		28	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	4.109	1.248	0.036	0.000	0.006	0.006	11	0.020	0.078	1.156
Onroad	Worker Trips-Paved Roads	G	4		28	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	35.446	3.326	3.561	0.057	2.620	0.778	5201	0.263	0.298	NA
Onroad	Worker Trips-Unpaved Roads	G	4		28	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	7.573	0.999	0.563	0.003	59.008	5.913	286	0.014	0.016	NA
Burn	Eucalyptus/Acacia	acres->	0.06	50%	3	23.230	3.341	2.010	NA	2.506	2.454	NA	0.120	1.164	NA	69.691	10.023	6.029	NA	7.517	7.361	NA	0.360	3.492	NA
Burn	Oak/Bay	acres->	0.26	50%	3	33.549	4.825	2.903	NA	3.619	3.543	NA	0.173	1.681	NA	100.647	14.475	8.708	NA	10.856	10.630	NA	0.520	5.044	NA
Burn	Pine	acres->	0.00	50%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	5.27	50%	3	426.894	67.559	39.165	NA	49.935	47.977	NA	NA	21.932	NA	1280.682	202.677	117.494	NA	149.805	143.930	NA	NA	65.797	NA
Burn	Grass	acres->	0.00	50%	3	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	3	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	3.111	0.689	12.412	0.017	2.548	0.932	1734	0.016	0.043	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	3	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.146	0.032	0.353	0.000	5.353	0.542	41	0.000	0.001	NA
Totals For Cutting/Skidding/Chipping/Trimming						**532.201**	**77.988**	**49.870**	**0.011**	**61.514**	**55.275**	**927**	**0.361**	**24.915**	**10.876**	**2782.657**	**284.535**	**188.054**	**0.154**	**255.073**	**186.063**	**11174**	**2.643**	**77.823**	**304.516**

WC011	Treated Area (acres) -->	16.59	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		83	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	222.794	6.070	4.460	0.011	3.108	2.859	371	0.468	0.339	38.545
Offroad	Chainsaws	G	2		83	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	33.220	18.367	0.288	0.004	0.052	0.048	90	0.149	1.142	10.982
Offroad	Chainsaws Preempt	G	1		83	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	40.154	22.201	0.349	0.004	0.063	0.058	109	0.119	1.380	13.275
Offroad	Chippers/Stump Grinders-Trailer	G	1		83	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	3451.676	93.276	59.698	0.135	44.758	41.178	5339	3.560	5.158	576.062
Offroad	Trimmers/Edgers/Brush Cutters	G	2		83	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	12.181	3.699	0.106	0.001	0.019	0.018	33	0.058	0.230	3.428
Onroad	Worker Trips-Paved Roads	G	4		83	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	105.073	9.861	10.556	0.168	7.765	2.307	15418	0.780	0.885	NA
Onroad	Worker Trips-Unpaved Roads	G	4		83	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	22.447	2.961	1.669	0.009	174.916	17.527	847	0.043	0.048	NA
Burn	Eucalyptus/Acacia	acres->	0.06	50%	9	8.807	1.267	0.762	NA	0.950	0.930	NA	0.046	0.441	NA	74.856	10.766	6.476	NA	8.074	7.906	NA	0.387	3.751	NA
Burn	Oak/Bay	acres->	0.77	50%	9	34.787	5.003	3.010	NA	3.752	3.674	NA	0.180	1.743	NA	295.687	42.526	25.582	NA	31.894	31.230	NA	1.528	14.818	NA
Burn	Pine	acres->	0.00	50%	9	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	15.75	50%	9	450.248	71.255	41.307	NA	52.667	50.601	NA	NA	23.132	NA	3827.109	605.666	351.111	NA	447.666	430.111	NA	NA	196.622	NA
Burn	Grass	acres->	0.00	50%	9	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	9	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	8.814	1.953	35.168	0.047	7.219	2.641	4914	0.045	0.121	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	9	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.415	0.091	1.001	0.001	15.167	1.536	116	0.001	0.003	NA
Totals For Cutting/Skidding/Chipping/Trimming						**541.765**	**79.650**	**50.263**	**0.010**	**62.782**	**56.468**	**859**	**0.293**	**25.442**	**7.738**	**8094.427**	**817.436**	**496.465**	**0.381**	**740.703**	**537.420**	**27235**	**7.137**	**224.497**	**642.291**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CONNECTED ACTION Treated Area (acres) --> 16.81

EBRPD - Wildcat Canyon Regional Park

WC005	Treated Area (acres) -->	14.72	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 years																									
Offroad	Air Compressors	G	1		74	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	198.636	5.412	3.976	0.009	2.771	2.549	331	0.417	0.302	34.366
Offroad	Chainsaws	G	2		74	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	29.618	16.375	0.257	0.003	0.047	0.043	80	0.133	1.018	9.791
Offroad	Chainsaws Preempt	G	1		74	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	35.800	19.794	0.311	0.004	0.056	0.052	97	0.106	1.230	11.835
Offroad	Chippers/Stump Grinders	D	2		74	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	101.579	26.207	316.867	0.450	9.824	9.038	45879	0.000	2.365	2077.803
Offroad	Fellers/Bunchers	D	1		74	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	112.210	34.907	336.238	0.652	10.673	9.819	57906	0.000	3.150	2621.673
Offroad	Skidders	D	2		74	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	540.621	76.856	609.144	1.058	33.842	31.135	94053	0.000	6.935	4287.384
Offroad	Trimmers/Edgers/Brush Cutters	G	2		74	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	10.860	3.298	0.094	0.001	0.017	0.016	29	0.052	0.205	3.056
Onroad	Worker Trips-Paved Roads	G	8		74	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	187.360	17.583	18.823	0.299	13.847	4.114	27492	1.391	1.577	NA
Onroad	Worker Trips-Unpaved Roads	G	8		74	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	40.026	5.279	2.976	0.017	311.899	31.254	1510	0.076	0.086	NA
Burn	Eucalyptus/Acacia	acres->	11.79	50%	8	1831.157	263.357	158.426	NA	197.518	193.403	NA	9.464	91.764	NA	13733.678	1975.181	1188.195	NA	1481.386	1450.523	NA	70.983	688.227	NA
Burn	Oak/Bay	acres->	0.58	50%	8	29.372	4.224	2.541	NA	3.168	3.102	NA	0.152	1.472	NA	220.290	31.682	19.059	NA	23.762	23.267	NA	1.139	11.039	NA
Burn	Pine	acres->	2.36	50%	8	305.998	25.299	23.191	NA	29.516	29.516	NA	1.385	13.192	NA	2294.983	189.743	173.931	NA	221.366	221.366	NA	10.391	98.937	NA
Burn	Scrub	acres->	0.00	50%	8	0.025	0.004	0.002	NA	0.003	0.003	NA	NA	0.001	NA	0.190	0.030	0.017	NA	0.022	0.021	NA	NA	0.010	NA
Burn	Grass	acres->	0.00	50%	8	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	8	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	7.777	1.724	31.030	0.042	6.370	2.330	4336	0.040	0.107	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	8	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.366	0.080	0.883	0.001	13.383	1.356	102	0.001	0.003	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**2184.620**	**295.905**	**205.830**	**0.039**	**238.014**	**227.705**	**3664**	**11.036**	**106.671**	**122.242**	**17513.993**	**2404.150**	**2701.803**	**2.537**	**2129.264**	**1786.883**	**231814**	**84.727**	**815.191**	**9045.908**

WC006	Treated Area (acres) -->	1.13	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		6	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	16.106	0.439	0.322	0.001	0.225	0.207	27	0.034	0.025	2.786
Offroad	Chainsaws	G	2		6	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.401	1.328	0.021	0.000	0.004	0.003	6	0.011	0.083	0.794
Offroad	Chainsaws Preempt	G	1		6	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.903	1.605	0.025	0.000	0.005	0.004	8	0.009	0.100	0.960
Offroad	Chippers/Stump Grinders	D	2		6	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	8.236	2.125	25.692	0.037	0.797	0.733	3720	0.000	0.192	168.470
Offroad	Fellers/Bunchers	D	1		6	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	9.098	2.830	27.263	0.053	0.865	0.796	4695	0.000	0.255	212.568
Offroad	Skidders	D	2		6	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	43.834	6.232	49.390	0.086	2.744	2.524	7626	0.000	0.562	347.626
Offroad	Trimmers/Edgers/Brush Cutters	G	2		6	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.881	0.267	0.008	0.000	0.001	0.001	2	0.004	0.017	0.248
Onroad	Worker Trips-Paved Roads	G	8		6	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	15.191	1.426	1.526	0.024	1.123	0.334	2229	0.113	0.128	NA
Onroad	Worker Trips-Unpaved Roads	G	8		6	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	3.245	0.428	0.241	0.001	25.289	2.534	122	0.006	0.007	NA
Burn	Eucalyptus/Acacia	acres->	0.92	50%	1	1073.402	154.377	92.867	NA	115.783	113.371	NA	5.548	53.791	NA	1073.402	154.377	92.867	NA	115.783	113.371	NA	5.548	53.791	NA
Burn	Oak/Bay	acres->	0.00	50%	1	1.109	0.159	0.096	NA	0.120	0.117	NA	0.006	0.056	NA	1.109	0.159	0.096	NA	0.120	0.117	NA	0.006	0.056	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.21	50%	1	50.362	7.970	4.620	NA	5.891	5.660	NA	NA	2.587	NA	50.362	7.970	4.620	NA	5.891	5.660	NA	NA	2.587	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**1142.941**	**165.527**	**119.253**	**0.039**	**129.602**	**120.828**	**3664**	**5.588**	**56.676**	**122.242**	**1227.853**	**179.426**	**206.327**	**0.208**	**155.479**	**126.776**	**19028**	**5.735**	**57.816**	**733.452**

WC011	Treated Area (acres) -->	0.96	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		5	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	13.421	0.366	0.269	0.001	0.187	0.172	22	0.028	0.020	2.322
Offroad	Chainsaws	G	2		5	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	2.001	1.106	0.017	0.000	0.003	0.003	5	0.009	0.069	0.662
Offroad	Chainsaws Preempt	G	1		5	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	2.419	1.337	0.021	0.000	0.004	0.004	7	0.007	0.083	0.800
Offroad	Chippers/Stump Grinders-Trailer	G	1		5	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	207.932	5.619	3.596	0.008	2.696	2.481	322	0.214	0.311	34.703
Offroad	Trimmers/Edgers/Brush Cutters	G	2		5	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.734	0.223	0.006	0.000	0.001	0.001	2	0.004	0.014	0.206
Onroad	Worker Trips-Paved Roads	G	4		5	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	6.330	0.594	0.636	0.010	0.468	0.139	929	0.047	0.053	NA
Onroad	Worker Trips-Unpaved Roads	G	4		5	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	1.352	0.178	0.101	0.001	10.537	1.056	51	0.003	0.003	NA
Burn	Eucalyptus/Acacia	acres->	0.96	50%	1	1116.644	160.596	96.609	NA	120.447	117.938	NA	5.771	55.958	NA	1116.644	160.596	96.609	NA	120.447	117.938	NA	5.771	55.958	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**1164.568**	**162.721**	**101.793**	**0.010**	**125.860**	**119.200**	**859**	**5.839**	**56.083**	**7.738**	**1351.920**	**170.260**	**105.510**	**0.026**	**136.977**	**122.284**	**1929**	**6.089**	**56.525**	**38.692**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CUMULATIVE ACTION Treated Area (acres) --> 1.43

EBRPD - Wildcat Canyon Regional Park

			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Access Road Construction: Temporary Access (1st, 2nd, or 3rd Year of Action)																									
Offroad	Dozers (Crawler Tractors)	D	1	3	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	4.797	1.277	7.591	0.008	0.669	0.615	650	0.000	0.115	29.843
Offroad	Loaders, Rubber Tired	D	1	3	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	3.820	0.893	5.535	0.006	0.483	0.444	542	0.000	0.081	24.844
Onroad	Dump Truck Trips-Paved Roads	D	1	3	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	1.214	0.268	6.613	0.009	1.301	0.444	932	0.009	0.023	NA
Onroad	Dump Truck Trips-Unpaved Roads	D	1	3	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.131	0.029	0.352	0.000	5.352	0.541	40	0.000	0.001	NA
Onroad	Water Truck-Paved Roads	D	1	3	0.219	0.048	1.134	0.002	0.217	0.074	158	0.001	0.004	NA	0.658	0.145	3.402	0.005	0.652	0.223	475	0.004	0.012	NA
Onroad	Water Truck-Unpaved Roads	D	1	3	0.044	0.010	0.117	0.000	1.784	0.180	13	0.000	0.000	NA	0.131	0.029	0.352	0.000	5.352	0.541	40	0.000	0.001	NA
Onroad	Worker Trips-Paved Roads	G	4	3	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	3.798	0.356	0.382	0.006	0.281	0.083	557	0.028	0.032	NA
Onroad	Worker Trips-Unpaved Roads	G	4	3	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.811	0.107	0.060	0.000	6.322	0.634	31	0.002	0.002	NA
Dust	Treated Area (acres) --> (acres)		0.25	3	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	7.500	0.750	NA	NA	NA	NA
Totals For Access Road Construction (WC007a, 007b, & 008)					**5.120**	**1.035**	**8.096**	**0.012**	**9.304**	**1.425**	**1089**	**0.014**	**0.089**	**18.229**	**15.360**	**3.105**	**24.288**	**0.035**	**27.911**	**4.276**	**3268**	**0.043**	**0.266**	**54.686**

WC001	Treated Area (acres) -->	0.23	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	2		1	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Fellers/Bunchers	D	1		1	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428
Offroad	Skidders	D	2		1	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	8		1	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	8		1	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.03	50%	1	12.251	1.762	1.060	NA	1.321	1.294	NA	0.063	0.614	NA	12.251	1.762	1.060	NA	1.321	1.294	NA	0.063	0.614	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.20	50%	1	49.231	7.791	4.517	NA	5.759	5.533	NA	NA	2.529	NA	49.231	7.791	4.517	NA	5.759	5.533	NA	NA	2.529	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**79.550**	**12.573**	**27.246**	**0.039**	**14.889**	**8.508**	**3664**	**0.098**	**3.386**	**122.242**	**79.550**	**12.573**	**27.246**	**0.039**	**14.889**	**8.508**	**3664**	**0.098**	**3.386**	**122.242**

WC002	Treated Area (acres) -->	0.31	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 3 mos																									
Offroad	Air Compressors	G	1		2	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	5.369	0.146	0.107	0.000	0.075	0.069	9	0.011	0.008	0.929
Offroad	Chainsaws	G	2		2	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1		2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	D	2		2	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Fellers/Bunchers	D	1		2	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	3.033	0.943	9.088	0.018	0.288	0.265	1565	0.000	0.085	70.856
Offroad	Skidders	D	2		2	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	14.611	2.077	16.463	0.029	0.915	0.841	2542	0.000	0.187	115.875
Offroad	Trimmers/Edgers/Brush Cutters	G	2		2	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	8		2	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.043	NA
Onroad	Worker Trips-Unpaved Roads	G	8		2	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.002	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.31	50%	1	75.718	11.983	6.947	NA	8.857	8.510	NA	NA	3.890	NA	75.718	11.983	6.947	NA	8.857	8.510	NA	NA	3.890	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**93.787**	**15.003**	**28.617**	**0.039**	**16.666**	**10.191**	**3664**	**0.035**	**4.133**	**122.242**	**110.769**	**17.783**	**46.031**	**0.073**	**21.841**	**11.380**	**6737**	**0.064**	**4.361**	**244.484**

WC007a	Treated Area (acres) -->	0.37	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		2	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	5.369	0.146	0.107	0.000	0.075	0.069	9	0.011	0.008	0.929
Offroad	Chainsaws	G	2		2	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.800	0.443	0.007	0.000	0.001	0.001	2	0.004	0.028	0.265
Offroad	Chainsaws Preempt	G	1		2	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.968	0.535	0.008	0.000	0.002	0.001	3	0.003	0.033	0.320
Offroad	Chippers/Stump Grinders	D	2		2	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	2.745	0.708	8.564	0.012	0.266	0.244	1240	0.000	0.064	56.157
Offroad	Fellers/Bunchers	D	1		2	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	3.033	0.943	9.088	0.018	0.288	0.265	1565	0.000	0.085	70.856
Offroad	Loaders, Skid Steer	D	1		2	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	1.208	0.276	1.217	0.002	0.084	0.077	136	0.000	0.025	6.274
Offroad	Skidders	D	2		2	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	14.611	2.077	16.463	0.029	0.915	0.841	2542	0.000	0.187	115.875
Offroad	Trimmers/Edgers/Brush Cutters	G	2		2	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.294	0.089	0.003	0.000	0.000	0.000	1	0.001	0.006	0.083
Onroad	Worker Trips-Paved Roads	G	8		2	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	5.064	0.475	0.509	0.008	0.374	0.111	743	0.038	0.043	NA
Onroad	Worker Trips-Unpaved Roads	G	8		2	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	1.082	0.143	0.080	0.000	8.430	0.845	41	0.002	0.002	NA
Burn	Eucalyptus/Acacia	acres->	0.37	50%	1	434.469	62.485	37.589	NA	46.864	45.888	NA	2.246	21.772	NA	434.469	62.485	37.589	NA	46.864	45.888	NA	2.246	21.772	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**453.141**	**65.644**	**59.867**	**0.040**	**54.715**	**47.607**	**3732**	**2.280**	**22.027**	**125.379**	**470.728**	**68.562**	**77.891**	**0.075**	**59.932**	**48.835**	**6873**	**2.310**	**22.268**	**250.758**

WC007b	Treated Area (acres) -->	0.27	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders	D	2		1	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078	1.373	0.354	4.282	0.006	0.133	0.122	620	0.000	0.032	28.078
Offroad	Fellers/Bunchers	D	1		1	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428
Offroad	Loaders, Skid Steer	D	1		1	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137
Offroad	Skidders	D	2		1	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938	7.306	1.039	8.232	0.014	0.457	0.421	1271	0.000	0.094	57.938
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	8		1	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA	2.532	0.238	0.254	0.004	0.187	0.056	372	0.019	0.021	NA
Onroad	Worker Trips-Unpaved Roads	G	8		1	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA	0.541	0.071	0.040	0.000	4.215	0.422	20	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.27	50%	1	318.890	45.863	27.589	NA	34.397	33.680	NA	1.648	15.980	NA	318.890	45.863	27.589	NA	34.397	33.680	NA	1.648	15.980	NA
Burn	Oak/Bay	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For	**Cutting/Skidding/Chipping/Trimming**					**337.562**	**49.021**	**49.868**	**0.040**	**42.248**	**35.400**	**3732**	**1.683**	**16.235**	**125.379**	**337.562**	**49.021**	**49.868**	**0.040**	**42.248**	**35.400**	**3732**	**1.683**	**16.235**	**125.379**

WC008	Treated Area (acres) -->	0.23	No. of Units	% Burned or	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	% Removed	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Cutting/Skidding/Chipping/Trimming: Up to 6 mos																									
Offroad	Air Compressors	G	1		1	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464
Offroad	Chainsaws	G	2		1	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132	0.400	0.221	0.003	0.000	0.001	0.001	1	0.002	0.014	0.132
Offroad	Chainsaws Preempt	G	1		1	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160
Offroad	Chippers/Stump Grinders-Trailer	G	1		1	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941	41.586	1.124	0.719	0.002	0.539	0.496	64	0.043	0.062	6.941
Offroad	Loaders, Skid Steer	D	1		1	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137	0.604	0.138	0.609	0.001	0.042	0.039	68	0.000	0.012	3.137
Offroad	Trimmers/Edgers/Brush Cutters	G	2		1	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041	0.147	0.045	0.001	0.000	0.000	0.000	0	0.001	0.003	0.041
Onroad	Worker Trips-Paved Roads	G	4		1	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA
Onroad	Worker Trips-Unpaved Roads	G	4		1	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA	0.270	0.036	0.020	0.000	2.107	0.211	10	0.001	0.001	NA
Burn	Eucalyptus/Acacia	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Oak/Bay	acres->	0.23	50%	1	88.912	12.787	7.692	NA	9.591	9.391	NA	0.460	4.456	NA	88.912	12.787	7.692	NA	9.591	9.391	NA	0.460	4.456	NA
Burn	Pine	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	0.000	0.000	NA
Burn	Scrub	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	0.000	NA
Burn	Grass	acres->	0.00	50%	1	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	NA	NA	NA	NA
Onroad	Log/Chip Haul Truck Trips-Paved Roa	D	1	50%	1	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA	1.037	0.230	4.137	0.006	0.849	0.311	578	0.005	0.014	NA
Onroad	Log/Chip Haul Truck Trips-Unpaved	D	1	50%	1	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA	0.049	0.011	0.118	0.000	1.784	0.181	14	0.000	0.000	NA
Totals For Cutting/Skidding/Chipping/Trimming						**137.440**	**15.051**	**13.485**	**0.011**	**15.045**	**10.692**	**927**	**0.527**	**4.593**	**10.876**	**137.440**	**15.051**	**13.485**	**0.011**	**15.045**	**10.692**	**927**	**0.527**	**4.593**	**10.876**

Offroad Source: CARB OFFROAD 2007
Onroad Source: CARB EMFAC 2011
Dust Source: MRI 1996
No. of Units Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #14; and CDM Smith estimate.
No. of Days Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #13.
Treated Area (acres) --> Acerage Source: FEMA EIS - Data Needs Responses - Jan 21, 2011. Question #12.
Onroad Haul Truck distance per trip estimated to be 75 miles one way; distance to Woodland, CA.
*Optional - hauling of logs or chips only if excess material is generated from fuel reduction activity.

CUMULATIVE ACTIONS NOT DIRECTLY RELATED TO FUEL REDUCTION

1. Anthony Chabot Equestrian Center			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Connection of facility to sanitary sewer.																								
Offroad	Tractors/Loaders/Backhoes	D	1	125	1.073	0.211	1.388	0.002	0.116	0.107	157	0.000	0.019	7.198	134.130	26.396	173.524	0.231	14.558	13.394	19662	0.000	2.382	899.743
Offroad	Rubber Tired Loaders	D	1	125	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	159.170	37.215	230.623	0.265	20.131	18.521	22585	0.000	3.358	1035.146
Offroad	Air Compressors	D	1	125	1.803	0.048	0.035	0.000	0.025	0.023	3	0.004	0.003	0.312	225.393	6.006	4.415	0.011	3.148	2.896	375	0.468	0.336	38.990
Offroad	Concrete/Industrial Saws	D	1	125	3.876	0.101	0.074	0.000	0.054	0.050	6	0.006	0.006	0.672	484.530	12.605	9.275	0.023	6.796	6.253	811	0.759	0.707	83.941
Offroad	Cement and Mortar Mixers	D	1	125	0.860	0.027	0.013	0.000	0.011	0.010	1	0.001	0.002	0.142	107.492	3.421	1.616	0.005	1.329	1.223	162	0.169	0.192	17.808
Offroad	Welders	D	1	125	2.352	0.064	0.038	0.000	0.030	0.028	4	0.003	0.004	0.392	294.034	8.050	4.751	0.012	3.803	3.499	454	0.366	0.450	49.061
Onroad	Dump Truck Trips-Paved Roads	D	1	125	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	50.563	11.162	275.552	0.374	54.204	18.493	38842	0.358	0.960	NA
Onroad	Worker Trips-Paved Roads	G	6	125	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA	237.365	22.275	23.847	0.379	17.542	5.212	34829	1.762	1.999	NA
Dust	Treated Area (acres) --> (acres)		0.25	125	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	312.500	31.250	NA	NA	NA	NA
Totals For No. 1					**13.541**	**1.017**	**5.789**	**0.010**	**3.472**	**0.806**	**942**	**0.031**	**0.083**	**16.998**	**1692.675**	**127.130**	**723.602**	**1.299**	**434.012**	**100.740**	**117721**	**3.881**	**10.383**	**2124.689**

2. Claremont Canyon Stonewall/Panoramic			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
New staging area for public access																								
Offroad	Skid Steer Loaders	D	2	70	5.913	0.095	0.145	0.001	0.005	0.004	63	0.012	0.005	3.741	413.890	6.624	10.165	0.053	0.335	0.309	4379	0.812	0.372	261.874
Onroad	Dump Truck Trips-Paved Roads	D	1	70	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	28.315	6.251	154.309	0.210	30.354	10.356	21751	0.200	0.538	NA
Onroad	Worker Trips-Paved Roads	G	4	70	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	88.616	8.316	8.903	0.141	6.549	1.946	13003	0.658	0.746	NA
Dust	Treated Area (acres) --> (acres)		0.25	70	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	175.000	17.500	NA	NA	NA	NA
Totals For No. 2					**7.583**	**0.303**	**2.477**	**0.006**	**3.032**	**0.430**	**559**	**0.024**	**0.024**	**3.741**	**530.822**	**21.191**	**173.377**	**0.404**	**212.239**	**30.111**	**39133**	**1.671**	**1.655**	**261.874**

3. I-80/San Pablo Dam Road			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Interchange improvements																								
Offroad	Tractors/Loaders/Backhoes	D	1	375	1.073	0.211	1.388	0.002	0.116	0.107	157	0.000	0.019	7.198	402.389	79.188	520.571	0.692	43.675	40.181	58987	0.000	7.145	2699.228
Offroad	Rubber Tired Loaders	D	1	375	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	477.509	111.645	691.869	0.795	60.393	55.562	67755	0.000	10.074	3105.438
Offroad	Air Compressors	D	3	375	5.409	0.144	0.106	0.000	0.076	0.069	9	0.011	0.008	0.936	2028.541	54.057	39.733	0.096	28.329	26.062	3379	4.210	3.023	350.911
Offroad	Concrete/Industrial Saws	D	4	375	15.505	0.403	0.297	0.001	0.217	0.200	26	0.024	0.023	2.686	5814.354	151.259	111.302	0.277	81.555	75.031	9729	9.109	8.487	1007.291
Offroad	Cranes	D	1	375	1.457	0.370	2.219	0.002	0.199	0.183	202	0.000	0.033	9.268	546.490	138.815	832.080	0.889	74.449	68.493	75751	0.000	12.525	3475.438
Offroad	Generator Sets	D	3	375	3.070	0.073	0.045	0.000	0.003	0.002	5	0.004	0.004	0.522	1151.163	27.257	16.976	0.053	0.985	0.906	1865	1.633	1.524	195.706
Offroad	Other Construction Equipment	D	3	375	0.402	0.077	0.480	0.001	0.019	0.017	66	0.000	0.007	3.006	150.669	28.724	179.881	0.384	6.979	6.421	24676	0.000	2.592	1127.084
Offroad	Pavers	D	1	375	1.326	0.364	2.191	0.002	0.191	0.176	181	0.000	0.033	8.328	497.066	136.356	821.443	0.798	71.659	65.926	68015	0.000	12.303	3123.165
Offroad	Paving Equipment	D	1	375	2.104	0.055	0.040	0.000	0.029	0.027	4	0.004	0.003	0.364	788.875	20.504	15.029	0.038	11.055	10.171	1319	1.336	1.151	136.602
Offroad	Skid Steer Loaders	D	2	375	5.913	0.095	0.145	0.001	0.005	0.004	63	0.012	0.005	3.741	2217.269	35.485	54.454	0.285	1.797	1.653	23458	4.353	1.992	1402.899
Offroad	Rollers	D	2	375	1.793	0.435	2.760	0.003	0.236	0.217	260	0.000	0.039	11.932	672.512	163.226	1035.046	1.145	88.328	81.262	97636	0.000	14.728	4474.315
Offroad	Crawler Tractors	D	1	375	1.599	0.426	2.530	0.003	0.223	0.205	217	0.000	0.038	9.948	599.666	159.657	948.916	0.953	83.616	76.927	81242	0.000	14.406	3730.369
Offroad	Asphalt Pavers	D	1	375	10.885	0.284	0.183	0.000	0.144	0.132	17	0.011	0.016	1.830	4081.971	106.621	68.650	0.163	53.871	49.561	6426	4.132	5.977	686.333
Offroad	Welders	D	2	375	4.705	0.129	0.076	0.000	0.061	0.056	7	0.006	0.007	0.785	1764.203	48.299	28.504	0.069	22.820	20.995	2725	2.197	2.701	294.366
Onroad	Dump Truck Trips-Paved Roads	D	4	375	1.618	0.357	8.818	0.012	1.735	0.592	1243	0.011	0.031	NA	606.757	133.945	3306.621	4.492	650.447	221.922	466102	4.291	11.518	NA
Onroad	Worker Trips-Paved Roads	G	20	375	6.330	0.594	0.636	0.010	0.468	0.139	929	0.047	0.053	NA	2373.645	222.753	238.473	3.790	175.424	52.124	348293	17.618	19.985	NA
Dust	Treated Area (acres) --> (acres)		5	375	NA	NA	NA	NA	50.000	5.000	NA	NA	NA	NA	NA	NA	NA	NA	18750.000	1875.000	NA	NA	NA	NA
Totals For No. 3					**64.462**	**4.314**	**23.759**	**0.040**	**53.881**	**7.275**	**3566**	**0.130**	**0.347**	**68.824**	**24173.080**	**1617.793**	**8909.546**	**14.919**	**20205.382**	**2728.195**	**1337360**	**48.880**	**130.129**	**25809.145**

4. Lake Chabot West Shore Trail			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Asphalt pavement repairs																								
Offroad	Skid Steer Loaders	D	2	30	5.913	0.095	0.145	0.001	0.005	0.004	63	0.012	0.005	3.741	177.382	2.839	4.356	0.023	0.144	0.132	1877	0.348	0.159	112.232
Offroad	Asphalt Pavers	D	2	30	21.771	0.569	0.366	0.001	0.287	0.264	34	0.022	0.032	3.660	653.115	17.059	10.984	0.026	8.619	7.930	1028	0.661	0.956	109.813
Offroad	Rollers	D	2	30	1.793	0.435	2.760	0.003	0.236	0.217	260	0.000	0.039	11.932	53.801	13.058	82.804	0.092	7.066	6.501	7811	0.000	1.178	357.945
Onroad	Dump Truck Trips-Paved Roads	D	1	30	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	12.135	2.679	66.132	0.090	13.009	4.438	9322	0.086	0.230	NA
Onroad	Worker Trips-Paved Roads	G	4	30	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	37.978	3.564	3.816	0.061	2.807	0.834	5573	0.282	0.320	NA
Dust	Treated Area (acres) --> (acres)		0.25	30	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	75.000	7.500	NA	NA	NA	NA
Totals For No. 4					**31.147**	**1.307**	**5.603**	**0.010**	**3.555**	**0.911**	**854**	**0.046**	**0.095**	**19.333**	**934.411**	**39.199**	**168.092**	**0.291**	**106.645**	**27.335**	**25610**	**1.377**	**2.844**	**579.990**

5. Miller-Knox Regional Shoreline			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Trail gap completion and new trail construction																								
Offroad	Skid Steer Loaders	D	2	30	5.913	0.095	0.145	0.001	0.005	0.004	63	0.012	0.005	3.741	177.382	2.839	4.356	0.023	0.144	0.132	1877	0.348	0.159	112.232
Onroad	Worker Trips-Paved Roads	G	4	30	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	37.978	3.564	3.816	0.061	2.807	0.834	5573	0.282	0.320	NA
Dust	Treated Area (acres) --> (acres)		0.25	30	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	75.000	7.500	NA	NA	NA	NA
Totals For No. 5					**7.179**	**0.213**	**0.272**	**0.003**	**2.598**	**0.282**	**248**	**0.021**	**0.016**	**3.741**	**215.360**	**6.403**	**8.172**	**0.083**	**77.951**	**8.466**	**7449**	**0.630**	**0.479**	**112.232**

6. Shepard Canyon			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Fuel management by modification of vegetation																								
Offroad	Skid Steer Loaders	D	1	125	2.956	0.047	0.073	0.000	0.002	0.002	31	0.006	0.003	1.871	369.545	5.914	9.076	0.048	0.299	0.276	3910	0.725	0.332	233.817
Offroad	Chainsaws	D	2	125	0.007	0.002	0.000	0.000	0.000	0.000	0	0.000	0.000	0.002	0.816	0.204	0.006	0.000	0.004	0.003	2	0.003	0.013	0.196
Onroad	Worker Trips-Paved Roads	G	4	125	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	158.243	14.850	15.898	0.253	11.695	3.475	23220	1.175	1.332	NA
Dust	Treated Area (acres) --> (acres)		0.25	125	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	312.500	31.250	NA	NA	NA	NA
Totals For No. 6					**4.229**	**0.168**	**0.200**	**0.002**	**2.596**	**0.280**	**217**	**0.015**	**0.013**	**1.872**	**528.604**	**20.969**	**24.980**	**0.300**	**324.498**	**35.004**	**27131**	**1.903**	**1.677**	**234.012**

7. Tilden - Golden Gate Live Steamers			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Construction of visitors station																								
Offroad	Skid Steer Loaders	D	1	60	2.956	0.047	0.073	0.000	0.002	0.002	31	0.006	0.003	1.871	177.382	2.839	4.356	0.023	0.144	0.132	1877	0.348	0.159	112.232
Offroad	Air Compressors	D	1	60	1.803	0.048	0.035	0.000	0.025	0.023	3	0.004	0.003	0.312	108.189	2.883	2.119	0.005	1.511	1.390	180	0.225	0.161	18.715
Onroad	Worker Trips-Paved Roads	G	4	60	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	75.957	7.128	7.631	0.121	5.614	1.668	11145	0.564	0.640	NA
Dust	Treated Area (acres) --> (acres)		0.25	60	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	150.000	15.000	NA	NA	NA	NA
Totals For No. 7					**6.025**	**0.214**	**0.235**	**0.002**	**2.621**	**0.303**	**220**	**0.019**	**0.016**	**2.182**	**361.527**	**12.850**	**14.107**	**0.149**	**157.268**	**18.190**	**13202**	**1.137**	**0.960**	**130.947**

8. Tilden Environmental Education Center			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Improvements to sanitary sewer system.																								
Offroad	Tractors/Loaders/Backhoes	D	1	125	1.073	0.211	1.388	0.002	0.116	0.107	157	0.000	0.019	7.198	134.130	26.396	173.524	0.231	14.558	13.394	19662	0.000	2.382	899.743
Offroad	Rubber Tired Loaders	D	1	125	1.273	0.298	1.845	0.002	0.161	0.148	181	0.000	0.027	8.281	159.170	37.215	230.623	0.265	20.131	18.521	22585	0.000	3.358	1035.146
Offroad	Air Compressors	D	1	125	1.803	0.048	0.035	0.000	0.025	0.023	3	0.004	0.003	0.312	225.393	6.006	4.415	0.011	3.148	2.896	375	0.468	0.336	38.990
Offroad	Concrete/Industrial Saws	D	1	125	3.876	0.101	0.074	0.000	0.054	0.050	6	0.006	0.006	0.672	484.530	12.605	9.275	0.023	6.796	6.253	811	0.759	0.707	83.941
Offroad	Cement and Mortar Mixers	D	1	125	0.860	0.027	0.013	0.000	0.011	0.010	1	0.001	0.002	0.142	107.492	3.421	1.616	0.005	1.329	1.223	162	0.169	0.192	17.808
Offroad	Welders	D	1	125	2.352	0.064	0.038	0.000	0.030	0.028	4	0.003	0.004	0.392	294.034	8.050	4.751	0.012	3.803	3.499	454	0.366	0.450	49.061
Onroad	Dump Truck Trips-Paved Roads	D	1	125	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	50.563	11.162	275.552	0.374	54.204	18.493	38842	0.358	0.960	NA
Onroad	Worker Trips-Paved Roads	G	6	125	1.899	0.178	0.191	0.003	0.140	0.042	279	0.014	0.016	NA	237.365	22.275	23.847	0.379	17.542	5.212	34829	1.762	1.999	NA
Dust	Treated Area (acres) --> (acres)		0.25	125	NA	NA	NA	NA	2.500	0.250	NA	NA	NA	NA	NA	NA	NA	NA	312.500	31.250	NA	NA	NA	NA
Totals For No. 8					**13.541**	**1.017**	**5.789**	**0.010**	**3.472**	**0.806**	**942**	**0.031**	**0.083**	**16.998**	**1692.675**	**127.130**	**723.602**	**1.299**	**434.012**	**100.740**	**117721**	**3.881**	**10.383**	**2124.689**

9. Tilden Regional Golf Course			No. of Units	Total	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel	or No. of Trips	No. of Days	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Modification of Wildcat Creek																								
Offroad	Skid Steer Loaders	D	2	70	5.913	0.095	0.145	0.001	0.005	0.004	63	0.012	0.005	3.741	413.890	6.624	10.165	0.053	0.335	0.309	4379	0.812	0.372	261.874
Offroad	Tractors/Loaders/Backhoes	D	1	70	1.073	0.211	1.388	0.002	0.116	0.107	157	0.000	0.019	7.198	75.113	14.782	97.173	0.129	8.153	7.500	11011	0.000	1.334	503.856
Onroad	Dump Truck Trips-Paved Roads	D	1	70	0.405	0.089	2.204	0.003	0.434	0.148	311	0.003	0.008	NA	28.315	6.251	154.309	0.210	30.354	10.356	21751	0.200	0.538	NA
Onroad	Worker Trips-Paved Roads	G	4	70	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	88.616	8.316	8.903	0.141	6.549	1.946	13003	0.658	0.746	NA
Dust	Treated Area (acres) --> (acres)		5	70	NA	NA	NA	NA	50.000	5.000	NA	NA	NA	NA	NA	NA	NA	NA	3500.000	350.000	NA	NA	NA	NA
Totals For No. 9					**8.656**	**0.514**	**3.865**	**0.008**	**50.648**	**5.287**	**716**	**0.024**	**0.043**	**10.939**	**605.934**	**35.973**	**270.550**	**0.534**	**3545.391**	**370.111**	**50144**	**1.671**	**2.989**	**765.730**

10. University of Califorina, Berkeley

Long-range plan for expansion of Hill Campus facilities

This project has not been scheduled, and is currently too speculative to be addressed quantitatively.

11. EBMUD			No. of Units or No. of Trips	Total No. of Days	Emission Rates (lbs/day), based on 8 hrs/day									(gal/day)	Activity Total Emission (lbs)									(gal)
Activity	Equipment Type	Fuel			CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	Fuel
Selective removal of 1000 eucalyptus trees per yea		r																						
Offroad	Air Compressors	G	1	125	2.684	0.073	0.054	0.000	0.037	0.034	4	0.006	0.004	0.464	335.533	9.142	6.717	0.016	4.680	4.306	558	0.704	0.511	58.050
Offroad	Chainsaws	G	1	125	0.200	0.111	0.002	0.000	0.000	0.000	1	0.001	0.007	0.066	25.015	13.831	0.217	0.003	0.039	0.036	68	0.112	0.860	8.270
Offroad	Chainsaws Preempt	G	1	125	0.484	0.267	0.004	0.000	0.001	0.001	1	0.001	0.017	0.160	60.473	33.435	0.525	0.007	0.095	0.088	163	0.180	2.078	19.992
Offroad	Chippers/Stump Grinders	D	1	125	0.686	0.177	2.141	0.003	0.066	0.061	310	0.000	0.016	14.039	85.793	22.134	267.624	0.380	8.297	7.633	38749	0.000	1.997	1754.901
Offroad	Fellers/Bunchers	D	1	125	1.516	0.472	4.544	0.009	0.144	0.133	783	0.000	0.043	35.428	189.544	58.965	567.969	1.101	18.029	16.587	97814	0.000	5.320	4428.502
Offroad	Skidders	D	1	125	3.653	0.519	4.116	0.007	0.229	0.210	635	0.000	0.047	28.969	456.605	64.912	514.480	0.894	28.583	26.296	79437	0.000	5.857	3621.101
Onroad	Worker Trips-Paved Roads	G	4	125	1.266	0.119	0.127	0.002	0.094	0.028	186	0.009	0.011	NA	158.243	14.850	15.898	0.253	11.695	3.475	23220	1.175	1.332	NA
Onroad	Log/Chip Haul Truck Trips-Paved Road	D	1	50	1.037	0.230	4.137	0.006	0.849	0.311	578	NA	NA	NA	51.846	11.490	206.869	0.279	42.464	15.536	28904	NA	NA	NA
Totals For No. 11					**2.303**	**0.349**	**4.265**	**0.008**	**0.943**	**0.339**	**764**	**0.009**	**0.011**	**0.000**	**1363.053**	**228.759**	**1580.300**	**2.931**	**113.883**	**73.957**	**268912**	**2.170**	**17.955**	**9890.816**

GRAND TOTAL - CUMULATIVE ACTIONS NOT DIRECTLY RELATED TO FUEL REDUCTION, LBS	32098.14	2237.40	12596.33	22.21	25611.28	3492.85	2004384	67.20	179.46	42034
GRAND TOTAL - CUMULATIVE ACTIONS NOT DIRECTLY RELATED TO FUEL REDUCTION, TONS or METRIC TONS	**16.049**	**1.119**	**6.298**	**0.011**	**12.806**	**1.746**	**909.169**	**0.030**	**0.081**	**21.017**

CUMULATIVE ACTIONS NOT DIRECTLY RELATED TO FUEL REDUCTION - Summary

		Activity Total Emission (tons)						Activity Total (metric tons)			
Facility	Project	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	N2O	CH4	CO2eq
1. Anthony Chabot Equestrian Center	Connection of facility to sanitary sewer.	0.85	0.06	0.36	0.00	0.22	0.05	53.40	0.002	0.005	54.04
2. Claremont Canyon Stonewall/Panoramic	New staging area for public access	0.27	0.01	0.09	0.00	0.11	0.02	17.75	0.001	0.001	18.00
3. I-80/San Pablo Dam Road	Interchange improvements	12.09	0.81	4.45	0.01	10.10	1.36	606.61	0.022	0.059	614.73
4. Lake Chabot West Shore Trail	Asphalt pavement repairs	0.47	0.02	0.08	0.00	0.05	0.01	11.62	0.001	0.001	11.84
5. Miller-Knox Regional Shoreline	Trail gap completion and new trail construction	0.11	0.00	0.00	0.00	0.04	0.00	3.38	0.000	0.000	3.47
6. Shepard Canyon	Fuel management by modification of vegetation	0.26	0.01	0.01	0.00	0.16	0.02	12.31	0.001	0.001	12.59
7. Tilden - Golden Gate Live Steamers	Construction of visitors station	0.18	0.01	0.01	0.00	0.08	0.01	5.99	0.001	0.000	6.16
8. Tilden Environmental Education Center	Improvements to sanitary sewer system.	0.85	0.06	0.36	0.00	0.22	0.05	53.40	0.002	0.005	54.04
9. Tilden Regional Golf Course	Modification of Wildcat Creek	0.30	0.02	0.14	0.00	1.77	0.19	22.74	0.001	0.001	23.01
10. University of Califorina, Berkeley	Long-range plan for expansion of Hill Campus facilities	Not calculated, no schedule - too speculative at this time.						Not calculated - too speculative			
11. EBMUD	Selective removal of 1000 eucalyptus trees per year	0.68	0.11	0.79	0.00	0.06	0.04	121.98	0.001	0.008	122.45
TOTALS		16.05	1.12	6.30	0.01	12.81	1.75	**909.17**	**0.030**	**0.081**	**920.33**

Category	Total Emission (tons)					
	CO	VOC	NOx	SOx	PM10	PM2.5
Other Cumulative Actions						
Offroad	13.89	0.86	3.90	0.01	0.41	0.38
Onroad	2.16	0.26	2.40	0.01	0.57	0.19
Dust	-	-	-	-	11.83	1.18
Burn	-	-	-	-	-	-
Cumulative Actions Totals	**16.05**	**1.12**	**6.30**	**0.01**	**12.81**	**1.75**

Total Emissions (metric tons)			
CO_2	N_2O	CH_4	CO_2eq
392.89	0.02	0.06	399.21
516.28	0.01	0.02	521.12
-	-	-	-
-	-	-	-
909.17	**0.03**	**0.08**	**920.33**

APPENDIX E IMPORTANT VIEWPOINTS MAPS AND SURVEY LOGS

General	
Date: 2/8/11	**Time:** 14:00
Critical Public View	
CPV ID: CPV1	**Location:** Car pull-off from Grizzly Peak Blvd of Panoramic view of bay, Strawberry Canyon, and City.
Proximity to Proposed Action (miles): Superior position above Strawberry Canyon (approx. 10-feet from beginning of treatment unit). Treatment unit is w/in foreground.	**Angle of Observation:** In front of viewing position (~25-degrees to 35-degrees down).
Duration of View: Variable. Transient for bikers & drivers. Prolonged for people parking to enjoy the view.	**View Classification:** Class of Views
Landscape Type: Panoramic	**Landscape Analysis Factors:** Expansive Scale, Contrast (natural landscape in fore- and mid-ground, and city scape and bay in background).
Visual Sensitivity	
Level: High **Indicators:** Recreators. Treatment unit is adjacent to road used to access numerous recreation areas and designated scenic turnout that is heavily used by people to look at the view of the bay.	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Rolling hills; Steep; Prominent; Concave; River valley (stream not visible); Angular jagged silhouette of mountains at skyline; Water prominent in view (edge of water ~ 5 miles)	Amorphous; Contiguous; Groups of trees, Linear; Amebic (grassy areas); Directional	Rectangular; institutional; Isolated; Cubic (UCB buildings); Linear (roads); Transmission Lines
Line	Horizontal lines	Flowing; Contiguous; Converging	Horizontal (buildings); Vertical (trunks); Bold; Angular; Gossimer (transmission lines)
Color	N/A (masked by veg)	Mosaic of greens (blue-green, emerald, spring)	Contrasting Values; Greyish; Chroma
Texture	N/A (masked by veg)	Feathery (Euc. Canopies); Smooth; Medium	Coarse; Rough; Smooth (buildings)
Pattern/ Distribution	Convergent	Clumped distribution of veg; Lines at drainages	Isolated; Intentional

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Predominately natural landscape, structure glare exists (at 15:00). Structures noticeable w/o being pointed out, but subordinate over entire view. Some encroachment of structures in natural landscape which are likely more noticeable in the afternoon.	**Coherence (Unity)[1]**: 1 – Coherent mosaic of color, line, texture. Natural and irregular distribution (unplanned distribution).
Visual Access: Unimpeded access to panoramic views.	**VMC:** 1
Notes	
Numerous different people visiting the CPV to look at view of bay.	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/8/11	**Time:** 16:30
Critical Public View	
CPV ID: CPV2	**Location:** On trail at staircase access point, adjacent to Summit Road across from residences.
Proximity to Proposed Action (miles): Within treatment unit, contains views of other distant treatment units.	**Angle of Observation:** Horizontal.
Duration of View: Indeterminate. Transient view for hikers.	**View Classification:** Continuum of views
Landscape Type: Framed	**Landscape Analysis Factors:** Framed view; Trending towards focal; Line of the path draws views.
Visual Sensitivity	
Level: High **Indicators:** Recreators on trail; Residences directly across Summit Street have views of area.	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Moderate peaks & valleys covered with vegetation; Rolling landscape in foreground.	Large, mature trees (pine, eucalyptus) Detail landscape; distinct; definite.	High-density residential homes across street. Street to the west. Golf course to the east (not in view). Trail through treatment unit.
Line	Diagonal ridges; skyline is shaped by vegetation.	Predominately vertical tree trunks; Tall; regular	Homes - rectilinear; horizontal – trail & street. Serpentine – trail.
Color	N/A	Green mosaic (gray, spring). Contrasting	Brown, greyish; Wood construction homes blends with surrounding landscape. Trail is brown.
Texture	N/A	Soft – grass and tree canopy; Rough – tree trunks; Contrasting between trunks, leaves & needles in foreground; Texture more even in background.	Path – granular; Structures - smooth
Pattern/ Distribution	Natural	Irregular distribution in groves of different species.	Regular siting; small lots; high-density residential.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 1 – Border of different land types – natural, park-like setting; disturbed (residential).	**Coherence (Unity)[1]**: 1 – No distracting disturbance of features in the landscape.
Visual Access: Access via trail, road, and residences across street.	**VMC:** 1
Notes	
Uni-directional experience. Framed view.	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/9/11	**Time:** 11:00
Critical Public View	
CPV ID: CPV3	**Location:** Upper parking lot pull-out above Lake Chabot
Proximity to Proposed Action (miles): Within treatment unit.	**Angle of Observation:** 360-degrees
Duration of View: Varies from prolonged (resident) to transient (recreators).	**View Classification:** Class of views
Landscape Type: Panoramic	**Landscape Analysis Factors:** Contrast (natural landscape & houses); expansive scale.
Visual Sensitivity	
Level: High **Indicators:** Recreators and residents in nearby hills.	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Predominately rolling hills	Mosaic of predominately shrubs with dispersed patches of trees; patches of open grassland.	High-density residential; Communication tower; trails.
Line	Variable; diagonal (predominately); undulating ridgetops.	Lines of trees in micro-depressions & drainages; some small patches of trees.	Variable; Linear (trails); Rectangular (buildings).
Color	N/A	Mosaic of greens; Grey (dead brush).	Mosaic of browns; grey
Texture	N/A	Soft	Smooth
Pattern/ Distribution	Natural	Clumped; Linear	Planned community; clumped along south & west side.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2	**Coherence (Unity)[1]**: 1
Visual Access: Access via trails & road.	**VMC:** 2
Notes	
Northwest portion of treatment unit borders contiguous stand of trees.	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/9/11	**Time:** 12:00
Critical Public View	
CPV ID: CPV4	**Location:** Chabot Golf Course Club House
Proximity to Proposed Action (miles): ~ 2,000 ft	**Angle of Observation:** Variable when recreating. Directly in front of club house terrace.
Duration of View: Variable. Transient when recreating; Prolonged when sitting on terrace.	**View Classification:** Unique
Landscape Type: Enclosed	**Landscape Analysis Factors:** Contrast between putting green & natural landscape (project area) behind. Visible sequence in transmission towers. En-framement from vegetation (trees).
Visual Sensitivity	
Level: High **Indicators:** Recreators.	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Rolling; Prominent ridgelines; Apparent drainages.	Variable from maintained putting green (foreground) to natural vegetation (background)	Transmission lines; Putting greens/fairways; Buildings; Roads; Paths
Line	Undulating silhouette of ridgeline; distinct horizontal line of putting green drainages are diagonal.	Horizontal putting green; Curvilinear fairways	
Color	N/A	Mosaic of greens	Grey – roads, paths, fence, transmission lines. White – building Reds – building (brick, terra cotta roof of club house)
Texture	N/A	Soft; Continuous; Medium	Smooth; Hard
Pattern/ Distribution	Natural	Natural golf course has manicured vegetation.	Intentional – golf course; Sequential - transmission lines.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Contrast between golf course areas & surrounding landscape. Eyes drawn to natural vegetation in background/middleground.	**Coherence (Unity)[1]**: 2
Visual Access: Access via walkways and golf course	**VMC:** 2
Notes	
Highly disturbed (man-made) foreground. Developed recreation site. Two different types of recreation: passive (sitting on terrace) & active (golfing).	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/9/11	**Time:** 15:00
Critical Public View	
CPV ID: CPV5	**Location:** Redwood Park at intersection of Golden Spike Trail and Tate Trail
Proximity to Proposed Action (miles): Within treatment area	**Angle of Observation:**
Duration of View: Transient (hikers, equestrians)	**View Classification:** Continuum of views
Landscape Type: Enclosed in background; Enframement in mid- and foreground by surrounding trees.	**Landscape Analysis Factors:** Some contrast between stables & natural area.
Visual Sensitivity	
Level: High **Indicators:** Recreators.	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Steep canyons & valley bottom	Predominately mature conifer and eucalyptus forest; Patches of grass near stables.	Stables; residence; auxillary buildings; trails; access road; stable is a focal point when walking on trail.
Line	Predominately diagonal	Vertical trunks; diagonal to flowing branches	Characteristic of rural buildings; gentle sloping roof; horizontal sides of structures. Trails – curving, directional.
Color	N/A	Mosaic of green	Trails – brown; Stable – grey/green. Road – grey.
Texture	N/A	Medium: Soft; Order; Contrast between trees (natural landscape & grass near stables)	Building – Smooth; Trails – Coarse.
Pattern/ Distribution	Natural	Natural	Rural Landscape & park-like

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Structure is a focal point, but very park-like setting since structure has color and look of a park structure. Aesthetic is fitting with predominant land use/aesthetic.	**Coherence (Unity)[1]**: 2
Visual Access: Access via trails. Road is approx. 100 yards from trail access.	**VMC:** 2
Notes	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/9/11	**Time:** 15:45
Critical Public View	
CPV ID: CPV6	**Location:** Redwood Park at Burton Road access point.
Proximity to Proposed Action (miles): Within treatment area	**Angle of Observation:** Direct (residents); Variable (recreators)
Duration of View: Transient (recreators); Prolonged (residents)	**View Classification:** Continuum of views
Landscape Type: Enframed (proximate locations); Panoramic Backdrop	**Landscape Analysis Factors:** Some contrast between homes & natural area. Variations of scale depending on if you are looking at/around trail or looking at view.
Visual Sensitivity	
Level: High **Indicators:** Residents & Recreators.	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Valleys & ridgelines; drainages converging in lower basin.	Mature coniferous forest; open understory of grasses, shrubs; compatible	Residential homes; trails; road
Line	Diagonal ridges; Curving basins; Gently flowing	Vertical trunks (predominately); Some diagonal branches; softer/continuous lines of grasses/understory	Rectangular homes with diagonal roofs; Winding trails
Color	N/A	Mosaic of green; grey/brown tree trunks	Residences – variable (can mostly see grey roofs); Trails - brown
Texture	N/A		
Pattern/ Distribution	Natural	Natural	Ordered; Residential neighborhood; Trail – natural, following ridgeline.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Yellow fire road is apparent, but not dominant. Residences are adjacent to parkland. Wind farm visible in distance. Overall nice park-like setting.	**Coherence (Unity)[1]**: 2
Visual Access: Access via roads and trails	**VMC:** 2
Notes	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/9/11	**Time:** 16:30
Critical Public View	
CPV ID: CPV7	**Location:** Redwood Park on West Ridge Trail.
Proximity to Proposed Action (miles): Within treatment area	**Angle of Observation:** Variable, predominately 45-degrees – 90-degrees
Duration of View: Transient (hikers/bikers); People may pause for a longer view due to opening of view.	**View Classification:** Unique – although it may represent a class of views if there are other openings of the view along the trail
Landscape Type: Enclosed in background; Enframement in mid- and foreground by surrounding trees.	**Landscape Analysis Factors:** Enframement; Convergence (eyes tend to follow the valley down)
Visual Sensitivity	
Level: High **Indicators:** Recreators	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Ridges with valley in between	Predominately mature forest (eucalyptus, pines, bays); Some exposed grass; bays are oval/spherical shaped.	Road – on horizontal plan cut into natural topo; trail
Line	Diagonal horizontal ridge	Vertical trunks; diagonal branches; oval, spherical bays	Curving; Horizontal
Color	N/A	Mosaic of greens; Some green/yellow in eucalyptus foliage; Brown/greys – tree trunks; Brown grass	Light Brown
Texture	N/A	Soft; smooth (Eucalyptus & bays); Dense; Some order (different tree types have different textures)	Rough
Pattern/ Distribution	Natural pattern of valleys/drainages	Natural	Purposeful; Directional

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 1 – No structures other than trails visible; Very natural, forest-like, open space feel; Very separate from man-made surroundings.	**Coherence (Unity)[1]**: 1
Visual Access: Trails; Road access to trailhead approx. 1,000 feet from viewing point.	**VMC:** 1
Notes	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/10/11	**Time:** 8:30
Critical Public View	
CPV ID: CPV8	**Location:** Behind residences just off of a spur road off of Stonewall Road (EBRPD plot)
Proximity to Proposed Action (miles): Immediately adjacent to treatment area	**Angle of Observation:** View of residents adjacent to park is variable, up to a 180-degree depending on location.
Duration of View: Prolonged (residents)	**View Classification:** Class of views.
Landscape Type: Enclosed	**Landscape Analysis Factors:** High (tall) scale due to tall eucalyptus trees in fore- and middle-ground.
Visual Sensitivity	
Level: High **Indicators:** Residents (primary) Recreators (would see it when they are entering park).	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Rolling hills; Prominent drainages; Steep; Distinct pyramids of ridges; Horizontal orientation of trails.	Tall, mature eucalyptus forest; Distinct parallel lines.	Houses adjacent to park trail within park. Road up to park. Water tower visible in periphery
Line	Diagonal ridges; Conical horizontal ridgelines.	Predominantly vertical trunks; Some diagonal branches.	Trail – diagonal & horizontal lines. Houses – rectangular with diagonal roofs, vertical sides; Roads – horizontal, gently curving. Water tower – cylindrical/
Color	N/A	Grey, brown trunks; Isolated patches of dark green in drainages; Eucalyptus foliage – greenish yellow.	Mosaic of browns, Natural earthen tones. Water tower – grey.
Texture	N/A	Smooth grass; Feathery Eucalyptus; Striated; Leaves – soft; Branches – rough.	Variable – structures are natural wood. Water tower – smooth.
Pattern/ Distribution	Natural	Natural look – but human interaction evident due to post-thinning and fuel break.	Planned residential areas; Trails create a park-like setting.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Due to structures, and water tower in peripheral.	**Coherence (Unity)[1]**: 2
Visual Access: Trails through park; Residents can walk into park; Road access to park.	**VMC:** 2
Notes	
View point represents views from residences adjacent to park.	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/10/11	**Time:** 10:00
Critical Public View	
CPV ID: CPV9	**Location:** Within park in Claremont Canyon (EBRPD) on trail (old fire road).
Proximity to Proposed Action (miles): Within treatment area	**Angle of Observation:** Variable for hikers/runners – ranges from being inside forest to viewpoints.
Duration of View: Transient (hikers/runners); People may pause for a longer view of Bay.	**View Classification:** Class of views.
Landscape Type: Foreground enclosure; Background panoramic.	**Landscape Analysis Factors:** Panoramic; Enclosure; Variable contrasting scale; Foreground – smaller scale; Background – larger scale.
Visual Sensitivity	
Level: High **Indicators:** Hikers; Runners; Bikers	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Steep canyons; Hillside	Tall, mature eucalyptus; Grass; Shrubs	Trail
Line	Diagonal; Horizontal; Curving at top of drop-off; vista-like	Vertical lines of tall, mature eucalyptus trunks; Finer vertical & diagonal lines of branches; Grass is soft, with flowing line that mimics topography.	Curving trial
Color	N/A	Green mosaic – green canopy demands attention; Leaves are yellow-green; Grey/brown trunks.	Tannish-grey
Texture	N/A	Grass – soft; Tree leaves – soft/smooth; Tree Branches – brittle; Trunks – smooth.	Rough
Pattern/ Distribution	Natural	Natural	Intentional; Directional

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Feels natural; Some minor encroachment. Structures in periphery do not demand attention.	**Coherence (Unity)[1]**: 1 – Trail is coherently arrayed with prominent landform and natural setting of park.
Visual Access: Trails through park; Road access to trail and access to trail from residences adjacent to park.	**VMC:** 2
Notes	
During our visit, a recreator set up a chair near the CPV to sit and look at the view.	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/10/11	**Time:** 9:30
Critical Public View	
CPV ID: CPV10	**Location:** On trail within Claremont Canyon Park. Looking down over Bay to the west and park to both the west and east.
Proximity to Proposed Action (miles): Above treatment unit by approx. 100 yards	**Angle of Observation:** Approximately 180-degrees – but variable as hikers/runners move down the trail.
Duration of View: Transient (hikers/runners); People may pause for a longer view.	**View Classification:** Class of views.
Landscape Type: Predominantly panoramic, but eucalyptus adds and element of enclosure and enframement.	**Landscape Analysis Factors:** Panoramic; Enframement from eucalyptus; Expansive Scale.
Visual Sensitivity	
Level: High **Indicators:** Hikers; Runners	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Rolling, but above steep canyon	Shrub dominated community with isolated patches of eucalyptus; Forms are contrasting shrubs against trees.	Trail – Fore- and mid-ground; Cityscape and bay – background.
Line	Curving; Flowing horizontal topo & ridge; Rolling silhouette of San Francisco beyond the bay.	Vertical tree trunks; Circular patterns of shrubs; Diagonal tree branches; Continuous; Undulating line at top of shrubs.	Trail – Curving & directional.
Color	N/A	Mosaic of greens; Lot of brown/grey from shrubs and tree trunks.	Trail – Light brown
Texture	N/A	Tree trunks – smooth; Shrubs – brittle	Trail – rough
Pattern/ Distribution	Natural	Ordered – Area appears to have been cleared	Intentional

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Area maintains natural "feel" but it is apparent it has been modified by thinning. Shrubs and trees contrast and give it a relatively "unharmonious" feel. Trail demands attention.	**Coherence (Unity)[1]**: 3 – Trees are in foreground and "in your face" commanding attention. Eyes go back and forth between trees and bay.
Visual Access: Trails (old fire road). Trail is accessed via streets and residences living adjacent to park.	**VMC:** 3
Notes	
Heavy use area.	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/10/11	**Time:** 11:00
Critical Public View	
CPV ID: CPV11	**Location:** Pull-off of Grizzly Peak Blvd; Overlooking treatment area near tunnel.
Proximity to Proposed Action (miles): Immediately adjacent to one treatment area, and treatment near tunnel entrance approx. 0.5 mile as the crow flies.	**Angle of Observation:** Variable when driving (~ 90-degrees)
Duration of View: Transient (driving); Pull-off exists but not expected to be highly utilized as a view point.	**View Classification:** Unique – due to Berkeley fire homes to the north (new homes) & presence of highway.
Landscape Type: Panoramic with some large scale enclosure from San Francisco hills.	**Landscape Analysis Factors:** Panoramic; Feature (San Francisco)
Visual Sensitivity	
Level: Moderate **Indicators:** Residential area to the north; presence of highway (visual and noise disturbance) and transmission lines influence level of sensitivity.	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Steep hills; Distinct Ridgetops; Flat areas for transmission lines.	Mixture of trees; more shrub-dominated to the northwest and transitions to more tree-dominated as you go south. Treatment area near tunnel is thick eucalyptus grove. Mosaic of round to oval shrubs.	Highway; Houses (high-density residential); Transmission towers and lines.
Line		Vertical /diagonal lines of trees in foreground; treeline in background predominantly pyramidal.	Houses – vertical & horizontal lines; Highway – curving; Transmission towers – predominantly vertical with some horizontal; Substation – mosaic of horizontal; San Francisco – vertical buildings.
Color	N/A	Green mosaic; Some brown/grey in tree trunks.	Grey – houses, buildings, highway; Grey/metallic – transmission towers
Texture	N/A	Foreground – brittle (shrub), smooth pines; Background – smooth and bumpy (treeline)	Smooth
Pattern/ Distribution	Natural	Fore-, middle-ground – random; Background – more natural	Intentional

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 3 – Competing land uses – utilities, residential, open space, cityscape (in background).	**Coherence (Unity)[1]**: 3
Visual Access: Road pull-out. Open & permissible to anyone who wants to stop. Residents have access to view from homes.	**VMC:** 3
Notes	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/10/11	**Time:** 12:00

Critical Public View	
CPV ID: CPV12	**Location:** Huckleberry Unit; Volcano Trail next to interpretive volcano sign.
Proximity to Proposed Action (miles): Within treatment unit.	**Angle of Observation:** Variable (walkers, runners)
Duration of View: Transient (hikers/runners); Prolonged (interpretive sign where people are likely to stop).	**View Classification:** Continuum of views.
Landscape Type: Enclosed	**Landscape Analysis Factors:** Some convergence to valley bottom; Enframement from surrounding ridgelines; Moderate scales – views limited predominately to fore- and middleground.

Visual Sensitivity
Level: High **Indicators:** Recreators

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Ridges & valley bottoms; hills.	Predominantly forest with grass and shrubs in foreground; Eucalyptus are younger, mature conifers on ridgetop.	Couple of houses in background; Trail; Interpretive sign community tower in background.
Line	Predominantly diagonal; Some horizontal lines at ridgetops.	Tree line mimics landform vertical trunks eclipsed by tree canopies.	House – rectangle, vertical sides; Communication tower – vertical; Trail – curving, horizontal; Sign – rectangle
Color	N/A	Eucalyptus – yellow/green contrasts with mature, dark green pines.	Trail – grey, dull, paved: Homes – Subtle, saturated
Texture	N/A	Foreground – Some brittle brush/shrub; Background – Soft canopy	Houses – smooth; Trail – some roughness.
Pattern/ Distribution	Natural	Natural contiguous forest canopy in background.	Path – Purposeful, directional; Houses – Random.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Houses are noticeable, but subordinate.	**Coherence (Unity)[1]**: 1 – Houses are tucked in and blend well with landscape.
Visual Access: Trail. Parking lot provides trail access. Interpretive sign located at viewpoint that may encourage people to stop.	**VMC:** 1

Notes
Trail goes in and out of open and shaded areas; Immediate location is fairly open.

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/10/11	**Time:** 13:45

Critical Public View	
CPV ID: CPV13	**Location:** Claremont Canyon (UC Berkeley), on trail that bisects treatment unit.
Proximity to Proposed Action (miles): Within treatment unit.	**Angle of Observation:** Straight-on, direct (path focuses eye ahead).
Duration of View: Transient (hikers/bikers);	**View Classification:** Continuum of views.
Landscape Type: Enclosed	**Landscape Analysis Factors:** Small scale; Very enclosed by thick eucalyptus forest.

Visual Sensitivity
Level: High **Indicators:** Recreators

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Steep hillside slope	Predominantly young eucalyptus forest; Brush; Thick understory.	Path
Line	Drainage converging; Diagonal (lines hard to see due to thick understory)	Thin vertical trunks; Round, oval understory; Understory – complex, broken, irregular.	Path – Winding, mimics contours of land form.
Color	N/A	Trunks – brown/grey; Tree foliage – green mosaic; Understory – grey/brown.	Light brown
Texture	N/A	Understory – brittle, rough, sharp; Foliage – glossy, smooth	Rough
Pattern/ Distribution	Natural	Understory – Chaotic, random, irregular, overgrown; Tree trunks – ordered, parallel trunks.	Intentional, directional, natural flow that follows landform. Vegetation around path is coherent with path.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 1 – Path is only element of landscape that is not natural, but it fits with natural topography and is not very noticeable. Distinct cuts near trail and channels cut along trail from runoff.	**Coherence (Unity)[1]**: 3 – Understory is co-dominant with tree canopy. Composition of forest indicates previous disturbance (appears to be second or third growth) and has not had time to grow back to natural forest conditions.
Visual Access: Trail. Parking lot provides trail access. Interpretive sign located at viewpoint that may encourage people to stop.	**VMC:** 2

Notes
Trail through treatment unit. Pull-off is very close to view point (immediately adjacent to area).

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/10/11	**Time:** 15:00

Critical Public View	
CPV ID: CPV14	**Location:** Entrance to Tilden Regional Park on Cannon Road.
Proximity to Proposed Action (miles): Approx. 30 yards from the end of the treatment area and on opposite side of road.	**Angle of Observation:** Directly in front of you.
Duration of View: Transient (drivers, bikers, walkers);	**View Classification:** Unique
Landscape Type: Enclosed	**Landscape Analysis Factors:** Moderate Scale; Enclosed; Enframement (slopes on side of road, park sign)

Visual Sensitivity
Level: High **Indicators:** Recreators entering the park.

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Peak; Valleys; Ridgetops	Large, mature eucalyptus forest; Rounded on top of vertical lines.	Road and park sign.
Line	Diagonal; Ridgetop; Jagged.	Some vertical lines apparent; Weak lines in individual trees that combine to create one undulating treetop silhouette.	Road – curving; Axis Sign - Rectangular
Color	N/A	Mosaic of greens; Some white flowering shrub-like trees in foreground light brown/grey trunks.	Road – grey; Sign - brown
Texture	N/A	Billowy canopy; Canopy dominating attention.	Medium texture but smooth in relation to setting.
Pattern/ Distribution	Natural	Natural, dense canopy.	Intentional; Directional.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 1 – Has look that matches park entrance. No features are distracting from view.	**Coherence (Unity)[1]**: 1 – All features within view go together and are coherently arranged.
Visual Access: Trail. Parking lot provides trail access. Interpretive sign located at viewpoint that may encourage people to stop.	**VMC:** 1

Notes
Road to park entrance.

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date:2/10/11	**Time:**17:00

Critical Public View	
CPV ID: CPV15	**Location:** Alvarado Park, Bonitas Gate Trail; Looking down on park area and bay to the west from trail that begins from adjacent residential area.
Proximity to Proposed Action (miles): Just within the treatment area on eastern/northern corner.	**Angle of Observation:** 180-degrees.
Duration of View: Transient (hikers); Prolonged (if you stop to look).	**View Classification:** Continuum of views.
Landscape Type: Panoramic View with elements of enclosure from vegetation and landforms.	**Landscape Analysis Factors:** Panoramic; Some contrast between eucalyptus groves and shorter grassland/scrub. Axis (trail) – eyes move along trail and naturally to the left to the scrub community.

Visual Sensitivity
Level: High **Indicators:** Recreators and Residents

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Rolling hills; Directional drainages; Convergence; Micro-drainages are apparent due to short vegetation (grasses) in the east portion of the view.	Shrub, grassland dominated. Dense, clumped shrubs at bottom of valley. Trees in background and peripheral.	Trails; Reservoir (one exists now and another is currently under construction during site visit); Class cityscape/bay in background; Industrial areas near the bay are visible.
Line		Shrubs – individually very round/oval, together more “ameba-type” forms they from lines converging toward the central drainage of the valley. Trees – straight, vertical trunks, diagonal branches.	Trails – Curving, flowing; Reservoir – circular.
Color	N/A	Mosaic of greens; Browns from vegetation and scrub that hasn’t leafed out yet.	Mosaic of urban landscape; Trails – greyish tan; Reservoir – Light greenish/tan.
Texture	N/A	Grass – Soft; Scrub – some brittleness; Trees – Soft, trunks have some coarseness and smoothness.	Trails – Coarse by natural; Cityscape – smooth; Reservoir – smooth.
Pattern / Distribution	Natural	Eucalyptus – intentional (plantation); Grass, shrubs – natural.	Trails – natural; Cityscape – intentional.

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Residential areas, water tower is noticeable but subordinate. (Night lighting would be partially shielded by eucalyptus)	**Coherence (Unity)[1]**: 1 – Water tower is hidden back in the trees; houses on the edge are orderly; trails blend in with the landscape; Cityscape is separated by the eucalyptus grove.
Visual Access: Trails; residents have access; road access to trailheads.	**VMC:** 1

Notes
When moving down into the park (south), when looking west toward treatment area the trees on the top of the ridge in the treatment area add ~ 50-ft to the top of the ridgeline and provide a shield of the cityscape beyond.

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 2/11/11	**Time:** 8:45

Critical Public View	
CPV ID: CPV16	**Location:** Miller/Knox Treatment Area - Trail next to Dorman Drive; Facing tunnel heading generally northbound.
Proximity to Proposed Action (miles): Approx. 100 yards south of treatment area.	**Angle of Observation:** Directly in front of you.
Duration of View: Variable - Transient (drivers, bikers, walkers); Prolonged (if you are sitting at the park bench where the view point was taken from),	**View Classification:** Unique
Landscape Type: Enclosed	**Landscape Analysis Factors:** Small, condensed scale; Large group of trees contrasts with all other vegetation in the area. Focal point is toward tunnel – the road directs attention toward the tunnel.

Visual Sensitivity

Level: High
Indicators: Recreators; people travelling along the road to access recreation points. There is a bench to look at scenic views and an old interpretive sign (no longer used).

Existing Visual Character: Landscape Character

	Landform/Water	Vegetation	Structures
Form	Rolling hills; slopes immediately adjacent to bay; exposed rock above road in slope (to the east, immediately on other side of road).	Dense; billowy eucalyptus canopies are rounded; Very few vertical trunks in view; Pines in the midground; Grass/shrubs in the foreground.	Road; Tunnel; Path: Telephone poles; Train tracks.
Line	Diagonal; leading toward horizontal plane of water.	Canopies rounded; Diagonal branches; Rounded shrubs; Grass follows natural topo.	Road – curving, directional; Tunnel – rounded arc with horizontal top; Path – winding; Poles – vertical with some horizontal lines visible; Tracks – linear.
Color	N/A	Mosaic of greens; Some brown and grey of tree trunks, but subordinate.	Brown poles, grey road and tunnel; Brown/grey train tracks; Brown path.
Texture	N/A	Soft canopies; Soft grasses; Shrubs in foreground are brittle.	Path – rough; Road and poles – smooth.
Pattern/ Distribution	Natural	Natural; Tree canopy is dense; shrubs are sparse.	Intentional; Directional (road, path).

Visual Modification Class Parameters

Congruence (Intactness)[1]: 1 – Utility lines are expected due to nature of area. Area is at the boundary between park setting and more residential area.	**Coherence (Unity)[1]**: 2 – There are a lot of utility poles – more than may be considered typical. They are noticeable, and not in any specific pattern.
Visual Access: Trail. Parking lot provides trail access. Interpretive sign located at viewpoint that may encourage people to stop.	**VMC:** 2

Notes

Trees form a sort of boundary and end to the park. Tunnel is a focal point.

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 9/13/12	**Time:** 12:00

Critical Public View	
CPV ID: CPV17	**Location:** Anthony Chabot Regional Park – Skyline Blvd looking east over treatment area.
Proximity to Proposed Action (miles): Approx. 10 yards west of treatment area.	**Angle of Observation:** Variable when driving/biking/walking (~ 180-degrees).
Duration of View: Variable - Transient (drivers, bikers, walkers);	**View Classification:** Continuum of views
Landscape Type: Foreground enclosed, background panoramic	**Landscape Analysis Factors:** Expansive Scale, Contrast (natural landscape in fore-, mid-, and background).

Visual Sensitivity
Level: Moderate **Indicators:** Recreators; people travelling along the road, bicyclists and vehicles traveling along roadway.

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Rolling hills to east; down slopes to west and east of roadway.	Variable; eucalyptus canopies are rounded; Clumps of vertical trunks in foreground along roadway; Grass/shrubs/eucalptus in the background.	Road; fenceline
Line	Undulating silhouette of ridgeline; distinct horizontal line	Canopies rounded; Diagonal branches; Rounded shrubs; Grass follows natural topo.	Road – curving, directional; Tunnel – rounded arc with horizontal top; Path – winding; Poles – vertical with some horizontal lines visible; Tracks – linear.
Color	N/A	Mosaic of greens and browns.	Grey road; Brown grassland; Green clumps of eucalyptus and shrubs.
Texture	N/A	Medium: Soft; Order; Contrast between trees (natural landscape & grass)	Rough; Road– smooth.
Pattern / Distribution	Natural	Natural	In Rural Landscape & park-like

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 1 – Roadway is expected due to nature of area. Area is at the boundary between park setting and more residential area.	**Coherence (Unity)[1]**: 2.
Visual Access: Roadway provides transient access.	**VMC:** 1

Notes
Trees form a sort of tunnel along roadway but do not block view to background.

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 9/13/12	**Time:** 12:11

Critical Public View	
CPV ID: CPV18	**Location:** Anthony Chabot Regional Park Equestrian Center – Goldenrod trail leading northeast from day-use parking lot near Keller Ave.
Proximity to Proposed Action (miles): Approx. 100 yards north of treatment area.	**Angle of Observation:** Variable when biking/walking/riding (~ 90-degrees).
Duration of View: Variable - Transient (bikers, walkers, horse riders.	**View Classification:** Unique
Landscape Type: Foreground enclosed, background panoramic	**Landscape Analysis Factors:** Small, condensed scale opening to panorama at gaps in vegetation. Vegetation surrounding equestrian center serves as visual screen.

Visual Sensitivity
Level: Moderate **Indicators:** Recreators; people traveling along the trail.

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Rolling hills to east; Steep downslope immediately east of CVP.	Dense; shrub banks are rounded;; Grass/shrubs in the background.	Stables and support structures screened by vegetation.
Line	Undulating silhouette of ridgeline; distinct horizontal line.	Canopies rounded; Diagonal branches; Rounded shrubs; Grass follows natural topo.	Rectangular structures with diagonal and horizontal roofs; Winding trail.
Color	N/A	Mosaic of greens; Some brown and grey of shrub trunks, but subordinate.	Brown buildings.
Texture	N/A	Soft canopies; Soft grasses; Shrubs in foreground are brittle.	Trail – rough; structures – smooth.
Pattern/ Distribution	Natural	Natural; Tree and shrub canopy is dense.	Intentional; Directional (trail).

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 2 – Contrast between equestrian area & surrounding landscape. Eyes drawn to natural vegetation in fore-ground/middleground	**Coherence (Unity)[1]**: 2
Visual Access: Trail.	**VMC:** 2

Notes
Trees and shrubs create a sort of visual tunnel along trail. Breaks in vegetation create multiple visual focal points.

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 9/13/12	**Time:** 12:21

Critical Public View	
CPV ID: CPV19	**Location:** Anthony Chabot Regional Park – Skyline Trail approximately .5 mile from day use trailhead near Keller Ave..
Proximity to Proposed Action (miles): Approx. 50 yards east of treatment area.	**Angle of Observation:** Variable when biking/walking/riding (~ 180-degrees).
Duration of View: Variable - Transient (bikers, walkers, horse riders.	**View Classification:** Unique
Landscape Type: Enclosed	**Landscape Analysis Factors:** Small, condensed scale opening to background of residential development at gaps in vegetation. Vegetation surrounding residential development provides some visual screening.

Visual Sensitivity
Level: Moderate **Indicators:** Recreators; people traveling along the trail.

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Rolling; Prominent ridgeline; Apparent drainages.	Mosaic of predominately shrubs with dispersed patches of trees; patches of open grassland.	Low density residential
Line	Variable; diagonal (predominately); undulating ridgetops.	Flowing; Contiguous; Converging	Characteristic of rural buildings; gentle sloping roof; horizontal sides of structures. Trail – curving, directional.
Color	N/A	Mosaic of green; some brown	Mosaic of residential building colors including browns, reds, and beiges.
Texture	N/A	Soft canopies; Soft grasses; Shrubs in foreground are brittle.	Path – rough; structures – smooth.
Pattern/ Distribution	Natural	Natural; Tree and shrub canopy is dense.	Intentional; Directional (trail).

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 1 – Contrast between residential structures & surrounding landscape. Eyes drawn to natural vegetation in fore-ground/middleground	**Coherence (Unity)[1]**: 2
Visual Access: Trail	**VMC:** 2

Notes
Trees and shrubs create a sort of visual tunnel along trail. Breaks in vegetation create multiple visual focal points.

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 9/13/12	**Time:** 13:08

Critical Public View	
CPV ID: CPV20	**Location:** Wildcat Canyon Regional Park – Turnout at end of Leneve Place.
Proximity to Proposed Action (miles): Approx. 10 feet west of treatment area.	**Angle of Observation:** Variable when biking/walking/riding (~ 90-degrees). View of residents adjacent to park is variable(~ 180-degrees).
Duration of View: Variable - Transient (drivers, walkers); Prolonged	**View Classification:** Continuum of views
Landscape Type: Foreground to left enclosed, foreground and background panoramic on right	**Landscape Analysis Factors:** Small, condensed scale on left opening to background of natural grassland panorama on right side to residential structure on far right.

Visual Sensitivity

Level: Low
Indicators: People traveling along Leneve Place on foot for recreation purposes and in cars to access residential neighborhood.

Existing Visual Character: Landscape Character

	Landform/Water	Vegetation	Structures
Form	Rolling hills to east	Variable; dense shrubs and trees on left side and down slope of public view; Grass/shrubs in the background on right side.	Road; residential structures along Leneve Place.
Line	Diagonal ridges; Conical horizontal ridgelines.	Rounded shrubs; Grass follows natural topo.	Road – curving, directional; Characteristic residential buildings; diagonal roofs; horizontal sides.
Color	N/A	Mosaic of green; predominate browns in background on right	Mosaic of residential building colors including browns, reds, and beiges.
Texture	N/A	Soft canopies; Soft grasses; Shrubs in foreground are brittle.	Road and residential buildings – smooth.
Pattern/ Distribution	Natural	Natural; Shrub/tree canopy on right and down slope is dense.	Intentional; Directional (road, path).

Visual Modification Class Parameters

Congruence (Intactness)[1]: 3 – Residential structures and view shed in background are co-dominant.	**Coherence (Unity)[1]**: 2
Visual Access: Roadway provides transient access.	**VMC:** 2

Notes

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

General	
Date: 9/13/12	**Time:** 10:45
Critical Public View	
CPV ID: CPV21	**Location:** Tilden Regional Park – Merry-go-round parking lot.
Proximity to Proposed Action (miles): Within treatment area.	**Angle of Observation:** Direct
Duration of View: Variable - Transient (recreators, park users),	**View Classification:** Continuum of views
Landscape Type: Enclosed	**Landscape Analysis Factors:** Contrast between park buildings & natural area. Variations of scale depending on if you are looking at/around merry-go-round or looking at view behind.
Visual Sensitivity	
Level: High **Indicators:** Recreators/Park Users.	

Existing Visual Character: Landscape Character			
	Landform/Water	**Vegetation**	**Structures**
Form	Flat area transitioning to steep hillside slope.	Predominantly forest with grass and shrubs in background; manicured grass lawn in foreground.	Road; parking lot, merry-go-round enclosure, restroom building.
Line	Predominantly diagonal; Some horizontal lines at ridgetops.	Tree line mimics landform vertical trunks eclipsed by tree canopies.	Rectangular building with domed roof, horizontal parking lot lines transitioning to diagonal moving down slope.
Color	N/A	Mosaic of greens; Some brown and grey of tree trunks, but subordinate.	Buildings with browns, greys and blues, grey parking lot.
Texture	N/A	Soft canopies; Soft grasses; Shrubs in foreground are brittle. Soft manicured lawn.	Road parking lot and buildings.
Pattern/ Distribution	Natural	Natural; Tree canopy is dense; shrubs are sparse.	Intentional; Directional (road, parking lot).

Visual Modification Class Parameters	
Congruence (Intactness)[1]: 3 – Recreation site structures and view shed in background are co-dominant..	**Coherence (Unity)[1]**: 2.
Visual Access: Parking lot and access road provides recreation site access.	**VMC:** 1
Notes	

[1] Adverse Changes: (1) Not Noticeable; (2) Noticeable but Subordinate; (3) Co-dominant; or (4) Dominant.

HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 1 of 10

Viewing Points

Proposed project areas

Connected project areas

Adjoining panel edge

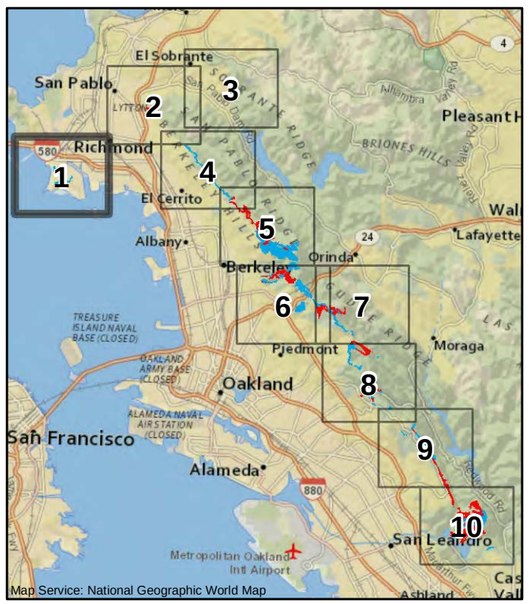
0.5-mile buffer

N W E S

0 750 1,500 3,000
Feet

0 0.125 0.25 0.5
Miles

HMGP 1731-16-34



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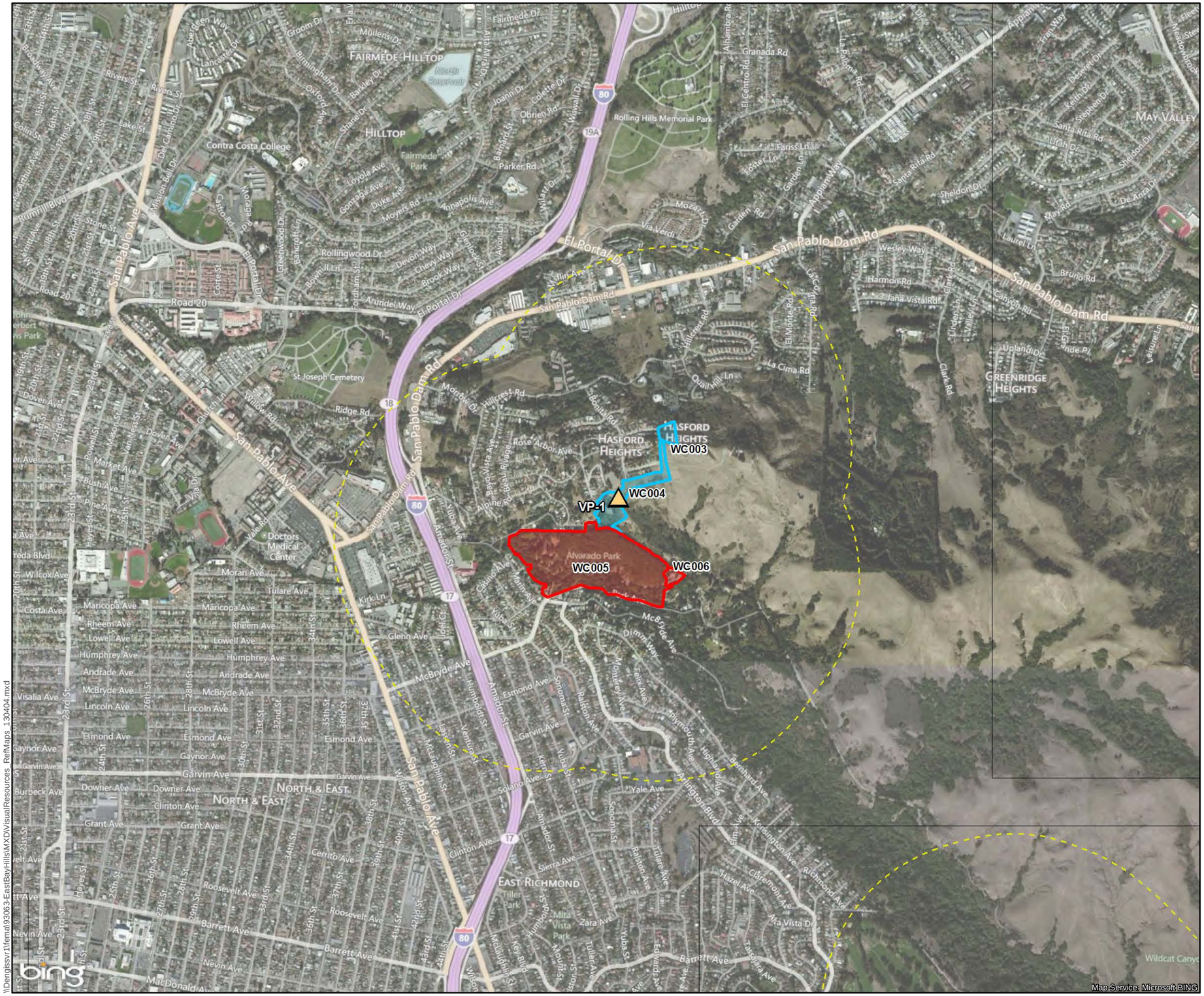
HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 2 of 10



Viewing Points

Proposed project areas

Connected project areas

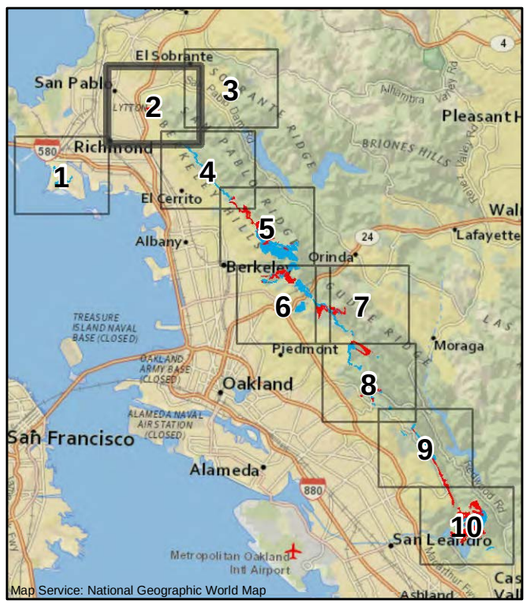
Adjoining panel edge

0.5-mile buffer

0 750 1,500 3,000
Feet

0 0.125 0.25 0.5
Miles

HMGP 1731-16-34



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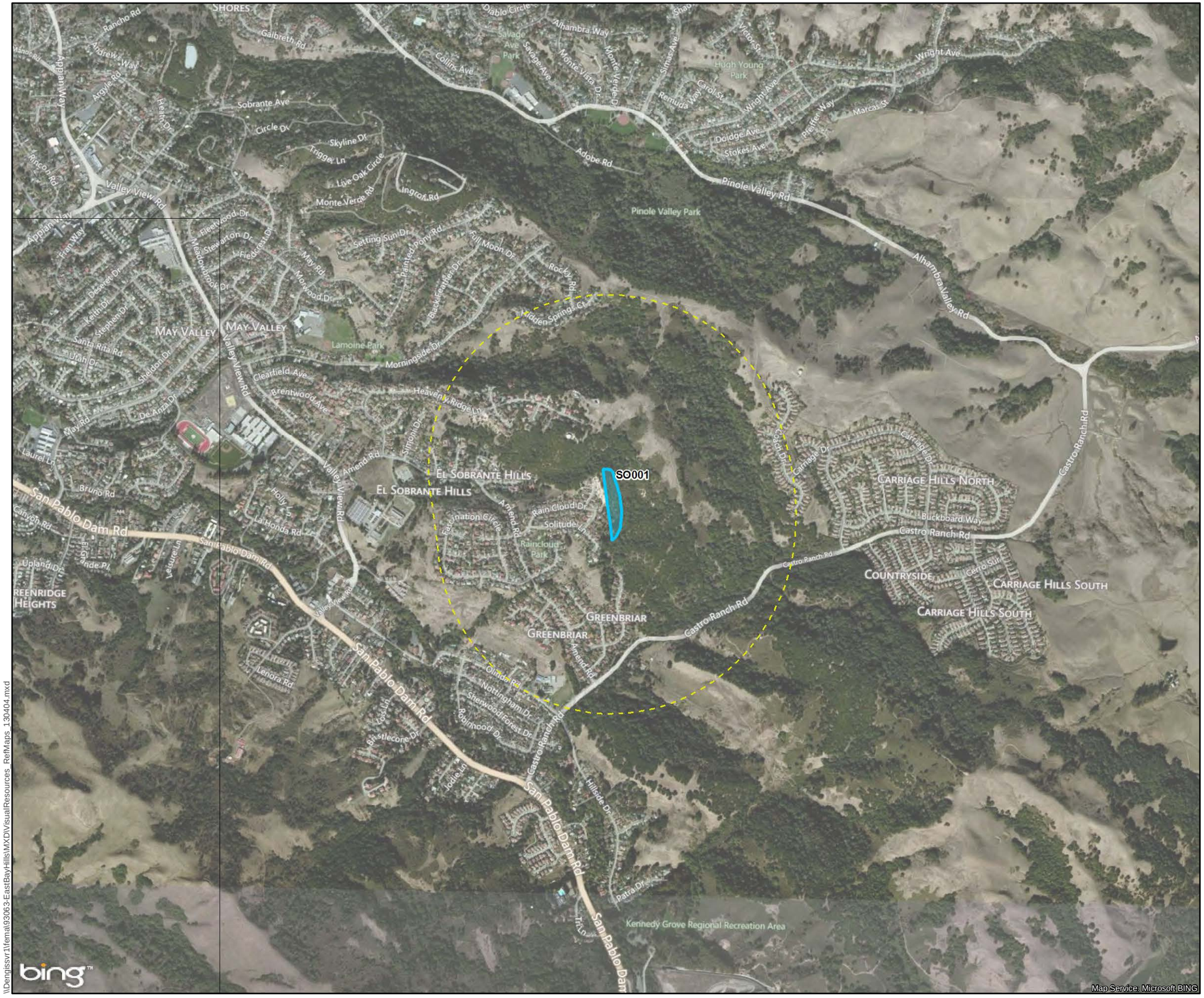
HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 3 of 10



Viewing Points

Proposed project areas

Connected project areas

Adjoining panel edge

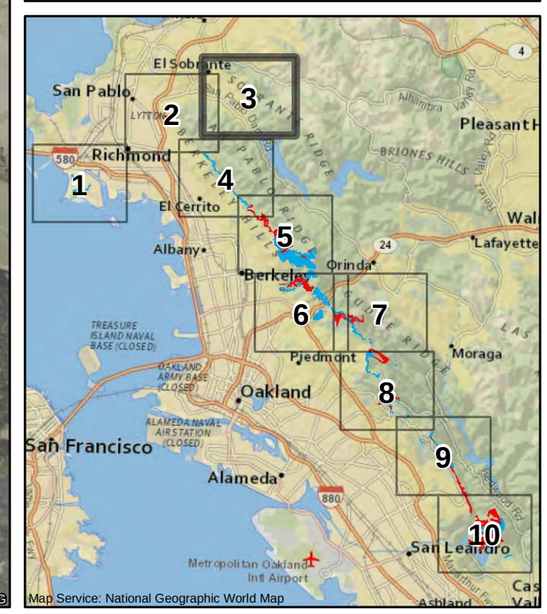
0.5-mile buffer

N W E S

0 750 1,500 3,000
Feet

0 0.125 0.25 0.5
Miles

HMGP 1731-16-34



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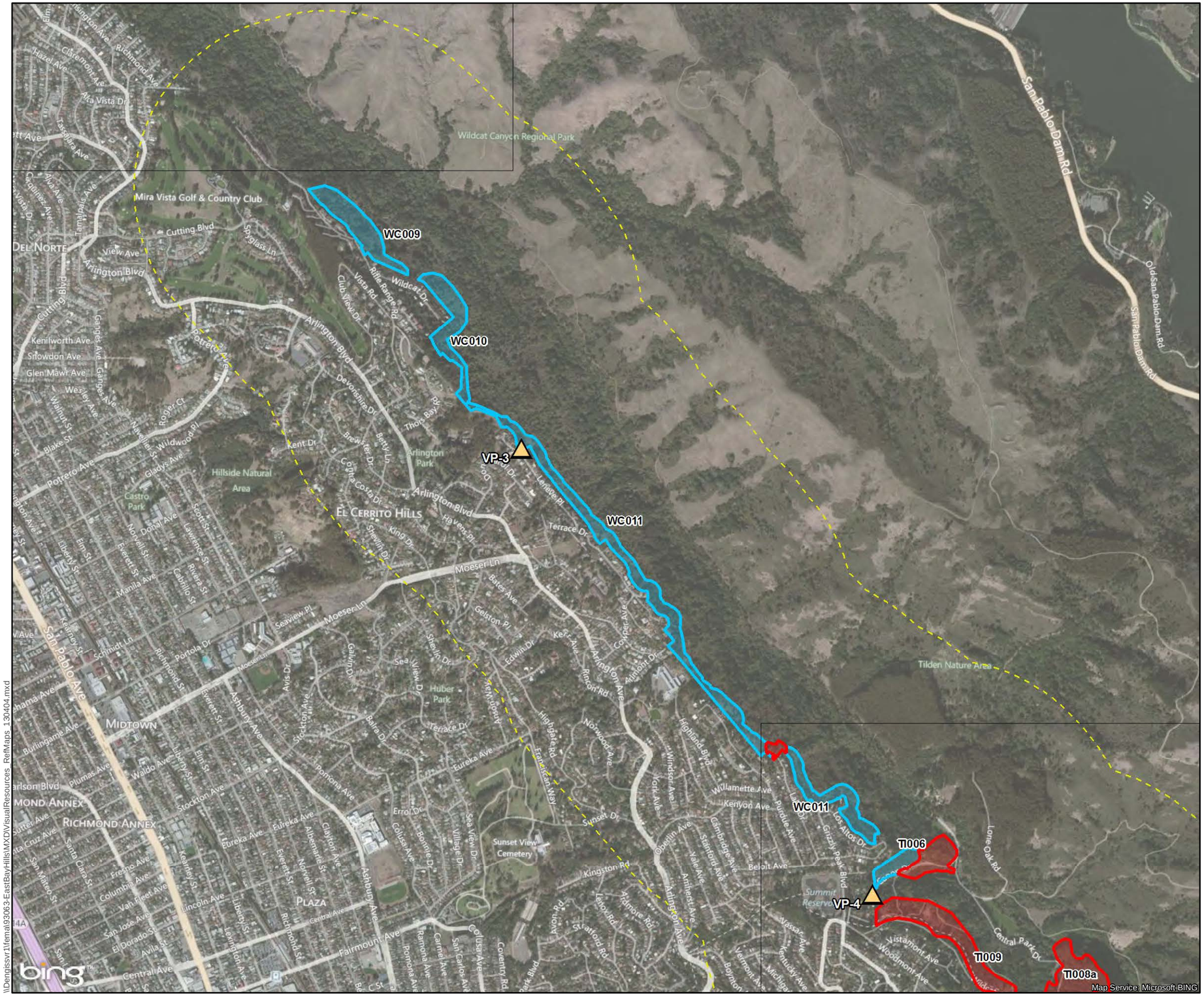
HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 4 of 10



Viewing Points

Proposed project areas

Connected project areas

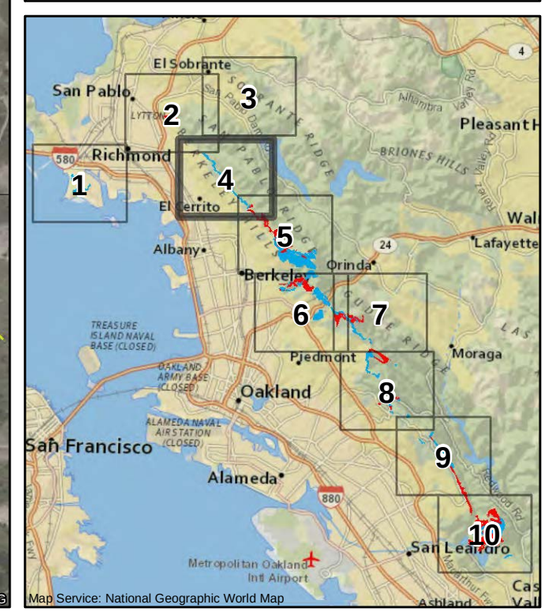
Adjoining panel edge

0.5-mile buffer

0 750 1,500 3,000
Feet

0 0.125 0.25 0.5
Miles

HMGP 1731-16-34



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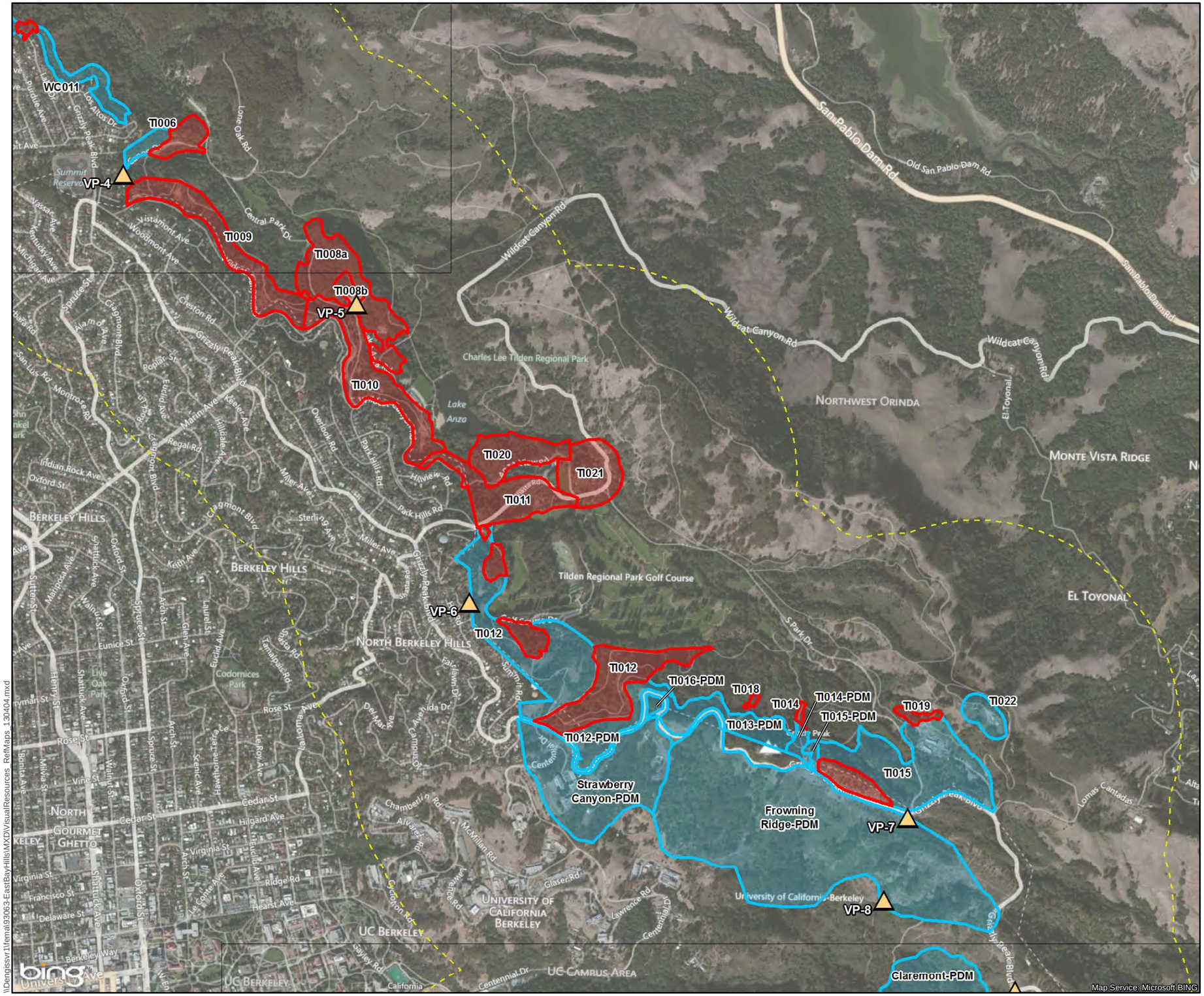
HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 5 of 10



Viewing Points

Proposed project areas

Connected project areas

Adjoining panel edge

0.5-mile buffer

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Feet

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Miles

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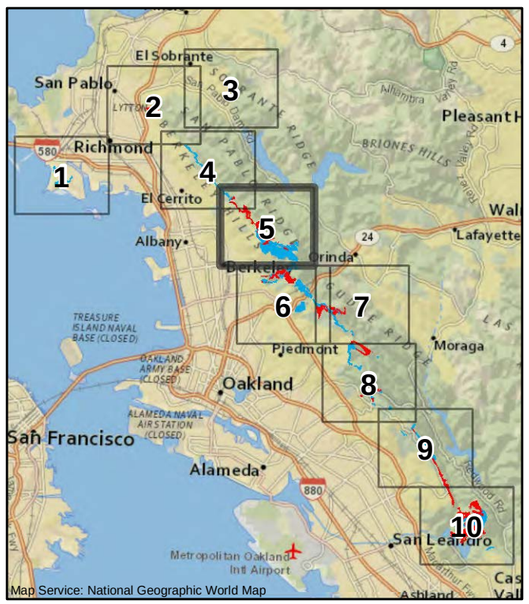
PDM-PJ-09-CA-2005-011
PDM-PJ-09-CA-2006-004



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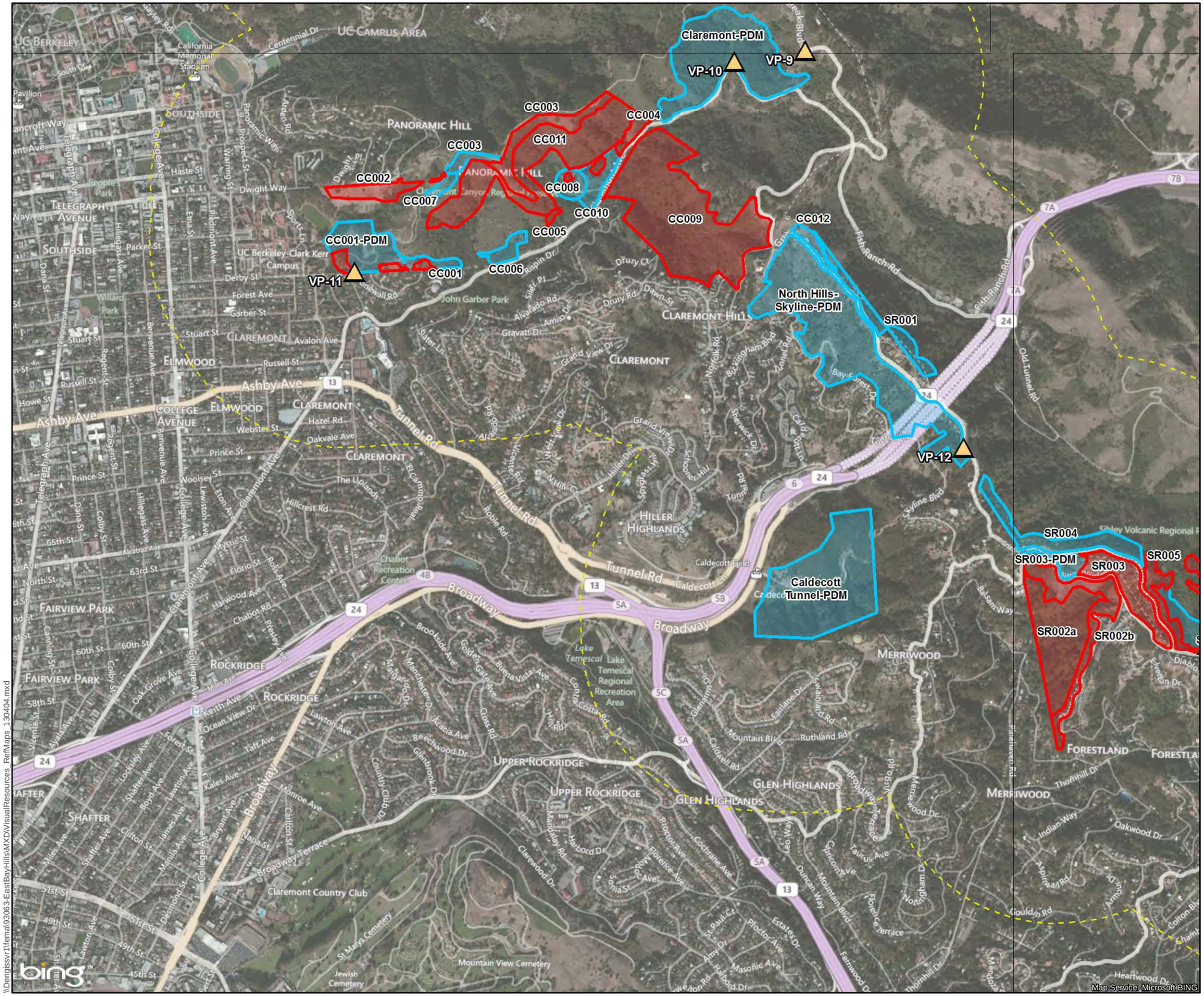
HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 6 of 10



Viewing Points
Proposed project areas
Connected project areas
Adjoining panel edge
0.5-mile buffer

0 750 1,500 3,000
Feet

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HMGP 1731-16-34
PDM-PJ-09-CA-2005-003
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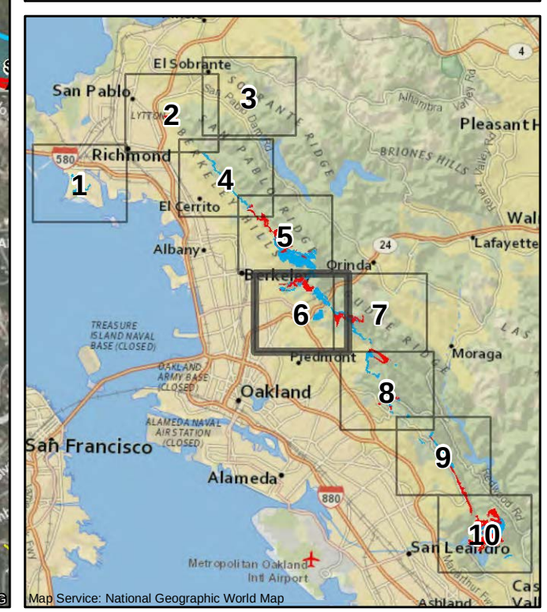

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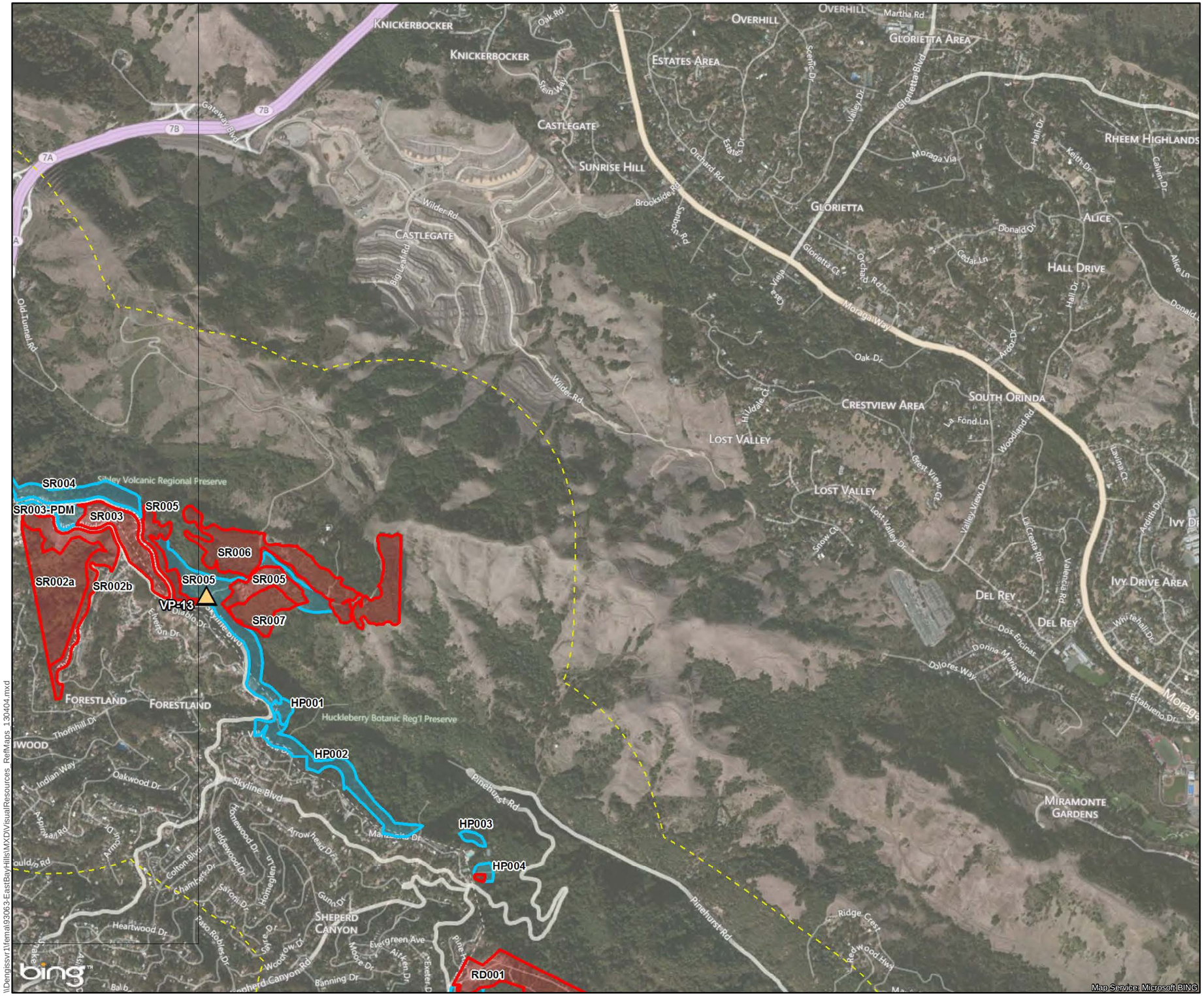
HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 7 of 10



Viewing Points

Proposed project areas

Connected project areas

Adjoining panel edge

0.5-mile buffer

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Feet

0 0.125 0.25 0.5
Miles

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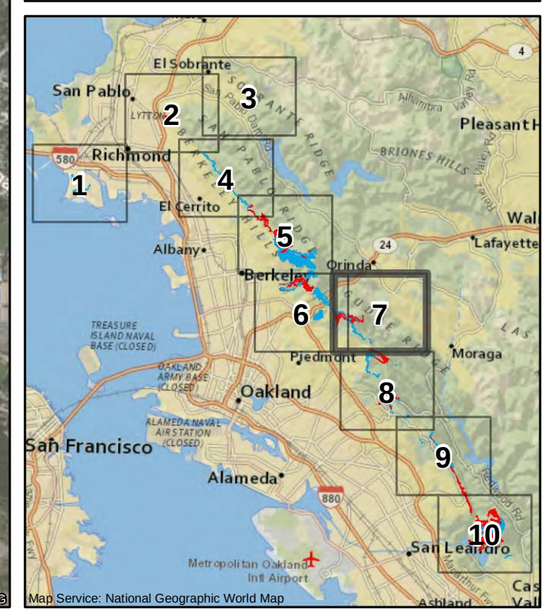
PDM-PJ-09-CA-2006-004



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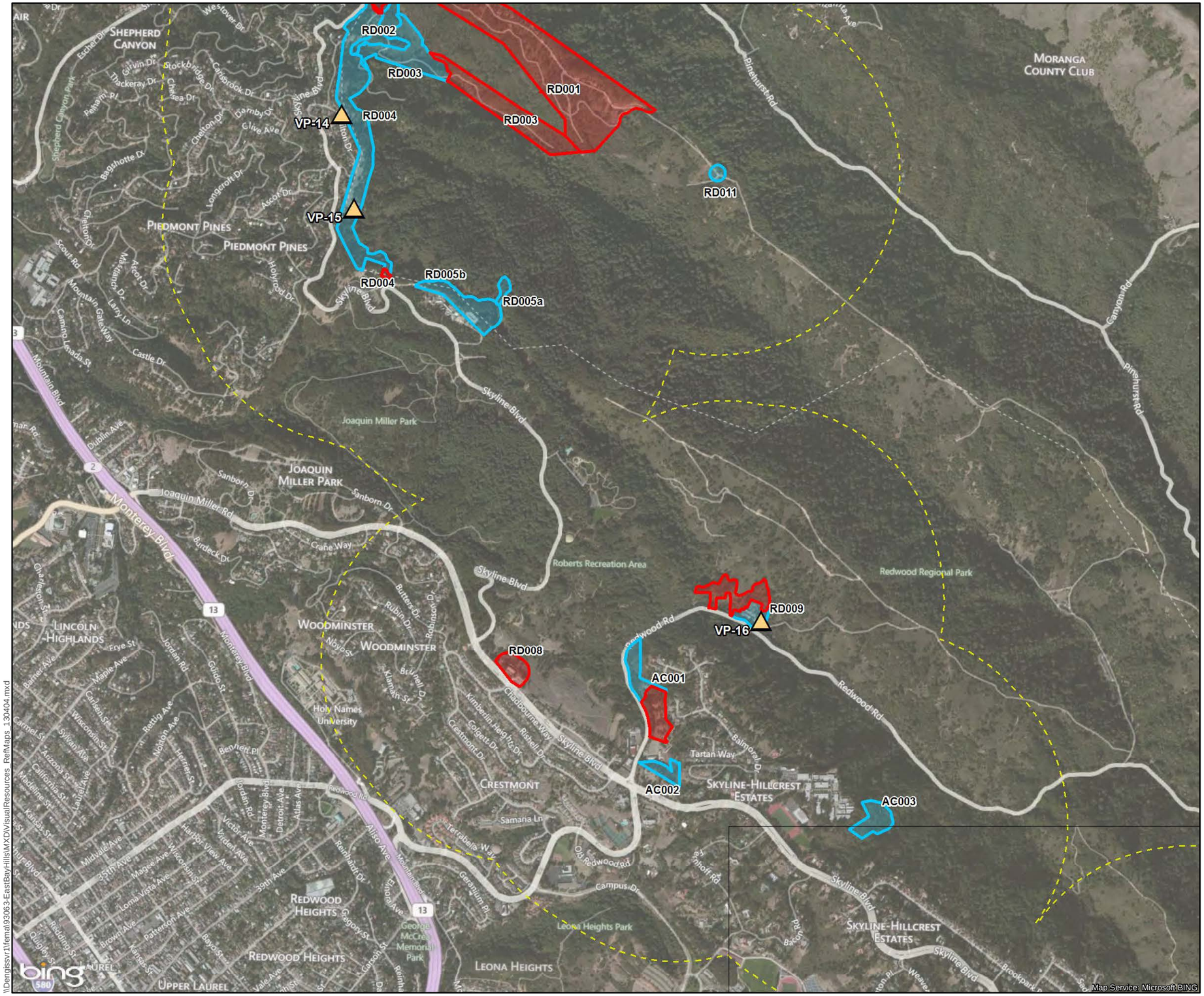
HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 8 of 10



Viewing Points

Proposed project areas

Connected project areas

Adjoining panel edge

0.5-mile buffer

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Feet

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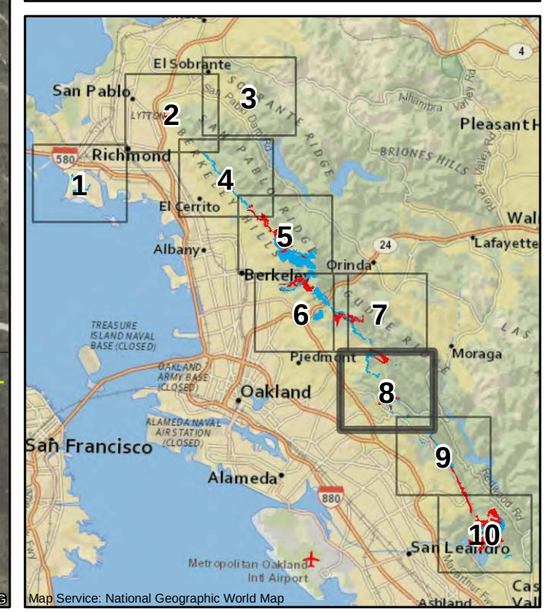
Miles

HMGP 1731-16-34



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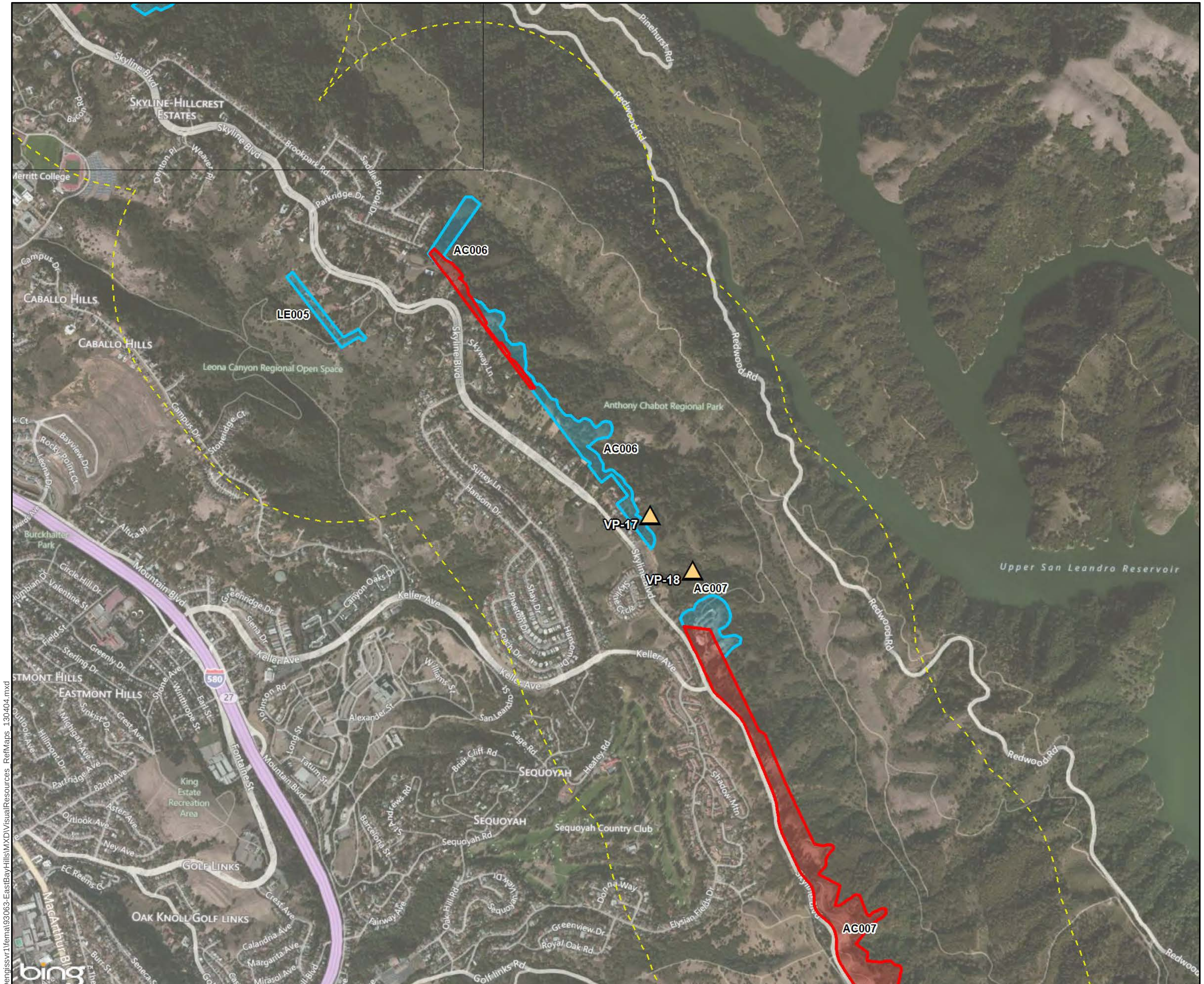

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HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 9 of 10

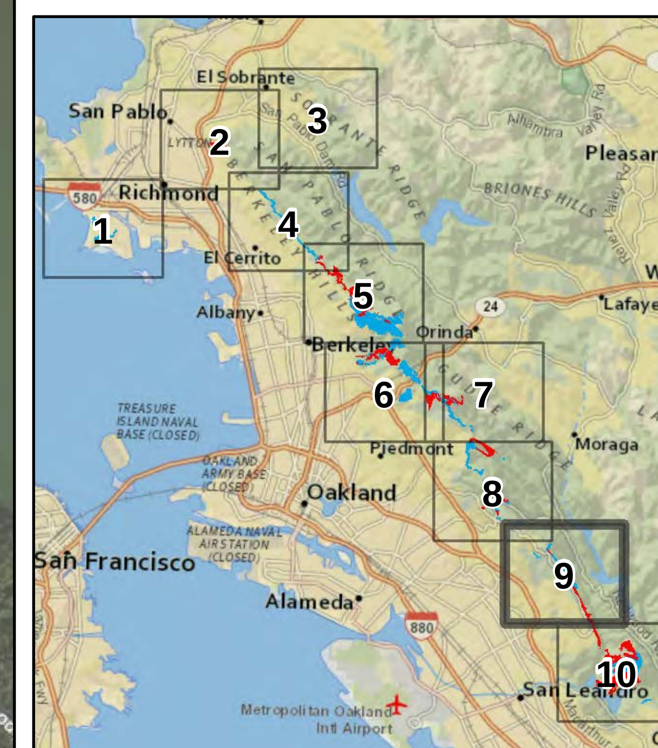
- Viewing Points
- Proposed project areas
- Connected project areas
- Adjoining panel edge
- 0.5-mile buffer

N W E S

0 750 1,500 3,000
Feet

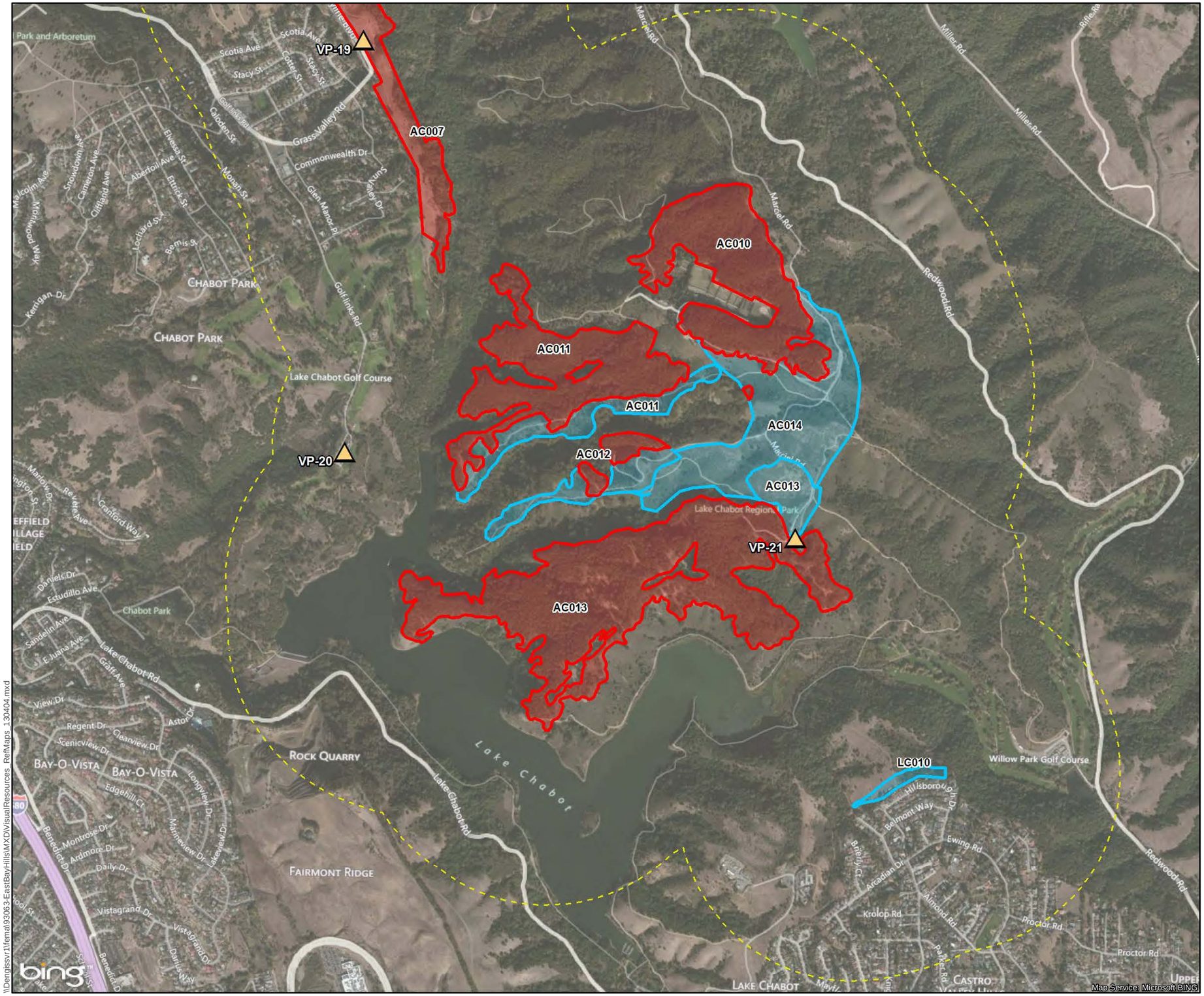
0 0.125 0.25 0.5
Miles

HMGP 1731-16-34



HAZARDOUS FIRE RISK REDUCTION EIS
EAST BAY HILLS, CA
VIEWING POINTS

FIGURE 10 of 10



Viewing Points

Proposed project areas

Connected project areas

Adjoining panel edge

0.5-mile buffer

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0 750 1,500 3,000
Feet

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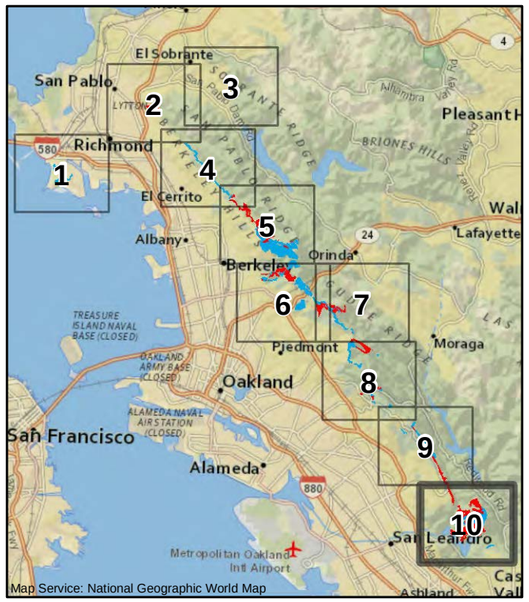
Miles

HMGP 1731-16-34



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SECTION ONE INTRODUCTION

The University of California, Berkeley (UCB), the City of Oakland, and the East Bay Regional Park District (EBRPD) (subapplicants) have applied in a total of four grant applications to the Department of Homeland Security's Federal Emergency Management Agency (FEMA), through the California Emergency Management Agency (Cal EMA), for federal financial assistance to implement hazardous fire risk reduction projects in the East Bay Hills of Alameda and Contra Costa counties, California, and at the Miller/Knox Regional Shoreline in Contra Costa County. Cal EMA is the official applicant and UCB, the City of Oakland, and EBRPD are subapplicants. The funding of these proposed projects would be provided under the Pre-Disaster Mitigation (PDM) Program and the Hazard Mitigation Grant Program (HMGP). The PDM Program is authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act, 42 U.S.C. § 5133), and the HMGP is authorized by Section 404 of the Stafford Act (42 U.S.C. § 5170c). The proposed action (federal action) is to provide federal financial assistance for projects associated with the four grant applications. FEMA's involvement in the hazardous fire risk reduction projects triggers the requirements of NEPA (42 U.S.C. §§ 4321–4327), which include an evaluation by federal agencies of the potential environmental impacts of proposed actions and a consideration of the impacts during the decision-making process. FEMA is preparing an environmental impact statement (EIS) in accordance with the Council on Environmental Quality's (CEQ's) NEPA implementing regulations in Title 40 CFR Parts 150-1508 and FEMA's NEPA procedures in 44 CFR Part 10.

The EIS also addresses the potential environmental effects of additional hazardous fire risk reduction projects planned by the same parties that meet the definition of a *connected action* in the National Environmental Policy Act (NEPA) regulations in Title 40 of the Code of Federal Regulations (40 CFR), section 1508.25. The EIS and this technical report refer to these additional projects as connected actions.

In support of the EIS, this technical report presents a screening level human health and ecological risk assessment of the proposed actions for hazardous fire risk reduction in the proposed and connected project areas. The risk assessments evaluate whether the use of the identified herbicides under the proposed and connected actions or the alternatives would result in an unacceptable risk to humans or ecological populations.

1.1 Scope

This screening level human health and ecological risk assessment was conducted to provide a focused evaluation of the herbicides proposed for use in the proposed and connected project areas. The scope and objectives of the screening level risk assessment (SLRA) are as follows:

- Describe existing conditions relevant to the risk-based approach by defining affected area boundaries, describing current pesticide usage, and identifying possible human and ecological receptors and exposure pathways

- Evaluate whether the estimated level of exposure to the herbicides proposed for use in the project area could lead to unacceptable levels of project-related risk to receptors in the affected area
- Determine whether mitigation measures need to be developed to protect the health of potentially exposed receptors.

The approach used in this risk assessment is consistent with guidance from California EPA (Cal/EPA) Department of Toxic Substances Control (DTSC) and with similar guidance from United States Environmental Protection Agency (EPA) for any issues not addressed by the State of California. The focus of the risk assessment is on providing information to the EIS being prepared under NEPA. Thus, the evaluation considers existing conditions in addition to assessing the proposed and connected actions and the alternatives. To meet the objectives outlined above, the SLRA includes the following (the section where each of these steps is addressed is provided in parentheses):

- Identify the types of pesticides/herbicides currently used and proposed for future use in the affected area including their hazardous and toxicological characteristics (Section 2)
- Identify the current and proposed methods of application of herbicides including the frequency and duration of applications (Section 2)
- Identify the types of environments and habitats in the affected area that could be affected by the use of herbicides (Section 2)
- Develop a conceptual exposure model that identifies media in which herbicides could be found, herbicide transport pathways and fate in the environment, as well as sensitive receptors that may ingest, inhale, or come in contact with the herbicides (Section 3)
- Determine the key human receptors and exposure pathways and ecological receptors and exposure pathways (Section 3)
- Identify studies with the same chemicals, receptors, and pathways and collect toxicological information and exposure parameters and note data gaps (if any) (Section 4)
- Assess quantitatively risk to human and ecological receptors using United States Department of Agriculture (USDA) Forest Service Risk Calculation Worksheets (Section 5)
- Discuss the assumptions and uncertainties inherent in the risk assessment process and their implications on the findings and conclusions (Section 6)
- Summarize the risk assessments and ascertain whether the estimated risks are acceptable and if additional mitigation measures are warranted (Section 7)

1.2 Site Background

1.2.1 Site Location

Most of the proposed action and all of the connected actions would occur in the region informally known as the East Bay Hills. As used in this document, the term East Bay Hills refers

to a series of ridges east of San Francisco Bay that begin on the east side of Interstate 80 in Richmond and run southeast to Lake Chabot. Elevations at the ridge tops range from approximately 600 to 1,900 feet above mean sea level. The East Bay Hills contain many densely built residential neighborhoods of mostly single-family homes, but also include large tracts of open space and wildlands managed by UCB, EBRPD, and the East Bay Municipal Utilities District (EBMUD).

The proposed action would be implemented on land owned by UCB and the City of Oakland and within 11 parks owned and maintained by EBRPD. One of the parks, the Miller/Knox Regional Shoreline, is not in the East Bay Hills. Miller/Knox is on the shore of San Francisco Bay in Richmond. Maps of the proposed and connected project areas are provided as Figures 3-1 through 3-10 in Section 3 of the EIS.

1.2.2 Proposed and Connected Actions and Alternatives

Two alternatives, the no action alternative and the proposed and connected actions, are being evaluated in the EIS. These alternatives are briefly summarized below. Detailed descriptions of these alternatives are provided in Section 3.4 of the EIS.

1.2.2.1 No Action Alternative

Under this alternative, FEMA would not fund any of the proposed grant applications. The Applicants may find other sources of funding (e.g., a grant from another agency or program), may use their own funds for all or some of the action, or may not pursue the action at all in the absence of FEMA grant funding (see Section 3.4.1 of the EIS).

1.2.2.2 Proposed and Connected Actions

The proposed action consists of the hazardous fire risk reduction projects included in four grant applications submitted to Cal EMA by UCB, the City of Oakland, and EBRPD (the subapplicants). This EIS also addresses vegetation management projects planned by EBRPD in many connected areas. A summary of the proposed and connected project areas is provided in Table 3-1 of the EIS. The grant applications include many vegetation management activities intended to reduce hazardous fire risk to people and structures in many areas in the East Bay Hills and Miller/Knox Regional Shoreline. FEMA may decide to fund one or several of the grant applications, but not all of them. This decision would be based on an analysis of the ability of each grant to meet the purpose and need and on its feasibility, cost-benefit ratio, and environmental impacts.

The proposed and connected actions would involve cutting down many trees to reduce the amount of fuel available to a wildfire. Targeted trees would be cut down and processed by logging contractors using methods consistent with the California Forest Practice Rules and as specified in the timber harvest plan required by § 4581 of the California Public Resources Code (Z'berg-Nejedly Forest Practice Act). The plan would be prepared by a registered professional forester and would contain detailed information on the timber operations.

The proposed and connected actions would include best management practices identified by the San Francisco Bay Regional Water Quality Control Board to control erosion during and after vegetation management activities (see Section 5.3.2.3 of the EIS).

The proposed and connected actions involve use of herbicides. No spraying of foliage would occur within 60 feet of standing or flowing water. Within this 60-foot buffer, herbicides would only be applied directly to stumps, and use of herbicides would be restricted to Garlon 3A or other herbicides approved for use near water. Within the 60-foot buffer, herbicides would be applied to stumps within 60 minutes of cutting down the tree. Herbicides would not be used in the 60-foot buffer within 24 hours after rain or when the chance of rain within 24 hours is greater than 40%. In addition herbicides would not be mixed within the 60-foot buffer area. To prevent airborne drift of herbicide mist into the 60-foot buffer, herbicides would not be applied to foliage outside the buffer when wind speed is greater than 10 mph or less than 2 mph. Very low wind speeds are conducive to drift because very light winds are highly variable and are associated with inversion conditions, in which mists and vapors tend to stay near the ground rather than dispersing upward. Response plans for accidental herbicide spills will be addressed in a Spill Prevention, Control, and Countermeasure Plan that will be developed for this project.

1.3 Risk Issues

This SLRA was conducted to estimate potential human health and ecological risks and hazards associated with exposure to herbicides proposed for use in the proposed and connected project areas.

1.3.1 Human Receptor Exposure

Land use in the vicinity of the proposed and connected project areas includes recreational, residential, commercial, and industrial uses. Depending on use, hazardous substances associated with the proposed and connected actions may impact human health via exposure during cutting and processing of vegetation, exposure during burning of cut vegetative material, and exposure to herbicides applied to prevent re-sprouting of stumps and to kill re-sprouts and seedlings. Exposure during removal and processing of vegetation and burning of cut vegetation is addressed in Section 5.10 of the EIS. This technical report focuses on adverse health effects, if any, associated with application of herbicides.

The proposed and connected actions would take place in regional parks and other open space areas used for recreation. Visitors and campers in these areas could be exposed to herbicides directly during application and indirectly after application. In addition, because residential neighborhoods are adjacent to the parks and open space, residents could also be exposed to herbicides directly during application and indirectly after application. Because a university, a high school, three elementary schools, and a preschool are also close to project areas, students of all ages have the potential to be exposed. Vegetation management workers may be exposed during mixing, loading, and application of the herbicides and during entry into treated sites.

Herbicides will be applied by hand methods. These methods of application could expose nearby populations through direct contact. Vegetation management workers and visitors and campers in the proposed and connected project areas could inadvertently inhale or directly contact the herbicides, particularly if the herbicides are sprayed during windy conditions and drift occurs. Indiscriminate spraying could also contaminate the soil, and park visitors and campers could be exposed to herbicides through skin contact with the soil or incidental ingestion of the soil during hand-to-mouth activities.

Surface water could be impacted by herbicides being directly sprayed on the water, by windblown spray reaching the water, or by precipitation and runoff carrying herbicides from the application site to surface water. Visitors participating in recreational activities such as swimming or boating could then be exposed through skin contact to contaminants in surface water or through incidental ingestion of the water. Further, anglers may, in theory, be exposed to chemicals taken up into fish through consumption of fish taken from nearby surface water bodies.

Groundwater could also be impacted if precipitation percolating through soil transports herbicides to groundwater. Surface water or groundwater affected by herbicides could in theory be used for drinking water or irrigation of home grown vegetables; therefore, risks to residents should be considered for these possible exposure pathways. However, most residents use public water supplies. In addition, surface water or groundwater in the area may be used for irrigation of agricultural crops. Uptake of chemicals into crops and subsequent consumption by people in the area is a possible exposure pathway.

1.3.2 Ecological Receptor Exposure

Herbicide Spraying - The proposed and connected actions also have potential to adversely affect ecological resources. Ecological receptors may be exposed to herbicides in the terrestrial and, under unanticipated scenarios, in the aquatic environments of the project area. Of primary concern are impacts to (1) non-target terrestrial plants from direct contact through spraying, (2) terrestrial wildlife from direct contact with herbicides and consumption of contaminated prey, and (3) aquatic life from direct contact with herbicides in surface water and consumption of contaminated prey; the latter only under certain unexpected conditions. Best management practices (BMPs), including maintaining no-herbicide-use buffer zones within a specified distance of all water bodies, are planned to help ensure the protection of aquatic life and wildlife that eat aquatic organisms. Further, dietary exposures from consumption of food items is unexpected given the low bioaccumulation potential of the proposed herbicides.

Herbicide treatment would comply with local, state and federal pesticide laws and regulations, and would be applied strictly in accordance with label directions. BMPs are included as part of the proposed and connected actions to minimize potential harm to human health and the environment. For example and as stated above, BMPs are in place to protect aquatic resources by requiring buffer zones around surface water bodies. BMPs considered important for

interpretation and evaluation of the conclusions of the risk assessments are provided in **Table 1-1**.

Table 1-1. Summary of Applicable Best Management Practices (BMPs)

General BMPs
Implementation:
Timing is based on ""Construction windows/seasonal restrictions and for the protection of species"" considerations
Herbicide must be applied when tree is felled - likely between Aug. 1 and Dec. 1, depending on precipitation and other environmental factors that dictate when the logging may occur.
BMP's:
Post onsite to inform public at least 24 hours in advance
Cut stumps no more than 4 inches above ground and should be cleanly cut
Ensure applications performed by licensed or certified operators registered with County
Operator must record in writing the treatment data and report to County
Operators must maintain calibrated equipment
Treatment must be performed according to EBRPD IPM policies
EBRPD IPM specialists to oversee application
IPM specialist will review data to ensure minimum amounts used to achieve desired results
Carefully follow label directions
Prevent drift – wind must be less than 3 to 5 mph (depending on technique) and lower than 80° Fahrenheit; use nozzles and pressures to avoid fine particles
Apply without generating runoff of pesticide mixture
Human Health BMPs
Pesticide applicators are required to use formulated pesticide products in accordance with the product label, as approved by the EPA. The product label includes requirements for the use of personal protective equipment (PPE) for the individuals mixing and applying the formulations, for containing the material, for proper application, and for safe disposal of any material that is not applied. The project supervisor must have the authority to start and stop the pesticide application and be well versed in the State regulatory requirements regarding safe and legal use of the pesticide product, and applicator and public safety. Finally, all personnel involved with the pesticide application must receive safety training specific to the formulated pesticide product that will be used and must follow the site safety and health plan developed for the project that will prevent exposure to proposed pesticide formulations and other formulation constituents at concentrations that could be expected to affect health.
Ecological BMPs
Application Recommendations for the Alameda Whipsnake
Apply on windless days to reduce drift.
Apply during dry periods to reduce surface transport to surface water bodies (which may increase exposures to certain prey items of Alameda whipsnake).
Apply after reproductive period (i.e., spring and early summer for Alameda whipsnake) to minimize exposures to potentially more sensitive early life stages. It is currently unknown if young snakes are more or less sensitive to herbicide exposures, but early life stages of many common test species show increased sensitivity to potentially hazardous chemicals compared to adults of the same species.
Application Recommendations for the Pallid Manzanita
Pallid manzanita surveys should be conducted prior to herbicide application to identify all individual plants present in potential treatment areas, to the extent possible.
Herbicides should be applied when there is little or no hazard of drift (*i.e.*, when wind speed is low) and only in areas that are a sufficient distance away from identified pallid manzanita plants.
Additionally, use of a fine spray, which is more prone to drift and is more toxic than larger droplets at low application rates, should be avoided.

Protective buffer zones should be applied around known pallid manzanita plants if they are identified in potential treatment areas. These buffer zones should be of sufficient size to ensure manzanita plants are protected from spraying and spraying drift. Marrs, et al. (1989 in IPCS 1994) identified that some species were more sensitive to the effects of glyphosate and concluded that when spraying with ground sprayers buffer zones around nature reserves should be 5-10 meters (m). It is possible that this could be a minimum buffer around plants near application areas to protect manzanita. Buffer zones should be clearly identified if manzanita is identified in proposed treatment areas.
Application Recommendations and Cautions for the Presidio Clarkia
Presidio clarkia surveys should be conducted prior to herbicide application to identify all individual plants present in potential treatment areas, to the extent possible.
Herbicides should be applied when there is little or no hazard of drift (*i.e.*, when wind speed is low) and only in areas that are a sufficient distance away from identified presidio clarkia plants.
Additionally, use of a fine spray, which is more prone to drift and is more toxic than larger droplets at low application rates, should be avoided.
Protective buffer zones should be applied around known presidio clarkia plants if they are identified in potential treatment areas. These buffer zones should be of sufficient size to ensure presidio clarkia plants are protected from spraying and spraying drift. Marrs, et al. (1989 in IPCS 1994) identified that some species were more sensitive to the effects of glyphosate and concluded that when spraying with ground sprayers buffer zones around nature reserves should be 5-10 meters (m). It is possible that this could be a minimum buffer around plants near application areas to protect presidio clarkia. Buffer zones should be clearly identified if presidio clarkia is identified in proposed treatment areas.
Application Recommendations and Cautions for the California Red-legged Frog
Apply on windless days to reduce drift.
Apply during dry periods to reduce unintended transport to surface waters.
Do not apply near ephemeral or permanent surface water bodies, both of which are used by California red-legged frogs for breeding and rearing of tadpoles.
Adhere to no-spray zones as described by the U.S. Environmental Protection Agency for protection of California red-legged frog.
Do not apply just before or during reproductive or rearing periods.
Berrill, et al. (1994) recommends against spring and summer use of triclopyr in forests to prevent harmful exposures to ranid frogs. However, late summer/early fall application may greatly reduce or prevent exposure to tadpoles (which are present approximately May to September) and breeding adults (breeding approximately late November to February).
Application Recommendations and Cautions for the Central California Coast Steelhead DPS
The primary herbicide-related concern for Central California Coast steelhead is exposure to herbicides via direct contact with and ingestion of herbicide-contaminated surface water (i.e., Wildcat Creek). The toxicity of these herbicides to salmonid fish is a concern under this potential scenario. Generally, Garlon® 4 and Roundup® are toxic at lower concentrations than Stalker®, yet none of the three herbicides is considered highly toxic to fish.
Seasonal timing of application, choosing application methods that limit runoff potential and drift to surface water bodies, and choosing herbicides with lower toxicity can mitigate potential adverse effects of herbicide use where salmonid fish might be present.
Studies indicate that if Garlon® 4, the most toxic of the herbicides considered, was applied at the maximum application rate directly into water, the levels would remain safe for aquatic life [Perkins, *et al.* (2000) in Bautista (2005)].
There is the potential for adult and juvenile steelhead to be present in Wildcat Creek (Leidy, et al. 2005). However, the aqueous degradation of these particular herbicides is likely to be rapid; significant and rapid dilution is expected; and high application rates to or near surface water, although not recommended, have been estimated to result in water concentrations that do not exceed toxic thresholds protective of fish (and larval ranid frogs).
Most of the proposed herbicide application areas are not near Wildcat Creek, and where application may be near Wildcat Creek, special precautions may be warranted to limit the likelihood and/or amount of herbicides indirectly entering the creek. This would be most important for portions of the creek with pools and slow moving water.

The two potentially most important routes of exposure to herbicides for terrestrial wildlife are direct dermal contact and dietary exposure. However, as stated above, dietary exposure by consumption of prey is considered unlikely given the low bioaccumulation potential of the proposed herbicides.

The primary route of exposure to sprayed herbicides for terrestrial life stages of amphibians, including species of special concern, is direct dermal contact. Dietary exposure is considered insignificant for the reasons stated above. For eggs and larval stages (tadpoles), the primary exposure route is direct contact with surface water (eggs and tadpoles) and ingestion of surface water (tadpoles). Exposures to herbicides by direct contact are possible for adult amphibians because of their permeable skin.

The three herbicides proposed for use in the proposed and connected project areas target a wide range of plants, and various sources document their negative impacts on non-target terrestrial plant species. The primary routes of exposure to sprayed herbicides for woody and broadleaf terrestrial plants are direct exposure to the leaves either from intentional application or drift from locations that were targeted for spraying. This is especially the case when wind velocities are sufficient to allow spray drift to occur.

The primary route of exposure to sprayed herbicides for aquatic receptors such as fish and aquatic invertebrates is direct contact with and ingestion of potentially contaminated surface water from Wildcat, Strawberry, Claremont, San Leandro, and Redwood Creeks. This is of most concern for juvenile and larval stages of aquatic receptors and portions of the creek with pools and slow moving water.

Of special concern are risks of herbicide use for five listed species that may be present in the project areas. In addition to the use of USDA Forest Service risk assessment worksheets, a separate evaluation of risk to these species was conducted. Species of concern include California red-legged frog (CRLF) (*Rana draytonii*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), Central California Coast (CCC) population of steelhead (*Oncorhynchus mykiss*), and two terrestrial plants: pallid manzanita (*Arctostaphylos pallida*), and Presidio clarkia (*Clarkia franciscana*). Some of these species also include sensitive life stages (e.g., larval stages of the frog and juvenile steelhead). The manzanita and clarkia are rare plant species that would not be frequently encountered within the project area. An underlying assumption associated with the focus on these species of special concern is that protection of these species would ensure protection of other, less sensitive species.

Cut Stump Treatment - The primary application method proposed for this fire reduction program is cut stump treatment, not spraying. Cut stump treatment allows substantial control over the site of herbicide application; therefore, this method has a low probability of affecting non-target species, reduces the area of environmental contamination, and requires only a small amount of herbicide to be effective. With this application method, the likelihood of drift or delivery of herbicides away from treatment sites is significantly minimized.

1.4 Report Organization

The SLRA consists of seven components, which are briefly described below and presented in the following sections:

- Section 2, Chemicals of Concern, identifies chemicals in the media of concern at concentrations that could potentially impact the health of human or ecological receptors.
- Section 3, Exposure Assessment, identifies media of concern, characterizes potentially exposed populations, and identifies pathways of exposure. This section also includes the determination of exposure point concentrations (i.e., the chemical concentration to which people or ecological receptors may be exposed) for each chemical of concern.
- Section 4, Toxicity Assessment, uses toxicity values for each chemical of concern to describe the relationship between human and ecological exposure and the potential for adverse health effects.
- Section 5, Risk Characterization, integrates exposure and chemical toxicity information to establish risk and hazard for each chemical for the exposure pathways of concern.
- Section 6, Uncertainty Evaluation, identifies uncertainties inherent in the risk assessment process and evaluates their impact upon the risk characterization and its interpretation.
- Section 7, Summary and Conclusions, provides a summary and conclusions of the SLRA results.
- Section 8, References.

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SECTION TWO CHEMICALS OF CONCERN

The following SLRA steps are addressed in this section:

- Identify the types of herbicides that are currently used and are proposed for future use in the proposed and connected project areas including their hazardous and toxicological characteristics
- Identify the current and proposed methods of application of herbicides including the frequency and duration of applications
- Identify the types of environments and habitats in the affected area that could be affected by the use of herbicides

2.1 Identification of Chemicals of Concern

2.1.1 Current Pesticide Use

This section describes the subapplicants' policies and programs related to use of pesticides. In this report the term pesticide can refer to both pesticides and herbicides. Current use of pesticides and herbicides by subapplicants is limited and chemicals are used only as a backup to other control methods in most areas. Exceptions would include areas such as golf courses.

2.1.1.1 EBRPD

2.1.1.1.1 EBRPD Pest Management Programs

Beginning in the 1970s, EBRPD has attempted to limit the use of toxic chemicals on its park lands. The 1987 EBRPD Pest Management Policies and Practices included a policy stating: "In accordance with the accepted principles of ecology, the District will strive to implement an integrated pest management program which eliminates the use of chemicals as much as feasible whenever alternative methods are effective" (EBRPD 1987). EBRPD identified the following wildland management issues in its 1997 Master Plan (EBRPD 1996): Management of wildland areas may require use of integrated pest management (IPM)[1] practices to control plant and animal pests. Agricultural sites and cultivated areas within EBRPD jurisdiction may also be managed in accordance with IPM methods to control noxious weed infestations, broom, and

[1] The EBRPD definition of IPM is "a strategic approach for preventing and suppressing pest problems before they reach unacceptable levels. Using IPM means selecting and integrating the most appropriate combinations of available pest control methods (including cultural, mechanical, chemical, and biological) for a given site/pest occurrence in ways that minimize risk to public safety, health and the environment. While the goal of IPM programs is the same—long-term resolution to pest problems—the actual specific set of strategies selected will vary by park location, the season, type of pest, habitat considerations, level of desired control and cost factors. Additional, current practices will change as new information and new technologies are developed." (EBRPD 2005)

other invasive non-native plants. EBRPD uses IPM methods to minimize the impact of undesirable species on natural resources and to reduce pest-related health and safety risks to the public in developed facilities and high-use recreational areas. The first Proposed Pest Species Management Program was initiated by EBRPD in 1982 (EBRPD 1982). By 1987, a more comprehensive IPM plan was prepared, which underwent CEQA review.[2] The 1987 IPM plan was implemented beginning in 1988 (EBRPD 1987). A summary of the plan follows. As required by state and local requirements, EBRPD analyzes the annual amount of pesticide usage through the areas under its jurisdiction. The latest pesticide use reports available for review as the writing of the EBRPD Vegetation Plan EIR was for the years 2007 and 2008 (EBRPD 2009a). The use of IPM methods by EBRPD is to minimize the impact of undesirable species on natural resources and to reduce pest-related health and safety risks to the public in developed facilities and high-use recreational areas.

2.1.1.1.2 1987 Integrated Pest Management Plan

The 1987 Pest Management Policies and Practices for EBRPD, Resolution Number 1987-11-325 (1987 IPM plan) was prepared to consolidate all relevant EBRPD board-adopted policies, administrative directives, and "state of the art" pest management practices pertaining to agricultural and structural uses on EBRPD lands. The plan is supported by the EBRPD Board of Directors and staff, an IPM specialist, and two advisory committees: the Pest Management Advisory Committee (PMAC)[3] and the Ecology Committee.[4]

The major implementation components of the plan include (1) monitoring program for pests; (2) use of pesticides only with prior authorization (by the IPM specialist or PMAC); (3) completion of an IPM checklist and pesticide use report; (4) notification and posting; (5) general chemical safety and environmental concerns, including periodic review of records of pesticide use by the PMAC to ensure compliance with applicable rules and regulations; and (6) IPM training program for workers. The plan was prepared to set a framework for use of IPM methods within EBRPD lands and to comply with local, state, and federal requirements for pesticide management.

2.1.1.1.3 EBRPD Annual Pesticide Use, 2007

The 2007 Pesticide Use Report for EBRPD (EBRPD 2008) includes pest management needs and practices within the properties owned and managed by EBRPD. The EBRPD list of approved pesticides in 2007 included Roundup (glyphosate), Surflan (oryzalin), Banvel (dicamba), copper sulfate, Garlon (triclopyr), Casoron (dichobenil), and Chlorophacinone (inadandione). All of

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[2] A Negative Declaration was prepared on the 1987 IPM Plan (not available for review).

[3] The Pest Management Advisory Committee (PMAC) is a five-member professional advisory committee appointed by the Board that oversees the IPM program effectiveness, develops long-term pest management programs, among other tasks.

[4] The Ecology Committee is a joint union-management committee with two union representatives and two representatives appointed by EBRPD management staff and at least two Board of Directors members. The function is advisory through recommendations to the EBRPD board, PMAC or staff.

these pesticides are considered EPA Category III and IV pesticides, "use with caution" (EPA 2007)[5] No category I (danger) or category II (warning) herbicides were on the board-approved list of herbicides for EBRPD in 2007.

The amount of each pesticide used by EBRPD is tracked and accounted for on an annual basis. In addition, the office of the IPM Specialist advises EBRPD park supervisors and concessionaires (including golf courses) on how to work toward the goal of reducing the need and number of annual pesticide applications. Prior authorization by the IPM Specialist is required before purchase and/or use of a pesticide is permitted for accountability and to ensure compliance with requirements for worker training.

The overall usage in 2007 of board-approved pesticides (Roundup, Surflan, Banvel, Garlon, Casoron, and Chlorophacinone) was similar to that recorded in 2006, with a slight increase of 1.5% in Roundup use for park operations and a decrease in use of 6.5% used in resource management projects.

2.1.1.1.4 EBRPD Annual Pesticide Use, 2008

The beginning of EBRPD's 2008 Annual Analysis of Pesticide Use (EBRPD 2009a) states that EBRPD's approved list of pesticides included:

- Roundup (glyphosate) – herbicide
- Surflan (oryzalin) – herbicide
- Banvel (dicamba) – herbicide
- Copper sulfate – algicide, molluscicide
- Garlon (triclopyr) – herbicide
- Casoron (dichlobenil) – herbicide
- Diphacinone (rozol) – rodenticide

Overall usage in 2008 of board-approved pesticides (Roundup, Surflan, Banvel, Garlon, Casoron, and Diphacinone) was similar to that recorded in 2007, with a slight increase of Roundup use (29%) for park operations and a decrease (25%) of use in resource management projects. The 2007 report listed Chlorophacinone as an approved pesticide but the 2008 report listed Diphacinone.

This report lists various EBRPD areas and how much of each of the above mentioned (except copper sulfate) pesticides were used in each area. The 2008 Annual Analysis of Pesticide Use also contains an approved list of pesticides for EBRPD for 2008 in that report's Appendix A.

[5] This material is subject to revision pending compilation of an IPM Golf Course Plan. The EBRPD IPM policy permits exemption to the board-approved list of pesticides with the approval of the IPM Specialist; this provides a measure of flexibility in the program to be able to respond to specific and limited in purpose pest control with the use of non- approved pesticides. (EBRPD 2005)

The approved list in this appendix includes more than the aforementioned list of approved pesticides. The following additional approved pesticides are included:

- Oxadiazon (Ronstar) – herbicide
- Amorphous silica gel (Dri-Die) – insecticide
- Ant traps or stakes (arsenic trioxide, boric acid) – insecticide
- *Bacillus thuringiensis* (dipel, thuricide) – insecticide
- Hydrated lime and copper sulfate (Bordeaux mixture) – fungicide/insecticide
- Chlorophacinone (Rozol)
- Copper napthenate – wood preservative
- Gas cartridges – fumigant for burrowing rodents
- Rodeo (glyphosate) – herbicide
- Insecticidal soap (Safers) – insecticide
- Pyrethrum (pyrenone) – insecticide
- Scotts Fertilizer Plus (has benomyl) – fungicide
- Sulfur – fungicide
- Pathfinder (triclopyr) – herbicide

In 2008, Transline (chlopyralid) was an experimental herbicide under review. Habitat (imazapyr, an aquatic herbicide) was also under review in 2008. The report does not say how much of these herbicides were used.

At EBRPD's golf courses, fungicides are also used. In 2008, Tilden golf course used the following fungicides which were all under review at the time: Mancozeb, Thiophanate-methyl, Quintozene, Chlorothalonil, Flutolanil, Vinclozdin, and Iprodine. The Tilden Golf Course also used Roundup and Powerzone (carfentrazone-ethyl) herbicides, and Primo/Proxy plant growth inhibitor. Powerzone was not listed by EBRPD as an approved pesticide.

2.1.1.1.5 EBRPD Hazardous Materials Business Plans

EBRPD has a hazardous materials business plan for its Tilden Corporation Yard, which houses Fire Station #1 and for a central warehouse that supplies pesticides to EBRPD at large. EBRPD's proposed and connected actions would be conducted from these facilities.

EBRPD prepared its most recent Hazardous Materials Business Plan in 2010. EBRPD did not include pesticides in that plan because it did not use a sufficient quantity of pesticides to warrant their inclusion in the plan. The 2010 HMBP was not made available and therefore was not reviewed. EBRPD stated that although it has used Roundup Pro in the past, only Garlon4 would be used in its proposed and connected project areas (EBRPD 2010).

2.1.1.1.6 EBRPD's Prescriptions for the Control of Invasive Plant Species and Noxious Weeds (LSA Associates, Inc. 2009a)

This document prescribes control methods for various types of plants, including specific herbicides to be used for each plant type. The document states that whatever is used by EBRPD or its contractors should be in accordance with EBRPD's Pest Management Policies and Practices Resolution.

2.1.1.1.7 EBRPD's Wildfire Hazard Reduction and Resource Management Plan (EBRPD 2009b)

EBRPD's vegetation management methods are based on its Wildfire Hazard Reduction and Resource Management Plan (EBRPD 2009b). The plan is available at http://www.ebparks.org/stewardship/fuelsplan/plan and is described in more detail in Section 3.4.2.3 of the EIS. The plan recommends selective thinning of areas dominated by non-native invasive species that contribute fuel to wildfires. Eucalyptus, Monterey pine, and acacia trees would be targeted to reduce the number of trees per acre or remove entire groves. Lower limbs would be removed from remaining trees and woody debris would be removed from under the trees.

Eucalyptus and acacia stumps would be treated with herbicide to prevent or reduce re-sprouting. Pine stumps do not require treatment because they do not produce sprouts. The herbicide application would include Garlon 4 Ultra or Garlon 3A, a colorant, and an approved carrier agent such as Hasten oil, water, or other product indicated as acceptable on the product label. EBRPD would apply herbicides in accordance with the instructions on the product label, guidance of the California Department of Pesticide Regulation, and restrictions described on in the Section 3.4.2 of the EIS. Seedlings of eucalyptus, Monterey pine, and acacia would be hand-pulled or chemically treated depending on size.

In the maintenance phase, sprouts growing from cut stumps would be treated by hand-spraying herbicide on their leaves or by cutting them and hand-spraying the cut stubble. No spraying of foliage would occur within 60 feet of standing or flowing water or when wind speed is greater than 10 mph or less than 2 mph. Frequency of maintenance treatment would depend on the effectiveness of initial treatment. Stumps would be treated with herbicide up to two times a year until the stump no longer produced sprouts. This typically requires two treatments.

2.1.1.2 City of Oakland

2.1.1.2.1 City of Oakland Pesticide Use Policy and Ban

Under a resolution passed on December 16, 1997, the City of Oakland currently bans the use of pesticides with 11 stated exemptions. For certain exemptions, including forestry management applications, restrictions were imposed including conformance with Alameda County Health Agency guidelines and use of the least hazardous effective available pesticide that is also approved and registered with EPA and DPR. Any application of pesticides requires use of applicators licensed by the State of California as pest control operators and that public

notification is provided prior to any treatment. Treatment must also include marker dyes and public education programs. The Citizens' IPM Advisory Committee advises the City Council on pest control practices.

The March 2010 City Council report on preparation of an IPM plan for the City of Oakland, which authorizes certain pesticide uses, describes application of herbicides in fuel reduction projects.

A report was prepared on March 22, 2005, regarding preparation of environmental documents under CEQA for a limited exemption to the ban on pesticide uses for fuel reduction projects. The following requirements were included in the 2005 resolution.

Herbicide Application. Aerial or ground spraying is not permitted under this policy. When herbicides are needed for vegetation control, best management practices call for direct application to the plant or tree either by hand painting the herbicide directly on to the cambium of the freshly cut tree or plant stump or bottle spritzing, no further than 6 inches away, onto freshly cut pampas grass clumps. In order to apply the herbicide to the stump or grass clump, all of the plant or tree's foliage (leaves, branches, and trunks) must be hand or mechanically cut away until nothing is left but a stump or clump. When glyphosate and triclopyr are applied in this manner, the herbicide is absorbed within the plant or tree's system and does not migrate into the surrounding soil.

Herbicide Formulations. The exemption will be limited to the use of two herbicides: glyphosate (in formulations such as Roundup or Rodeo) and triclopyr (in formulations such as Garlon and Pathfinder). These are federally and California-registered pesticides for the control of woody plant species and broad leaf plants in right of ways, forests, open space parks, ditch banks and maintenance of wildlife corridors. The EPA categorically ranks herbicide toxicity on a scale of one to four as follows: Category One - Highly Toxic; Category Two - Moderately Toxic; Category Three - Slightly Toxic; Category Four - Not Acutely Toxic.

Both glyphosate and triclopyr have received the lowest ranking for toxicity or a Category Four. In accordance with the city's IPM policy and BMPs, the choice of formulation for each type of application will be determined based on environmental factors as well as the product's capabilities. Glyphosate and triclopyr will only be used when conditions and BMPs demonstrate that a chemical treatment would be the most effective approach and will only be applied to the list of plants previously identified in this report and those new non-native plants that may be identified in the Wildfire Prevention Assessment District's yearly report.

Use of Herbicides by Surrounding Jurisdictions. The Cities of Berkeley and Oakland are the only two jurisdictions in Alameda County that either ban or partially ban the use of herbicides for weed control. Although the City of Berkley has a total pesticide ban, the University of California Berkeley uses herbicides for vegetation management in the Berkeley Hills within Berkeley city limits. Other public agencies utilizing herbicides include EBRPD

> and East Bay Municipal Utility District. Both agencies have fire prevention and vegetation management responsibilities within Oakland city limits. (Oakland 2005).

However, the document titled *Wildfire Prevention Program 2008-2010, Bi-Annual Vegetation Management Plan*, prepared by the City of Oakland Fire Department, provides a description of ongoing activities related to chemical treatment for an herbicide demonstration project along Shepherd Canyon Road on five City parcels next to the Municipal Corporation yard and Oakland Fire Department Station 24. The following excerpt (p. 23) includes the use of Stalker (imazapyr) which is not permitted under the City of Oakland IPM policy above:

> The herbicide prescription will be written by a Certified Pesticide Applicator and the application will follow the label directions. The herbicide solution will be applied to the cambium layer of the freshly cut tree stump within a few minutes of felling. The herbicide mixture will likely consist of a combination of Garlon4 (tricloypyr) and Stalker (imazapyr) in a solution of esterified seed oil, water, and marking dye. A typical tree requires 1 to 2 ounces of diluted solution. [0.5 ounces solution per lineal foot of cambium]. All cut tree stumps shall receive semiannual follow-up treatment of herbicides (Garlon4, Stalker, and Roundup) on any emerging stump sprouts, to ensure the permanent elimination of eucalyptus from the project area. Follow up treatment of sprouts will be conducted until 100% removal is obtained.

The City of Oakland pesticide ban exempts, that is, allows “the use of pesticidal soaps, insect growth regulators, microbials, botanicals, synthetic pyrethroids, horticultural oils, and insecticidal bait stations” but does not provide an exemption for the use of Stalker (imazapyr).

In addition, the City provided a response to questions as a result of the preparation of this EIS describing their use of herbicides to treat cut stumps and follow-up treatments, which include the use of Garlon4 and Stalker, as follows:

> During the project, the native understory will be protected, while the non-native trees will be removed and their stump cambium chemically treated with herbicide to prevent re-sprouting. Felled eucalyptus and pine will be either removed then be chipped or lopped and scattered or chipped and scattered on the project site. Logs will be placed and retained as a component of the sediment/erosion control measures to be employed and will serve as habitat supporting a variety of wildlife. Protection of the native species and ongoing management after project completion will ensure a successful conversion protective of natural and recreational resource values, including but not limited to habitat, hydrology, soils and geology, and air quality. All cut eucalyptus stumps shall receive annual follow-up treatment of herbicides (Garlon4, Stalker) on any emerging stump sprouts, to ensure the permanent elimination of eucalyptus from the project area. Follow up treatment of re-sprouts and seedlings emerging from the latent seed stock present in the project area will be managed over time to prevent recolonization of this invasive species. Additionally, annual re-inspection of the defensible spaces ensures that the homes and business in the project area continue to maintain at least 100 foot clearance.

2.1.1.2.2 City of Oakland Hazardous Materials Business Plan

The City of Oakland Fire Station #7 Hazardous Materials Business Plan (Oakland 2008) was reviewed to determine the types of hazardous materials stored at the fire station, which is located at 1006 Amito Drive in Oakland, 1,000 feet south of proposed and connected project areas in Claremont Canyon Regional Preserve Only hazardous materials stored on-site at or above reportable quantities are inventoried in the plan. The reporting quantities are 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases. The plan states that the Oakland fire station #7 does not own or operate a UST or an AST; however it does store up to 515 gallons of diesel fuel on-site. The fire station does not generate or treat hazardous waste on-site.

Diesel fuel, flares and fusses, compressed oxygen, and compressed air are the constituents stored at the site above threshold quantities. Hazardous waste generated at the facility is limited to rags and absorbent materials used to clean oil from the apparatus drip pans and fluorescent light bulbs. Hazardous materials previously reported below threshold quantities include kerosene, spray paint, floor stripper, chlorine bleach, latex paint, mineral spirits, WD-40, Sanisol disinfectant, oven cleaner, and paint thinner.

The fire station hazardous materials business plan does not mention storage of pesticides or herbicides but does mention that they can be poisonous in the Emergency Response Procedures section of the report.

2.1.1.3 UCB

2.1.1.3.1 UCB Vegetation Programs

UCB has had a UCB Fire Mitigation Committee (UCFMC) since the mid-1980s whose mission has been to identify, mitigate, control, reduce and report on fire risk in and surrounding UCB Campus. From the mid-1980s to 1995, fire mitigation work was prescribed by an earlier fire ecology consultant and was then passed through the University of California (UC) Environment, Health and Safety (EH&S) group to Physical Plant – Campus Services (PP-CS). The fire prevention work was conducted primarily by gardeners and groundskeepers. The 1991 Tunnel Fire and the formation of the HEF led to additional focus on fire risk and prevention in the hills of the UCB campus. In June 1995, the current Fire Ecology Consultant (Safe Solutions Group) developed annual fire prevention actions. In 2001, the UCFMC took on a pilot project to thin eucalyptus trees that had been killed in a freeze. Eucalyptus reduction activities were continued based on the success of that project. However, because the Hill Area is home to the headwaters to several watersheds and streams and at least one sensitive species, the UCFMC needed to balance the fire prevention needs with environmental protection goals. The 2020 Hill Area Fire Fuel Management Program (2020 HAFFMP, UCB 2003) was borne from this need.

The UCFMC manages an ongoing program that addresses fires that initiate in the hilly eastern portions of the campus, where wildfires threaten Priority 1 (private) and Priority 2 (public) structures and surrounding vegetation. These areas continue to be treated under state and local

fire codes. Priority 3 areas (ornamental and wildlands capable of generating or feeding spot fires) are added under the 2020 Hill Area Fire Fuel Management Program (2020 HAFFMP, UCB 2003), which updated and formalized the Campus Hill fire risk management plan and procedures, describes local fuel types, prescribes mitigation actions, and identifies constraints to mitigation. The purpose of the 2020 HAFFMP is to prescribe and implement fire fuel hazard mitigation in the human population concentrations, adjacent vegetation and evacuation routes. There are two proposed types of actions: Priority 1 and 2, focusing on the intermix of vegetation and structures, and Priority 3, focusing on the management of vegetation to reduce the fuel load in the wildlands. The prescriptions are intended to be both preventive and facilitative efforts that would include maintaining staging areas and firebreaks, coordinating firefighting personnel, and equipment access. Priority 3 management zones include those where treatment is feasible and those where it is not.

The 2020 HAFFMP includes fuel management and treatment techniques and associated mitigation measures, which are provided in Appendices B and D of the 2020 HAFFMP (adapted from the EBRPD Vegetation Management Projects Alameda and Contra Costa Counties, California HMGP #919-515-24, April 2003). The HAFFMP prescribes treatment methods for stands of eucalyptus, mixed hardwoods, and Monterey pine, as well as for native and nonnative understory and brush. The program indicates that each specific area would be evaluated for the potential issues related to application of pesticides and the other environmental concerns prior its use and would include the implementation of necessary mitigation measures to minimize or prevent impacts which are provided in Appendix B of the HAFFMP.

2.1.1.3.2 UCB Hazardous Materials Business Plan

UCB's hazardous materials business plan (UCB 2010) covers UCB properties in the City of Berkeley except the Physical Plant Campus Services at 2000 Carleton Street in Berkeley. Only hazardous materials stored on-site at or above reportable quantities are inventoried in the plan. The reporting quantities are 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases.

The UCB Office of Environmental Health and Safety operates the hazardous materials facility for the UCB campus at 1 Frank Schlessinger Way.

UCB owns a UST and an AST and generates and treats hazardous waste on-site. On-site treatment includes one conditionally exempt small quantity treatment and one conditionally authorized treatment area.

2.1.1.3.3 UCB Herbicide Use Records

UCB provided herbicide use records for the past 10 years (UCB 2011). The use records were for the TLAP&F and Physical and Environmental Planning Department and excluded uses by other UC entities, such as Grounds, Intercollegiate Athletics, Botanical Garden, and Recreational Sports departments. The herbicide records documented applications in fuel reduction areas in the near vicinity of the proposed and connected project areas with some possible overlap into the

Frowning Ridge proposed project area. The herbicides used included glyphosate applied as a cut stump spray, imazapyr applied as a basal bark spray, triclopyr applied using foliar low pressure, and clopyralid applied using foliar high pressure. Clopyralid has not been used since 2006.

2.1.2 Proposed Pesticide Use

This section presents summaries of chemical characteristics for the three herbicides being considered for use in the proposed and connected project areas – Garlon® 4 Ultra, Stalker®, and Roundup®. The summaries include descriptions of the commercial formulations or the active ingredients of commercial products, including properties associated with fate and transport. Data and discussions presented below provide a brief summary of representative information and are not intended to be a comprehensive presentation of all available data.

2.1.2.1 Garlon® Products (Triclopyr)

Garlon® 4 Ultra is one of three herbicides proposed for use in the proposed and connected project areas. Garlon® 4 Ultra is a yellow colored liquid herbicide comprised of 60.45% of 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester (triclopyr BEE) with the balance (39.55%) comprised of undisclosed inert ingredients. The active ingredient, triclopyr, is the pyridine analogue of 2,4,5-T and imitates the actions of auxin, a natural plant growth hormone. Once the herbicide is applied, it is absorbed by the roots and leaves of the target plant and accumulates in the growth regions of a plant affecting its ability to grow (MDAR 2012). According to the manufacturer, Garlon 4 Ultra is intended to be used to control woody plants and annual and perennial herbaceous broadleaf species. It can be applied to control or eradicate these plants either by foliar spraying or by applying directly to basal bark or cut stumps (EPA 2007).

In its vegetation management program, the U.S. Forest Service has used Garlon® 4 Ultra and Garlon® 3A (triclopyr TEA), a commercial formulation of the triethylamine salt of triclopyr (44%), emulsifiers, surfactants, and ethanol. The Garlon® 3A formulation appears to be less toxic to non-target species than Garlon® 4. Triclopyr TEA dissociates extremely rapidly to triclopyr acid and triethylamine, and triclopyr BEE hydrolyzes rapidly to triclopyr acid and 2- 3 butoxyethanol U.S. EPA/OPP (1998a).

Triclopyr BEE, the active ingredient of Garlon® 4, is highly soluble in water, leading to acute toxicity concerns, but generally has a short half-life in water due to degradation from exposure to sunlight. Most studies identify a half-life of between a few hours and 9 days (SERA and SRC 1996). Triclopyr BEE "degrades quite rapidly in water to triclopyr acid. Laboratory studies indicate that photolysis is the principal degradation pathway, with hydrolysis also contributing. Several studies indicate that the half-life of the ester in water can range from 1.5 to 6.6 days as a result of photolysis" (MDAR 2012 referencing McCall and Gavit, 1986; Solomon, et al., 1988; Havens and Shepler, 1993). Hydrolysis half-lives are dependent on pH and temperature and range from 0.06 days to 208 days in natural waters (MDAR 2012).

The half-life of triclopyr BEE in soils ranges from 4 to 40 days. The foliar half-life is several days, with studies summarized identifying a 42% reduction in 6 days after application and

between 10 and 15 days (SERA and SRC 1996). Additional studies suggest that soil microbes degrade triclopyr readily, especially in warm, moist conditions that favor microbial activity but that persistence in soil varies depending on soil type and climate. "Reported half-lives for triclopyr in western Oregon soils range from 75 to 81 days" (Norris, et al. 1987). This study found detectable triclopyr residues in soil 477 days after treatment. Comparable half-lives were reported for triclopyr in soil after applications of Garlon® 3A (10 to 39 days) (Deubert and Corte-Real 1986) and Garlon® 4 (approximately 14 days in clay or sand) (Stephenson, et al. 1990)" (Forest Service Pacific Northwest Region 2001). The biodegradation potential of Garlon® 4 under aerobic conditions is high, while the bioconcentration potential is moderate.

The major metabolite of triclopyr in both mammals and the environment is 3,5,6-trichloro-2-4 pyridinol, commonly abbreviated as TCP. Although TCP does not have the phytotoxic potency of triclopyr, this compound can be toxic to mammals as well as other species. The half-life of TCP in soil ranges from 40 to 95 days. The half-life of TCP on foliage and fruit is 2.6 to 15 days and 16.5 to 73 days, respectively. The half-life of TCP in water is 6 days.

2.1.2.2 Stalker® (Imazapyr)

Stalker® is the second of three herbicides proposed for use in the proposed and connected project areas to remove targeted invasive and flammable plants, including target tree species, thus reducing fire risk and restoring native vegetative communities. Stalker® is a pale yellow to dark green colored liquid with a weak ammonia-like odor and neutral pH. It is composed of 27.6% IPA (IPA) salt of imazapyr, which is the active ingredient, and 72.4% of proprietary ingredients (BASF 2012). Similar to Garlon® 4, target species for Stalker® application include broadleaf plants, woody plants and trees, as well as certain grasses and vines. Additionally, it is applied by foliar spraying, spraying of bark and basal stems, and application to recently cut brush and trees. Further application methods include direct injection into targeted individual trees and Frill or girdle treatment, which involves spraying or painting the herbicide onto cuts made through the bark and completely around the circumference of the tree with no more than 2-inch intervals between cuts. Most means of application include mixing Stalker with diesel or penetrating oil. Following application, the herbicide is absorbed by a plant's roots, leaves, and bark and targets the same parts of the plant as Garlon® 4 (SERA 2011). Imazapyr, the active ingredient, inhibits activity of an enzyme necessary for growth (OSU 2002). Trees not targeted for application in the proposed and connected project areas may also be impacted by Stalker® if the herbicide reaches the surface soil and is taken up by the roots (SERA 2011).

According to EPA, the active ingredient of Stalker®, imazapyr, is persistent in soil and can reach surface water by either runoff or leaching to groundwater that discharges to surface water, since it is very mobile. When imazapyr reaches surface water, it is soluble and the only means of degradation is through exposure to sunlight; however, the half-life is between 3 and 5 days in surface water, and it is not expected to bioaccumulate in tissues of aquatic organisms under normal pH conditions. The greatest exposure potential is expected to be to non-targeted aquatic and terrestrial plants exposed to spray drift, which is reduced by implementation of and adherence to best management practices of application and maintenance (EPA 2006). Estimates of persistence in the environment vary based on field conditions. Imazapyr is considered to be

moderately persistent in soil with a half-life of approximately 90 days with the primary means of degradation being microbial action according to one source (U.S. DOE, Bonneville Power Administration 2000). Other sources of toxicity information indicate that the half-life in soil can range from 14 days to 17 months. Forestry dissipation studies identified by Oregon State University (OSU) indicated that the half-life ranged from 14 to 44 days in forest litter, 19 to 34 days in forest soil, and 12 to 40 days on plant tissue (OSU 2002).

Formulations of imazapyr may or may not contain a surfactant. The label on Stalker® the herbicide that will be used in the proposed and connected actions does not indicate if a surfactant is included in the proprietary ingredients.

2.1.2.3 Roundup® (Glyphosate)

Roundup® is the third herbicide proposed for use in the proposed and connected project areas to remove invasive and flammable plant and tree species, thus reducing fire risk and restoring native vegetative communities. It is a nonselective herbicide with the active ingredient glyphosate and is among the most widely used herbicides across the United Sates by volume. There are several formulations of Roundup® and, since the patent expired for Monsanto, the manufacturer, in 2000, additional herbicide formulations with glyphosate as the active ingredient have been developed and marketed (IPCS 1994). Currently, 46 commercial formulations are listed by Greenbook and the PAN pesticide database lists more than 700 active formulations of glyphosate with a variety of inert ingredients (SERA 2011). The various Roundup® formulations as well as other glyphosate-based herbicides include different percentages of the active ingredient and proprietary ingredients, such as surfactants, which are possibly more toxic than glyphosate. The type of surfactant and its concentration may differ among formulations and manufacturers. What is more, product labels and MSDSs for some glyphosate formulations do not indicate whether or not surfactants are present in the formulation. Little information is available in the open literature on the identity or toxicity of the surfactants in glyphosate formulations. Surfactants not only enhance the efficacy of glyphosate but also may enhance the toxicity of glyphosate. The specific identity of the surfactants, other inerts, contaminants, and impurities are disclosed to the EPA as part of the registration process; however this information is not disclosed publically because it is classified as trade secret. A common surfactant in Roundup® is polyoxyethylene amine (IPCS 1994). Studies indicate that the surfactant polyoxyethyleneamine or polyethoxylated tallow amine (both abbreviated POEA), used in some commercial glyphosate-based formulations, may be more toxic to animals than glyphosate (OSU 2002) and are a particular concern for aquatic species (EPA/OPP 2008). Thus, the majority of information provided below describes the active ingredient glyphosate in the form of the IPA salt; however, when specific information about Roundup® was identified, it is summarized below.

Glyphosate is an odorless white chrystalline powder (IPCS 1994) applied to vegetation by means similar to Garlon 4 and Stalker. Similar to the other two herbicides being considered for use in the proposed and connected project areas, glyphosate is absorbed by a plant's roots, leaves, and bark and targets the same parts of the plant by inhibiting the enzyme required to initiate plant growth. Glyphosate leads to stunted growth, loss of green coloration, leaf wrinkling or

malformation, and death. Death of the plant can occur between four and twenty days following application (OSU 2002).

Tu, et al. (2001) report that glyphosate is strongly adsorbed to soil particles, which prevents it from excessive leaching or from being taken up from the soil by non-target plants. It is degraded primarily by microbes, but strong adsorption to soil can inhibit microbial action and slow the rate of degradation. Photo- and chemical degradation are not significant means by which glyphosate is removed from soils. The half-life of glyphosate ranges from several weeks to years, but averages 2 months. In the water column, glyphosate is rapidly decreased through adsorption to suspended and bottom sediments and has a half-life of 12 days to 10 weeks.

2.2 Pesticide Application Methods

Application of herbicides will use hand methods. For the majority of areas the initial herbicide application is planned as cut stump treatment. The herbicides used for cut stump treatment would include Garlon 4 Ultra or Garlon 3A, a colorant, and an approved carrier agent such as Hasten oil, water, or other product indicated as acceptable on the product label. Garlon 3A would be used in streamside zones or near standing water. Cut stump applications, as the name implies, involves cutting down the tree and then applying herbicide (e.g., triclopyr formulation) to the tree stump. The stump is treated by applying the formulation to the cambium ring. Cut stump treatment involves less pesticide use over smaller areas than broadcast treatment, but may involve repeated treatments. Applications are expected to occur for several weeks at a time and may be repeated for several years. Frequency of maintenance treatment would depend on the effectiveness of initial treatment. Stumps would be treated with herbicide up to two times a year until the stump no longer produced sprouts. This typically requires two treatments. Herbicides could be mixed with other herbicides or with a solution of methylated seed oil or esterified seed oil, water, and indicator dye. Table 2-1 summarizes the proposed herbicide applications for implementation of the proposed and connected actions by project area. Table 2-2 summarizes herbicide applications proposed for maintenance of the proposed and connected actions by project area. The same herbicides proposed for use in the implementation phase of the proposed and connected actions will be used for maintenance activities.

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Table 2-1. Proposed Herbicide Application Implementation

Park/Location	Polygon	Action	Acres	Applicant	HERBICIDE							
					Type	Amount (gallons)	Gallons per acre	Product lbs/gal	Application Vol (lbs/acre)	Application Method	Timing of Application	Duration
Anthony Chabot Regional Park	AC001	Proposed	4.320	EBRPD	Garlon/Hasten 50/50 **{assumed Garlon 4A- diluted 50/50 with Hasten so 4 lbs per gallon is diluted to 2 lbs per gallon}**	2.50	0.58	2.00	1.16	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" considerations.	Up to 3mo.
Anthony Chabot Regional Park	AC002	Proposed	2.480	EBRPD	Garlon/Hasten 50/50	4.00	1.61	2.00	3.23	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6mo.
Anthony Chabot Regional Park	AC003	Proposed	4.750	EBRPD	Garlon/Hasten 50/50	7.00	1.47	2.00	2.95	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6mo.
Anthony Chabot Regional Park	AC006	Proposed	25.520	EBRPD	Garlon/Hasten 50/50	17.00	0.67	2.00	1.33	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 yr
Anthony Chabot Regional Park	AC007	Proposed	8.440	EBRPD	Garlon/Hasten 50/50	1.50	0.18	2.00	0.36	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6mo.
Anthony Chabot Regional Park	AC011	Proposed	26.15 - incorrect acreage (26.7ac)	EBRPD	Garlon/Hasten 50/50	34.00	1.27	2.00	2.55	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 mo.
Anthony Chabot Regional Park	AC012	Proposed	18.930	EBRPD	Garlon/Hasten 50/50	7.00	0.37	2.00	0.74	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year.
Anthony Chabot Regional Park	AC013	Proposed	16.850	EBRPD	Garlon/Hasten 50/50	11.50	0.68	2.00	1.36	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 mo.
Anthony Chabot Regional Park	AC014	Proposed	92.550	EBRPD	Garlon/Hasten 50/50	100.00	1.08	2.00	2.16	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 2 years
Anthony Chabot Regional Park	AC001	Connected	5.322	EBRPD	Garlon [assume Garlon 4A not diluted so 4 lbs per gallon]	1.50	0.28	4.00	1.13	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6mo.
Anthony Chabot Regional Park	AC006	Connected	5.260	EBRPD	Garlon	2.50	0.48	4.00	1.90	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6mo.
Anthony Chabot Regional Park	AC007	Connected	89.132	EBRPD	Garlon	40.00	0.45	4.00	1.80	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 2 years
Anthony Chabot Regional Park	AC010	Connected	90.057	EBRPD	Garlon	70.00	0.78	4.00	3.11	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3 years
Anthony Chabot Regional Park	AC011	Connected	85.955	EBRPD	Garlon	65.00	0.76	4.00	3.02	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3 years
Anthony Chabot Regional Park	AC012	Connected	9.464	EBRPD	Garlon	7.00	0.74	4.00	2.96	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 1 year
Anthony Chabot Regional Park	AC013	Connected	192.558	EBRPD	Garlon	140.00	0.73	4.00	2.91	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3 years
Anthony Chabot Regional Park	AC014	Connected	0.405	EBRPD	Garlon	1.00	**2.47**	**4.00**	**9.87**	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 6mo.
Anthony Chabot Regional Park	AC004	Cumulative	23.510	EBRPD	Garlon	15.00	0.64	4.00	2.55	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Anthony Chabot Regional Park	AC008a	Cumulative	70.141	EBRPD	Garlon	74.00	1.06	4.00	4.22	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3 years
Anthony Chabot Regional Park	AC008b	Cumulative	55.136	EBRPD	Garlon	65.00	1.18	4.00	4.72	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3 years
Anthony Chabot Regional Park	AC008c	Cumulative	231.112	EBRPD	Garlon	286.00	1.24	4.00	4.95	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3 years
Anthony Chabot Regional Park	AC009	Cumulative	24.808	EBRPD	Garlon	30.00	1.21	4.00	4.84	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3 years

Table 2-1. Proposed Herbicide Application Implementation

Park/Location	Polygon	Action	Acres	Applicant	HERBICIDE							
					Type	Amount (gallons)	Gallons per acre	Product lbs/gal	Application Vol (lbs/acre)	Application Method	Timing of Application	Duration
Claremont Canyon Regional Preserve	CC001	Proposed	2.280	EBRPD	Garlon/Hasten 50/50	3.5	1.54	2.00	3.07	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Claremont Canyon Regional Preserve	CC001	Proposed	13.650	EBRPD	Garlon/Hasten 50/50	11.00	0.81	2.00	1.61	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Claremont Canyon Regional Preserve	CC003	Proposed	2.740	EBRPD	'Garlon/Hasten 50/50	4.00	1.46	2.00	2.92	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Claremont Canyon Regional Preserve	CC006	Proposed	3.340	EBRPD	Garlon/Hasten 50/50	2.00	0.60	2.00	1.20	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Claremont Canyon Regional Preserve	CC007	Proposed	1.720	EBRPD	Garlon/Hasten 50/50	1.50	0.87	2.00	1.74	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Claremont Canyon Regional Preserve	CC008	Proposed	3.720	EBRPD	Garlon/Hasten 50/50	0.50	0.13	2.00	0.27	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Claremont Canyon Regional Preserve	CC010	Proposed	5.360	EBRPD	Garlon/Hasten 50/50	5.00	0.93	2.00	1.87	Cut stump treatment on brush, eucalyptus, and bay laurel	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Claremont Canyon Regional Preserve	CC012	Proposed	2.400	EBRPD	Garlon/Hasten 50/50	2.00	0.83	2.00	1.67	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Claremont Canyon Regional Preserve	CC001	Connected	3.038	EBRPD	Garlon	2.00	0.66	4.00	2.63	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Claremont Canyon Regional Preserve	CC002	Connected	6.158	EBRPD	Garlon/Hasten 50/50	***0.50***	***0.08***	***2.00***	***0.16***	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3mo.
Claremont Canyon Regional Preserve	CC003	Connected	11.058	EBRPD	Garlon/Hasten 50/50	10.00	0.90	2.00	1.81	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 6mo.
Claremont Canyon Regional Preserve	CC004	Connected	2.553	EBRPD	Garlon/Hasten 50/50	4.00	1.57	2.00	3.13	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 1 year.
Claremont Canyon Regional Preserve	CC005	Connected	0.636	EBRPD	Garlon/Hasten 50/50	1.00	1.57	2.00	3.15	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 6mo.
Claremont Canyon Regional Preserve - **euc forest veg community is incorrect.**	CC008	Connected	0.277	EBRPD	Garlon/Hasten 50/50	1.00	3.61	2.00	7.23	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 6 months
Claremont Canyon Regional Preserve	CC009	Connected	65.630	EBRPD	Garlon/Hasten 50/50	55.00	0.84	2.00	1.68	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 1 year
Claremont Canyon Regional Preserve	CC010	Connected	0.809	EBRPD	Garlon/Hasten 50/50	1.50	1.85	2.00	3.71	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 1 year
Claremont Canyon Regional Preserve	CC011	Connected	40.207	EBRPD	Garlon/Hasten 50/50	36.00	0.90	2.00	1.79	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 1 year
Huckleberry Botanic Regional Preserve	HP001	Proposed	1.710	EBRPD	Garlon/Hasten 50/50	1.00	0.58	2.00	1.17	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Huckleberry Botanic Regional Preserve	HP002	Proposed	13.620	EBRPD	Garlon/Hasten 50/50	1.00	0.07	2.00	0.15	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Huckleberry Botanic Regional Preserve	HP003	Proposed	1.120	EBRPD	Garlon/Hasten 50/50	1.00	0.89	2.00	1.79	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Huckleberry Botanic Regional Preserve	HP004	Proposed	1.310	EBRPD	Garlon/Hasten 50/50	0.50	0.38	2.00	0.76	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Huckleberry Botanic Regional Preserve	HP004	Connected	0.319	EBRPD	Garlon/Hasten 50/50	0.50	1.57	2.00	3.14	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year

Table 2-1. Proposed Herbicide Application Implementation

Park/Location	Polygon	Action	Acres	Applicant	HERBICIDE							
					Type	Amount (gallons)	Gallons per acre	Product lbs/gal	Application Vol (lbs/acre)	Application Method	Timing of Application	Duration
Kennedy Grove Regional Recreation Area	KG001	Cumulative	0.830	EBRPD	Garlon/Hasten 50/50	1.00	1.21	2.00	2.41	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Kennedy Grove Regional Recreation Area	KG002	Cumulative	4.541	EBRPD	Garlon/Hasten 50/50	5.00	1.10	2.00	2.20	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 2 years
Kennedy Grove Regional Recreation Area	KG003	Cumulative	3.729	EBRPD	Garlon/Hasten 50/50	1.00	0.27	2.00	0.54	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Kennedy Grove Regional Recreation Area	KG004	Cumulative	6.105	EBRPD	Garlon/Hasten 50/50	3.00	0.49	2.00	0.98	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC010	Proposed	4.790	EBRPD	Garlon/Hasten 50/50	2.50	0.52	2.00	1.04	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Lake Chabot Regional Park	LC001	Cumulative	3.482	EBRPD	Garlon/Hasten 50/50	4.00	1.15	2.00	2.30	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC002	Cumulative	1.208	EBRPD	Garlon/Hasten 50/50	2.00	1.65	2.00	3.31	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC003	Cumulative	1.929	EBRPD	Garlon/Hasten 50/50	2.00	1.04	2.00	2.07	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC004	Cumulative	2.143	EBRPD	Garlon/Hasten 50/50	2.00	0.93	2.00	1.87	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC005a	Cumulative	2.051	EBRPD	Garlon/Hasten 50/50	2.00	0.98	2.00	1.95	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC005b	Cumulative	5.248	EBRPD	Garlon/Hasten 50/50	6.00	1.14	2.00	2.29	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC006	Cumulative	30.874	EBRPD	Garlon/Hasten 50/50	30.00	0.97	2.00	1.94	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 2 years
Lake Chabot Regional Park	LC007a	Cumulative	2.410	EBRPD	Garlon/Hasten 50/50	5.00	2.07	2.00	4.15	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC007b	Cumulative	2.750	EBRPD	Garlon/Hasten 50/50	5.00	1.82	2.00	3.64	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC007c	Cumulative	3.464	EBRPD	Garlon/Hasten 50/50	7.00	2.02	2.00	4.04	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC007d	Cumulative	0.797	EBRPD	Garlon/Hasten 50/50	2.00	2.51	2.00	5.02	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Lake Chabot Regional Park	LC008	Cumulative	12.266	EBRPD	Garlon/Hasten 50/50	6.00	0.49	2.00	0.98	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year

Table 2-1. Proposed Herbicide Application Implementation

Park/Location	Polygon	Action	Acres	Applicant	HERBICIDE							
					Type	Amount (gallons)	Gallons per acre	Product lbs/gal	Application Vol (lbs/acre)	Application Method	Timing of Application	Duration
Lake Chabot Regional Park	LC009	Cumulative	28.100	EBRPD	Garlon/Hasten 50/50	4.00	0.14	2.00	0.28	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Leona Canyon Regional Open Space	LE005	Proposed	4.580	EBRPD	Garlon/Hasten 50/50	7.50	1.64	2.00	3.28	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Leona Canyon Regional Open Space	LE002	Cumulative	0.356	EBRPD	Garlon/Hasten 50/50	1.00	2.81	2.00	5.61	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Leona Canyon Regional Open Space	LE003	Cumulative	4.847	EBRPD	Garlon/Hasten 50/50	1.00	0.21	2.00	0.41	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Leona Canyon Regional Open Space	LE004	Cumulative	9.727	EBRPD	Garlon/Hasten 50/50	3.00	0.31	2.00	0.62	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Leona Canyon Regional Open Space	LE006	Cumulative	39.802	EBRPD	Garlon/Hasten 50/50	20.00	0.50	2.00	1.00	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Miller/Knox Regional Shoreline	MK005	Proposed	10.010	EBRPD	Garlon/Hasten 50/50	15.00	1.50	2.00	3.00	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Point Pinole Regional Shoreline	PP001	Cumulative	441.830	EBRPD	Garlon/Hasten 50/50	265.00	0.60	2.00	1.20	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 years
Point Pinole Regional Shoreline	PP001b	Cumulative	1.748	EBRPD	Garlon/Hasten 50/50	2.00	1.14	2.00	2.29	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 months
Point Pinole Regional Shoreline	PP002	Cumulative	14.092	EBRPD	Garlon/Hasten 50/50	9.00	0.64	2.00	1.28	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Point Pinole Regional Shoreline	PP003	Cumulative	4.170	EBRPD	Garlon/Hasten 50/50	5.00	1.20	2.00	2.40	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Point Pinole Regional Shoreline	PP004	Cumulative	1.555	EBRPD	Garlon/Hasten 50/50	2.00	1.29	2.00	2.57	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 months
Point Pinole Regional Shoreline	PP005	Cumulative	13.611	EBRPD	Garlon/Hasten 50/50	2.00	0.15	2.00	0.29	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Redwood Regional Park	RD001	Proposed	0.230	EBRPD	Garlon/Hasten 50/50	0.50	2.17	2.00	4.35	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Redwood Regional Park	RD002	Proposed	5.010	EBRPD	Garlon/Hasten 50/50	11.00	2.20	2.00	4.39	Cut stump treatment on eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Redwood Regional Park	RD003	Proposed	11.820	EBRPD	Garlon/Hasten 50/50	9.00	0.76	2.00	1.52	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Redwood Regional Park	RD004	Proposed	27.800	EBRPD	Garlon/Hasten 50/50	3.00	0.11	2.00	0.22	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 2 years
Redwood Regional Park	RD005a	Proposed	1.100	EBRPD	Garlon/Hasten 50/50	4.00	**3.64**	**2.00**	**7.27**	Cut stump treatment on eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Redwood Regional Park	RD005b	Proposed	8.450	EBRPD	Garlon/Hasten 50/50	1.00	0.12	2.00	0.24	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year

Table 2-1. Proposed Herbicide Application Implementation

Park/Location	Polygon	Action	Acres	Applicant	HERBICIDE							
					Type	Amount (gallons)	Gallons per acre	Product lbs/gal	Application Vol (lbs/acre)	Application Method	Timing of Application	Duration
Redwood Regional Park	RD009	Proposed	2.920	EBRPD	Garlon/Hasten 50/50	5.00	1.71	2.00	3.42	Cut stump treatment on eucalyptus, brush, and bay laurel	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Redwood Regional Park	RD011	Proposed	1.020	EBRPD	Garlon/Hasten 50/50	1.50	1.47	2.00	2.94	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Redwood Regional Park	RD001	Connected	66.110	EBRPD	Garlon/Hasten 50/50	25.00	0.38	2.00	0.76	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 years
Redwood Regional Park	RD003	Connected	15.793	EBRPD	Garlon/Hasten 50/50	25.00	1.58	2.00	3.17	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 2 years
Redwood Regional Park	RD004	Connected	0.524	EBRPD	Garlon/Hasten 50/50	1.00	1.91	2.00	3.82	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 mos.
Redwood Regional Park	RD009	Connected	6.727	EBRPD	Garlon/Hasten 50/50	6.00	0.89	2.00	1.78	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Redwood Regional Park	RD007	Cumulative	2.133	EBRPD	Garlon/Hasten 50/50	5.00	2.34	2.00	4.69	Cut stump treatment on eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Sibley Volcanic Regional Preserve	SR001	Proposed	7.880	EBRPD	Garlon/Hasten 50/50	2.00	0.25	2.00	0.51	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Sibley Volcanic Regional Preserve	SR003	Proposed	3.920	EBRPD	Garlon/Hasten 50/50	3.50	0.89	2.00	1.79	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Sibley Volcanic Regional Preserve	SR004	Proposed	12.940	EBRPD	Garlon/Hasten 50/50	8.00	0.62	2.00	1.24	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Sibley Volcanic Regional Preserve	SR005	Proposed	22.790	EBRPD	Garlon/Hasten 50/50	10.00	0.44	2.00	0.88	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Sibley Volcanic Regional Preserve	SR002a	Connected	28.305	EBRPD	Garlon 4 Ultra	25.00	0.88	4.00	3.53	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 2 years
Sibley Volcanic Regional Preserve	SR002b	Connected	15.901	EBRPD	Garlon/Hasten 50/50	10.00	0.63	2.00	1.26	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Sibley Volcanic Regional Preserve	SR003	Connected	12.552	EBRPD	Garlon 4 Ultra	10.00	0.80	4.00	3.19	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Sibley Volcanic Regional Preserve	SR005	Connected	14.607	EBRPD	Garlon/Hasten 50/50	8.00	0.55	2.00	1.10	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year1
Sibley Volcanic Regional Preserve	SR006	Connected	38.392	EBRPD	Garlon/Hasten 50/50	45.00	1.17	2.00	2.34	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 years
Sibley Volcanic Regional Preserve	SR007	Connected	8.681	EBRPD	Garlon/Hasten 50/50	10.00	1.15	2.00	2.30	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Sobrante Ridge Regional Preserve	SO001	Proposed	4.050	EBRPD	Garlon/Hasten 50/50	0.50	0.12	2.00	0.25	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Tilden Regional Park	TI006	Proposed	3.970	EBRPD	Garlon/Hasten 50/50	9.00	2.27	2.00	4.53	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Tilden Regional Park	TI012	Proposed	41.650	EBRPD	Garlon/Hasten 50/50	10.00	0.24	2.00	0.48	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Tilden Regional Park - Oakland PDM	TI012	Proposed	12.930	EBRPD	Garlon/Hasten 50/50	20.00	1.55	2.00	3.09	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Tilden Regional Park - Oakland PDM	TI013	Proposed	15.710	EBRPD	Garlon/Hasten 50/50	11.00	0.70	2.00	1.40	Cut stump treatment on brush and eucalyptus	'Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Tilden Regional Park – Oakland PDM	TI014	Proposed	2.820	EBRPD	Garlon/Hasten 50/50	8.00	2.84	2.00	5.67	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months

Table 2-1. Proposed Herbicide Application Implementation

Park/Location	Polygon	Action	Acres	Applicant	HERBICIDE							
					Type	Amount (gallons)	Gallons per acre	Product lbs/gal	Application Vol (lbs/acre)	Application Method	Timing of Application	Duration
Tilden Regional Park	TI015	Proposed	45.640	EBRPD	Garlon/Hasten 50/50	10.00	0.22	2.00	0.44	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Tilden Regional Park - Oakland PDM	TI015	Proposed	1.460	EBRPD	Garlon/Hasten 50/50	1.00	0.68	2.00	1.37	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Tilden Regional Park – Oakland PDM	TI016	Proposed	1.360	EBRPD	Garlon/Hasten 50/50	4.00	2.94	2.00	5.88	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Tilden Regional Park	TI022	Proposed	6.440	EBRPD	Garlon/Hasten 50/50	5.00	0.78	2.00	1.55	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Tilden Regional Park	TI006	Connected	6.768	EBRPD	Garlon/Hasten 50/50	1.00	0.15	2.00	0.30	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 6 months
Tilden Regional Park	TI008a	Connected	28.762	EBRPD	Garlon/Hasten 50/50	30.00	1.04	2.00	2.09	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 1 year
Tilden Regional Park	TI008b	Connected	2.557	EBRPD	Garlon/Hasten 50/50	3.00	1.17	2.00	2.35	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 months
Tilden Regional Park	TI009	Connected	25.976	EBRPD	Garlon/Hasten 50/50	4.00	0.15	2.00	0.31	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 1 year
Tilden Regional Park	TI010	Connected	27.852	EBRPD	Garlon/Hasten 50/50	1.00	***0.04***	***2.00***	***0.07***	Cut stump treatment on eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 6 months
Tilden Regional Park	TI011	Connected	22.206	EBRPD	Garlon/Hasten 50/50	4.00	0.18	2.00	0.36	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 3 months
Tilden Regional Park	TI012	Connected	36.234	EBRPD	Garlon/Hasten 50/50	33.00	0.91	2.00	1.82	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration	Up to 2 years
Tilden Regional Park	TI014	Connected	0.717	EBRPD	Garlon/Hasten 50/50	2.00	2.79	2.00	5.58	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Tilden Regional Park	TI015	Connected	6.930	EBRPD	Garlon/Hasten 50/50	1.00	0.14	2.00	0.29	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Tilden Regional Park	TI018	Connected	0.607	EBRPD	Garlon	1.00	1.65	4.00	6.59	Cut stump treatment on brush and eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Tilden Regional Park	TI019	Connected	2.039	EBRPD	Garlon	1.00	0.49	4.00	1.96	Cut stump treatment on brush and eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Tilden Regional Park	TI020	Connected	15.752	EBRPD	Garlon	9.00	0.57	4.00	2.29	Cut stump treatment on brush and eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Tilden Regional Park	TI021	Connected	17.778	EBRPD	Garlon	3.00	0.17	4.00	0.68	Cut stump treatment on brush and eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	up to 1 year
Tilden Regional Park	TI001	Cumulative	28.633	EBRPD	Garlon	20.00	0.70	4.00	2.79	Cut stump treatment on brush and eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 2 years
Tilden Regional Park	TI002a	Cumulative	108.984	EBRPD	Garlon	123.00	1.13	4.00	4.51	Cut stump treatment on brush and eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 years
Tilden Regional Park	TI003	Cumulative	15.648	EBRPD	Garlon	3.00	0.19	4.00	0.77	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 years

Table 2-1. Proposed Herbicide Application Implementation

Park/Location	Polygon	Action	Acres	Applicant	HERBICIDE							
					Type	Amount (gallons)	Gallons per acre	Product lbs/gal	Application Vol (lbs/acre)	Application Method	Timing of Application	Duration
Tilden Regional Park	TI004	Cumulative	48.512	EBRPD	Garlon	52.00	1.07	4.00	4.29	Cut stump treatment on brush and eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 years
Tilden Regional Park	TI005	Cumulative	6.374	EBRPD	Garlon	5.00	0.78	4.00	3.14	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Tilden Regional Park	TI007a	Cumulative	2.410	EBRPD	Garlon	5.00	2.08	4.00	8.30	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 1 year
Tilden Regional Park	TI007b	Cumulative	1.320	EBRPD	Garlon	2.00	1.52	4.00	6.06	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Tilden Regional Park	TI007c	Cumulative	2.223	EBRPD	Garlon	4.00	1.80	4.00	7.20	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 years
Wildcat Canyon Regional Park	WC003	Proposed	1.670	EBRPD	Garlon/Hasten 50/50	2.00	1.20	4.00	4.79	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Wildcat Canyon Regional Park	WC004	Proposed	7.960	EBRPD	Garlon/Hasten 50/50	4.00	0.50	4.00	2.01	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Wildcat Canyon Regional Park	WC009	Proposed	11.470	EBRPD	Garlon/Hasten 50/50	5.00	0.44	4.00	1.74	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 3 months
Wildcat Canyon Regional Park	WC010	Proposed	10.790	EBRPD	Garlon/Hasten 50/50	15.00	1.39	4.00	5.56	Cut stump treatment on brush and eucalyptus	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 6 months
Wildcat Canyon Regional Park	WC011	Proposed	33.700	EBRPD	Garlon/Hasten 50/50	30.00	0.89	4.00	3.56	Cut stump treatment on brush	Timing is based on "Construction windows/seasonal restrictions and for the protection of species" consideration.	Up to 1 year
Wildcat Canyon Regional Park	WC005	Connected	44.307	EBRPD	Garlon/Hasten 50/50	27.00	0.61	4.00	2.44	Cut stump treatment on brush and eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 years
Wildcat Canyon Regional Park	WC006	Connected	1.187	EBRPD	Garlon/Hasten 50/50	1.00	0.84	4.00	3.37	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Wildcat Canyon Regional Park	WC001	Cumulative	4.436	EBRPD	Garlon/Hasten 50/50	1.00	0.23	4.00	0.90	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 months
Wildcat Canyon Regional Park	WC002	Cumulative	3.992	EBRPD	Garlon/Hasten 50/50	1.00	0.25	4.00	1.00	Cut stump treatment on brush	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 3 months
Wildcat Canyon Regional Park	WC007a	Cumulative	0.748	EBRPD	Garlon/Hasten 50/50	1.00	1.34	4.00	5.35	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months
Wildcat Canyon Regional Park	WC007b	Cumulative	0.534	EBRPD	Garlon/Hasten 50/50	1.00	1.87	4.00	7.49	Cut stump treatment on eucalyptus	August 1 - December 1, depending on precipitation and other environmental factors that dictate when the logging may occur. - For ALL RTA's	Up to 6 months

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Key:

CRLF	California red-legged frog
AWS	Alameda whipsnake
SMHM	Salt marsh harvest mouse
CA	California

Table 2-2. Proposed Herbicide Application for Maintenance

Park/Location	Polygon	Action	Applicant	Maintenance plan	Long-term erosion control	Invasive species control
Tilden Regional Park - Oakland PDM	TI014	Proposed	EBRPD	Mechanical treatments are possible, but others may be less disruptive due to slope conditions. Remove all shrubs and small trees under eucalyptus and oak-bay trees and prune trees to 8 feet Thin eucalyptus groves and apply herbicides to cut stumps trees and prune trees to 8 feet.		Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Tilden Regional Park - Oakland PDM	TI015	Proposed	EBRPD	Reduce shrubs beneath eucalyptus trees through grazing except in riparian areas to maintain defensible space. - Treat broom with herbicides. Emphasize understory and surface fuel treatments by removing forest litter, dead bark and branches, and understory shrubs. Broom control also should be considered for this RTA, Enhance conditions for Western Leatherwood.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides. Enhance conditions for Western Leatherwood.
Tilden Regional Park - Oakland PDM	TI016	Proposed	EBRPD	Mechanical treatments are possible, but others may be less disruptive due to slope conditions. Remove all shrubs and small trees under eucalyptus and oak-bay trees and prune trees to 8 feet Thin eucalyptus groves and apply herbicides to cut stumps trees and prune trees to 8 feet.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Strawberry Canyon-PDM	n/a	Proposed	UCB	- Low-volume foliar application of herbicide to only those trees not killed by initial treatment (usually <10% of trees)and basal bark treatment of resprouts - Spray applied when resprout reaches 3 feet in height but before 6 feet - Semi-annual follow-up treatment for 7 to 10 years - Backsprayer used to selectively apply to young foliage - Follow-up treatment may include basal bark application or re-cutting of sprout and treatment to the cut surface	- Implement Mitigation Measures and Best Practices from the UCB LRDP EIR, as necessary - Implement BMPs identified by RWQCB during and after vegetation removal - Continue implementing urban runoff management program and complying with NPDES stormwater permitting requirements - Continue to develop and implement the Strawberry Creek Management Plan	Additional detail needed from UCB on actions to control the spread of invasive species - UC's annual fire mitigation work program target certain invasive species, specifically broom, in areas of cleared eucalyptus, pine, and acacia - Broom is targeted for control (50% +/-) on all sites; poison oak is targeted for control (25% +/-) on all sites - For broom and poison oak control, focus is on areas recently cleared of heavy brush and adjacent to maintenance trails
Frowning Ridge – City of Oakland – PDM	n/a	Proposed	UCB		Same as Strawberry Canyon – PDM	
Anthony Chabot Regional Park	AC001, AC006, AC007, AC010, AC011, AC012, AC013, AC014	Connected	EBRPD	Maintain the site using hand labor and application of herbicides. Use herbicides to control broom and eucalyptus resprouting. Consider annual control and monitoring of invasive species. Use animal grazing and/or hand labor to maintain the site.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Anthony Chabot Regional Park	AC004, AC008a, AC008b, AC008c, AC009	Cumulative	EBRPD	Maintain the site using hand labor and application of herbicides. Use herbicides to control broom and eucalyptus resprouting. Consider annual control and monitoring of invasive species. Use animal grazing and/or hand labor to maintain the site.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides

Table 2-2. Proposed Herbicide Application for Maintenance

Park/Location	Polygon	Action	Applicant	Maintenance plan	Long-term erosion control	Invasive species control
Claremont Canyon Regional Preserve	CC001, CC002, CC003, CC004, CC005, CC008, CC009, CC010, CC011	Connected	EBRPD	Successful treatment requires a commitment to carefully-timed rotation of mechanical treatments -hand labor-grazing-herbicides to control or reduce broom and or brush invasion. Use animal grazing for initial and follow-up treatments during appropriate seasons to avoid impacts to snakes. - French broom and invasive plant species are a concern - Use animal grazing, mechanical treatment, or hand labor to remove woodland understory and reduce scrub between woodlands. Maintain site by mowing and other hand labor techniques.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Huckleberry Botanic Regional Preserve	HP004	Connected	EBRPD	Emphasize surface fuel reduction in follow-on treatments. Treat broom with herbicides. Follow BMP's for P. Manzanita protocol.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	no animal grazing is allowed in this RTA. Use hand labor to maintain the site, as well as application of herbicides. Follow protocols for P. Manzanita.
Kennedy Grove Regional Recreation Area	KG001, KG002, KG003, KG004	Cumulative	EBRPD	Use herbicides to control broom and eucalyptus resprouting. French broom and invasive plant species are a concern.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Lake Chabot Regional Park	LC001, LC002, LC003, LC004, LC005a, LC005b, LC006, LC007a, LC007b, LC007c, LC007d, LC008, LC009	Cumulative	EBRPD	Use herbicides to control broom and eucalyptus resprouting. Use animal grazing and/or hand labor to maintain the site	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Leona Canyon Regional Open Space	LE001, LE002, LE003, LE004, LE006, , , ,	Cumulative	EBRPD	Use herbicides to control broom and eucalyptus resprouting. Use animal grazing and/or hand labor to maintain the site.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Point Pinole Regional Shoreline	PP001, PP001a, PP001b, PP002, PP003, PP004, PP005, PP005b,	Cumulative	EBRPD	Use herbicides to control broom and eucalyptus resprouting. Use animal grazing and/or hand labor to maintain the site.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides

Table 2-2. Proposed Herbicide Application for Maintenance

Park/Location	Polygon	Action	Applicant	Maintenance plan	Long-term erosion control	Invasive species control
Redwood Regional Park	RD001, RD003, RD004, RD008, RD009, , , ,	Connected	EBRPD	Reduce shrubs beneath eucalyptus trees through grazing except in riparian areas to maintain defensible space. - Treat broom with herbicides. Emphasize understory and surface fuel treatments by removing forest litter, dead bark and branches, and understory shrubs. Broom control also should be considered for this RTA, including herbicide treatment, hand labor, and animal grazing to help maintain.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Redwood Regional Park	RD006, RD007, RD010	Cumulative	EBRPD	Treat broom with herbicides. Emphasize understory and surface fuel treatments by removing forest litter, dead bark and branches, and understory shrubs. Broom control also should be considered for this RTA, including herbicide treatment, hand labor, and animal grazing to help maintain.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Sibley Volcanic Regional Preserve	SR002a, SR002b, SR003, SR005, SR006, SR007	Connected	EBRPD	Treat broom with herbicides. Emphasize understory and surface fuel treatments by removing forest litter, dead bark and branches, and understory shrubs. Broom control also should be considered for this RTA, including herbicide treatment, hand labor, and animal grazing to help maintain.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Sobrante Ridge Regional Preserve	SO002	Cumulative	EBRPD	Use herbicides to control broom and eucalyptus resprouting. Use animal grazing and/or hand labor to maintain the site.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Temescal Regional Recreation Area	TM001	Cumulative	EBRPD	Maintain site by mowing, pruning or other hand labor or use animal grazing.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Tilden Regional Park	TI006, TI008a, TI008b, TI009, TI010, TI011, TI012, TI014, TI015, TI018, TI019, TI020, TI021	Connected	EBRPD	Remove all shrubs and small trees under eucalyptus and oak-bay trees and prune trees to 8 feet Thin eucalyptus groves and apply herbicides to cut stumps trees and prune trees to 8 feet.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides

Table 2-2. Proposed Herbicide Application for Maintenance

Park/Location	Polygon	Action	Applicant	Maintenance plan	Long-term erosion control	Invasive species control
Tilden Regional Park	TI001, TI002a, TI002b, TI002c, TI003, TI004, TI005, TI007a, TI007b, TI007c	Cumulative	EBRPD	Treat broom with herbicides. Emphasize understory and surface fuel treatments by removing forest litter, dead bark and branches. TI001 follow BMP's for P. Manzanita.- Continue to mow and weed behind homes - Use animal grazing and/or hand labor to maintain the site.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Wildcat Canyon Regional Park	WC005, WC006, WC011	Connected	EBRPD	Remove all shrubs and small trees under eucalyptus and oak-bay trees and prune trees to 8 feet	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides
Wildcat Canyon Regional Park	WC001, WC002, WC007a, WC007b, WC008	Cumulative	EBRPD	Thin eucalyptus groves and apply herbicides to cut stumps trees and prune trees to 8 feet. Emphasize understory and surface fuel treatments by removing forest litter, dead bark and branches.	Do not use plastic mono-filament netting for erosion control (use coconut coir matting or tackified hydroseeding compounds)- Do not operate heavy equipment on slopes steeper than 65%, or steeper than 50% in unstable areas; if such areas are unavoidable, develop specific measures to minimize effects	Follow-up treatment includes animal grazing and herbicides. Use animal grazing and/or hand labor to maintain the site, as well as application of herbicides

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Note: The herbicides used for maintenance activities are the same herbicides used in the implementation phase

Key:

CRLF	California red-legged frog
AWS	Alameda whipsnake
SMHM	Salt marsh harvest mouse
CA	California

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SECTION THREE EXPOSURE ASSESSMENT

The following SLRA steps are addressed in this section:

- Develop a conceptual exposure model that identifies the potential media in which herbicides could be found, their pathways, and fate in the environment, as well as the potentially sensitive receptors (those who could ingest, inhale, or come in contact with the herbicides)
- Determine the key human receptors and exposure pathways and ecological receptors and exposure pathways

3.1 Site Conceptual Exposure Model

Populations that may be exposed to released contaminants and pathways by which these populations may come into contact with contaminants are identified in the exposure assessment. The site conceptual exposure model (SCEM) is a description of potential exposure pathways associated with a site or project, including potential sources of contamination, transport mechanisms, exposure routes (e.g., inhalation, ingestion, or dermal absorption), and potentially exposed populations. Only exposure pathways likely to be complete and to contribute significantly to overall exposure are typically evaluated.

Exposure is defined as contact with a chemical or physical agent (EPA, 1989a). Exposure assessment is the estimation of magnitude, frequency, duration, and pathway(s) of exposure to a chemical. Assessment of exposure consists of three steps:

- Characterization of Exposure Setting
- Identification of Exposure Pathways
- Quantification of Exposure

The first step involves identifying physical characteristics of a site and the current and potential future use of the site by receptors. These characteristics, along with concentrations and distributions of chemicals of potential concern (COPCs), define the exposure setting for current and future receptors.

Step two of the exposure assessment identifies pathways by which populations might be exposed to site-related chemicals. Chemical sources, release and transport mechanisms, and intermedia transfer are evaluated. Exposure pathways are identified based on the location and activities of potentially exposed receptors and on the types of potentially contaminated media.

The final step, exposure quantification, has two components: estimation of exposure point concentrations and calculation of chemical intake. Exposure point concentrations are chemical concentrations at the point of contact with site media such as contaminated vegetation, soil, or surface water. Since this SLRA is being used to estimate risks based on proposed and planned

actions instead of existing conditions, exposure point concentrations cannot be directly measured. Instead, these concentrations were estimated based on proposed application rates.

The probability that populations (e.g., members of the general public or ecological receptors) would be exposed to herbicides as a result of the proposed and connected actions is unpredictable. Therefore, chemical intake or exposure concentrations based on site-specific frequency and duration of exposure were not calculated. Instead, a range of possible exposures were quantitatively evaluated.

The exposure assessment is discussed separately for human and ecological receptors in the following subsections.

3.2 Human Health Risk Conceptual Exposure Model

3.2.1 Exposure Setting

Included in the characterization of the exposure setting is a description of physical characteristics of the site and identification of current and potential future human populations on and near the site as they pertain to potential human exposure. The proposed and connected project areas are situated within various regional parks and open space areas in the East Bay Hills with topographic features ranging in elevation from sea level to 1,900 feet above mean sea level. The East Bay Hills include densely built residential neighborhoods of mostly single-family homes, but also include large tracts of open space and wildlands operated and managed by UCB, EBRPD, and EBMUD. These areas include upland and riparian forests, scrub, grasslands, wetlands, and water features (e.g., perennial and intermittent creeks, ponds, and reservoirs). Urban and natural creeks drain to San Francisco Bay. Parks and open space provide a variety of recreational opportunities for people living in or visiting the area.

The San Francisco Regional Water Quality Control Board (SFRWQCB) has designated beneficial uses for each groundwater basin within its jurisdiction. The beneficial uses for the East Bay Plain Subbasin are municipal and domestic water supply, industrial process water supply, industrial service water supply, and agricultural water supply (SFRWQCB 2011). Groundwater in the East Bay Plain Subbasin is used locally for irrigation, industrial, and emergency water supply purposes, and as a limited drinking water supply (SFRWQCB 1999). The most frequent current use of groundwater in the East Bay Plain Subbasin is for irrigation from “backyard” private shallow wells. It is estimated that more than 4,000 homeowners use groundwater from this subbasin for irrigation (SFRWQCB 1999). Groundwater is also used by a few businesses for industrial purposes and by several other users to irrigate parks, golf courses, cemeteries, and school grounds. Groundwater is also used for drinking water by several small systems in the cities of Hayward, San Leandro, and Oakland (SFRWQCB 1999). Most of the wells in the East Bay Plain Subbasin are less than 100 feet bgs, but many wells are between 100 and 834 bgs deep.

EBMUD provides water service in the project vicinity within Contra Costa and Alameda counties, including the cities of Richmond, El Cerrito, Oakland, Berkeley, and San Leandro. EBMUD's water system serves approximately 1.3 million people in a 331-square-mile area extending from Crockett to the north, south to Hayward (encompassing the major cities of Oakland and Berkeley), and east from San Francisco Bay to Walnut Creek and through the San Ramon Valley (EBMUD 2012).

Several hospitals are located within the project vicinity. Emergency facilities are located at Doctors Medical Center in San Pablo, Highland Hospital in Oakland, and Summit Medical Center in Berkeley and Oakland. Educational facilities (a university, a high school, three elementary schools, and a preschool) are near the proposed and connected project areas.

The East Bay Hills' hot and dry autumns, wind-conducive topography, flammable vegetation, dense development, and limited accessibility for firefighting contribute to making the area a substantial regional fire danger. The proposed and connected actions would be implemented on land owned by Oakland and UCB and within various regional parks owned and maintained by EBRPD. Oakland's portion involves 359 acres, UCB's portion involves 99 acres, and EBRPD's portion involves 540 acres in 11 regional parks.

In general, EBRPD and other agencies with jurisdiction over portions of the project area intend to maintain or expand recreational and open space areas; therefore, existing recreational and open space land uses in and adjacent to the project area will likely remain the same, or expand, in the future. In most areas planned future land uses in and adjacent to the proposed and connected project areas are similar to the existing uses. These uses mostly consist of developed residential neighborhoods and public facilities, and are expected to remain as such.

3.2.2 Exposed Populations and Exposure Pathways

For the SCEM, a complete exposure pathway consists of the following four elements:

- A source and mechanism of release of chemicals to the environment
- A transport mechanism for movement of chemicals to a point of human contact (exposure point)
- An exposure point (the point of potential contact between receptor and medium)
- An exposure route (e.g., inhalation, ingestion, dermal contact)

If one or more of these elements are missing, the pathway is incomplete. Normally in risk assessment incomplete pathways are not quantitatively evaluated. Potentially complete pathways that are unlikely to contribute significantly to overall exposure are also not evaluated. Therefore, an analysis of exposure pathways is included to identify those complete and significant exposure pathways that may be important for risk management decisions. However for this risk assessment exposure pathways that may be incomplete or insignificant are evaluated to provide a worst case analysis of exposure associated with improper use or application of herbicides.

Sources of contamination, mechanisms of contaminant release from sources, and subsequent transport of contaminants through the environment are examined in this section to identify potentially contaminated media at the site. Potential exposure pathways for human receptors are discussed in subsequent sections. The SCEM for the proposed and connected project areas illustrated in Figure 3-1 highlights pathways that are assumed to be potentially complete and significant.

3.2.2.1 Media and Receptors of Concern

Land use in the vicinity of the proposed and connected project areas includes recreational, residential, commercial, and industrial uses. The proposed and connected project areas are in regional parks and other open space areas used for recreation. Visitors and campers in these areas could be exposed to herbicides directly during application and indirectly after application. In addition, because residential neighborhoods are adjacent to the parks and open space, residents could also be exposed to herbicides directly during application and indirectly after application if herbicides migrate from the original application area. Because a university, a high school, three elementary schools, and a preschool are also close to project areas, students of all ages have the potential to be exposed. In addition, several hospitals are located in the project vicinity although it is unlikely sensitive individuals at these facilities could be exposed. Workers could be exposed to herbicides while mixing, loading, or applying herbicides, and when entering a treated site.

Exposure to herbicides/herbicides can occur from being accidentally sprayed, from entering areas soon after treatment, eating berries or other foods collected from treated areas, touching sprayed vegetation, drinking contaminated water, or accidental exposure to downwind drift. In some proposed and connected project areas exposure could result from contact with herbicides in surface water while wading, swimming, or fishing. Members of the public, both visitors and nearby residents could potentially be exposed to herbicides from drift or accidental spraying if they are in the area at the time of application. The general public might also be exposed through contact with recently sprayed vegetation, consumption of recently sprayed berries or other plant materials, drinking contaminated water, or through consumption of contaminated fish. It is expected that the general public, both visitors and residents, is likely to receive less exposure than herbicide handlers or vegetation management workers in most proposed and connected action project areas.

Herbicides will be applied by hand methods (e.g., painting cut stumps by hand, or spritzing tree sprouts by hand). These methods of application could expose populations through direct contact by inhalation or skin (dermal) contact with the herbicides, particularly if the herbicides are sprayed during windy conditions and the wind carries the herbicides farther from the application area than intended. Indiscriminate spraying could also contaminate soil, and populations could be exposed through skin contact with or incidental ingestion of the soil. Wind erosion is a major transport mechanism for soil (e.g., Winegardner 1996), and wind erosion is also associated with the environmental transport of herbicides. Wind erosion leading to off-site movement of herbicides is highly site-specific. The amount of herbicide that might be transported by wind erosion depends on several factors, including application rate, depth of incorporation into the soil, persistence in the soil, wind speed, and topographical and surface conditions of the soil. Due

to the cut stump application method it is likely that the amount of herbicide transported by the wind would be insubstantial.

Surface water could potentially be impacted by herbicides being directly sprayed on the water, by windblown spray reaching the water, or by precipitation and surface water runoff carrying herbicides from the application site to the surface water. If visitors use the surface water for recreational activities such as swimming or boating, they could be exposed through skin contact with the surface water or incidental ingestion of the water. Anglers may, in theory, be exposed to chemicals taken up into fish through consumption of fish taken from nearby surface water bodies. This exposure pathway would apply only to chemicals that accumulate in biological tissues.

Groundwater could also be impacted if precipitation percolating through soil transports the herbicides to the groundwater. Surface water or groundwater affected by herbicides could potentially be used for drinking water withdrawals or irrigation of homegrown vegetables. Surface water or groundwater in the area may also be used for irrigation of agricultural crops. Uptake of chemicals into crops and subsequent consumption by people in the area is a possible risk.

The overall scope of the analysis is graphically illustrated in the SCEM (**Figure 3-1**). The SCEM includes theoretically feasible exposures and provides a basis for discussing the likelihood and importance of potential exposure pathways at the site. As illustrated in the SCEM, the following populations were quantitatively or qualitatively evaluated:

- Current and future pesticide handlers and vegetation management workers
- Current and future on-site recreational visitors (adult and child)
- Current and future off-site residents (adult and child)

Exposure routes for these receptors include ingestion, dermal contact, and inhalation of contaminated media. Pathways of exposure may involve direct contact with herbicides in spray, soil, and vegetation, and, though unlikely, via indirect contact through ingestion of surface water or contaminated fruits. Exposure assumptions for all receptors and scenarios are provided in the attached Forest Service worksheets (Attachment 1).

Additionally people could be exposed to contaminants in smoke during burning of vegetation or during accidental fires that could occur during the proposed and connected actions. Burning of vegetation treated with herbicides is not planned therefore exposure to herbicides in smoke is unlikely to occur. The effects on air quality that may result from the burning of removed vegetation as part of the proposed and connected actions is discussed in the Air Quality section (Section 5.5) of the EIS.

Potential exposure pathways for the above populations are discussed in more detail in the following sections.

3.2.2.1.1 Occupational Exposure, Pesticide Handler/Vegetation Management Workers

Occupational exposure to herbicides varies with the method of application. The greatest risk occurs when the worker must directly handle and/or mix chemicals. Spot and localized herbicide applications including use of backpack sprayers and stem injection require the most hands-on use of herbicides and, therefore, carry the greatest risk of exposure. Under all application categories, workers can be exposed to herbicides from accidental spills, splashing, leaking equipment, contact with the chemical while mixing, loading, or applying the pesticide/herbicide, or by entering treated areas. Exposure can occur either through skin or through inhalation. Short-term (acute), intermediate-term, and long-term occupational exposure may all occur.

It is expected that adherence to operational safety guidelines, use of protective clothing, equipment checks, and personal hygiene can prevent incidents from occurring. The pesticide/herbicide label and corresponding Material Safety Data Sheets detail application requirements in addition to safety guidelines to limit or prevent worker exposure.

3.2.2.1.2 General Public, Recreational Visitors

Parks and open space within the proposed and connected project areas are used for a variety of recreational activities including: walking, dog walking, hiking, biking, horseback riding, picnicking, bird watching, camping, golfing, and educational programs. Some of the parks within these areas include water features used for swimming, boating, and fishing. Not all of these populations and activities are expected to be present in all of the proposed and connected project areas.

Recreational visitors (adults and children) may be exposed to herbicides used in the fire risk reduction program while visiting the proposed and connected project areas through incidental ingestion and dermal contact with contaminated materials (e.g. vegetation, soil, surface water, and sediment). While recreating, incidental ingestion of contaminants may occur following hand-to mouth activities. Dermal contact with herbicide residuals in treated areas or in areas where herbicides have migrated is also possible. Recreational visitors could contact contaminants in soil, surface water, and sediment, or on vegetation, picnic tables or other surfaces while recreating in the area. Additionally, recreational visitors that are in the vicinity or nearby during the application of herbicides could inhale vapors or dust; they may also inhale windblown dusts post application. There is also a potential for exposure via ingestion of fish caught in the area; however, the herbicides selected for this project have a low bioaccumulation potential; therefore, this pathway is unlikely to be significant.

Areas that are being treated are closed to the public during treatment and for a specified time post treatment. This procedure limits exposure to recreational visitors and because of the short half-lives for the proposed herbicides to be used for this project exposure pathways for recreational visitors may be incomplete or not significant.

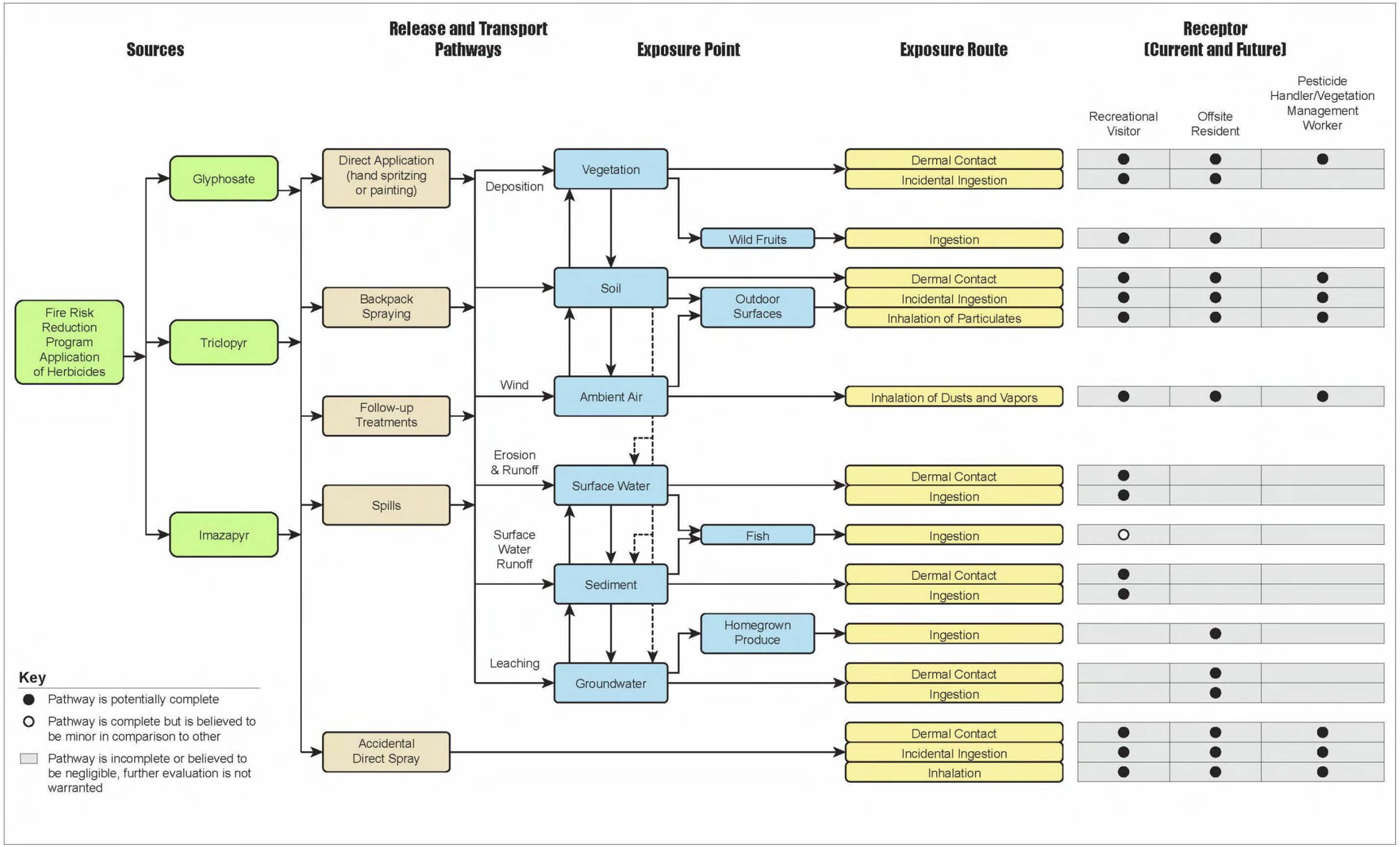

Figure 3-1. Conceptual Site Model for Hazardous Fire Risk Reduction Proposed and Connected Project Areas – East Bay Hills, California

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Exposure scenarios developed and included in the forest service risk calculation worksheets for recreational visitors (i.e. members of the general public) include acute accidental, acute non-accidental, and longer-term or chronic exposures. Accidental exposure scenarios assume that an individual is exposed to the compound of concern either during or shortly after its application. The nature of the accidental exposures evaluated is intentionally extreme (e.g. direct spray). Non-accidental exposures involve dermal contact with contaminated vegetation, soil, surface water, and sediment as well as the consumption of contaminated fruit, vegetation, water, or fish. The longer-term or chronic exposure scenarios parallel the acute exposure scenarios for the consumption of contaminated fruit, water, or fish. All of the non-accidental exposure scenarios are based on levels of exposure to be expected from the routine uses of the pesticide/herbicide at a recommended application rate.

3.2.2.1.3 General Public, Residents

Because residential areas are in the vicinity of the proposed and connected project areas, residents may contact herbicide residuals through a variety of exposure routes. Both adults and young children may be exposed. Exposure to residents at home may occur if herbicides are transported from primary application areas into residential areas. Likely routes of exposure include inhalation of air containing dusts or vapors, skin contact with herbicides by contact with treated foliage, soil or other surfaces(e.g. building surfaces), and eating foods or drinking water with pesticide residues. Some residents in the area use groundwater for irrigation and may contact herbicides in water or on home-grown produce if these compounds have been transported to groundwater. It is important to note that the possibility residents will be exposed to herbicides during fire risk reduction program activities is highly unpredictable and may not occur at all.

3.2.3 Exposure Assumptions

It is preferable to use site-specific, chemical-specific, and activity-specific exposure data to derive exposure estimates for the risk assessment. However, when such data are unavailable (which is often the case), a surrogate approach may be used. Surrogate data are substitute data or measurements on one substance (or population) used to estimate analogous or corresponding values for another substance (or population). Data from surrogate studies or from generic databases such as the Pesticide Handlers Exposure Database (PHED) developed by Health Canada, U.S. EPA, and the pesticide industry can be used to approximate exposure to receptors. PHED is a generic (multiple products and studies as opposed to activity — and product-specific) pesticide worker exposure database containing measured values of dermal and inhalation exposures from dozens of field studies. In addition the USDA Forest Service has conducted several risk assessments for exposure scenarios and herbicide use that would be analogous to those associated with this project. Exposure assumptions and results from these risk assessments can be used to qualitatively evaluate risks associated with the fire risk reduction program.

To avoid underestimating human exposure to a chemical, risk assessments typically look at the range of possible exposures. Some individuals may have a high degree of contact for an extended time (for example, pesticide/herbicide applicators). Other individuals may have a lower degree of contact for a shorter time (for example, visitors entering a treated area). Chances that members of

the general public will be exposed to herbicides as a result of fire risk reduction program activities are highly unpredictable; therefore, this SLRA evaluates the Maximum Exposed Individual (MEI) for recreational visitors and residents. This approach attempts to characterize the extreme but still plausible upper limit on exposure. In addition to this upper bound MEI value, a central tendency assessment provides a central estimate of exposure as well as a lower bound on exposure. The central estimate of exposure is used to assess the prospect of mitigation, e.g. protective measures to limit exposure. If lower bound exposure estimates exceed a level of concern, there is strong indication that the pesticide cannot be used in a manner that will lead to acceptable risk. For workers a range of possible exposures from high degree of contact to minimal contact is evaluated.

Two general types of methods can be considered for receptor exposure modeling, deposition-based and absorption-based. In deposition modeling the exposure dose is estimated from air concentrations and skin deposition monitoring data. The Pesticide Handler's Exposure Database (PHED Task Force 1995) has summarized surrogate exposures from PHED for 37 types of exposures, involving mixer-loaders, flaggers, and applicators, for several different types of formulations (e.g., liquid, granular, and wetable powders) applied with ground or aerial equipment. Routinely evaluated are different exposure scenarios for workers using different levels of personal protective equipment (PPE). Using the estimates of deposited dose and concentration of the pesticide/herbicide in air, the absorbed dose for workers can be calculated if estimates are available on absorption rates for inhalation and dermal exposure. Using this method dermal exposures were found to be much greater than exposures associated with inhalation (EPA/OPP (1998a). The USDA Forest Service generally uses absorption-based models in which the amount of chemical absorbed is estimated from the amount of chemical handled (USDA/FS 1989a, b, c). Regardless of whether a deposition- or absorption-based model is used to estimate receptor exposure, the general algorithms for estimating receptor exposure are similar and are calculated generally, as the product of the exposure rate and the amount of the herbicide that is handled by the receptor. General exposure scenarios for both workers and the general public are linearly related to the application rate. Consequently, if the application rate were to double or vary by some other factor, the estimated exposure would double or vary by the same factor.

In this SLRA the primary goal is to estimate the absorbed dose so that it can be compared with the available information on the dose-response relationships for the chemical of concern, as detailed further in Section 5 (Risk Characterization).

3.2.3.1 Workers

For workers, general exposure involves the handling and application of the herbicide. Exposure estimates are calculated from the amount of chemical handled per day and the exposure rates for the worker group. The majority of exposure assumptions (except application rates) used for workers were the default assumptions recommended in the Forest Service worksheets. However, the number of acres treated per hour for the central tendency estimate was reduced from 0.625 acres per hour to 0.286 acres per hour because it is assumed that the cut stump treatment will require more time per acre to complete than a broadcast application. In addition it was assumed that workers would complete 3 applications 120 days apart to eliminate re- sprouting of trees.

Backpack workers are assumed to apply herbicides from 6 to 8 hours per day. For exposures without mitigation measures workers are assumed not to wear any PPE and clothing is assumed not to provide any protection. Although each of the specific exposure assessments for workers involves degrees of uncertainty, exposure estimates are objective in that they are based on empirical relationships of absorbed dose to herbicide use.

In additional to general exposure workers were assumed to have accidental/incidental exposures to herbicide solutions. The skin surface and eyes of workers are most likely to be affected by accidental spills or splashes of herbicide solutions. Generally, dermal exposure is the predominant route of exposure for pesticide/herbicide applicators. Two types of dermal exposures were assessed in the risk assessment: direct contact with an herbicide solution and accidental spills of the pesticide onto the surface of the skin. Workers were assumed to wear gloves grossly contaminated with the herbicide solution for 1 minute and for 1 hour which is equivalent to immersing the hands in the herbicide solution for the specified time. In both cases, the chemical concentration in contact with the skin and the resulting dermal absorption rate are essentially constant. Accidental dermal exposure scenarios evaluated for workers consist spilling a chemical solution on to the lower legs as well as spilling a chemical solution on to the hands with at least some of the chemical adhering to the skin.

All exposure assumptions for workers are provided in Forest Service risk calculations worksheets provided in Attachment 1.

3.2.3.2 General Public (Recreational Visitors and Offsite Residents)

The receptor chosen for a specific scenario for the general public relates to concerns for the Most Exposed Individual (MEI) as well as the most sensitive individual. Based on general allometric considerations, the smaller the individual, the greater will be the chemical doses per unit body weight (e.g., Boxenbaum and D'Souza. 1990). Additional variability is taken into consideration by estimating exposure doses or absorbed doses for individuals of different age groups (i.e., adults, young children, toddlers, and infants). Children may behave in ways that increase their exposure to applied herbicides (e.g., long periods of outdoor play, pica, or imprudent consumption of contaminated media or materials). In addition, anatomical and physiological factors, such as body surface area, breathing rates, and consumption rates for food and water are not linearly related to body weight and age. Consequently, the models used to estimate the exposure dose (e.g., mg/kg body weight/day) based on chemical concentrations in environmental media (e.g., ppm in air, water, or food) indicate that children, compared with individuals of different age groups, are generally exposed to the highest doses of chemicals for a given environmental concentration. For many of the exposure scenarios the receptor of concern is a young woman rather than an adult male. In general, the body size of a female is smaller than that of males. Thus, in direct spray exposure scenarios, females are subject to somewhat higher doses than males. More importantly exposure levels for a young woman of reproductive age are used in order to better assess the potential for adverse effects in the population at risk from potential reproductive effects (i.e., the most exposed and the most sensitive individual). For some scenarios young children are considered the most sensitive receptor.

The two general types of exposure scenarios developed for the public include acute exposure and longer-term (chronic exposure). Most of the acute exposure scenarios are accidental and assume that an individual is exposed to the compound either during or shortly after its application. Other acute exposures are assumed to be non-accidental and include ingestion of contaminated fruit, vegetation, water or fish, contact with contaminated vegetation or contact with contaminated surface water. Specific scenarios are developed for direct spray, dermal contact with contaminated vegetation, as well as the consumption of contaminated fruit, water, and fish. Most of these scenarios should be regarded as extreme, some to the point of limited plausibility. The longer-term or chronic exposure scenarios parallel the acute exposure scenarios for the consumption of contaminated fruit, water, and fish but are based on estimated levels of exposure for longer periods after application.

Scenarios evaluated for the general public are described in more detail below. All exposure assumptions for the general public are provided in Forest Service risk calculations worksheets provided in Attachment 1.

3.2.3.2.1 Accidental Direct Spray

Direct sprays involving ground applications assume an individual is sprayed with a chemical solution containing the herbicide some of which remains on the skin and is absorbed by first-order kinetics. For the general public two direct spray scenarios are considered; one where a young child is directly sprayed and 100% of the body is exposed (i.e. “naked child scenario”) and the second where the feet and legs of a young woman of reproductive age are sprayed. These exposure scenarios are likely to represent upper limits of plausible exposure. For each of these scenarios, some assumptions are made regarding the surface area of the skin and body weight. These assumptions are based on standard values developed by the U.S. EPA (U.S. EPA 1989b,c) which are detailed in the Forest Service worksheets (Attachment 1).

3.2.3.2.2 Dermal Exposure to Contaminated Vegetation

In this exposure scenario, it is assumed that the herbicide is sprayed at a given application rate, and that an individual comes in contact with sprayed vegetation or other contaminated surfaces on the same day. For this exposure scenario, an estimate of dislodgeable residue and the rate of transfer from the contaminated vegetation to the surface of the skin are estimated. Dermal transfer rates are reasonably consistent for a number of pesticides (Durkin et al. 1995). In the absence of chemical specific data, dislodgeable residues are assumed to be 10% of the application rate; this is the assumption made in the Forest Service worksheets. The exposure scenario assumes a contact period of 1 hour and assumes that the chemical is not effectively removed by washing for 24 hours. Other assumptions used in this exposure scenario involve estimates of body weight, skin surface area, and first-order dermal absorption rates. The MEI receptor for this scenario is a young woman. Exposure assumptions for the dermal pathway are detailed in the Forest Service worksheets, typically in Worksheet D02 (Attachment 1).

3.2.3.2.3 Consumption of Fruits and Other Vegetation

Forest Service worksheets include exposure scenarios for the acute and longer-term consumption of contaminated vegetation. Two sets of exposure scenarios are provided: one for the consumption of contaminated fruit and the other for the consumption of contaminated broadleaf vegetation. The concentration of the herbicide on contaminated fruit and vegetation is estimated using the empirical relationships between application rate and concentration on different types of vegetation (Fletcher et al. 1994). Residue rates on vegetation are a function of the application rate and the physical characteristics of the vegetation—i.e., surface area and volume. Plants with higher surface area to volume ratios (e.g., grasses) will tend to have higher residues rates, compared with plants which have lower surface area to volume ratios (e.g., fruits).

The use of the exposure scenario for the longer-term consumption of contaminated vegetation is probably not realistic and may be grossly conservative. While acute exposures to contaminated vegetation may be plausible (i.e., vegetation treated shortly prior to consumption), it is unlikely that humans would consume vegetation exposed to significant levels of herbicides over a prolonged period because the vegetation would show obvious signs of injury.

3.2.3.2.4 Ingestion of Contaminated Water- Accidental Spill

The accidental spill scenario assumes that a young child consumes contaminated water shortly after an accidental spill of a premixed field solution (100 gallons) into a small pond. Because this scenario is based on the assumption that exposure occurs shortly after the spill, no dissipation or degradation is considered. It is likely that this exposure scenario overestimates exposure. The actual chemical concentrations in the water will vary according to the amount of compound spilled, the size of the water body into which it is spilled, the time at which water consumption occurs relative to the time of the spill, and the amount of contaminated water consumption. The Forest Service program, Gleams-Driver, estimates expected peak and longer term herbicide concentrations in surface water resulting from a spill or accidental spray or drift of the herbicide to surface water.

3.2.3.2.5 Ingestion of Contaminated Water- Chronic

The Forest Service worksheets also evaluate ingestion of contaminated water for children drinking 1 liter of water per day based on longer-term average water contamination rates.

3.2.3.2.6 Dermal Contact Resulting from Accidental Direct Spray of or Drift to a Pond or Stream

Concentrations of the herbicide in a small pond and a small stream are based on estimates of drift adapted from AgDrift depending on the application method. The Forest Service Worksheets calculate risk for a young woman swimming in contaminated water for 1 hour (Attachment 1).

3.3 Ecological Risk Conceptual Exposure Model

3.3.1 Exposure Setting

This section discusses the potentially affected environments within and near the project areas and potentially exposed receptors that may be associated with herbicide application as described in previous sections.

3.3.1.1 Vegetation and Aquatic Communities within the Project Areas

Field reconnaissance surveys were conducted in 2010 to characterize vegetation and aquatic communities within the proposed and connected project areas described previously. Vegetation communities were characterized either by ground verifying baseline field data provided in the East Bay Regional Park District Wildfire Hazard Reduction and Resource Management Plan Environmental Impact Report (EBRPD EIR) (LSA Associates, Inc. 2010) or mapped when existing vegetation data were unavailable. Aquatic features were identified using USGS data layers, 2010 National Wetlands Inventory (NWI) data (USFWS 2010a), and field verification. A total of 13 vegetation communities were identified in the proposed and connected project areas and named according to conventions in the EBRPD EIR or California Native Plant Society's (CNPS's) A Manual for California Vegetation (Sawyer, et al. 2008):

- Oak-Bay Woodland
- Eucalyptus Forest
- Coastal Scrub
- Coyote Brush Scrub
- Developed/Disturbed/Landscaped
- Coniferous Forest
- Successional Grassland
- California Annual Grassland
- Riparian Woodland
- Redwood Forest
- Northern Maritime Chaparral
- Coastal Prairie
- Tidal Salt Marsh

Riverine and lacustrine features (features associated with rivers and lakes, respectively) that occur in the project areas and vicinity include perennial creeks, intermittent drainages, ponds, and reservoirs. In addition, a total of five riverine features (perennial and ephemeral creeks) were identified in the proposed and connected project areas: Wildcat, Strawberry, Claremont, San Leandro, and Redwood creeks. Wetland features include areas that are typically inundated or saturated by surface or groundwater and support vegetation or aquatic life that is adapted for life in saturated soils.

More details on the specifics of these habitat types are provided in Sections 4.2 of the EIS titled Hazardous Fire Risk Reduction Biological Assessment, East Bay Hills, California (FEMA 2012).

3.3.1.2 Federally Listed Species with Potential to Occur in the Project Areas

As a result of the field reconnaissance and background review, as well as input from the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), it was determined that the project areas provide habitat suitable to support five species under the USFWS jurisdiction and one species under NMFS jurisdiction. These five species are discussed below.

3.3.1.2.1 California Red-Legged Frog (CRLF) (*Rana draytonii*)

Critical habitat for the CRLF was designated in 2006 (71 FR 19244–19346) and was revised in 2010 (75 FR 12816–12959). The proposed and connected project areas do not overlap any designated critical habitat units; however, Area CCS-1 (Berkeley Hills) is less than 2 miles east of the Sobrante Ridge Regional Preserve proposed project area, and Area ALA-1A (Dublin Canyon) and Area ALA-1B (Cook Canyon) are 4 miles southeast of Anthony Chabot Regional Park proposed and connected project areas. A recovery plan for the species was finalized in May of 2002 (USFWS 2002a). The recovery plan identifies eight recovery units and 35 core areas where recovery actions should be focused. The proposed and connected project areas are in Recovery Area 4 (South and East San Francisco Bay Recovery Area) but do not overlap any of the core areas. Because there is no designated critical habitat within the project areas, CRLF critical habitat is not included in the impacts analysis.

CRLFs are known to occur in portions of the proposed and connected project areas and have the potential to occur in other portions where suitable habitat occurs. This species has been documented in the Sobrante Ridge Regional Preserve. As described above, six CRLF reported occurrences are within the distance from the project areas in which the species is known to disperse for breeding habitat, and portions of the project areas contain suitable upland and dispersal habitat.

CRLF habitat in the proposed and connected project areas includes both aquatic/riparian habitat (breeding and non-breeding) and upland dispersal habitat. Two types of upland dispersal habitat occur within the proposed and connected project areas: (1) upland dispersal habitat from streams and ponds with known occurrences (breeding habitat) and (2) upland dispersal habitat from nonbreeding aquatic/riparian habitat.

3.3.1.2.2 Alameda Whipsnake (Masticophis lateralis euryxanthus)

Critical habitat was designated for the Alameda whipsnake in 2006 (71 CFR § 58175). The proposed and connected project areas overlap Area 1 (Tilden-Briones), Area 2 (Oakland-Las Trampas), and Area 6 (Caldecott Tunnel Corridor). All areas finalized as designated critical habitat for the Alameda whipsnake are considered occupied and in the subspecies' historical geographic range, and contain sufficient habitat to support at least one life history function as defined in the critical habitat designation (71 CFR § 58191). The species is included in the Draft

Recovery Plan for Chaparral and Scrub Community Species East of San Francisco, published by USFWS in 2002 (USFWS 2002b). An updated species-specific recovery plan is currently in draft form and not publically available. The recovery units identified in the draft recovery plan cover the designated critical habitat units described above plus additional areas.

An analysis was conducted to identify the presence of the three designated primary constituent elements (PCEs) and designated critical habitat for Alameda whipsnake in the project areas. PCEs for the Alameda whipsnake are defined in 50 CFR Part 17: Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for the Alameda Whipsnake (October, 2006) as follows:

- PCE 1 = >0.5 acre of coastal scrub, coyote brush scrub and/or chaparral that provides shelter from predators; temperature regulation; prey-viewing opportunities; and nesting habitat and substrate;
- PCE 2 = oak-bay woodland, riparian woodland or grassland adjacent to PCE 1 that provides foraging and dispersal habitat; and
- PCE 3 = lands with rocky outcrops, talus and burrows within or adjacent to PCE 1 and PCE 2 that provide retreats (shelter), hibernacula, foraging, and dispersal habitat, and provide additional prey population support functions.

The presence of rock-bearing soils in the proposed and connected project areas was used to identify the highest "potential" for the presence of PCE 3 or rocky outcrops. Information obtained from EBRPD field assessments identified rocky outcrops in EBRPD parks. Information on UC Berkeley and City of Oakland parcels indicates they are limited to "potential" PCE 3 based on presence of rock-bearing soils. The results of PCE analysis of Alameda whipsnake critical habitat in the proposed and connected project areas indicate that of the 22 parks/parcels evaluated, 15 contain existing Alameda whipsnake critical habitat.

The Alameda whipsnake is known to occur in portions of the proposed and connected project areas and has the potential to occur in other parts of the project areas where suitable habitats with elements to support the species lifecycle are present. Vegetation communities in the project areas were mapped and field verified as described above for the CRLF. In addition, field site visits with USFWS, CDFG and Ms. Karen Swaim (species expert) were conducted to confirm habitat characteristics for the Alameda whipsnake. The Alameda whipsnake suitable habitat analysis included Alameda whipsnake core, dispersal, and foraging habitat. Of the 22 parks/parcels evaluated, 19 contain existing Alameda whipsnake suitable habitat.

3.3.1.2.3 Central California Coast (CCC) Steelhead (*Oncorhynchus mykiss*)

Critical habitat for the CCC steelhead was designated by NMFS in 2005 (70FR52488). The proposed and connected project areas do not overlap any designated critical habitat for the species. The closest designated critical habitat areas are San Francisco and San Pablo Bays. San Francisco Bay is within 260 feet of the nearest project area in Miller/Knox Regional Shoreline although the project areas in Miller/Knox Regional Shoreline vary in elevation from 16 to 370

feet above San Francisco Bay. A recovery plan has not been developed for this distinct population segment (DPS).

There is low potential for the CCC steelhead to occur in the proposed and connected project areas, including in Wildcat Creek and San Leandro Creek, as described below.

Wildcat Creek is in Wildcat Canyon Regional Park and Tilden Regional Park. Wildcat Creek flows northwest through the valley between Berkeley Hills and San Pablo Ridge and passes through the City of San Pablo to enter San Pablo Bay. A concrete lined culvert beneath a K-Mart parking lot and a Cal-Trans maintained drop structure at Interstate 80 restrict steelhead access to the lower creek, but these barriers may be passable during some flows (Leidy, et al. 2005). Two EBRPD-managed dams in the creek's upper watershed form Jewel Lake and Lake Anza and block all upstream migration. However, steelhead reproduce in a portion of the creek below Jewel Lake and in an area above Lake Anza and young of the year were documented in the creek in 2002 (Leidy, et al. 2005).

San Leandro Creek is downstream of Lake Chabot in Anthony Chabot Regional Park. Barriers to migration in this creek have existed since construction of the Chabot Reservoir in 1874, and include the Upper San Leandro Reservoir and 4-foot concrete weir, located 0.3 miles upstream from Interstate 80 (Leidy, et al. 2005). However, sampling upstream of the Upper San Leandro Reservoir from June 1996 to February 2001 found steelhead present ranging in size from 26 mm to 490 mm, including several individuals with smolt characteristics (Leidy, et al. 2005).

3.3.1.2.4 Pallid manzanita (*Arctostaphylos pallida*)

No critical habitat has been designated for pallid manzanita. The species is included in a draft recovery plan, Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco (USFWS 2002b); however, recovery units for the pallid manzanita are not identified in this plan (USFWS 2002b).

Several documented and observed CNDDB occurrences of pallid manzanita occur in the project area, specifically in Sobrante Ridge and Huckleberry Botanic Regional Preserve (CDFG 2011). In addition, it is possible that viable seed banks likely exist with the project areas and these activities may stimulate germination. Therefore, this species is known to occur in parts of the project area and may occur in other areas with suitable habitat.

Additional information on known occurrences of pallid manzanita was obtained from an EBRPD wildfire hazard reduction stewardship resources site assessment, completed in February 2012. Of the 22 parks/parcels evaluated, four contain known occurrences of pallid manzanita.

3.3.1.2.5 Presidio clarkia (*Clarkia franciscana*)

No critical habitat has been designated for the Presidio clarkia. The species is included in a recovery plan, Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (USFWS 1998); however, only geographic areas that include serpentine soils are described in this recovery plan, and no recovery units are identified (USFWS 1998). The geographic areas

with serpentine soil identified in this plan do not overlap the proposed and connected project areas; one area (Skyline Serpentine Prairie) is adjacent to the proposed and connected project areas in Redwood Regional Park, and the other (Fairmount Ridge) is approximately 0.5 mile west of the proposed and connected project areas in Anthony Chabot Regional Park.

There is moderate potential for Presidio clarkia to occur in the project areas. Although serpentine soil habitat has not been mapped in the project areas, there could be small patches of serpentine soil present and unaccounted for in the large scale soil mapping available for the project areas. In addition, there are two known occurrences of this species within 0.2 mile of the project areas.

Known occurrences of Presidio clarkia were obtained from EBRPD and CNDDB. A GIS overlay analysis was conducted using the baseline vegetation layer, known Presidio clarkia occurrences, and a layer that includes the proposed and connected project areas. Results indicate that of the 21 parks and open space areas evaluated, Redwood Regional Park is the only one that contains known occurrences of Presidio clarkia.

3.3.2 Ecological Site Conceptual Model

The components of the ecological exposure scenarios are graphically illustrated in **Figure 3-2**. As shown on this figure, multiple exposure scenarios may be associated with herbicide use. The two primary exposure pathways of ecological concern are (1) direct contact with and ingestion of herbicides and (2) ingestion of vegetation and, if herbicides are bioaccumulative, prey contaminated with herbicides. Even though bioaccumulation potential from herbicide application is low, consumption of a directly sprayed prey item could occur, resulting in an acute exposure for the consumer. The consumption of a directly sprayed prey item would likely be uncommon or rare and such prey would not be a major or consistent source of food for the consumer. A highly exposed consumer could suffer from such exposure, but that would at most be harmful to an individual and not a population. For protected species, such exposures would be reduced or eliminate by use of BMPs. Individuals of protected species (e.g., CRLF or Alameda whipsnake) could be exposed in this fashion (i.e., ingestion of prey contaminated with herbicides), however it is anticipated that such exposures would be rare if they occurred at all.

Herbicides deposited on vegetation and surface soil may be taken up by terrestrial plants through foliage and roots, although implementation of BMPs should limit this exposure primarily to target species. Soil invertebrates may also take up herbicides by dermal absorption and soil ingestion. Terrestrial vertebrates, including those that burrow, may be exposed to chemicals in soil not only via direct contact, ingestion, and inhalation, but also (assuming bioaccumulation) by ingestion of contaminated food items (e.g., plants and invertebrates). Implementation of BMPs (e.g., adhering to 60 foot buffers around water bodies; not spraying on windy days) should mitigate or eliminate exposure to aquatic life, including listed species, related to herbicide application.

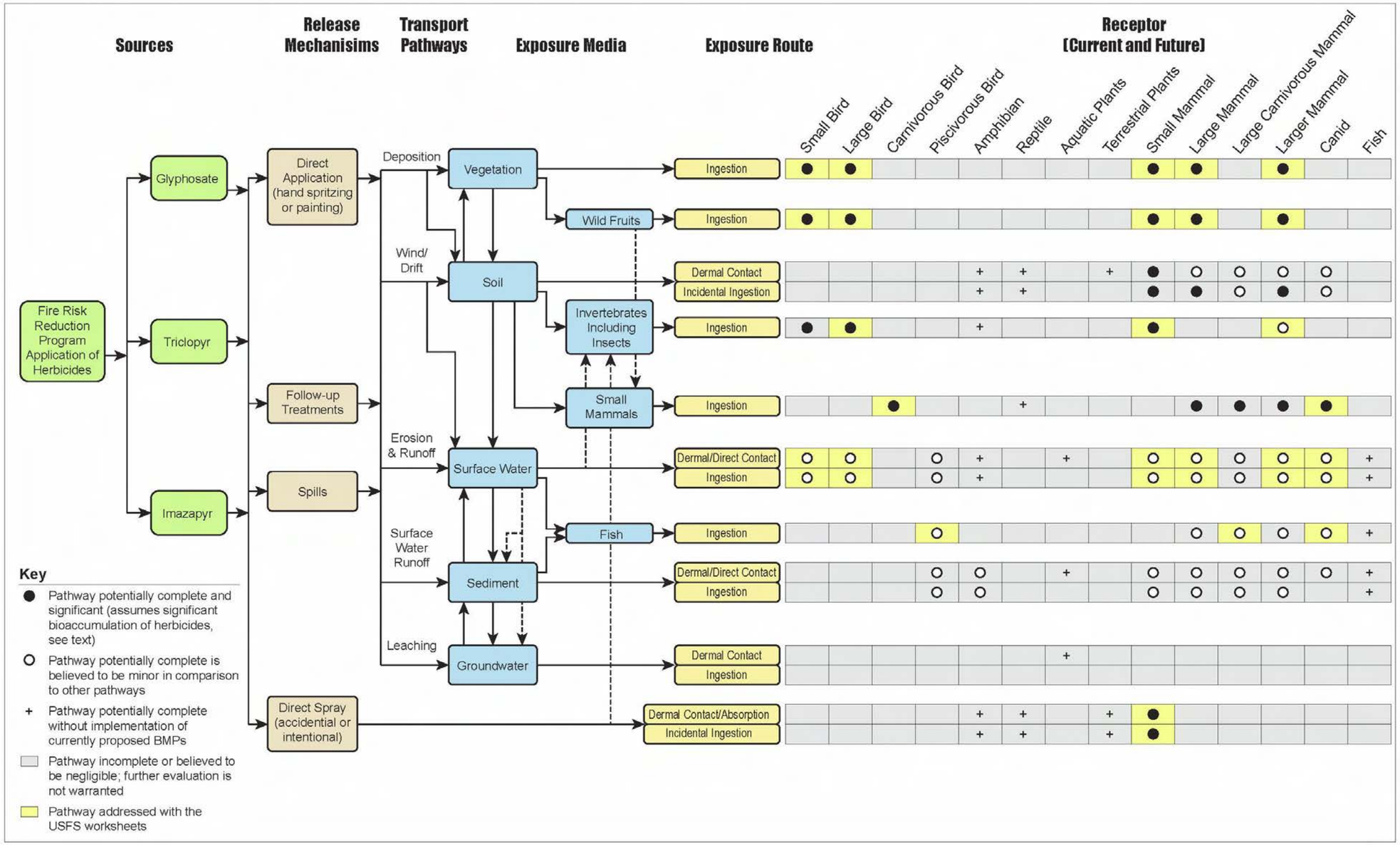

Figure 3-2. Ecological Conceptual Site Model for Hazardous Fire Risk Reduction Proposed and Connected Project Areas – East Bay Hills, California

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Direct application to vegetation or foliage via spraying can cause fruits of trees and shrubs to be coated with herbicides. When herbicides remain on vegetation or fruit, many potential receptors, including birds and mammals, may be exposed to them via ingestion. Small mammals are most likely to be exposed via ingestion and dermal contact with herbicides, while larger mammals including canids and other carnivores are less likely to be directly exposed due to larger home and foraging ranges.

Direct application to tree stumps or foliage can cause insects and possibly small vertebrates to be unintentionally sprayed. These organisms may be prey for other animals, such as birds, and larger reptiles, amphibians, and mammals. Thus, ingestion of prey, assuming herbicides bioaccumulate, could lead to upper trophic level exposures. Implementation of BMPs should mitigate or eliminate aquatic exposures, and the expectation of little or no bioaccumulation of proposed herbicides contributes to predictions of minimal or insignificant dietary exposures. The inhalation route of exposure is not evaluated in the SLRA, since toxicity data are limited and the pathway is considered minor relative to other pathways described.

Herbicides transported to surface water could affect aquatic plants, fish, larval amphibians, and if herbicides were found to be bioaccumulative, predators on aquatic organisms. Aquatic habitats of Wildcat, Strawberry, Claremont, San Leandro, and Redwood creeks are of greatest concern and BMPs would be employed to protect aquatic receptors. This focus on protection of aquatic communities would limit possible impacts to these systems. Therefore, the SCEM and the evaluation of ecological risks are based on potential impacts to terrestrial receptors, including the five sensitive species previously discussed. The SCEM is attached as **Figure 3-2**.

3.3.3 Exposure Pathways and Media of Concern

3.3.3.1 Exposure Pathways

The two main exposure pathways of ecological concern are application of herbicides in the terrestrial habitats and runoff of herbicides from the terrestrial habitats into the aquatic habitats of Wildcat, Strawberry, Claremont, San Leandro, and Redwood creeks. Herbicides could come in contact with ecological receptors during application and from spray drift. As stated previously, these herbicides could potentially runoff during rain events and eventually make their way into Wildcat Creek and other aquatic environments.

For both terrestrial and aquatic exposures, there are potentially direct contact and ingestion components of ecological exposure. Direct exposure to terrestrial plants (including pallid manzanita and Presidio clarkia) and animals (including CRLF and Alameda whipsnake) would primarily be from the application or misapplication of herbicides resulting in leaf or root exposure for plants or dermal exposure for animals. Direct exposure for aquatic animals (e.g., fish including steelhead, amphibian larvae, etc.) could come as the result of herbicide runoff into the surface water of Wildcat Creek or other water bodies and then the aquatic receptors come directly in contact with the water. Terrestrial receptors could also come in contact with

herbicides in water when they drink from water bodies that had been contaminated with herbicides.

As previously discussed, the low bioaccumulation potential of the three herbicides proposed for use suggests ingestion of contaminated food items is not a critical exposure pathway.

3.3.3.2 Media of Concern

The primary media of concern for ecological receptors is surface soil in the terrestrial habitats and surface water (and possibly sediments) in the aquatic environments. Herbicides in soil could come in direct contact with roots of plants and dermal contact with terrestrial animals. Herbicides that make their way to surface water could come in contact with aquatic receptors such as fish and larval stages of amphibians directly.

3.3.4 Potentially Exposed Populations

Populations of plants and animals potentially exposed to the herbicide applications include all the plants and animals in the vicinity of the application areas and also those that might be exposed to surface water that has received herbicide runoff. Details on the habitat types of the project area and the wildlife species that inhabit them can be found in Section 4.2 of the EIS. For the purposes of this screening level ecological risk assessment, an important focus is on the five federally listed species mentioned in Section 3.3 above and discussed in detail in the Biological Resources section of the EIS.

3.4 Quantification of Exposure for Human and Ecological Receptors

To assess exposures to human and ecological receptors, the risk assessments used USDA Forest Service risk assessment worksheets available online at http://www.fs.fed.us/foresthealth/pesticide/worksheets.shtml. These spreadsheets have been developed for numerous herbicides and were used to evaluate exposure scenarios relevant to the proposed and connected actions. The Forest Service risk assessment worksheets use very conservative methods both in assessment of exposures as well as consequences. Using site-specific parameters as much as possible, these spreadsheets were used to estimate exposure point concentrations and hazards for human and ecological receptors.

The Forest Service risk assessment worksheets estimate risks associated with multiple application methods including: backpack, ground broadcast, and aerial applications. These worksheets do not directly assess risk resulting from cut stump treatment, the primary application method proposed for use in the fire risk reduction program. As such, the worksheets can be considered conservative or potentially overly protective because they assume herbicide application methods that are not anticipated to be used. Cut stump treatment, the preferred application method, allows substantial control over the site of herbicide application; therefore, this method has a low probability of affecting non-target species, reduces the area of environmental contamination, and requires only a small amount of herbicide to be effective.

With this application method, the likelihood of drift or delivery of herbicides away from treatment sites is minimized.

Of special concern are risks of herbicide use for five listed species that may be present in the project areas. In addition to the use of Forest Service risk assessment worksheets, a separate evaluation of risk to these species was conducted.

3.4.1 Exposure Point Concentrations

Exposure point concentrations (EPCs) are concentrations of chemicals of concern (i.e., herbicides) that may exist at locations where treatment occurs, leading to potential exposure to receptors. For example, an EPC may be calculated for herbicide residuals on vegetation to address exposure of recreational visitors via dermal contact or the amount taken up into vegetation that is subsequently consumed by small mammals. The specific application rates used in herbicide applications vary according to local conditions and the nature of the target vegetation. EPCs are used in the Forest Service risk assessment worksheets for both human and ecological receptors in exposure scenarios that represent a range of potential exposures.

Site-specific exposure point concentrations are calculated based on proposed herbicide use, application area, and application volumes. EPCs were estimated by determining application rates related to area of application (i.e., identified polygons), concentration of herbicide, application volumes, and application time (e.g. lbs per acre per day). The amount of herbicide in pounds per acre to be applied within each polygon was estimated based on the information provided by the subapplicants. For each polygon similar methods (i.e., herbicides, quantities, and application methods) were proposed to eliminate non-native plant species that contribute to fire danger. Thus, exposure estimates were not calculated for every polygon but for the range of application rates which would represent the possible range of exposures resulting from each herbicide application. This approach is based on 0-hour residues and does not take into account degradation; actual environmental concentrations will be less.

In non-broadcast applications such as cut stump, application rates in units of pounds (lbs) of acid equivalent (a.e.) per acre may not be regarded as meaningful descriptors of an application in that the areas treated are noncontiguous. Product labels for the proposed herbicides do provide limitations in units of lb a.e./acre which are identical to the limitations on broadcast applications. Thus, an analysis of a noncontiguous application can be based on the total amount of herbicide applied and the total area over which the application will be made to approximate an application rate in units of lbs a.e./acre. Usually, herbicides are diluted prior to field applications; this is referred to as field dilution. For example, the recommended range of mixing volumes for many liquid herbicide formulations is about 10-100 gallons of water per acre for ground applications. For the risk assessment, the extent to which a formulation is diluted prior to application primarily influences dermal and direct spray scenarios, both of which depend on the field dilution. As the concentration of pesticide in the applied solution increases, exposure and potential risk also increase. Like application rates, field dilutions are generally expressed as a range with a central

or average value. A specific application rate and dilution volume used in the risk assessment is intended to reflect typical or central estimates as well as plausible lower and upper bounds.

Application rates are summarized in **Table 3-1**. The application rate is one of the key variables that can be used to mitigate impacts. The risk assessments use the range of application rates (e.g. average and maximum application rate) along with exposure assumptions for maximum exposed individuals to evaluate the influence of the application rate on exposure.

Table 3-1. Summary of Ranges of Herbicide Application Rates

Herbicide	Application Rate lb/acre	Central Application Volume gal/acre	Concentration in Field Solution lb/gal	Number of Applications No Units	Application Interval Days
Triclopyr BEE	3	25	0.12	3	120
	8	25	0.32	3	120
	3	200	0.015	3	120
	8	200	0.04	3	120
Triclopyr TEA	1	25	0.04	3	120
	1	200	0.01	3	120
Imazapyr	0.1	20	0.005	3	120
Glyphosate	1	10	0.1	3	120
	8	10	0.8	3	120

SECTION FOUR TOXICITY ASSSESSMENT

The following SLRA step is addressed in this section:

- Identify studies with the same chemicals, receptors, and pathways and collect toxicological information and exposure parameters and note data gaps (if any).

FEMA recognizes that there is a significant body of published works available related to federal- and state-approved pesticides, especially those that are commonly used. Key information sources were reviewed to narrow down the list to studies from reputable sources and risk assessments that are both current and applicable to the conditions of EBH. The published literature was used to the extent it is relevant and useful and was supplemented by more project-specific evaluation, as appropriate.

4.1 Human Health Toxicity Values

Pesticides/herbicides are unique chemicals as they are intrinsically toxic for several biological targets, are deliberately spread into the environment, and their toxicity has a limited species selectivity. Pesticide/herbicide toxicity depends on the compound family and in humans exposure may result in acute poisonings as well as long term health effects, including cancer and adverse effects on reproduction. Due to their intrinsic toxicity, a specific and complex legislation prescribes a thorough risk assessment process for pesticides prior to their entrance to the market (pre-marketing risk assessment) so that all pesticides sold or distributed in the United States are registered by EPA and based on scientific studies are shown that they can be used without posing unreasonable risks to people or the environment. The pre-marketing risk assessment examines certain critical effects including: carcinogenicity, genotoxicity, developmental, reproductive, neurological, immunological, and endocrine function. EPA ranks pesticide toxicity on a scale of one to four as follows: Category I - Highly Toxic, Category II - Moderately Toxic, Category III – Slightly Toxic (low toxicity), and Category IV - Not Acutely Toxic (very low toxicity).

Under California law (Statutes of 1969, Chapter 1169), the Department of Pesticide Regulation (DPR) must “eliminate from use” any pesticide that “endangers the agricultural or nonagricultural environment, is not beneficial for the purposes for which it is sold, or is misrepresented.” To do this, the law requires the department to have “an orderly program for the continuous evaluation” of registered pesticides. DPR uses various tools to evaluate pesticide products to determine what risks they pose and whether changes to the use or proposed use are necessary. Before registration, DPR conducts a premarket evaluation of pesticide products based on standards used by EPA and studies required by California statutes to decide if the product can be used safely. It should be noted however that absolute safety cannot be proven and the absence of risk can never be demonstrated. These evaluations may prompt DPR to deny registration, propose registration conditional upon receipt of additional data, or propose registration with additional oversight provided by making the pesticide a restricted material. Restricted materials require a permit and are subject to site-specific restrictions.

Toxicity values are numerical expressions of the relationship between dose (exposure) and response (adverse health effects). Separate toxicity values are developed for carcinogenic and non-carcinogenic (i.e., systemic) health effects. To develop toxicity values EPA and other agencies (e.g. Office of Environmental Health Hazard Assessment, OEHHA) gather evidence from a variety of sources regarding the potential for a substance to cause adverse health effects in humans. These sources may include controlled epidemiologic studies (e.g. post marketing pesticide risk assessments), clinical studies, and experimental animal studies. Toxicity values for carcinogens are provided as cancer slope factors (CSF) in units of risk per milligram of chemical per kilogram of body weight per day. The inhalation unit risk (IUR) is the upper-bound excess lifetime cancer risk estimated to result from continuous exposure to a chemical at a concentration of 1 microgram per cubic meter ($\mu g/m^3$ in air). A CSF is developed based on the assumption that no threshold for carcinogenic effects exists, and that any exposure is associated with some finite risk of cancer. Toxicity values for non-carcinogens, or for significant systemic effects caused by carcinogens, are provided as reference doses (RfD) in units of mg/kg-day or reference concentrations (RfCs) in units of mg chemical per cubic meter of air (mg/m^3). Reference doses are interpreted as thresholds below which adverse health effects are not expected to occur, even in the most sensitive individuals in a population. Cancer slope factors and reference doses are used in conjunction with estimates of exposure to quantify risks and health hazards to exposed individuals. In addition to acute and chronic reference dose values, EPA identifies no-observed-adverse-effect level (NOAELs) for pesticides/herbicides, sometimes referred to as *points of departure*, for oral, dermal, and inhalation exposures for acute, intermediate, and longer-term exposure. These values are typically margin of exposure calculations (MOEs) used in EPA risk characterizations and represent different approaches to characterize risk (i.e., the MOE approach versus the hazard quotient approach). The MOE is a ratio of the dose from a toxicological study selected for risk assessment, typically a NOAEL, to the predicted exposure. Estimated MOEs are compared to a level of concern that reflects the dose selected for risk assessment and uncertainty factors (UFs) applied to that dose.

Consistent with DTSC PEA guidance (DTSC, 1999), toxicity values were obtained from CalEPA to the extent available. Toxicity values not available from CalEPA were obtained from EPA's online Integrated Risk Information System database or other toxicological sources according to a hierarchy established in the OSWER directive 9285.7-53 (EPA 2003). Toxicity values used in the assessment are presented in Table 4-1. None of the herbicides proposed for use in this project were identified as carcinogens; therefore, only non-cancer hazards were evaluated. A summary of general toxicity information for herbicides proposed for use in the fire reduction program is provided below.

Table 4-1. Human Health Toxicology Assessment

Acute Toxicity											
	Primary Effects		**Oral Exposure**			**Dermal Exposure**			**Inhalation Exposure**		
Pesticide/ Herbicide	Primary Effects		Oral LD_{50} (mg/kg)	LD_{50} Based On	Comments	Dermal LD_{50}	LD_{50} Based On	Comments	Inhalation LD_{50}	LD_{50} Based On	Comments
	Target	Comment	(mg/kg)			(mg/kg)			(mg/L)		
Garlon (Triclopyr)											
Triclopyr -TEA	Irritating to eyes and skin	Category I Highly Toxic to Eyes, Category IV for skin, Practically non-toxic	1,847	Rat Study	Toxicity Category III, Slightly toxic	>2,000	Rabbit Study	Toxicity Category III, Slightly toxic	>2.6	Rat Study	Toxicity Category IV, Practically non-toxic
Triclopyr -BEE	Irritating to eyes and skin	Category III Slightly Toxic to Eyes, Category IV for skin, Practically non-toxic	803	Rat Study	Toxicity Category III, Slightly toxic	>2,000	Rabbit Study	Toxicity Category III, Slightly toxic	>4.8	Rat Study	Toxicity Category IV, Practically non-toxic
Stalker (Imazapyr)	Irritating to eyes and skin	Category I Highly Toxic to Eyes, Category IV for skin, Practically non-toxic	> 5,000	Rat Study	Toxicity Category IV, Practically non-toxic	>2,000	Rabbit Study	Toxicity Category III, Slightly toxic	>1.3	Rat Study	Toxicity Category III, Slightly toxic
Roundup (Glyphosate)	Irritating to eyes, skin, and upper respiratory tract	Category III Slightly Toxic to Eyes, Category IV for skin, Practically non-toxic	4,300	Rat Study	Toxicity Category III	>2,000	Rabbit Study	Toxicity Category II, Moderately toxic	>1.3	Rat Study	Toxicity Category III, Slightly toxic

Table 4-1. Human Health Toxicology Assessment

	Non-Cancer							Cancer			
Pesticide/ Herbicide	Oral RfD	Primary Target Organ	RfD Based On	Combined Uncertainty / Modifying Factor	Source	Date [1]	RfC	Oral Slope Factor	Weight of Evidence/ Cancer Guideline Description	Source	Inhalation Unit Risk
	(mg/kg-day)						(mg/m^3)	$(mg/kg\text{-}day)^{-1}$			($\mu g/m^3$)
Garlon (Triclopyr)	0.05	kidney	Rat Study	100	EPA OPP	10/2/2012	NA	NA	Group D by EPA OPP- not classifiable as a human carcinogen	EPA OPP	NA
Stalker (Imazapyr)	2.5	NA	Dog Study	100	EPA OPP	10/2/2012	NA	NA	Group E by EPA OPP- evidence of human non-carcinogenicity	EPA OPP	NA
Roundup (Glyphosate)	2.0	kidney	Rabbit Study	100	EPA OPP	10/2/2012	NA	NA	Group E by EPA OPP- evidence of human non-carcinogenicity	EPA OPP	NA

[1] Date shown for IRIS is the date IRIS was searched. http://www.epa.gov/iris/
Date shown for other sources is also the search date.

Definition:
EPA OPP= EPA Office of Pesticide Programs
LD_{50} = lethal dose for 50% of study animals
IRIS = Integrated Risk Information System
mg/kg-day = milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter
NA = not available
RfD = reference dose
RfC = reference concentration

4.1.1 Garlon Products (triclopyr)

Toxicology studies conducted with triclopyr have been performed using either the free acid, triethylamine salt (TEA), or the butoxyethyl ester (BEE) form of triclopyr. TEA and BEE products are used as selective herbicides to control broad leaf weeds and brush on a variety of sites (e.g. rights-of-way, pasture and rangelands, forests, rice, and turf), including home lawns. Triclopyr products are formulated as soluble concentrates, emulsifiable concentrates, liquids (pressurized and ready-to-use), granulars, wettable powders, and pellets. Triclopyr acid is somewhat persistent and is mobile. The predominant degradation pathway for triclopyr in water is photodegradation. The predominant degradation pathway in soil is microbial degradation to the major degradate 3,5,6-trichloro-2-pyridinol (TCP), which is both persistent and mobile. TCP is similar in toxicity to triclopyr.

Technical triclopyr acid was found to be slightly toxic by oral and dermal routes and was placed in Toxicity Category III for these effects. Acceptable studies for acute inhalation, primary eye irritation, primary dermal irritation and dermal sensitization were not available for the technical grade of triclopyr acid. Available data indicate that both BEE and TEA are slightly toxic by oral (Toxicity Category III) and dermal (Toxicity Category III) routes of exposure, are practically non-toxic by inhalation (Toxicity Category IV), and do not cause dermal irritation. In a primary eye irritation study, TEA was found to be corrosive while BEE was found to be minimally irritating. Both TEA and BEE were found to cause dermal sensitization in test animals. EPA has classified triclopyr as a Group D chemical (not classifiable as to human carcinogenicity). This decision was based on increases in mammary tumors in both the female rat and mouse, and adrenal pheochromocytomas in the male rat, which were considered to be only a marginal response, and the absence of additional support from structural analogs or genotoxicity.

The reference dose (RfD), the amount of triclopyr residues that could be consumed daily over a lifetime without adverse effects, was established at 0.05 mg/kg/day. The reference dose was based on a 2-generation reproduction toxicity study in rats with a no-observed-effect level (NOEL) of 5.0 mg/kg/day, the lowest dose tested (EPA 1998a). An uncertainty factor of 100 (10 for interspecies differences in response, and 10 for intraspecies differences) was considered protective. At the next dose level (25 mg/kg/day), an increased incidence of proximal tubular degeneration of the kidneys was observed in both groups (P1 and P2) of parental rats exposed. People may also be exposed to residues of triclopyr through the diet. Triclopyr tolerances have been established for grass forage and hay, meat, meat byproducts, milk and eggs, and rice. EPA found that dietary risk contributed only a small percentage of the RfD which indicates dietary exposure to triclopyr residues may not be a significant concern under conditions evaluated in the re-registration eligibility decision (RED). For the acute dietary risk assessment, the endpoint of concern was the maternal and developmental NOEL of 30 mg/kg/day from a developmental toxicity study in rabbits based on a decreased number of live fetuses and other effects at the 100 mg/kg dose. An uncertainty factor of 100 (10 for interspecies differences in response, and 10 for intraspecies differences) was considered protective of infants and children for both acute and chronic exposures. Data indicated no special sensitivity of infants and children to triclopyr residues.

Dermal absorption was calculated to be less than 2% based on a study with human volunteers and a rabbit dermal absorption study (EPA/OPP 1998a). Neither occupational nor residential risk assessments for short-term and intermediate-term dermal exposure to triclopyr have been conducted because no adverse effects were seen at the highest dose tested of 1000 mg/kg/day in a 21-day dermal toxicity study in rabbits.

Because the acute inhalation median lethal dose (LC50) was determined to be greater than 2.6 mg/L, significant toxicity resulting from inhalation exposure would not be expected, and a separate risk assessment for the inhalation route of exposure was not performed.

EPA determined that use of currently registered products containing triclopyr in accordance with labeling required by RED will not pose unreasonable risks of adverse effects to humans or the environment. EPA also concluded that the reassessed tolerances for triclopyr met the safety standard under the Food Quality Protection Act (FQPA) and that there was a reasonable certainty that no harm will result to infants and children or to the general population from aggregate exposure to triclopyr or TCP residues. Required labeling specifies practices and conditions under which pesticide products are considered safe and may include: personnel protection equipment necessary for application, application rates, the type of environment considered safe for application (e.g. terrestrial or aquatic), safe exposure application times for a pesticide handler, duration time before re-entry into a treated area is considered safe, and whether the product may be applied to areas with crops or animals and under what conditions, etc..

The potential hazards associated with exposures to TCP are discussed in detail in the EPA RED on triclopyr (EPA/OPP 1998a). U.S. EPA/OPP (1998a) concludes in the RED that the existing uses of triclopyr are unlikely to result in acute or chronic dietary risks or acute or chronic drinking water risks from TCP. Therefore quantitative estimates of exposure to the metabolite TCP was not included in this screening level risk assessment.

Triclopyr TEA dissociates extremely rapidly to triclopyr 2 acid and triethylamine, and triclopyr BEE hydrolyzes rapidly to triclopyr acid and 2- 3 butoxyethanol U.S. EPA/OPP (1998a). Relatively little information is available on the toxicity of triethylamine. There is an extensive database on the toxicity of 2- butoxyethanol and much of the available information associated with potential human health effects was reviewed by ATSDR (1998). Acute and chronic toxicity criteria for 2- butoxyethanol are similar to acute and chronic toxicity criteria for triclopyr.

The toxicity of ethanol, which is used in formulations such as Garlon 3A, is well characterized in humans (WHO 1988). For acute and chronic exposures, the alcohol contained in Garlon 3A will not be of toxicological significance because of the rapid breakdown of alcohol in the environment and the relatively high levels of alcohol associated with alcohol poisoning.

4.1.2 Imazapyr

Imazapyr is part of the imidazolinone chemical class. Imazapyr is a systemic, non-selective, pre- and post-emergent herbicide used for the control of a broad range of terrestrial and aquatic weeds and controls plant growth by preventing the synthesis of branched-chain amino acids. Imazapyr

is applied either as an acid or as the isopropylamine salt. Commercial formulations contain either imazapyr acid or the imazapyr isopropylamine salt, both of which are dissolved in a water solution. Application rates of imazapyr range from 0.014 pounds acid equivalent (a.e.) per acre (lbs a.e./acre) on corn to 1.5 lbs a.e./acre on non-crop areas and aquatic sites. The herbicide imazapyr is an anionic, organic acid that is non-volatile and is both persistent and mobile in soil and may be transported via runoff to surface water and may also leach to groundwater. Imazapyr is essentially stable to hydrolysis, aerobic and anaerobic soil degradation, as well as aerobic and anaerobic aquatic metabolism. Upon direct application, or indirect release into surface water, photolysis is the only identified mechanism for imazapyr degradation in the environment. The half-life of imazapyr is approximately 3 to 5 days in surface water. The major identified metabolites were pyridine hydroxy-dicarboxylic acid, pyridine dicarboxylic acid, and nicotinic acid. Metabolites hydroxy-dicarboxylic acid and pyridine dicarboxylic acid are expected to be no more toxic than the parent compound. Additionally, pyridine hydroxy-dicarboxylic acid is considered to be less stable than the parent compound. Nicotinic acid one of the metabolites of imazapyr is a possible neurotoxin at high dose levels, but there is no concern for low exposures. Nicotinic acid (also called Niacin and referred to as Vitamin B3) is considered an essential nutrient. Imazapyr is not expected to bioaccumulate in aquatic organisms because it exists as an anion at typical environmental pHs.

EPA classifies imazapyr as a Class III pesticide which designates low toxicity. Imazapyr has low acute toxicity via the oral (Toxicity Category IV) and dermal (Toxicity Category III) routes of exposure. Imazapyr has been placed in acute Toxicity Category II for the inhalation route of exposure. It is not irritating to the skin and is negative for dermal sensitization; however, imazapyr results in irreversible eye damage (Toxicity Category I). Based on animal studies there is no evidence that imazapyr causes cancer, DNA damage, nerve damage, or birth defects. Imazapyr is classified as a Group E chemical, “not likely to be carcinogenic”.

EPA has not derived an agency-wide RfD for imazapyr (i.e.an RfD is not listed on the EPA Integrated Risk Information System (http://www.epa.gov/iris/). The Office of Pesticide Programs of the EPA (EPA/OPP) derived a chronic RfD of 2.5 mg/kg/day (U.S. EPA/OPP 1997) using data from a study in which groups of male and female dogs were exposed to 10 dietary concentrations of 0, 1000, 5000, or 10,000 parts per million (ppm) imazapyr for 1 year (Shellenberger 1987). The RfD is based on the NOAEL of 2.5 mg/kg/day and an uncertainty factor of 100 (10 for species-to-species extrapolation and 10 for sensitive subgroups in the human population).

Normally, an acute hazard value is chosen from acute (non-lethal), subchronic, or developmental toxicity studies from which there is reasonable evidence that a single exposure can lead to a potential effect. Because the available data suggest that a single exposure to imazapyr does not result in an effect of concern for risk assessment purposes, an acute RfD was not derived.

4.1.3 Glyphosate

Glyphosate is a non-selective herbicide registered for use on many food and non-food field crops as well as non-crop areas where total vegetation control is desired. When applied at lower rates, glyphosate also is a plant growth regulator. Glyphosate is among the most widely used herbicides by volume. Three salts of glyphosate (ammonium salt, dimethylamine salt, isopropylamine salt) are used as active ingredients in registered pesticide products. Many glyphosate formulations include surfactants, and the toxicity of these surfactants is of equal or greater concern to the risk assessment than is the toxicity of technical grade glyphosate. The isopropylamine salt, an active ingredient in 53 registered products, is used as an herbicide to control broadleaf weeds and grasses in many food and nonfood crops and a variety of other sites including ornamentals, lawns and turf, residential areas, greenhouses, forest plantings and industrial rights-of-way. It is formulated as a liquid, solid or pellet/tablet, and is applied using ground or aerial equipment. Glyphosate adsorbs strongly to soil and is not expected to move vertically below the 6 inch soil layer; residues are expected to be immobile in soil. Glyphosate is readily degraded by soil microbes to aminomethyl phosphonic acid (AMPA), which is degraded to carbon dioxide. Glyphosate and AMPA are not likely to move to groundwater due to their strong adsorptive characteristics. However, glyphosate does have the potential to contaminate surface waters due to its aquatic use patterns and through erosion, as it adsorbs to soil particles suspended in runoff. If glyphosate reaches surface water, it would not be broken down readily by water or sunlight.

Glyphosate is of relatively low oral and dermal acute toxicity and it was been placed in Toxicity Category III for these effects. The acute inhalation toxicity study was waived because glyphosate is nonvolatile and because adequate inhalation studies with end-use products exist showing low toxicity. In June 1991, EPA classified glyphosate as a Group E oncogen, one that shows no evidence of carcinogenicity for humans, based on the lack of convincing evidence of carcinogenicity in adequate studies.

EPA (Monsanto 1981) determined an RfD of 0.1 mg/kg/day for glyphosate based on a 3-generation rat reproduction study. Dietary concentrations of glyphosate were adjusted weekly during growth, and between mating rest periods to achieve dose levels of 0, 3, 10, and 30 mg/kg/day. Each generation (generation 1 (F0), generation 2 (F1), and generation 3 (F2)) consisted of 12 male and 24 female rats. Each parent generation was mated to produce to litters. No treatment-related effects on fertility were noted, nor were any systemic effects in adult rats apparent. Male pups from the mating of the high dose group (30 mg/kg/day) showed an increase in the incidence of unilateral renal tubular dilation. Based on this finding, the NOEL and LEL for this study were 10 and 30 mg/kg/day, respectively. An uncertainty factor of 100 was used to account for the inter- and intraspecies differences.

EPA's risk assessment of glyphosate's many registered food uses concluded that human dietary exposure and risk are minimal. Studies with a variety of plants indicate that uptake of glyphosate or AMPA from soil is limited. In animals, most glyphosate is eliminated in urine and feces.

EPA concluded in the RED that the use of currently registered pesticide products containing the isopropylamine and sodium salts of glyphosate in accordance with the labeling specified in this RED would not pose unreasonable risks or adverse effects to humans or the environment.

The current Forest Service risk assessment adopts the RfD of 2 mg/kg bw/day from U.S. EPA/OPP (1993a,b, 2000). This approach is taken because the RfDs derived by U.S. EPA/ORD (1990) and WHO (2005) are based on what may be viewed as free standing NOELs—i.e., no adverse effect levels are defined in the studies on which the criteria are based. This more conservative RfD is used in this risk assessment.

4.2 Ecological Risk Toxicity Values

Appendix E of the BA (FEMA 2012) presents information on the three herbicides being considered for use in the proposed and connected project areas – Garlon® 4 Ultra, Stalker®, and Roundup®. Included in this information are summaries of chemical characteristics of the commercial formulations or the active ingredients, general and (where available) species specific ecotoxicity data, potential direct (e.g., toxicity) and indirect (e.g., secondary or associated) effects of herbicide use, and BMPs to reduce the potential for adverse effects, especially on special status species. Toxicity values are numerical expressions of the relationship between exposure and effect. Ecological effects data can be expressed as a dose rate (e.g., mg/kg body weight ingested per day) or as a concentration (e.g., concentration of chemical in surface water).

Toxicity values for the five listed species of concern are included in Table 4-2. Table 4-2 includes some general information on each of the three herbicides being considered along with toxicity values available for each of the five special status species. These species can also be viewed as representative surrogates for a number of non-listed plant and wildlife species in the project area. The idea being that if these species are protected, a majority of similar types of plant and wildlife species would be protected.

Each of the nine attached terrestrial USDA Forest Service worksheets also include toxicity values for broader categories of receptors evaluated in the worksheets, and some of these receptor categories are assumed to reasonably represent species of special concern for this screening level assessment. More details of toxicity values are presented in the USDA Forest Service herbicide risk assessments (available online at http://www.fs.fed.us/foresthealth/pesticide/risk.shtml) identified below:

- Triclopyr Human Health and Ecological Risk Assessment [prepared by Syracuse Environmental Research Associates (SERA) 2011 for USDA Forest Service]
- Imazapyr Human Health and Ecological Risk Assessment (prepared by SERA 2011 for USDA Forest Service)
- Glyphosate Human Health and Ecological Risk Assessment (prepared by SERA 2011 for USDA Forest Service)

Table 4-2. Ecological screening levels (or safe levels) of the active ingredients of Garlon® 4 Ultra, Stalker®, and Roundup®

Garlon® 4 Ultra			
General Notes:			
Garlon® 4 Ultra is a yellow colored liquid herbicide comprised of 61.6% of the butoxyethyl ester (BEE) of triclopyr-2-butyoxyethyl ester (triclopyr), and between 18.6% and 31% kerosene, with the balance an undisclosed component or combination of constituents.			
Triclopyr BEE "degrades quite rapidly in water to triclopyr acid. Laboratory studies indicate that photolysis is the principal degradation pathway, with hydrolysis also contributing. Several studies indicate that the half-life of the ester in water can range from 1.5 to 6.6 days as a result of photolysis"			
The half-life in soils ranges between 4 and 40 days. Reported half-lives for triclopyr in western Oregon soils range from 75 to 81 days.			
Ecological screening levels for Plants:			
Listed Species of Concern	*Reference for Screening Levels*	*Screening Level NOEL*	*Screening Level FEL*
Pallid Manzanita	Morash and Freedman 1989 - Seedlings of *Rubus* species, other dicots, and monocots	10 milligram per kilogram (mg/kg)	50 mg/kg
Presidio clarkia	Morash and Freedman 1989 - Seedlings of *Rubus* species, other dicots, and monocots	10 mg/kg	50 mg/kg
Ecological screening levels for Wildlife:			
Listed Species of Concern	*Basis for Screening Level [Reference]*	*Screening Level*	*Test Species Evaluated*
Alameda Whipsnake	No Toxicity data available		
California Red-legged Frog		**1 milligram per liter (mg/L)**	ranid frog larvae
	EC_{50} [Berrill, et al. (1994)]	1.2 mg/L	bullfrog, green frog, and leopard frog
	96-hour LC50 [Perkins et al. (2000)]	10 mg acid equivalent acid equivalent (a.e.)/L	African clawed frog
Central California Coast Steelhead DPS	LC_{50} [Wan, et al. (1987)]	2.7 mg/L [parts per million (ppm)]	rainbow trout
	LC_{50} [Wan, et al. (1987)]	1.4 mg/L (ppm)	chum and Chinook salmon
	LC_{50} [Dow (2011)]	**.984 mg/L (ppm)**	rainbow trout
	96-hour LC_{50} [WSSA (1983)]	117 ppm	rainbow trout
	96-hour LC_{50} [WSSA (1983)]	148 ppm	bluegill sunfish
	NPIC (2002)	Triclopyr BEE is moderately to highly toxic (LC_{50} 0.1 to ≤ 10 ppm)	bluegill sunfish, rainbow trout, and fathead minnow
Stalker®			
General Notes:			

- Stalker® is a pale yellow to dark green colored liquid with a weak ammonia-like odor and neutral pH. It is comprised of 27.6% IPA (IPA) salt of imazapyr, which is the active ingredient, and 72.4% of proprietary ingredients.
- The half-life is between 3 and 5 days in surface water and it is not expected to bioaccumulate in tissues of aquatic organisms under normal pH conditions.
- Imazypyr is considered to be moderately persistent in soil with a half-life of approximately 90 days with the primary means of degradation being microbial action according to one source. Forestry dissipation studies identified by Oregon State University (OSU) indicated that the half-life ranged from 14 to 44 days in forest litter, 19 to 34 days in forest soil, and 12 to 40 days on plant tissue.

Ecological screening levels for Plants:

Listed Species of Concern	*Notes*	*Basis for Screening Level [Reference]*	*Screening Level*	*No Adverse Effects Concentration (NOAEC)*
Pallid Manzanita	Aquatic Plants only	EC_{50} [U.S. EPA (2006)]	0.018 mg a.e./L	0.011 mg a.e./L
Presidio clarkia	Aquatic Plants only	EC_{50} [U.S. EPA (2006)]	0.018 mg a.e./L	0.011 mg a.e./L

Ecological screening levels for Wildlife:

Listed Species of Concern	*Basis for Screening Level [Reference]*	*Screening Level*	*Test Species Evaluated*
Alameda Whipsnake	No Toxicity data available		
California Red-legged Frog	LC_{50} [Trumbo and Waligora (2009)]	**14.7 mg/L**	bullfrog tadpoles
Central California Coast Steelhead DPS	96-hour LC_{50} [BASF (2012)]	>100 mg/L (ppm)	rainbow trout
	96-hour LC_{50} [Mangels and Ritter (2000)]	>100 mg/L (ppm)	rainbow trout, bluegill sunfish, and channel catfish
	96-hour LC_{50} [Mangels and Ritter (2000)]	184 mg/L (ppm)	Atlantic silverside (marine species)
	96-hour LC_{50} [U.S. DOE-Bonneville Power Administration (2000)]	>100 mg/L (ppm)	rainbow trout
	96-hour LC_{50} [U.S. DOE-Bonneville Power Administration (2000)]	>100 mg/L (ppm)	bluegill sunfish

Roundup®

General Notes:

- The various Roundup® formulations as well as other glyphosate-based herbicides include different percentages of the active ingredient and proprietary ingredients, such as surfactants, which are possibly more toxic than glyphosate. A common surfactant in Roundup® is polyoxyethylene amine. Studies indicate that the surfactant polyoxyethyleneamine or polyethoxylated tallow amine (both abbreviated POEA), used in some commercial glyphosate-based formulations, may be more toxic to animals than glyphosate.
- The half-life of glyphosate in soil ranges from several weeks to years, but averages 2 months.
- In the water column, glyphosate is rapidly decreased through adsorption to suspended and bottom sediments and has a half-life of 12 days to 10 weeks.

Ecological screening levels for Plants:

Listed Species of Concern	*Reference for Screening Level*	*Screening Level*	*Effect*
Pallid Manzanita	Smith and Oehme 1992 in SERA (2011)	1/33 of an application rate of 1.121 kg/ha	Caused transient damage in soybeans, based on an assessment of visual injury, over a 30-day period after application but no net decrease in soybean production by the end of the season
Presidio clarkia	Smith and Oehme 1992 in SERA (2011)	1/33 of an application rate of 1.121 kg/ha	Caused transient damage in soybeans, based on an assessment of visual injury, over a 30-day period after application but no net decrease in soybean production by the end of the season

Ecological screening levels for Wildlife:

Listed Species of Concern	*Basis for Screening Level [Reference]*	*Screening Level*	*Test Species Evaluated*	Notes
Alameda Whipsnake	No Toxicity data available			
California Red-legged Frog	96-hour LC_{50} [Perkins et al. (2000)]	9.3 mg a.e./L	African clawed frog	
	Smith et al. (2009) reported some mortality	**.56 mg a.e./L**	western chorus and plains leopard frog	Roundup® 360 formulation
	48-hour LC_{50} [Bidwell and Gorrie (1995)]	11.6 mg a.e./L	western chorus and plains leopard frog	Roundup® 360 formulation
	48-hour LC_{50} [Bidwell and Gorrie (1995)]	121 mg/L	four species of frogs from western Australia	technical grade glyphosate
	Amphibian acute LC_{50} [EPA/OPP 2008]	3.17 mg/L	bluegill sunfish 96-hr LC_{50}	terrestrial uses, for formulations
	Most sensitive fish, aquatic invertebrate, and aquatic plant EC_{50} or LC_{50} [EPA/OPP 2008]	3 mg/L	freshwater invertebrates	terrestrial uses, for formulations
	EC_{50} [EPA/OPP 2008]	0.39 mg/L	non-vascular plants	terrestrial and aquatic uses, for formulations
	Amphibian chronic NOAEC/LOAEC [EPA/OPP 2008]	1.8/>1.8 mg a.e./L	chronic study with leopard frog	
	Amphibian chronic LOAEC [EPA/OPP 2008]	1.9 mg/L	chronic study with leopard frog	terrestrial uses, for formulations
Central California Coast Steelhead DPS	96-hour LC_{50} [Schuette (1998)]	38 mg/L (ppm)	rainbow trout	
	96-hour LC_{50} [Schuette (1998)]	78 mg/L (ppm)	bluegill sunfish	
	LC_{50} [Folmar, et al. (1979)]	140 mg/L (ppm)	rainbow trout	exposed to glyphosate only
	LC_{50} [Folmar, et al. (1979)]	97 mg/L (ppm)	fathead minnows	exposed to glyphosate only
	LC_{50} [Folmar, et al. (1979)]	130 mg/L (ppm)	channel catfish	exposed to glyphosate only
	LC_{50} [Folmar, et al. (1979)]	150 mg/L (ppm)	bluegill sunfish	exposed to glyphosate only
	LC_{50} [Folmar, et al. (1979)]	8.3 mg/L (ppm)	rainbow trout	exposed to Roundup®

LC_{50} [Folmar, et al. (1979)]	**2.4 mg/L (ppm)**	fathead minnows	exposed to Roundup®
LC_{50} [Folmar, et al. (1979)]	13 mg/L (ppm)	channel catfish	exposed to Roundup®
LC_{50} [Folmar, et al. (1979)]	6.4 mg/L (ppm)	bluegill sunfish	exposed to Roundup®
96-hour LC_{50} [U.S. DOE-Bonneville Power Administration (2000)]	8.2 mg/L (ppm)	rainbow trout	
96-hour LC_{50} [U.S. DOE-Bonneville Power Administration (2000)]	5.8 mg/L (ppm)	bluegill sunfish	
96-hour LC_{50} [U.S. DOE-Bonneville Power Administration (2000)]	20 mg/L (ppm)	Chinook salmon	
96-hour LC_{50} [U.S. DOE-Bonneville Power Administration (2000)]	20 mg/L (ppm)	coho salmon	

EC_{50} (abnormal behavioral response) = EC_{50} is the abbreviation for effective concentration 50. It is the concentration at which 50% of the maximum biological response is reached.

L**C_{50} (mortality)** = LC_{50} is the abbreviation for lethal concentration 50. It is the concentration at which 50% of the tested group will die. Also called median lethal concentration LC_{50}.

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SECTION FIVE RISK CHARACTERIZATION

The following SLRA steps are addressed in this section:

- Assess quantitatively and semi-quantitatively the potential risk to humans and ecological receptors
- If relevant literature-based toxicity values are not available, develop risk-based concentrations of the chemicals for the relevant exposure media (e.g., soil, water, air, dietary items) and compare to project-specific estimates of exposure to the chemicals in those media

Risk characterization involves integration of toxicity criteria and exposure assessment into expressions of risk. The following sections present risks for human and ecological receptors.

5.1 Human Health Risk Characterization

In this section of the risk assessment, human health risks associated with the exposure pathways identified in Section 3 are assessed. Potential risks due to exposures to herbicides used in the proposed and connected actions are evaluated by integrating toxicity and exposure assessments into quantitative expressions of noncancer hazards. None of the herbicides proposed for use in this project were identified as carcinogens; therefore, there is no cancer risk from the herbicides to be used in the proposal and only noncancer hazards are evaluated.

The potential for noncancer health effects is evaluated by comparing an exposure level or concentration over a specified time period with an RfD or RfC derived for a similar exposure period. This ratio of exposure to toxicity is referred to as a hazard quotient. The hazard index is the sum of the hazard quotients from individual chemicals and exposure routes. If the hazard index exceeds unity (1), hazard quotients for individual COPCs with similar toxicological effects or mechanism of action may be summed to yield an effect-specific hazard index (EPA 1989a). The effect-specific hazard index can be calculated by summing hazard quotients for chemicals with similar toxicological effects (e.g., developmental toxicity) or target organs (e.g., liver).The hazard index assumes that there is a level of exposure below which it is unlikely even for sensitive populations to experience adverse health effects. However, this value should not be interpreted as a probability; generally, the greater the hazard index is above unity, the greater the level of concern. A hazard index less than 1 suggests that the exposure is unlikely to result in an adverse effect.

Exposures for workers (i.e., herbicide handlers) and members of the general public (e.g., offsite residents and recreational visitors) were evaluated in this risk assessment. For each group, two exposure scenarios were taken into consideration: general exposure (normal use) and exposure after accidental releases or improper herbicide use or application (e.g., a spill of herbicide mixture or direct spray of workers or other individuals). Hazards were estimated using the range of possible application rates for the proposed herbicides to address general exposure. Accidental

exposure was addressed using conservative (probably overestimated) volumes of herbicide mixtures spilled during an accidental release or accidentally sprayed onto receptors.

Hazards were estimated without mitigation measures and with mitigation measures. Mitigation measures or best management practices may eliminate exposure pathways or reduce exposure. Pesticide applicators are required to use formulated pesticide/herbicide products in accordance with the product label, as approved by the EPA. The product label includes requirements for the use of personal protective equipment (PPE) for the individuals mixing and applying the formulations, for containing the material, for proper application, and for safe disposal of any material that is not applied. The project supervisor must have the authority to start and stop the pesticide application and be well versed in the State regulatory requirements regarding safe and legal use of the pesticide product, and applicator and public safety. Finally, all personnel involved with the herbicide application must receive safety training specific to the formulated herbicide product that will be used and must follow the site safety and health plan developed for the project that will prevent exposure to proposed herbicide formulations and other formulation constituents at concentrations that could be expected to affect health. Mitigation measures for human health are summarized in **Table 1-1.**

Hazards for each receptor group for both general and accidental exposure with are summarized below.

5.1.1 Noncancer Hazards

In this section results of the calculations performed in the USDA Forest Service risk assessment worksheets used to evaluate exposure for receptors to the three herbicides to be used in the proposed and connected actions are discussed. Scenarios evaluated in the Forest Service risk assessment worksheets are applicable for likely exposure scenarios associated with the proposed and connected actions. The worksheets use standard exposure equations and default exposure assumptions to estimate risks. Exposures for workers (i.e., herbicide handlers) and members of the general public (e.g. residents, recreational visitors) are summarized below.

5.1.1.1 Occupational Exposures of Vegetation Management Workers

For workers, general exposure involves the handling and application of the herbicide. Exposure estimates are calculated from the amount of chemical handled per day and the exposure rates for the worker group. The majority of exposure assumptions (except application rates) used for workers were the default assumptions recommended in the USDA Forest Service worksheets. Although each of the specific exposure assessments for workers involves degrees of uncertainty, exposure estimates are objective in that they are based on empirical relationships of absorbed dose to herbicide use. A quantitative summary of the risk characterization for workers is presented in **Table 5-1** for a range of application rates for triclyopyr BEE, triclyopyr TEA, imazapyr, and glyphosphate; these values are based on central estimates. All risk calculations are provided in the Forest Service Worksheets included in Attachment 1.

Table 5-1. Summary of Hazard Quotients[a] for Workers

Herbicide	Triclopyr BEE				Triclopyr TEA		Imazapyr	Glyphosate	
Application Rate (lb/acre)	**3**	**8**	**3**	**8**	**1**	**1**	**0.1**	**1**	**8**
Application Volume (gal/ acre)	**25**	**25**	**200**	**200**	**25**	**200**	**20**	**10**	**10**
Scenario : Backpack Applications	**Hazard Quotient (HQ) Without Mitigation**								
Accidental/Incidental Exposures									
Contaminated Gloves, 1 minute	0.04	0.10	0.005	0.01	0.00002	0.000003	0.000003	0.000002	0.00001
Contaminated Gloves, 1 hour	**2**	**6**	0.3	0.7	0.001	0.0002	0.0002	0.0001	0.0009
Spill on Hands, 1 hour	0.004	0.01	0.0005	0.001	0.0004	0.00005	0.00003	0.0002	0.002
Spill on legs, 1 hour	0.01	0.03	0.001	0.004	0.001	0.0001	0.00006	0.0006	0.005
General Exposures									
Chronic	0.7	**1.9**	0.7	**1.9**	0.1	0.1	0.0002	0.003	0.02
Acute	0.03	0.09	0.03	0.09	0.006	0.006	NC	NC	NC
Scenario : Backpack Applications	**Hazard Quotient (HQ) With Mitigation**								
Accidental/Incidental Exposures [b]									
Contaminated Gloves, 1 minute	0	0	0	0	0	0	0	0	0
Contaminated Gloves, 1 hour	0	0	0	0	0	0	0	0	0
Spill on Hands, 1 hour	0	0	0	0	0	0	0	0	0
Spill on legs, 1 hour	0	0	0	0	0	0	0	0	0
General Exposures [c]									
Chronic	0.3	0.9	0.3	0.9	0.06	0.06	0.0001	0.002	0.01
Acute	0.02	0.05	0.02	0.05	0.003	0.003	NC	NC	NC

NC = Not calculated, no acute toxicity

[a] All hazards presented are based on central values

[a] Under post mitigation, accidental/incidental exposures would be reduced by following best management practices.

[b] Under post mitigation, general exposures would be reduced by best management practices; the hazards presented consider a protection factor of 50% for the use of personal protection equipment.

5.1.1.1.1 Without Mitigation

Acute Exposure

As seen in **Table 5-1**, HQs for all accidental acute exposures are below a level of concern (i.e. less than 1) except for wearing of gloves heavily contaminated by triclyopyr BEE for 1 hour. HQs for this scenario range from 2 to 6. This scenario's key assumption is that wearing gloves grossly contaminated with a chemical solution is equivalent to immersing the hands in the herbicide solution for 1 hour. Such exposure would not occur for workers who comply with the herbicide manufacturer's directions and with prudent industrial hygiene. These HQs are based on an acute RfD and would only apply to male workers. In the Forest Service worksheets, acute exposure is not applicable to women of child bearing age because it does not consider developmental effects.

Chronic Exposure

For general exposures, hazards are above a level of concern only for exposure associated with the maximum application rate of triclopyr BEE (8 a.e./acre). For triclopyr BEE, MEI estimates of HQs based on the chronic RfD range from 0.7 to 1.9; HQs for all other herbicides are below a level of concern. The highest application rate for triclopyr BEE considered in this risk assessment is 8 lbs a.e./acre, although Forest Service programs comparable to this program seldom use application rates in excess of 6 lbs a.e./acre and the site specific application rate for the majority of areas was 3 lbs a.e./acre or less. Conservative exposure assumptions used for assessment of hazards for MEI are likely to overestimate exposure and risk.

5.1.1.1.2 With Mitigation

Even though exposures associated with the maximum application rate of 8 lbs a.e./acre are unlikely to be realized, they can be mitigated using best management practices. First, lower application rates are likely to be effective and use of the minimum rate can be used to mitigate acute risks. Some triclopyr BEE formulations are moderate eye irritants and all formulations of triclopyr TEA require the use of protective eyewear. From a practical perspective, eye irritation is the mostly likely effect that workers will experience during the application of triclopyr formulations. As with all herbicide applications, potential ocular and dermal effects can and should be minimized or avoided by prudent industrial hygiene practices during and after the application of triclopyr formulations. BMPs to be implemented include use of appropriate PPE and requirements for specific safety training for all applicators.

The unmitigated calculations do not account for personal protective equipment (e.g., chemical resistant gloves, long-sleeved shirt and long pants, shoes and socks) as recommended by the product label. Dermal exposure contributes most of the risk for workers handling herbicides under the proposed use. It is assumed that the using PPE including wearing chemical resistant gloves rated as high on the EPA Chemical Resistant Category Selection Chart would eliminate most of the dermal exposure for workers. A reduction factor of 50% was selected as a conservative estimate of the potential risk reduction for workers wearing appropriate PPE; actual

risk reduction would be higher for workers following label instructions. When a protection factor of 50% is assumed in the model for the use of personal protective equipment, the hazard quotient is reduced to be 0.9, which is less than the hazard quotients level of concern of 1. In a study by Middendorf (1992), the wearing of gloves during the backpack application of triclopyr was shown to reduce worker exposure by a factor of 4.4. Based on this study and the fact that the application rate modeled likely overestimates actual application, it is likely that the modeled exposure scenario that results in hazard quotients at or above the level of concern would not occur for workers who comply with the herbicide manufacturer's directions and with standard industrial hygiene practices.

BMPs include entry restrictions that are designed to protect people from being exposed to dangerous levels of pesticides left on treated surfaces. An entry restriction rule-of-thumb for all products is until sprays have dried, dusts have settled or vapors dispersed. Product labels state the specific entry restrictions. Product labels will also state that early reentry (entering a treated area before the entry restriction has expired) can only be done by personnel wearing specific protective clothing. The Worker Protection Standard (WPS) established Restricted Entry Intervals (REI) for pesticides used to produce agricultural plants. The REI is a period of time after and application of a pesticide that worker entry to the treated area is restricted. These REIs are based on the acute dermal toxicity of the active ingredient, eye irritation effects or skin irritation effects. If workers must enter the sprayed area within the REI, then those workers will need to wear the required Personal Protective Equipment that is noted on the pesticide label.

5.1.1.2 General Public (Recreational Visitors and Offsite Residents)

For the public, general exposure scenarios are somewhat more arbitrary than for workers and several are less plausible. This observation holds true for both acute (accidental/unintentional exposure) and chronic exposure scenarios. Acute scenarios involve accidental exposure and assume that an individual is exposed to the compound either during or shortly after its application or spill. Specific scenarios are assessed for direct spray, dermal contact with recently sprayed vegetation, as well as the consumption of recently sprayed fruit or surface water or fish recently affected by a spill. These scenarios should be regarded as extreme, some to the point of limited plausibility. For example, gathering and consuming fruit from areas designated for herbicide use is limited or not possible since desirable and consumable fruit producing trees and shrubs do not occur in most, if not all, target areas.

Longer-term or chronic exposure scenarios parallel acute exposure scenarios for the consumption of contaminated fruit, water, and fish but are based on estimated levels of exposure for longer periods after application.

For each herbicide, three specific exposure scenarios are considered, including walking through a contaminated area after treatment, consumption of surface water from a contaminated watershed, and the consumption of contaminated vegetation/fruit. These three scenarios are consistently used because one of them usually leads to the highest estimates of exposure. Additional acute scenarios are assessed that consider accidental exposures such as being directly sprayed with the herbicide or consuming water that has been contaminated resulting from a spill.

The receptor chosen to represent each scenario is presented in **Table 5-2** along with a summary of the risk characterization for a range of application rates for triclyopyr BEE, triclyopyr TEA, imazapyr, and glyphosphate. The hazards presented in Table 5-2 are based on typical exposure assumptions for the general public scenarios and a range of application rates. All risk calculations are provided in the Forest Service Worksheets included in Attachment 1 including upper bound and lower bound hazard estimates.

5.1.1.2.1 Without Mitigation

Acute

For the general public, the only accidental acute scenario that results in HQs at the level of concern is the ingestion of water that has been contaminated by a spill (triclopyr BEE (HQ= 1.1) and glyphosate (HQ= 1.4)) in least dilute formulation. The accidental spill scenario assumes that a young child consumes contaminated water shortly after an accidental spill of a premixed field solution (100 gallons) into a small pond; no dissipation or degradation is considered. Since this exposure scenario is based on assumptions that are likely to err substantially on the high side, exposure is probably overestimated, perhaps by a large margin. Additionally, the maximum application rate will not be used for the majority of areas and perhaps not for any areas if lower application rates prove effective. Therefore, a more concentrated solution could not be accidentally spilled. Finally based on best management practices, herbicides will not be applied within 60 feet of surface water; therefore, contamination of water by a spill is unlikely suggesting that this exposure pathway will not be complete during herbicide application.

The risk assessment also evaluated exposure to a young child and to women of childbearing age accidently exposed to direct spray of the herbicides. HQs resulting from being accidentally sprayed with herbicides are less than one suggesting that adverse health effects are unlikely for receptors based on the assumptions used in this risk assessment.

For members of the general public, the only non-accidental acute exposure scenario of concern involves the consumption of recently sprayed fruit or vegetation with consequent exposures to triclopyr and 3,5,6-trichloro-2-pyridinol (TCP), the primary metabolite of triclopyr. Relative risks for this exposure scenario are substantially higher that risks associated with other exposure scenarios. At application rates of 3 lb a.e./acre and 8 lb a.e./acre of triclopyr BEE, the HQs are 10 and 26, respectively for the consumption of contaminated vegetation by a young woman. The HQ associated with exposure to triclopyr TEA for the consumption of contaminated vegetation by a young woman is 3. Because triclopyr has been shown to cause adverse developmental effects in mammals, the high HQs associated with terrestrial applications could be of concern in terms of the potential for adverse reproductive outcomes in females.

Table 5-2. Summary of Hazard Quotients[a] for the General Public

Herbicide		Triclopyr BEE				Triclopyr TEA		Imazapyr	Glyphosate	
Application Rate (lb/acre)		**3**	**8**	**3**	**8**	**1**	**1**	**0.1**	1	8
Application Volume (gal/ acre)		**25**	**25**	**200**	**200**	**25**	**200**	**20**	10	10
Scenario	**Receptor**	**Hazard Quotient (HQ) Without Mitigation**								
Accidental Acute Exposures										
Direct Spray of Child Whole Body	Child	0.20	0.40	0.020	0.05	0.02	0.002	0.001	0.009	0.07
Direct Spray feet and legs	Adult Female	0.3	0.9	0.04	0.1	0.03	0.004	0.0001	0.0009	0.007
Water Consumption (Spill)	Child	0.4	**1.1**	0.05	0.1	0.10	0.02	0.007	0.2	**1.4**
Fish Consumption (Spill)	Adult Male	0.0007	0.002	0.00009	0.0002	0.0002	0.00003	0.0001	0.002	0.02
Non-Accidental Acute Exposures										
Vegetation Contact, shorts and T-shirt	Adult Female	0.5	1.5	0.5	1.5	0.04	0.04	0.00009	0.0005	0.005
Contaminated Fruit	Adult Female	0.7	**2**	0.7	**2**	0.2	0.2	0.0005	0.006	0.05
Contaminated Vegetation	Adult Female	**10**	**26**	**10**	**26**	**3**	**3**	0.007	0.08	0.6
Swimming, 1 hour	Adult Female	0.00008	2.E-04	8.E-05	0.0002	4.E-07	4.E-07	1.E-08	2.E-09	2.E-08
Water consumption	Child	0.00009	2.E-04	9.E-05	0.0002	2.00E-04	2.00E-04	0.00006	4.E-04	0.003
Fish consumption	Adult Male	2.E-07	4.E-07	2.E-07	4.E-07	4.E-07	4.E-07	9.E-07	5.E-06	4.E-05
Chronic/Longer Term Exposures										
Contaminated Fruit	Adult Female	0.3	0.8	0.3	0.8	0.1	0.1	2.E-04	9.E-04	8.E-03
Contaminated Vegetation	Adult Female	0.6	**1.7**	0.6	**1.7**	0.3	0.3	0.003	1.E-02	0.1
Water consumption	Adult Male	9.E-06	2.E-05	9.E-06	2.E-05	0.003	0.003	8.E-06	3.E-06	2.E-05
Fish consumption	Adult Male	1.E-09	3.E-09	1.E-09	3.E-09	2.E-07	2.E-07	2.E-08	5.E-09	4.E-08

Scenario	Receptor	Hazard Quotient (HQ) With Mitigation								
Accidental Acute Exposures										
Direct Spray of Child Whole Body	Child	0	0	0	0	0	0	0	0	0
Direct Spray feet and legs	Adult Female	0	0	0	0	0	0	0	0	0
Water Consumption (Spill)	Child	0	0	0	0	0	0	0	0	0
Fish Consumption (Spill)	Adult Male	0	0	0	0	0	0	0	0	0
Non-Accidental Acute Exposures										
Vegetation Contact, shorts and T-shirt	Adult Female	0	0	0	0	0	0	0	0	0
Contaminated Fruit	Adult Female	0	0	0	0	0	0	0	0	0
Contaminated Vegetation	Adult Female	0	0	0	0	0	0	0	0	0
Swimming, 1 hour	Adult Female	0	0	0	0	0	0	0	0	0
Water consumption	Child	0	0	0	0	0	0	0	0	0
Fish consumption	Adult Male	0	0	0	0	0	0	0	0	0
Chronic/Longer Term Exposures										
Contaminated Fruit	Adult Female	0	0	0	0	0	0	0	0	0
Contaminated Vegetation	Adult Female	0	0	0	0	0	0	0	0	0
Water consumption	Adult Male	0	0	0	0	0	0	0	0	0
Fish consumption	Adult Male	0	0	0	0	0	0	0	0	0

[a] All hazards presented are based on central values

Visitors to areas where application has occurred seem unlikely to receive much if any exposure through consumption of contaminated fruit. Areas designated for fire hazard reduction seldom, if ever, support substantial populations of species that produced harvestable fruit. This exposure pathway may be incomplete now and in the future. In addition, offsite residents and recreational visitors will not have access to areas during and after treatment as part of BMPs. Additional protective options include the cutting down of edible vegetation such as blackberries prior to treatment of an area, or treating areas when ripe fruit is not present. High HQs reported for triclopyr BEE exposure should be examined within the perspective of low potential for exposure and the availability of easily implementable mitigations options.

Chronic

For members of the general public, the only chronic exposure scenario of concern involves the consumption of contaminated fruit or vegetation in areas treated with triclopyr BEE (HQ=1.7). The use of the exposure scenario for the longer-term consumption of contaminated vegetation is probably not realistic and may be greatly overestimate possible hazards. People are unlikely to consumed fruits (e.g. blackberries) over a prolonged period because such vegetation is a targeted non-native species and should be eliminated by herbicide application. Moreover, this pathway can be broken by slashing fruit bearing species prior to herbicide application, or by applying herbicides when ripe fruit is not present.

5.1.1.2.2 With Mitigation

Most of the exposure pathways for the general public would be eliminated when mitigation measures are considered. Proper application and consideration of safety measures by herbicide applicators would prevent contamination of media that the general public could contact. BMPs include entry restrictions that are designed to protect people from being exposed to dangerous levels of pesticides left on treated surfaces. An entry restriction rule-of-thumb for all products is until sprays have dried, dusts have settled or vapors dispersed. Product label state the specific entry restrictions. Product labels will also state that early reentry (entering a treated area before the entry restriction has expired) can only be done by personnel wearing specific protective clothing. All entry restrictions will be followed and in most cases entry restrictions will be more conservative than those specified on product labels. Restricting access to treated areas would eliminate exposure to contaminated vegetation and reduce the possibility that people would consume contaminated fruits or other vegetation. Buffers restricting treatment near surface water bodies would eliminate contamination of surface water thereby eliminating exposure pathways associated with contaminated surface water such as ingestion of water contaminated by a spill or swimming in water contaminated by a spill or drift.

Acute

Under mitigation measures acute accidental exposure pathways (i.e. receptors accidentally sprayed, consummation of water by a spill, and consumption of fish contaminated as a result of a spill) for the general public would be incomplete; therefore the risk associated with the proposed and connected actions would be insignificant.

Under mitigation measures non-accidental acute exposure pathways (i.e. receptors contacting treated vegetation, ingestion of contaminated fruit and other vegetation, swimming in contaminated water, consuming contaminated water and/or fish) for the general public would be also incomplete; therefore the risk associated with the proposed and connected actions would be insignificant.

Chronic

Under mitigation measures chronic exposure pathways (i.e. ingestion of contaminated fruit and other vegetation, and consuming contaminated water and/or fish) for the general public would be also incomplete; therefore the risk associated with the proposed and connected actions would be insignificant.

5.1.1.3 Cumulative Effects

Frequently herbicides are applied as a mixture. For example it is common practice to mix Garlon 4 (triclopyr) with Stalker (imazapyr). It is not possible to calculate the hazard for a mixture but hazards were calculated for each herbicide in the mixture and then combined if appropriate. Because mechanism of actions and toxicological endpoints for the three herbicides proposed for use in the proposed and connected actions have not been determined to be similar hazard estimates from exposure to each herbicide was not combined.

Cumulative effects from the use of herbicides include the potential use of herbicides by non-applicant landowners in the area. Along with these activities, workers and the general public that are in the project area could use some of these herbicides outside the project area for personal activities (e.g. treating weeds on their own property). Glyphosate likely has the highest risk of this cumulative effect (use on private property) because it is the most common herbicide sold to the general public to treat weeds. There are many design features to minimize risk to worker and public health and safety from the use of herbicides from this alternative; therefore, the risk cumulatively from these other activities and this alternative would be low to moderate.

5.1.1.4 Adjuvants

Adjuvants are solution additives that are mixed with an herbicide solution to improve performance of the mixture. Adjuvants can enhance activity of an herbicide’s active ingredient (activator adjuvant) or offset any problems associated with spray application. Activator adjuvants include surfactants, wetting agents, sticker-spreaders, and penetrants. Surfactants, or surface-acting agents, facilitate and enhance the absorbing, emulsifying, dispersing, spreading, sticking, wetting, or penetrating properties of herbicides.

Adjuvants are not under the same registration guidelines as pesticides. US EPA does not register or approve the labeling of adjuvants. California Department of Pesticide Regulation does require the registration of those adjuvants that are considered to increase the action of the pesticide/herbicide it is used with.

Based on the analysis of possible adjuvants that may be used in the proposed and connected actions (see Section 2.1.2), including the design features, the risk of adjuvants (at the application rates provided in proposed and connected actions) would be low.

5.1.2 Summary of Human Health Risk

Herbicide use in the proposed and connected actions has no direct beneficial effects to human health and safety from the use. Potential adverse direct and indirect impacts are addressed for each herbicide and adjuvants (generally). There would be indirect beneficial impacts by successfully removing invasive plants that could change the fire danger in the proposed and connected project areas. Cumulative effects are addressed for the herbicides generally based on projects that would utilize herbicides nearby and also for individuals that may be exposed to herbicides from other sources. Numerous mitigation measures have been added to this alternative to minimize risk and potential harm to human health and safety for workers and the public. **Table 5-3** provides a summary of the ratings of risk to human health and safety based on this analysis. Although the rating of risk to triclopyr is moderate this rating would be adjusted to low if mitigation measures are implemented.

Table 5-3. Rating of risk to human health and safety for each herbicide and adjuvants (in general) considered for the proposed and connected actions

Negligible	Low	Moderate
Imazapyr	Glyphosate	Triclopyr
Adjuvants		

5.2 Ecological Risk Characterization

Risk characterization integrates information from exposure assessments and toxicity assessments to characterize risks to representative ecological receptors. Risk characterization can be qualitative or quantitative. Quantitative risk estimation is most often based on derivation of hazard quotients or HQs, where HQ equals the exposure point concentration (EPC) of a hazardous chemical divided by an effects or toxicity-based concentration. EPCs for chemicals proposed to be used for this project are unavailable because herbicide concentrations in soil and water cannot be reliably determined based on the application methods proposed for use. Near worst-case EPCs are assumed as inputs to the USFS worksheets used to generate HQs for a subset of assumptions and conditions. These near worst case risk estimates are discussed below in Section 5.2.3, following qualitative estimations of risk associated with expected conditions (Section 5.2.2) and application of BMPs. The conservative quantitative risk estimates from the USFS worksheets and more reasonable qualitative risk estimates based on a variety of factors are presented following a summary of exposure and toxicity information.

5.2.1 Summary of Exposure and Toxicity Assessments

Section 3.3 summarizes the two major exposure pathways of concern for ecological risk assessment. The soil exposure pathway is linked to application of herbicides in the terrestrial habitats, while the water exposure pathway is linked to potential (but unanticipated) runoff of herbicides from the terrestrial habitats into surface waters. These two primary exposure pathways form the basis of the qualitative and quantitative risk estimates discussed below.

A brief summary of toxicity information is provided here for ecological receptor species of special concern. Toxicity information for Garlon® 4 Ultra, Stalker®, and Roundup® is summarized in Section 4.2 and in Table 4-2.

Toxicity information for these chemicals is unavailable for Alameda whipsnake or other reptiles that may be exposed via herbicide application in terrestrial environments. It is assumed that protection of adult amphibians with more permeable skin would provide protection of reptiles with less permeable skin. This assumption is based in part on findings that suggest amphibians and reptiles have reasonably similar sensitivities to many chemicals, and in general both classes have been found to be less sensitive to many chemicals than are fish, birds, and mammals. Assumptions on fish sensitivity are based on the comparison of larval amphibian toxicity data to fish toxicity data for the same chemical. Dietary exposure would be significant and complete if herbicides were accumulated in the tissues of prey items routinely consumed by Alameda whipsnake or other reptiles. However, accumulation of herbicides in prey items of whipsnakes (e.g., insects, lizards, small mammals) is unexpected because none of the herbicides are considered bioaccumulative (Appendix E of the BA).

Toxicity data for amphibians are presented in Table 4-2, and summarized below. Reviewed studies indicate that maintaining surface water concentrations of triclopyr (the active ingredient in Garlon® 4 Ultra) below about 1 mg/L should provide adequate protection for CRLF tadpoles (Table 4-2). No data are available for estimating safe or threshold concentrations of triclopyr for metamorphosed red-legged frogs in terrestrial environments, but transformed individuals of this species are unlikely to frequent the dry terrestrial areas where herbicide application is expected to be most intense. Protection of surface waters and adjacent shorelines (where both tadpoles and transformed adults are expected to reside) from unintended triclopyr exposures is critical for protection of the CRLF.

As stated previously, ecotoxicity data for amphibians are especially sparse for Stalker® or the active ingredient imazapyr. Trumbo and Waligora (2009) determined an LC50 of 14.7 mg/L for exposed bullfrog tadpoles to imazapyr. Reviews of available information indicate Stalker® is less toxic to ranid frog tadpoles than Garlon 4® (Table 4-2).

For Roundup®, including effects from the active ingredient glyphosate, LC50 results ranged from 9.3 mg a.e./L to 121 mg/L (Table 4-2). Bidwell and Gorrie (1995) reported 48-hour LC50 values of 11.6 mg a.e./L for the Roundup® 360 formulation and 121 mg/L for technical grade glyphosate using four species of frogs from western Australia. At the typical application rate,

expected water concentrations for acute and longer-term exposures are for the most part well below any reported LC50 for amphibians.

Limited information is available on toxicity of the proposed herbicides to specific plant taxa. Available and relevant toxicity data are summarized in Table 4-2, and some key data are presented below. Herbicides are designed to inhibit growth of plants. Therefore, any amount of herbicide that comes in contact with plants, including pallid manzanita and Presidio clarkia, would have a negative effect. For Garlon® 4 Ultra, Morash and Freedman in 1989 found for seedlings of Rubus species, other dicots, and monocots a no observable effects level (NOEL) to be 10 milligram per kilogram (mg/kg). The only reference found for Stalker® applies only to aquatic plants and therefore is not applicable. Smith and Oehme in 1992 found that Roundup® at 1/33 of an application rate of 1.121 kg/ha caused transient damage in soybeans, based on an assessment of visual injury, over a 30-day period after application but no net decrease in soybean production by the end of the season (Smith et. al. 1992). Reducing risks to these plants of special concern is critical; therefore, BMPs will be used to limit exposure of these species to any of the herbicides.

Qualitative risk estimates are based on exposure related information for plant and animal species of concern and other species represented by these critical receptors. These discussions of risk consider habitat preferences, habitat suitability, environmental persistence of herbicides, and frequency and duration of exposure. Quantitative risk estimates for specific receptor groups based on USFS worksheets are based on conservative assumptions and conservative estimates of chemical concentrations serving as EPCs. Together, the qualitative risk estimates (i.e., discussions of factors affecting exposure and potential for adverse effects) and the quantitative risk estimates (HQs) derived from the worksheets provide a range of risk estimates from expected or more likely (qualitative) to near worst case or unexpected (worksheet HQs).

5.2.2 Qualitative Risk Discussion - Listed Species

5.2.2.1 Terrestrial Receptors

5.2.2.1.1 Alameda Whipsnake

The two potentially most important routes of exposure to herbicides applied to terrestrial environments for snakes, such as the Alameda whipsnake, are direct/dermal contact and dietary. As discussed above, dietary exposures are unlikely given the low bioaccumulation potential of the proposed herbicides. Direct contact with herbicides is not expected to result in adverse effects in terrestrial reptiles given the relatively impermeable skin of these organisms and the low likelihood of contact. The expectation of limited direct contact with herbicides is based on the assumption that herbicides will be applied directly to stumps of non-native trees, such as eucalyptus, which is not desirable habitat for the Alameda whipsnake. Herbicide application is expected to be most intense where these trees are most abundant, and are, therefore, not preferred by the whipsnake. Because of habitat unsuitability, Alameda whipsnakes are unlikely to frequent areas where herbicide application is expected to be most aggressive.

5.2.2.1.2 Pallid manzanita and Presidio clarkia

The primary routes of exposure to herbicides for woody and broadleaf terrestrial plants, including manzanita and flowers such as the Presidio clarkia, are direct exposure to the leaves either from intentional application near these species or drift from locations targeted for spraying. Drift will be minimized since herbicide application is proposed to be focused on direct application to cut stumps, and foliar application is proposed to be limited to maintenance activities. Further, BMPs are in place to prevent application during rain events or during windy days when drift would be more likely.

5.2.2.2 Aquatic Receptors

5.2.2.2.1 California Red-Legged Frog (CRLF)

The primary routes of exposure to sprayed herbicides for terrestrial life stages of amphibians, such as the CRLF, are dermal/direct contact and, under the assumption that herbicides are bioaccumulative, dietary. For eggs and larval stages (tadpoles), the primary exposure route of concern is direct contact with surface water (eggs and tadpoles) and ingestion of surface water (tadpoles). The effects of direct dermal contact with herbicides on terrestrial life stages of amphibians are unknown. Exposures to herbicides via direct contact are possible for adult amphibians due to the permeable skin. Exposure potential for adult amphibians is, therefore, expected to be greater than that predicted for terrestrial reptiles whose skin provides some level of protection. Adult CLRFs are, however, unlikely to frequent the terrestrial environments during the dry season when herbicide application is expected to occur. Therefore, the potential for direct contact exposure to herbicides for transformed individuals is low.

Dietary exposure via consumption of food items/prey would be considered important for amphibians at all life stages if the herbicides proposed for use were bioaccumulative. Accumulation of herbicides in algae and detritus (the primary dietary items for larvae) and in prey items of adult frogs (e.g., insects, other invertebrates, occasionally small vertebrates) is expected to be minimal, however. This conclusion is based on (1) the expectation that transformed frogs will remain near water in the dry season, when herbicide application is most likely to occur, and (2) the recommendation that application of herbicides near surface water bodies be prevented, so transport of terrestrial-applied herbicides to water bodies should be minimal. Support for the assumption of low bioaccumulation potential is provided in Appendix E of the BA (FEMA 2012). Recommendations for the protection of the CRLF (see Section 7.2) should be strictly adhered to in order to limit ecological risk to all life stages of amphibians in and downstream from the proposed and connected project areas.

5.2.2.2.2 Central California Coast (CCC) Steelhead distinct population segment (DPS)

The primary route of exposure to sprayed herbicides for steelhead and other fish is direct contact with and ingestion of potentially contaminated surface water from Wildcat Creek. From the studies reviewed for salmonids or freshwater fish more generally, and based on the chemical characteristics of the three herbicides of interest, bioaccumulation potential is expected to be low and likely insignificant [Appendix E of the BA (FEMA 2012)].

The data summarized in Table 4-2 indicate Garlon® 4 to be generally the most toxic of the three herbicides to fish. From all the information available it is also suggested that maintaining surface water concentrations of triclopyr below about 1 mg/L should provide adequate protection for the CCC steelhead DPS and other salmonid fish. This conclusion is based on protection against acutely toxic concentrations, and does not consider long term chronic exposures, which are unlikely considering the expectation of relatively rapid degradation of triclopyr in surface water.

Many of the aquatic toxicity studies reviewed referred to relatively low toxicity with a few indicating "low to moderate" toxicity of the three herbicides to trout. The primary exposure scenario for salmonid fish appears to be associated with chemical runoff into the Wildcat Creek or spray drift into Wildcat Creek or its upgradient tributaries. Under these scenarios, herbicides reaching Wildcat Creek are likely to be quickly diluted and mixed in with the flow of the creek. Perkins, et al. (2000) in Bautista (2005) calculated that if Garlon®4 (the most toxic herbicide to fish of those considered) was applied at the highest reasonable application rate directly to water, that water concentrations would likely remain below 1 mg/L (1 ppm). Based on the studies reviewed, this likely maximum concentration in surface water (1 mg/L) should be protective of both adult and juvenile CCC steelhead and other potentially sensitive freshwater fish.

Recommendations for the protection of the CCC steelhead DPS (see Section 7.2) should be strictly adhered to in order to limit ecological risk to all life stages of steelhead and other salmonid fish potentially in the project area.

5.2.3 Results of USFS Worksheets

For describing quantitative risk estimates for ecological receptors the ratio of an exposure value to a toxicity value is referred to as a hazard quotient (HQ). An HQ assumes that some level of exposure exists below which even sensitive populations are unlikely to experience significant adverse effects. HQs below 1 indicate acceptable risk, while HQs equal to or exceeding 1 indicate unacceptable risk. Higher HQs may or may not indicate more severe effects, but typically indicate a greater likelihood of adverse effects occurring.

Herbicides are frequently applied as a mixture. It is not possible to calculate an HQ for a mixture and, instead, HQs were calculated separately for each herbicide or potentially toxic constituent in the mixture.

The USDA Forest Service worksheets (see Attachment 1) evaluate two general types of exposure scenarios: acute exposures (generally short term exposures to higher concentrations) and chronic exposures (generally longer term exposures to lower concentrations). Some acute exposure scenarios are accidental (e.g., following a spill) or incidental (e.g., spray during herbicide application) and assume that an ecological receptor is exposed to the compound either during or shortly after its application. Specific scenarios were developed for direct spray, consumption of contaminated water, and consumption of contaminated fish. These scenarios should be regarded as extreme (i.e., overly conservative), given the focus on mitigation based on strict adherence to proposed BMPs and on expectations of low or insignificant bioaccumulation. Additional acute scenarios consider accidental exposures such as being directly sprayed with the herbicide or

consuming water contaminated following a spill. Non-accidental acute exposures include exposure scenarios for the consumption of contaminated fruit, vegetation (grasses), water, insects, contaminated small mammals, and fish.

Chronic exposure scenarios include consumption of contaminated fruit, vegetation, water, and fish. These scenarios are assumed to occur over time following herbicide application.

A quantitative summary of the central tendency (average) HQs for terrestrial ecological receptors is presented in **Table 5-4** for a range of application rates for triclopyr BEE, triclopyr TEA, imazapyr, and glyphosphate. The worksheets also include HQs for lower and upper bound exposures that bracket these central tendency values. USDA worksheets are included in Attachment 1**.**

HQs for imazapyr for all scenarios are below 1 and ecological impacts from imazapyr application are not anticipated. HQs for glyphosate for all scenarios are below one with two exceptions (HQ=1.1 in two cases) (Table 5-4). These HQs are based on NOAELs and maximum application rates and impacts to ecological receptors are unlikely following application of glyphosate. Therefore the majority of the following text discusses elevated HQs for triclopyr BEE and triclopyr TEA.

5.2.3.1 Accidental Scenarios

For the terrestrial animals evaluated, the only accidental acute scenario that results in HQs exceeding the threshold of 1 is direct spray of a small mammal with 100% absorption (glyphosate, HQ=1.1) at the maximum application rate using a conservative NOAEL toxicity value. These HQs would be rounded to 1 following accepted convention, suggesting that adverse ecological effects are unlikely. Additionally, the maximum application rate would not be used for the majority of areas, if at all; therefore, a more concentrated solution could not be accidentally spilled. All other accidental acute scenarios are predicted to result in minimal ecological risk.

Table 5-4. Summary of Hazard Quotients (Toxicity) for the Terrestrial Animals

Herbicide		Triclopyr BEE				Triclopyr TEA		Toxicity Value [1]		Imazapyr	Toxicity Value [1]		Glyphosate		Toxicity Value [1]	
Application Rate (lb/acre)		3	8	3	8	1	1			0.1			1	8		
Application Volume (gal/ acre)		25	25	200	200	25	200			20			10	10		
Scenario	**Receptor**	**Hazard Quotients**								**Hazard Quotients**			**Hazard Quotients**			
		Central								**Central**			**Central**			
Accidental Acute Exposures																
Direct Spray																
first-order absorption	Small mammal (20g)	1E-02	3E-02	1E-02	3E-02	1E-03	1E-03	**440**	**NOAEL***	9E-05	**738**	**NOAEL**	1E-03	1E-02	**175**	**NOAEL**
100% absorption	Small mammal (20g)	0.2	0.4	0.2	0.4	0.1	0.1	**440**	**NOAEL***	3E-03	**738**	**NOAEL**	0.1	**1.1**	**175**	**NOAEL**
Contaminated Water																
Spill	Small mammal (20g)	2E-03	5E-03	2E-04	6E-04	6E-04	8E-05	**440**	**NOAEL***	5E-05	**738**	**NOAEL**	4E-03	3E-02	**175**	**NOAEL**
Spill	Larger Mammal (400g)	6E-03	2E-02	7E-04	2E-03	2E-03	2E-04	**100**	**NOAEL**	3E-05	**738**	**NOAEL**	N/A	N/A	N/A	N/A
Spill	Canid (5 kg)	2E-02	6E-02	3E-03	8E-03	8E-03	1E-03	**20**	**NOAEL***	8E-05	**250**	**NOAEL**	2E-03	2E-02	**175**	**NOAEL**
Spill	Large Mammal (70g)	4E-02	1E-01	6E-03	1E-02	1E-02	2E-03	**8**	**NOAEL***	2E-05	**738**	**NOAEL**	2E-03	1E-02	**175**	**NOAEL**
Spill	Small bird (10g)	1E-02	3E-02	1E-03	4E-03	4E-03	5E-04	**126**	**NOAEL**	2E-05	**2510**	**NOAEL**	2E-03	2E-02	**540**	**NOAEL**
Spill	Large Bird (4 kg)	2E-03	4E-03	2E-04	5E-04	5E-04	7E-05	**126**	**NOAEL**	3E-06	**2510**	**NOAEL**	3E-04	3E-03	**540**	**NOAEL**
Consumption of contaminated Fish																
Spill	Large Mammalian Carnivore (70 kg)	2E-02	4E-02	2E-03	6E-03	6E-03	7E-04	**8**	**NOAEL***	5E-06	**738**	**NOAEL**	N/A	N/A	N/A	N/A
Spill	Canid (5 kg)	9E-03	3E-02	1E-03	3E-03	3E-03	4E-04	**20**	**NOAEL***	2E-05	**250**	**NOAEL**	N/A	N/A	N/A	N/A
Spill	Fish-eating bird (2.4 kg)	2E-03	5E-03	2E-04	6E-04	6E-04	7E-05	**126**	**NOAEL**	2E-06	**2510**	**NOAEL**	4E-04	3E-03	**540**	**NOAEL**
Non-Accidental Acute Exposures																
Contaminated Fruit (Lowest Residue Rate)																
	Small mammal (20g)	0.1	0.3	0.1	0.3	0.0	0.0	**440**	**NOAEL***	2E-03	**738**	**NOAEL**	7E-03	5E-02	**175**	**NOAEL**
	Larger Mammal (400g)	0.1	0.3	0.1	0.3	0.0	0.0	**100**	**NOAEL**	5E-04	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Large Mammal (70g)	0.8	**2.2**	0.8	**2.2**	0.3	0.3	**8**	**NOAEL***	3E-04	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Small bird (10g)	0.9	**2.3**	0.9	**2.3**	0.3	0.3	**126**	**NOAEL**	1E-03	**2510**	**NOAEL**	N/A	N/A	N/A	N/A
	Large Bird (4 kg)	1E-01	3E-01	1E-01	3E-01	3E-02	3E-02	**126**	**NOAEL**	2E-04	**2510**	**NOAEL**	N/A	N/A	N/A	N/A
Contaminated Vegetation (Short Grass - Highest Residue Rate)																
	Small mammal (20g)	**1.0**	**2.6**	**1.0**	**2.6**	0.3	0.3	**440**	**NOAEL***	2E-02	**738**	**NOAEL**	8E-02	7E-01	**175**	**NOAEL**
	Larger Mammal (400g)	**1.0**	**2.6**	**1.0**	**2.6**	0.3	0.3	**100**	**NOAEL**	5E-03	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Large Mammal	**7**	**19**	**7**	**19**	**2**	**2**	**8**	**NOAEL***	3E-03	**738**	**NOAEL**	1E-01	9E-01	**175**	**NOAEL**
	Small bird (10g)	**8**	**23**	**8**	**23**	**3**	**3**	**126**	**NOAEL**	2E-02	**2510**	**NOAEL**	N/A	N/A	N/A	N/A
	Large Bird (4 kg)	**1.0**	**2.6**	**1.0**	**2.6**	0.3	0.3	**126**	**NOAEL**	2E-03	**2510**	**NOAEL**	5E-02	4E-01	**540**	**NOAEL**
Contaminated Water																
	Small mammal (20g)	4E-07	1E-06	4E-07	1E-06	1E-06	1E-06	**440**	**NOAEL***	4E-07	**738**	**NOAEL**	9E-06	7E-05	**175**	**NOAEL**
	Larger Mammal (400g)	1E-06	3E-06	1E-06	3E-06	3E-06	3E-06	**100**	**NOAEL**	3E-07	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Canid (5 kg)	5E-06	1E-05	5E-06	1E-05	1E-05	1E-05	**20**	**NOAEL***	7E-07	**250**	**NOAEL**	5E-06	4E-05	**175**	**NOAEL**
	Large Mammal (70g)	1E-05	3E-05	1E-05	3E-05	2E-05	2E-05	**8**	**NOAEL***	2E-07	**738**	**NOAEL**	4E-06	3E-05	**175**	**NOAEL**
	Small bird (10g)	3E-06	7E-06	3E-06	7E-06	6E-06	6E-06	**126**	**NOAEL**	2E-07	**2510**	**NOAEL**	5E-06	4E-05	**540**	**NOAEL**
	Large Bird (4 kg)	4E-07	9E-07	4E-07	9E-07	9E-07	9E-07	**126**	**NOAEL**	3E-08	**2510**	**NOAEL**	8E-07	6E-06	**540**	**NOAEL**
Contaminated Insects																
	Small mammal (20g)	0.1	0.4	0.1	0.4	0.0	0.0	**440**	**NOAEL***	3E-03	**738**	**NOAEL**	1E-01	**1.1**	**175**	**NOAEL**
	Larger Mammal (400g)	0.1	0.4	0.1	0.4	0.0	0.0	**100**	**NOAEL**	6E-04	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Small bird (10g)	**1.0**	**2.8**	**1.0**	**2.8**	0.3	0.3	**126**	**NOAEL**	2E-03	**2510**	**NOAEL**	7E-02	6E-01	**540**	**NOAEL**
Consumption of small mammal (after direct spray) by predator																
	Canid (5 kg)	0.4	**1.1**	0.4	**1.1**	0.1	0.1	**20**	**NOAEL***	1E-03	**250**	**NOAEL**	1E-02	1E-01	**175**	**NOAEL**
	Carnivorous bird (640 g)	8E-02	2E-01	8E-02	2E-01	3E-02	3E-02	**126**	**NOAEL**	1E-04	**2510**	**NOAEL**	6E-03	5E-02	**540**	**NOAEL**

Herbicide		Triclopyr BEE				Triclopyr TEA		Toxicity Value [1]		Imazapyr	Toxicity Value [1]		Glyphosate		Toxicity Value [1]	
Application Rate (lb/acre)		3	8	3	8	1	1			0.1			1	8		
Application Volume (gal/ acre)		25	25	200	200	25	200			20			10	10		
Scenario	**Receptor**	**Hazard Quotients**								**Hazard Quotients**			**Hazard Quotients**			
		Central								**Central**			**Central**			
Consumption of contaminated Fish																
	Large Mammalian Carnivore (70 kg)	4E-06	1E-05	4E-06	1E-05	1E-05	1E-05	**8**	**NOAEL***	4E-08	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Canid (5 kg)	2E-06	6E-06	2E-06	6E-06	6E-06	6E-06	**20**	**NOAEL***	2E-07	**250**	**NOAEL**	N/A	N/A	N/A	N/A
	Fish-eating bird (2.4 kg)	4E-07	1E-06	4E-07	1E-06	9E-07	9E-07	**126**	**NOAEL**	2E-08	**2510**	**NOAEL**	1E-06	8E-06	**540**	**NOAEL**
Chronic/Longer Term Exposures																
Contaminated Fruit (Lowest Residue Rate)																
	Small mammal (20g)	0.9	**2.4**	0.9	**2.4**	0.3	0.3	**22**	**NOAEL***	1E-03	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Larger Mammal (400g)	0.9	**2.4**	0.9	**2.4**	0.3	0.3	**5**	**NOAEL**	2E-04	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Large Mammal (70g)	**6**	**17**	**6**	**17**	**2**	**2**	**0.4**	**NOAEL***	1E-04	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Small bird (10g)	**6**	**15**	**6**	**15**	**2**	**2**	**7.5**	**NOAEL**	3E-03	**610**	**NOAEL**	N/A	N/A	N/A	N/A
	Large Bird (4 kg)	0.6	**1.7**	0.6	**1.7**	0.2	0.2	**7.5**	**NOAEL**	3E-04	**610**	**NOAEL**	N/A	N/A	N/A	N/A
Contaminated Vegetation (Short Grass - Highest Residue Rate)																
	Small mammal (20g)	**1.3**	**3.4**	**1.3**	**3.4**	0.7	0.7	**22**	**NOAEL***	9E-03	**738**	**NOAEL**	1E-04	9E-04	**175**	**NOAEL**
	Larger Mammal (400g)	**1.3**	**3.5**	**1.3**	**3.5**	0.7	0.7	**5**	**NOAEL**	2E-03	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Large Mammal (70g)	**9**	**25**	**9**	**25**	**5**	**5**	**0.4**	**NOAEL***	1E-03	**738**	**NOAEL**	5E-03	4E-02	**175**	**NOAEL**
	Small bird (10g)	**9**	**25**	**9**	**25**	**5**	**5**	**7.5**	**NOAEL**	3E-02	**610**	**NOAEL**	N/A	N/A	N/A	N/A
	Large Bird (4 kg)	**1.1**	**2.8**	**1.1**	**2.8**	0.5	0.5	**7.5**	**NOAEL**	3E-03	**610**	**NOAEL**	3E-02	3E-01	**43**	**NOAEL**
Contaminated Water																
	Small mammal (20g)	4E-08	1E-07	4E-08	1E-07	7E-06	7E-06	**22**	**NOAEL***	1E-07	**738**	**NOAEL**	2E-07	1E-06	**175**	**NOAEL**
	Larger Mammal (400g)	1E-07	3E-07	1E-07	3E-07	2E-05	2E-05	**5**	**NOAEL**	1E-07	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Canid (5 kg)	5E-07	1E-06	5E-07	1E-06	8E-05	8E-05	**1**	**NOAEL***	2E-07	**250**	**NOAEL**	9E-08	7E-07	**175**	**NOAEL**
	Large Mammal (70g)	1E-06	3E-06	1E-06	3E-06	2E-04	2E-04	**0.4**	**NOAEL***	6E-08	**738**	**NOAEL**	7E-08	6E-07	**175**	**NOAEL**
	Small bird (10g)	2E-07	6E-07	2E-07	6E-07	4E-05	4E-05	**7.5**	**NOAEL**	3E-07	**610**	**NOAEL**	1E-06	1E-05	**43**	**NOAEL**
	Large Bird (4 kg)	3E-08	8E-08	3E-08	8E-08	5E-06	5E-06	**7.5**	**NOAEL**	4E-08	**610**	**NOAEL**	2E-07	1E-06	**43**	**NOAEL**
Consumption of contaminated Fish																
	Large Mammalian Carnivore (70 kg)	4E-07	1E-06	4E-07	1E-06	7E-05	7E-05	**0.4**	**NOAEL***	1E-08	**738**	**NOAEL**	N/A	N/A	N/A	N/A
	Canid (5 kg)	2E-07	6E-07	2E-07	6E-07	4E-05	4E-05	**1**	**NOAEL***	6E-08	**250**	**NOAEL**	N/A	N/A	N/A	N/A
	Fish-eating bird (2.4 kg)	3E-08	8E-08	3E-08	8E-08	5E-06	5E-06	**7.5**	**NOAEL**	3E-08	**610**	**NOAEL**	2E-07	2E-06	**43**	**NOAEL**

[1] The source for toxicity values (i.e., NOAELs) is from the USDA Forest Service worksheets and the USDA Forest Service risk assessments completed by Syracuse Environmental Research Associates (SERA) in 2011 for triclopyr, glyphosate, and imazapyr.

5.2.3.2 Non-accidental Scenarios - Acute

For terrestrial animals, for non-accidental acute exposure to triclopyr elevated HQs are summarized below:

- HQs are elevated (>1) for large mammal (triclopyr BEE, HQ=2.2) and small bird (triclopyr BEE, HQ=2.3) consuming contaminated fruit following application at the maximum rate of 8 lb a.e./acre.
- All animal groups (small mammal, larger mammal, large mammal, small bird, and large bird) have HQs exceeding 1 when consuming triclopyr BEE contaminated vegetation.
- For triclopyr BEE, HQs range from 1 following application at the minimum rate (3 lb a.e./acre) for a large and small mammal to 23 following application at the maximum rate for a small bird.
- Large mammal HQs range from 2 for triclopyr TEA to 19 for triclopyr BEE and small bird HQs range from 3 for triclopr TEA to 23 for triclopyr BEE.
- Slightly elevated HQs occur when contaminated insects are ingested by small mammals (glyphosate, HQ=1.1) and by small birds (triclopyr BEE, HQ=1 at minimum application rate and HQ=2.8 at maximum application rate).
- HQs of 1.1 occur for canids consuming contaminated small mammals following application of triclopyr BEE at the maximum application rate.

For all of these scenarios the conservative NOAEL serves as the toxicity value in the HQ calculations. Generally, low effect thresholds (e.g., Lowest Observed Adverse Effect Levels or LOAELs), which are higher than NOAELs, are used to reveal contaminant thresholds where adverse effects begin to be observed. Use of NOAELs is therefore conservative, and use of LOAELs would be associated with lower HQs. Finally, implementation of the proposed BMPs is expected to eliminate many of the exposures evaluated on these worksheets or included in the ecological SCEM (e.g., exposures of aquatic life to contaminated surface water).

5.2.3.2 Non-Accidental Scenarios – Chronic

Analysis of chronic longer term exposure scenarios resulted in elevated HQs for ecological receptors eating triclopyr-contaminated fruit and vegetation. For ecological receptors consuming contaminated fruit, three groups exceeded an HQ of 1, but only following application at maximum rates. Exceedances were reported for small mammal (triclopyr BEE, HQ=2.4), larger mammal (triclopyr BEE, HQ=2.4), and large bird (triclopyr BEE, HQ=1.7). In addition:

- HQs exceed 1 based on minimum and maximum application rates for large mammal (HQs range from 2 for triclopyr TEA to 17 for triclopyr BEE at the maximum application rate) and small bird (HQs range from 2 for triclopyr TEA to 15 for triclopyr BEE at the maximum application rate) ingestion contaminated fruit.
- HQs for most ecological receptor groups exceeded 1 for ingestion of contaminated vegetation over the long-term based on all application rates for triclopyr TEA and BEE from minimum to maximum.

- Small mammal HQs ranged from 0.7 for triclopyr TEA to 3.4 for triclopyr BEE at the maximum concentration rate.
- Larger mammal HQs ranged from 0.7 for triclopyr TEA to 3.5 for triclopyr BEE at the maximum concentration rate.
- Large bird HQs ranged from 0.5 for triclopyr TEA to 2.8 for triclopyr BEE at the maximum concentration rate.
- Large mammal and small bird HQs on all application rates for triclopyr TEA and BEE exceeded 1 (HQs ranged from 5 to 25 for each group).
- All other chronic scenarios resulted in HQs below 1.

As noted above for acute HQ calculations, conservative NOAELs are used as toxicity values in the HQ calculations.

Longer-term consumption of contaminated vegetation and fruit is probably not realistic given the short half-life of the herbicides proposed to be used. Exposure over longer periods would lessen as herbicides are degraded both abiotically and biologically. Furthermore, and probably not too important given the low bioaccumulation potential of the proposed herbicides, in areas where herbicides are applied for control of unwanted vegetation, plants would die rather quickly and the food source would therefore be removed.

5.2.4 Ecological Significance and Conservatism Associated with USFS Worksheet Hazard Quotients

The primary method of estimating risk to ecological receptors is the HQ approach, where the HQ equals a selected exposure point concentration (EPC) divided by a selected toxicity value (also expressed as a concentration). Toxicity values used in the derivation of ecological HQs are most often expressed as (1) lowest concentrations at which ecologically significant adverse effects begin to be observed—referred to as Lowest Observed Adverse Effects Levels (LOAELs), or (2) highest concentrations at which no adverse effects are observed (NOAELs). Experimentally derived NOAELs and LOAELs are preferred over estimated values, yet availability of toxicity data often dictates the use of estimated values. For example, a NOAEL is often estimated from an experimentally derived LOAEL by applying a factor of ten to the LOAEL (NOAEL = LOAEL/10). Similarly, a LOAEL can be estimated from an experimentally derived NOAEL, often using the same factor of ten (LOAEL = NOAEL * 10). The factor of ten is assumed to represent the relative difference in concentrations where adverse effects are not observed and those where such effects begin to be observed. For some highly toxic chemicals a lower factor (e.g., five) may be appropriate for estimating toxicity values. Use of a lower factor such as five is based on the perceived steepness of the dose-response curve that depicts an organisms' response to exposure to toxic chemicals (Sample *et al.* 1996).

HQs that remain below one (1) represent acceptable risk levels, while HQs equal to or exceeding one represent unacceptable risk. Higher HQs are not necessarily associated with more severe effects but likely represent a greater likelihood of adverse effects occurring or being observed. A

NOAEL-based HQ below one is commonly assumed to provide a substantial margin of safety associated with the conclusion of no unacceptable risk. A LOAEL-based HQ below one is also considered representative of no unacceptable risk, but confidence in this conclusion may be lower for untested species (i.e., species other than that on which the LOAEL is based).

The HQs presented on the USFS worksheets and summarized on Table 5-4 are considered conservative depictions of risk for several reasons. First, these HQs are derived by dividing EPCs by NOAELs, not LOAELs. As such, elevated HQs (i.e., those equal to or greater than 1) are not linked to adverse effect levels but instead are linked to chemical concentrations associated with no observed adverse effect (i.e., “safe” levels). Assuming a LOAEL to NOAEL relationship factor of ten, as described above, means that these HQs can be divided by ten to approximate HQs that would be descriptive of risks based on low levels of observed adverse effects. Stated differently, these NOAEL-based HQs can be viewed as being about ten-fold higher than estimated LOAEL-based HQs.

Although it is prudent to estimate risk using a conservative and protective approach (e.g., deriving NOAEL-based HQs), other factors should be considered when interpreting the potential for ecologically significant adverse effects to occur during or following application of herbicides. These factors include, but are not limited to the following:

- Chemical persistence
  - The herbicides proposed for use have relatively short half-lives and none are expected to persist in the environment
- Receptor behavior
  - Mobile ecological receptors are likely to avoid areas where substantial human activity will occur (e.g., areas of intensive herbicide application)
  - Some receptors may be able to detect and avoid herbicides
- Habitat suitability
  - HQs do not consider habitat-related issues such as preferred habitat, habitat suitability (quality and quantity of habitat)
- Herbicide application method
  - The preferred method of herbicide application is direct application to cut stumps, and spraying (with potentially greater risk of drift) is reserved for special conditions. The USFS worksheets do not have the ability to account for the cut stump application method. Therefore the USFS worksheet HQs represent a more conservative approach than what is planned for this project.
- Employment of Best Management Practices (BMPs)
  - BMPs will be employed to limit unintended contact of ecological receptors to herbicides.
  - These BMPs are described in detail elsewhere, but include buffer zones around aquatic environments, application methods to reduce exposure, and timing of application to reduce exposure to ecological receptors. BMPs related to timing of

application include those intended to avoid rain events, elevated wind conditions, and seasonal timing to avoid critical reproductive seasons for key receptors.

SECTION SIX UNCERTAINTIES

The following SLRA steps are addressed in this section:

- Identify uncertainties inherent in risk assessment process
- Evaluate the impact of uncertainties upon the risk characterization

Uncertainty is associated with every step of all risk assessment. Due to the conservative nature of risk calculations in the Forest Service worksheets, most uncertainties are likely to result in overestimation of risk, perhaps by substantial margins. This approach is warranted because it is prudent to err on the side of overprotection.

Risk estimations presented above are based on default exposure assumptions, toxicity values designed to be protective of sensitive individuals, and a range of chemical concentrations including the maximum possible application rates. Uncertainties are associated with each of these factors, and thus uncertainty exists in each of the risk estimates. In addition, intentionally extreme exposure scenarios are evaluated, including accidental and direct spraying of herbicides on human and ecological receptors. These extreme scenarios are not considered probable but provide a worst case estimate of risk under unanticipated conditions.

In summary, input parameters and assumptions used in this risk assessment purposely result in overestimation of exposure and risk. To appropriately interpret and use the risk estimates generated, risk managers should consider these uncertainties and their effect on the results presented. Specific uncertainties that can have substantial impact on the results of this assessment are discussed below.

6.1 Human Health

6.1.1 Exposure Point Concentrations

Both the screening level chronic assessment and site specific assessment are based on 0-hour residues and do not take into account degradation. Actual environmental concentrations would be less. The risk assessment assumes an equal application rate over an exposure area, considering all exposures within that area as equally possible; for the cut stump treatment this assumption will overestimate exposure concentrations for part, and perhaps the large part of the exposure area.

6.1.2 Exposure Assumptions

The screening level assessment assumes a range of exposures for receptors when in actuality these receptors may not be exposed at all. Uncertainty is associated with exposure parameter values used; however, assumptions are chosen to be conservative so risks are not underestimated. For example, assumptions are made for the exposure time, frequency, and duration of potential

chemical exposures, as well as for the quantity of material ingested, inhaled, or absorbed. In general, assumptions are based on reasonable maximum exposures and, in most cases, values were default values in USDA Forest Service worksheets, which are values recommended by EPA guidance documents.

6.1.3 Toxicity Values

A potentially large source of uncertainty is inherent in the derivation of the EPA toxicity criteria (i.e., RfDs,). In many cases, data must be extrapolated from animals to sensitive humans by the application of uncertainty factors to an estimated NOAEL or lowest-observed-adverse-effect level (LOAEL) for noncancer effects. While designed to be protective, it is likely in many cases that uncertainty factors overestimate the magnitude of differences that may exist between humans and animals, and among humans.

In some cases, however, toxicity criteria may be based on studies that did not detect the most sensitive adverse effects. For example, many past studies have not measured possible toxic effects on the immune system. Moreover, some chemicals may cause subtle effects not easily recognized in animal studies.

6.1.4 Risk Characterization

It is possible and even likely that some receptors will be exposed to multiple sources of herbicides or multiple herbicides as a result of the fire risk reduction program. For example, individual contacting contaminated vegetation might also consume contaminated water and/or vegetation. In addition some of the formulations used in this program will be a mixture of herbicides. For the herbicides evaluated in this risk assessment, these multiple sources of exposure are inconsequential. The only substantial exposure scenario involves the consumption of contaminated vegetation after terrestrial applications. All other plausible combinations of exposures would not have a substantial impact on the risk characterization.

Because the risk estimates for some scenarios are based on residues immediately after application and do not take into account degradation, actual environmental concentrations would be less, and actual exposure would therefore be less.

Hazards presented in Tables 5-1 and 5-2 are based on central estimates; these estimates correspond to the typical value based on scenarios developed by the USFS that are referred to as typical (e.g. a “naked” child accidentally sprayed with herbicide). Upper (worst-case) and lower (best-case) bound estimates are presented in Attachment 1. Exposure assumptions for upper bound estimates are intended to reflect exposure for the most exposed individual and include higher herbicide application rates and other upper bound exposure assumptions. Upper bound hazard estimates are higher than central hazard estimates and hazards exceed the level of concern for receptors and exposure pathways that were below a level of concern for the central estimate. For example, acute and chronic hazards are 10 to 13 times higher for the upper bound estimates than for central estimates for workers exposed to triclopyr. Upper bound estimates for the general public for non-accidental acute and chronic exposure are significantly higher for some

pathways such as swimming in or ingesting contaminated water. Because many of the scenarios evaluated in the risk assessment are unlikely to be complete when BMPs are considered the risk characterization focused on central estimates which were still considered an overestimation of likely hazards associated with the proposed and connected actions. In addition the risk assessment evaluated a range of application rates to estimate the central value which are discussed in the risk characterization. Therefore central estimates can be used to evaluate mitigation strategies.

Addressing cumulative effects, within the context of the Food Quality Protection Act, requires the assessment of chemicals with a similar mode of action. At this time, available data to determine whether the herbicides used in this program have a common mechanism of toxicity with other substances or how to include these herbicides in a cumulative risk assessment are not available.

Importantly there is uncertainty in assessing risks for some exposure pathways that may actually be incomplete (e.g. ingestion of contaminated water). As discussed previously, BMPs specify a buffer between surface water bodies and herbicide treatment areas, limiting the possibility of contaminating surface water.

6.2 Ecological Risk Uncertainties

6.2.1 Uncertainties in Exposure Information

Qualitative and quantitative risk estimates for ecological receptors generally assume that receptors are present or may be present in the proposed treatment areas. There is considerable uncertainty in this assumption, since treatment areas are more likely to be characterized as “disturbed” environments dominated by invasive or nonnative plant species that provide mostly unsuitable habitat for native plants and animals. In addition, exposure related assumptions include lack of avoidance, yet ecological receptors may in fact avoid treatment areas for a variety of reasons. First, human disturbance (including use of roads, vehicle traffic, noise, etc.) may lead to temporary avoidance of treatment areas. Second, some receptors may be able to detect herbicides (e.g., olfactory) and therefore may avoid treatment areas. Habitats providing the most suitable conditions for native ecological receptors are unlikely to be habitats receiving treatment, so exposure pathways may be incomplete for some if not most mobile ecological receptors.

6.2.2 Uncertainties in Ecotoxicity Information

Uncertainties related to effects or toxicity data for ecological receptors are primarily based on data limitations. As documented in this report and in Appendix E of the BA (FEMA 2012), toxicity data are lacking for certain chemicals and specific ecological receptors.

The use of NOAELs rather than LOAELs to derive ecological HQs has been discussed in a previous section, but in general risk estimates based on NOAELs are rather uncertain because

NOAELs are not linked to adverse effects but instead serve as “safe” values *not* associated with adverse effects.

USFS worksheets use allometric relationships to estimate chemical doses from the test animal (generally a rat) to the receptor of concern (e.g., a 400 gram small mammal represented by a squirrel). These mathematical relationships are based on body weights which may or may not accurately represent differences in chemical sensitivity between unrelated groups of animals. The different estimated NOAELs for a variety of mammals shown on these worksheets only express the differences in body weights of receptors and do not reflect differences in sensitivity (or tolerance) to the chemical of interest. A similar concern is noted for toxicity data for birds.

6.2.3 Uncertainties in Risk Characterization

Because the risk estimates for some scenarios are based on residues immediately after application and do not take into account herbicide degradation, exposure concentrations may be lower within a short time following treatment.

There is uncertainty in risk estimation for some exposure pathways that are likely to be incomplete (e.g., ingestion of contaminated water, ingestion of contaminated prey). As discussed previously, BMPs specify a buffer between surface water bodies and herbicide treatment areas, limiting the possibility of contaminating surface water. Also, uptake and accumulation of herbicides into biological tissues is considered unlikely given the low bioaccumulation potential of the proposed herbicides.

Finally, the primary method of estimating risk quantitatively to ecological receptors is the derivation of HQs. This approach divides an exposure concentration by an effects concentration or toxicity value. Uncertainties in either the exposure or the effects value clearly affect the associated HQ. The HQ approach does not consider longer term EPCs reflecting chemical degradation, receptor behavior, avoidance of chemicals, habitat suitability, and numerous other inputs that can have profound effects on receptor exposure (i.e., contact with the herbicides proposed for use).

SECTION SEVEN SUMMARY AND CONCLUSIONS

The following SLRA steps are addressed in this section:

- Ascertain whether the estimated risks are acceptable and if additional mitigation measures are warranted.

7.1 Summary of Human Health Risk Assessment

This screening level human health risk assessment was conducted to provide a focused evaluation of the herbicides proposed for use in the proposed and connected project areas. The herbicides considered for use in the proposed and connected project areas are Garlon® 4 Ultra (triclopyr BEE), Garlon® 3A (triclopyr TEA), Stalker® (imazapyr), and Roundup® (glyphosate). Herbicides may be mixed with other herbicides or with a solution of methylated seed oil or esterified seed oil, water, and indicator dye. Applications of herbicides would occur by hand methods. For the majority of areas the initial herbicide application is planned as cut stump treatment.

Land use in the vicinity of the proposed and connected project areas includes recreational, residential, commercial, and industrial uses. Hazardous substances associated with the proposed and connected actions have the potential to impact human health via exposure during cutting and processing of vegetation, exposure during burning of cut vegetative material, and exposure to herbicides applied to prevent re-sprouting of stumps and to kill re-sprouts and seedlings.

Contaminants in various media in the proposed and connected project areas were evaluated for potential health threats to the following receptors:

- Current Occupational Exposures, Herbicide Handlers/ Vegetation Management Workers
- Current and Future Recreational Users
- Current and Future Offsite Residents

Exposure routes for these receptors include ingestion, dermal contact, and inhalation of contaminated media. Pathways of exposure may involve direct contact with herbicides in spray, soil, and vegetation, and, though unlikely, via indirect contact through ingestion of surface water or contaminated fruits. USDA Forest Service risk assessment worksheets were used to assess exposures to these receptors. For each receptor group, two exposure scenarios were taken into consideration: general exposure (normal use) and exposure after accidental releases or improper herbicide use or application (e.g., a spill of herbicide mixture or direct spray of workers or other individuals). Hazards were estimated using the range of possible application rates for the proposed herbicides to address general exposure. Accidental exposure was addressed using conservative (probably overestimated) volumes of herbicide mixtures spilled during an accidental release or accidentally sprayed onto receptors. A range of exposures was evaluated including MEI and central tendency. The intent of the MEI is to estimate a conservative exposure

case that is still within the range of possible exposures. Central tendency assumptions are also developed, which reflect more typical exposures.

Exposure point concentrations were estimated by determining application rates related to area of application, concentration of herbicide, application volumes, and application time (e.g., pounds per acre per day). The amount of herbicide in pounds per acre to be applied within each area was estimated based on the information provided by the subapplicants. For each area, similar methods (i.e., similar herbicides, quantities, and application methods) were proposed to eliminate non-native plant species that contribute to fire danger. Thus, exposure estimates were not calculated for every area but for the range of application rates which would represent the possible range of exposures resulting from each herbicide application. Because this approach is based on initial residues and does not take into account degradation, actual environmental concentrations would be less.

In the toxicity assessment, current toxicological human health data (i.e., RfDs, RfCs,) were obtained from various sources and are utilized in the order as specified by EPA (2003).

For human health, risks due to exposures to the herbicides proposed for use were evaluated by integrating toxicity and exposure assessments into quantitative expressions of non-cancer hazards. None of the herbicides proposed for use in this project were identified as carcinogens; therefore, only non-cancer hazards were evaluated. Adverse ecological effects were evaluated by comparing exposure concentrations to reference doses or toxicity values. The ratio of exposure to toxicity is referred to as a hazard quotient (HQ). An HQ assumes that some level of exposure exists below which even sensitive populations are unlikely to experience significant adverse effects. HQs below 1 suggest acceptable risk, while HQs equal to or exceeding 1 may suggest unacceptable risk. Higher HQs may or may not indicate more severe effects, but typically do indicate a greater likelihood of adverse effects occurring.

Hazards were estimated with and without out mitigation measures. Mitigation measures or best management practices may eliminate exposure pathways or reduce exposure and should be considered when interpreting risks.

For workers, general exposure involves the handling and application of the herbicide. HQs for all accidental acute exposures are below a level of concern (i.e., less than 1) except for wearing of gloves heavily contaminated by triclopyr BEE for 1 hour. HQs for this scenario range from 2 to 6. This scenario's key assumption is that wearing gloves grossly contaminated with a chemical solution is equivalent to immersing the hands in the herbicide solution for 1 hour. Such exposure would not occur for workers who comply with the herbicide manufacturer's directions and with prudent industrial hygiene. For general exposures, hazards are above a level of concern only for exposure associated with the maximum application rate of triclopyr BEE. For triclopyr BEE, estimates of HQs based on the chronic reference dose range from 0.7 to 1.9; HQs for all other herbicides are below 1.

For the public, general exposure scenarios are somewhat more arbitrary than for workers and several are less likely to occur in reality. Specific scenarios were assessed for direct spray;

dermal contact with recently sprayed vegetation; and consumption of recently sprayed fruit, surface water, or fish recently affected by a spill. These scenarios should be regarded as extreme, some to the point of limited plausibility. For example, BMPs will restrict access to recently treated areas, and gathering and consuming fruit from areas designated for herbicide use is limited. Implementation of BMPs will also protect surface water and groundwater eliminating exposures associated with these media {e.g., groundwater or surface water used for irrigation or drinking water (see Section 5.4 of the EIS)}. Longer-term or chronic exposure scenarios parallel acute exposure scenarios for consumption of contaminated fruit, water, and fish, but are based on estimated levels of exposure for longer periods after application.

For the general public, the only accidental acute scenario that results in HQs at the level of concern is the ingestion of water that has been contaminated by a spill (triclopyr BEE (HQ= 1.1) and glyphosate (HQ= 1.4)) in least dilute formulation. The accidental spill scenario assumes that a young child consumes contaminated water shortly after an accidental spill of a premixed field solution (100 gallons) into a small pond; no dissipation or degradation is considered. Since this exposure scenario is based on assumptions that are likely to err substantially on the high side, exposure is probably overestimated, perhaps by a large margin. Additionally, the maximum application rate will not be used for the majority of areas and perhaps not for any areas if lower application rates prove effective. Therefore, a more concentrated solution could not be accidentally spilled. Finally based on best management practices, herbicides will not be applied within 60 feet of surface water; therefore, contamination of water by a spill is unlikely suggesting that this exposure pathway will not be complete during herbicide application.

The risk assessment also evaluated exposure to a young child and to women of childbearing age accidently exposed to direct spray of the herbicides. HQs resulting from being accidentally sprayed with herbicides are less than 1, suggesting that adverse health effects would be unlikely based on the assumptions used in this risk assessment.

For members of the general public, the only non-accidental acute exposure scenario of concern involves the consumption of recently sprayed fruit or vegetation with consequent exposures to triclopyr and 3,5,6-trichloro-2-pyridinol (TCP), the primary metabolite of triclopyr. Relative risks for this exposure scenario are substantially higher than risks associated with other exposure scenarios. At application rates of 3 lb a.e./acre and 8 lb a.e./acre of triclopyr BEE, the HQs are 10 and 26, respectively, for consumption of contaminated vegetation by a young woman. The HQ associated with exposure to triclopyr TEA for consumption of contaminated vegetation by a young woman is 3. Because triclopyr has been shown to cause adverse developmental effects in mammals (based on rat and rabbit studies), the high HQs associated with terrestrial applications could be of concern in terms of the potential for adverse reproductive outcomes in females.

Visitors to areas where application has occurred seem unlikely to receive much if any exposure through consumption of contaminated fruit. A large portion of the areas designated for fire hazard reduction do not support substantial populations of species that produce harvestable fruit. This exposure pathway may be incomplete now and in the future. In addition, as a BMP, offsite residents and recreational visitors will not have access to project areas during and immediately

after treatment. Additional protective options include cutting down edible vegetation such as blackberries prior to treatment of an area, or treating areas when fruit is not present. High HQs reported for triclopyr BEE exposure should be evaluated in light of the low potential for exposure and the availability of easily implementable mitigation measures.

For members of the general public, the only chronic exposure scenario of concern involves consumption of contaminated fruit or vegetation in areas treated with triclopyr BEE (HQ=1.7). Use of the exposure scenario for longer-term consumption of contaminated vegetation is probably not realistic and may greatly overestimate possible hazards. While acute exposures to contaminated vegetation may be plausible (i.e., vegetation treated shortly prior to consumption), it is unlikely that humans would consume vegetation exposed to significant levels of herbicides over a prolonged period because (1) limited edible fruit and vegetation grows in project areas, and (2) vegetation exposed to herbicides will show obvious signs of injury. Moreover, this pathway can be broken by simply cutting fruit-bearing species prior to herbicide application, or by applying herbicides when fruit is not present.

7.2 Ecological Risk

As a result of the uncertainties described above in Section 6, this risk assessment should not be construed as presenting absolute hazards. Rather, it is a conservative analysis intended to indicate the potential for adverse impacts to occur based on maximum exposed receptor scenarios and on conservative assumptions expressing unexpected conditions. As discussed, assumptions used to evaluate exposure to receptors of concern are chosen err on the side of protectiveness. Risks based on conservative exposure assumptions tend to overestimate the potential for and in some cases the severity of adverse effects. In addition, the USFS worksheets assess only the spraying of herbicides and do not consider the direct application of herbicides to cut stumps, which is the preferred application method. Interpretation of the hazards presented in this summary should consider that BMPs will be used to eliminate or reduce exposure for many of the pathways evaluated in this risk assessment.

As stated above, it is assumed that protection of the five listed species provides adequate protection of other less sensitive species. This assumption is based on the expectation that these five species are sufficiently sensitive to the proposed herbicides to serve as surrogates for other less sensitive but closely related species. For example, protection of the CRLF is assumed protective of other closely related amphibians. Some of these species have sensitive life stages (e.g., larval frogs and juvenile steelhead). Protection of these sensitive life stages is considered important.

Implementation of BMPs, described in detail in the Hazardous Fire Risk Reduction EIS, is expected to provide adequate protection of all five species of special concern (CRLF, Alameda whipsnake, CCC steelhead, pallid manzanita, and Presidio clarkia), including protection of sensitive life stages.

The following recommendations are provided to help ensure protection of the five listed species and other species represented by these five species.

7.2.1 Application Recommendations for the Alameda Whipsnake

- Apply on windless days to reduce drift.
- Apply during dry periods to reduce surface transport to surface water bodies (which may increase exposures to certain prey items of Alameda whipsnake).
- Apply after reproductive period (*i.e.*, spring and early summer for Alameda whipsnake) to minimize exposures to potentially more sensitive early life stages. It is currently unknown if young snakes are more or less sensitive to herbicide exposures, but early life stages of many common test species show increased sensitivity to potentially hazardous chemicals compared to adults of the same species.

7.2.2 Application Recommendations for the pallid manzanita

- Pallid manzanita surveys should be conducted prior to herbicide application to identify all individual plants present in potential treatment areas, to the extent possible.
- Herbicides should be applied when there is little or no hazard of drift (*i.e.*, when wind speed is low) and only in areas that are a sufficient distance away from identified pallid manzanita plants.
- Additionally, use of a fine spray, which is more prone to drift and is more toxic than larger droplets at low application rates, should be avoided.
- Protective buffer zones should be applied around known pallid manzanita plants if they are identified in potential treatment areas. These buffer zones should be of sufficient size to ensure manzanita plants are protected from spraying and spraying drift. Marrs, *et al.* (1989 in IPCS 1994) identified that some species were more sensitive to the effects of glyphosate and concluded that when spraying with ground sprayers buffer zones around nature reserves should be 5-10 meters (m). It is possible that this could be a minimum buffer around plants near application areas to protect manzanita. Buffer zones should be clearly identified if manzanita is identified in proposed treatment areas.

7.2.3 Application Recommendations and Cautions for the Presidio clarkia

- Presidio clarkia surveys should be conducted prior to herbicide application to identify all individual plants present in potential treatment areas, to the extent possible.
- Herbicides should be applied when there is little or no hazard of drift (*i.e.*, when wind speed is low) and only in areas that are a sufficient distance away from identified presidio clarkia plants.
- Additionally, use of a fine spray, which is more prone to drift and is more toxic than larger droplets at low application rates, should be avoided.
- Protective buffer zones should be applied around known presidio clarkia plants if they are identified in potential treatment areas. These buffer zones should be of sufficient size to ensure presidio clarkia plants are protected from spraying and spraying drift. Marrs, *et al.* (1989 in IPCS 1994) identified that some species were more sensitive to the effects of glyphosate and concluded that when spraying with ground sprayers buffer zones around

nature reserves should be 5-10 meters (m). It is possible that this could be a minimum buffer around plants near application areas to protect presidio clarkia. Buffer zones should be clearly identified if presidio clarkia is identified in proposed treatment areas.

7.2.4 Application Recommendations and Cautions for the CRLF

- Apply on windless days to reduce drift.
- Apply during dry periods to reduce unintended transport to surface waters.
- Do not apply near ephemeral or permanent surface water bodies, both of which are used by CRLFs for breeding and rearing of tadpoles.
- Adhere to no-spray zones (i.e., buffer areas) as described by the U.S. Environmental Protection Agency for protection of CRLF.
- Do not apply just before or during reproductive or rearing periods.
  - Berrill, *et al.* (1994) recommends against spring and summer use of triclopyr in forests to prevent harmful exposures to ranid frogs. However, late summer/early fall application may greatly reduce or prevent exposure to tadpoles (which are present approximately May to September) and breeding adults (breeding approximately late November to February).

7.2.5 Application Recommendations and Cautions for the CCC Steelhead DPS

- The primary herbicide-related concern for Central California Coast steelhead is exposure to herbicides via direct contact with and ingestion of herbicide-contaminated surface water (*i.e.*, Wildcat Creek). The toxicity of these herbicides to salmonid fish is a concern under this potential scenario. Generally, Garlon® 4 and Roundup® are toxic at lower concentrations than Stalker®, yet none of the three herbicides is considered highly toxic to fish.
- Seasonal timing of application, choosing application methods that limit runoff potential and drift to surface water bodies, and choosing herbicides with lower toxicity can mitigate potential adverse effects of herbicide use where salmonid fish might be present.
- Studies indicate that if Garlon® 4, the most toxic of the herbicides considered, was applied at the maximum application rate directly into water, the levels would remain safe for aquatic life [Perkins, *et al.* (2000) in Bautista (2005)].
- There is the potential for adult and juvenile steelhead to be present in Wildcat Creek (Leidy, *et al.* 2005). However, the aqueous degradation of these particular herbicides is likely to be rapid; significant and rapid dilution is expected; and high application rates to or near surface water, although not recommended, have been estimated to result in water concentrations that do not exceed toxic thresholds protective of fish (and larval ranid frogs).
- Most of the proposed herbicide application areas are not near Wildcat Creek, and where application may be near Wildcat Creek, special precautions may be warranted to limit the

likelihood and/or amount of herbicides indirectly entering the creek. This would be most important for portions of the creek with pools and slow moving water.

- Protective no-spray buffer zones should be adhered to around all bodies of water including ponds, streams, and rivers.

7.3 Summary

In support of the EIS, a screening level human health and ecological risk assessment of the proposed and connected actions was conducted. The risk assessment evaluated whether the use of herbicides or other actions performed under the proposed and connected actions would result in unacceptable risk to human or ecological populations. The risk assessment conducted a very conservative analysis intended to estimate adverse impacts that might occur based on maximum exposed receptor scenarios. Several exposure scenarios evaluated consider extreme accidental exposure, some to the point of limited plausibility. For some of these scenarios hazards were above the acceptable thresholds (i.e., a hazard quotient greater than one). As part of the interpretation of the hazards presented it is important to consider that BMPs are expected to eliminate or reduce exposure for the most important exposure pathways evaluated in this risk assessment. Exposure pathways where hazards were above acceptable thresholds that will be mitigated using BMPs include the following.

Human Health:

- Accidental/incidental exposure of workers to triclopyr wearing contaminated gloves for 1 hour or more.
- Chronic exposure of workers to triclopyr at the maximum application rate.
- Accidental exposure to triclopyr for a young child who consumes surface water contaminated by a spill of triclopyr and glyphosate at the maximum application rates.
- Acute and chronic exposure to triclopyr by people who ingest vegetation or fruit contaminated with triclopyr.

Ecological Receptors:

- Accidental exposures
  - Direct spray of a small mammal with glyphosate at the maximum application rate.
- Non-accidental exposure - Acute
  - Large mammal and small bird consuming contaminated fruit following triclopryr at the maximum application rate.
  - All animal groups (small mammal, larger mammal, large mammal, small bird, and large bird) when consuming triclopyr BEE contaminated vegetation.
  - Large mammal and small bird when consuming triclopyr TEA contaminated vegetation.
  - Small mammals when consuming glyphosate contaminated insects and small birds when consuming triclopyr BEE contaminated insects.

- Canids when consuming triclopyr BEE contaminated small mammals at the maximum application rate.

- Non-Accidental Scenarios – Chronic
  - Small mammal, larger mammal, and large bird when consuming triclopyr BEE contaminated fruit at the maximum rates.
  - Large mammal and small bird when consuming triclopyr contaminated fruit at the minimum and maximum application rates.
  - Most ecological receptor groups when consuming contaminated vegetation based on all application rates for triclopyr TEA and BEE from minimum to maximum.
    - Small mammal, larger mammal, large mammal, small bird, and large bird when consuming triclopyr BEE contaminated vegetation at the minimum and maximum application rate.
    - Large mammal and small bird when consuming triclopyr TEA contaminated vegetation at minimum and maximum application rates.

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Attachment 1

USDA Forest Service Worksheets

1_Proposed_avg_3lb_Triclopyr_BEE.xlsm

2_Proposed_max_8lb_Triclopyr_BEE.xlsm

3_Proposed_avg_3lb_-appv100_Triclopyr_BEE.xlsm

4_Proposed_max_8lb_Triclopyr_appv100_BEE.xlsm

5_Proposed_max_1lb_Triclopyr_TEA.xlsm

6_Proposed_max_1lb_appv100_Triclopyr_TEA.xlsm

7_Proposed_Imazapyr-max_01lb_Terrestrial.xlsm

8_Glyphosate_Attachment_1a_Roundup_OriginalBackpackDirectedFoliar.xls

9_Glyphosate_Attachment_1a_Roundup_OriginalBackpackDirectedFoliar_max8lb.xls

Note: Attachment 1 in the Print Version of Appendix F includes only the Risk Results, all worksheets are provided with the electronic version of Appendix F

Attachment 1

USDA Forest Service Worksheets

Workbook 1

Proposed_avg_3lb_Triclopyr_BEE.xlsm

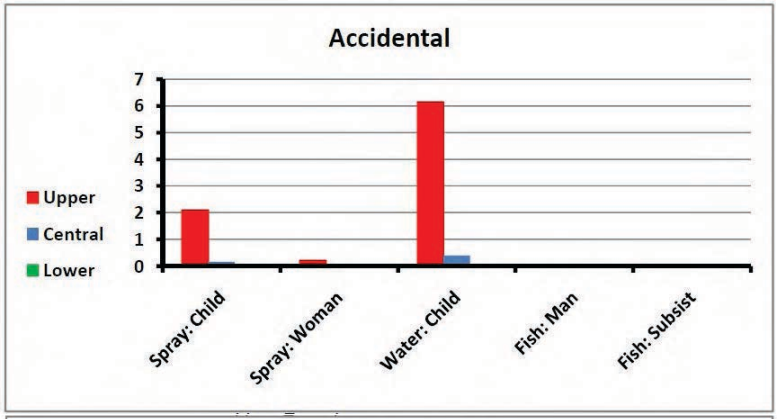
	A	B	C	D	E	F
1	**Worksheet E01: Summary of Worker Exposure Assessments**					
2	**Application Rate:**	3	**lb a.e./acre**			E01aV5-3Wrkr
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail**
4			**Central**	**Lower**	**Upper**	**Worksheet**
5	**Accidental/Incidental Exposures**					
6	Contaminated Gloves, 1 min.	Worker	0.0364	0.01188	0.3744	C02a
7	Contaminated Gloves, 1 hour	Worker	2.184	0.7128	22.464	C02b
8	Spill on Hands, 1 hour	Worker	0.004159949	0.001036178	0.055761063	C03a
9	Spill on lower legs, 1 hour	Worker	0.010251302	0.002553439	0.137411191	C03b
10	**General Exposures**					
11	Backpack Applications:		0.0348348	0.003096	0.468	C01a
12	Ground Broadcast Applications:		0.12768	0.00594	1.764	C01b
13	Aerial Applications:		0.0882	0.00216	0.96	C01c

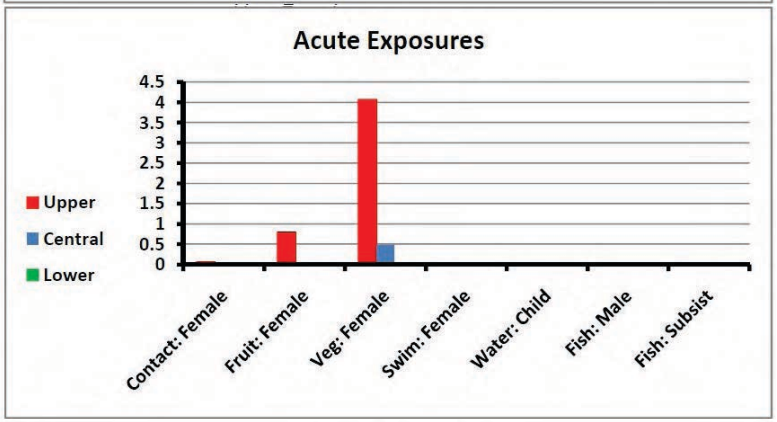
	A	B	C	D	E	F
1	**Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)**					
2	**Application Rate:**	3	**lb a.e./acre**			E01aV5-3Wrkr
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity**
4			**Central**	**Lower**	**Upper**	**Value**
5	**Accidental/Incidental Exposures**					
6	Contaminated Gloves, 1 min.	Worker	4E-02	1E-02	0.4	1
7	Contaminated Gloves, 1 hour	Worker	**2**	0.7	**22**	1
8	Spill on Hands, 1 hour	Worker	4E-03	1E-03	6E-02	1
9	Spill on lower legs, 1 hour	Worker	1E-02	3E-03	0.1	1
10	**General Exposures**					
11	**Chronic Exposures**					
12	Backpack Applications:		0.7	6E-02	**9**	0.05
13	Ground Broadcast Applications:		**3**	0.1	**35**	0.05
14	Aerial Applications:		**1.8**	4E-02	**19**	0.05
15	**Acute Exposures** (Male Workers Only)					
16	Backpack Applications:		3E-02	3E-03	0.5	1
17	Ground Broadcast Applications:		0.1	6E-03	**1.8**	1
18	Aerial Applications:		9E-02	2E-03	1.0	1
19						
20						
21						
22						
23						
24						
25						
26						
27						

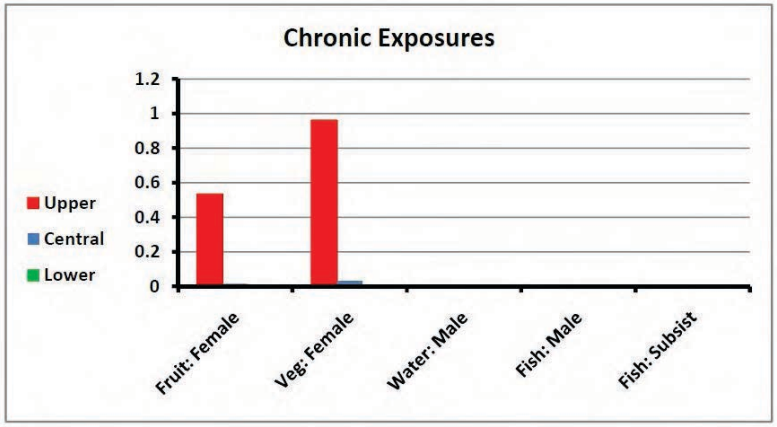
As discussed in Section 3.4.2, the custom worksheet includes a set of HQs based on general exposures using the acute RfD. The acute exposure HQs apply only to male workers. ***Risks to female workers must be based on the chronic HQs regardless of the duration of exposure.*** See

Worksheet E03: Summary of Exposure Assessments for the General Public

Application Rate:	3 lb a.e./acre				E03aV6
		mg/kg/day or mg/kg/event			
Scenario	**Receptor**	**Central**	**Lower**	**Upper**	**Detail Worksheet**
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child	whole Child body	1.57E-01	3.91E-02	2.11E+00	D01a
Direct Spray of Woman	feet Adult Female and lower legs	1.58E-02	3.93E-03	**2.12E-01**	D01b
Water consumption (spill)	Child	3.98E-01	3.12E-02	**6.15E+00**	D05
Fish consumption (spill)	Adult Male	7.18E-04	9.23E-05	7.38E-03	D08a
Fish consumption (spill)	Subsistence Populations	3.50E-03	4.50E-04	3.60E-02	D08b
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact	shorts Adult Female and T-shirt	2.50E-02	9.89E-03	6.16E-02	D02
Contaminated Fruit	Adult Female	3.70E-02	1.62E-02	**7.97E-01**	D03a
Contaminated Vegetation	Adult Female	**4.86E-01**	3.38E-02	**4.07E+00**	D03b
Swimming, one hour	Adult Female	4.12E-06	7.84E-10	6.18E-04	D11
Water consumption	Child	9.02E-05	2.06E-08	1.02E-02	D06
Fish consumption	Adult Male	1.63E-07	6.09E-11	1.22E-05	D09c
Fish consumption	Subsistence Populations	7.92E-07	2.97E-10	5.94E-05	D09d
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	1.44E-02	4.20E-03	**5.36E-01**	D04a
Contaminated Vegetation	Adult Female	3.19E-02	5.95E-04	**9.62E-01**	D04b
Water consumption	Adult Male	4.51E-07	2.75E-12	2.37E-05	D07
Fish consumption	Adult Male	5.14E-11	5.14E-16	1.80E-09	D09a
Fish consumption	Subsistence Populations	4.17E-10	4.17E-15	1.46E-08	D09b



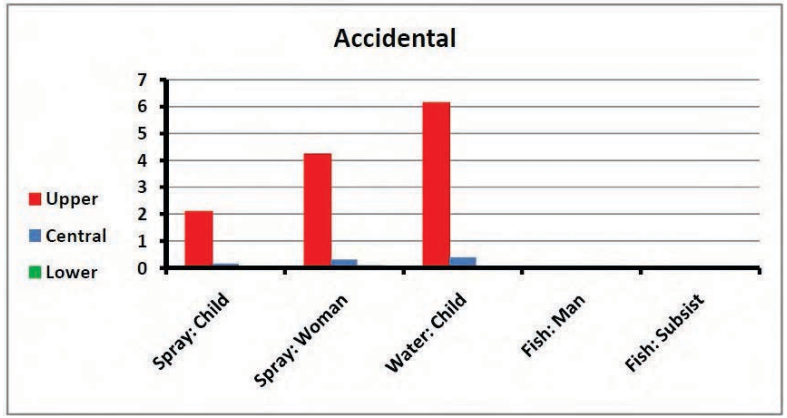


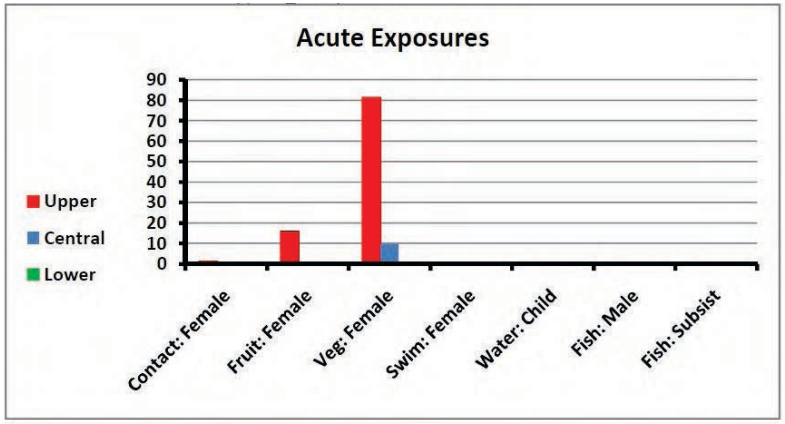


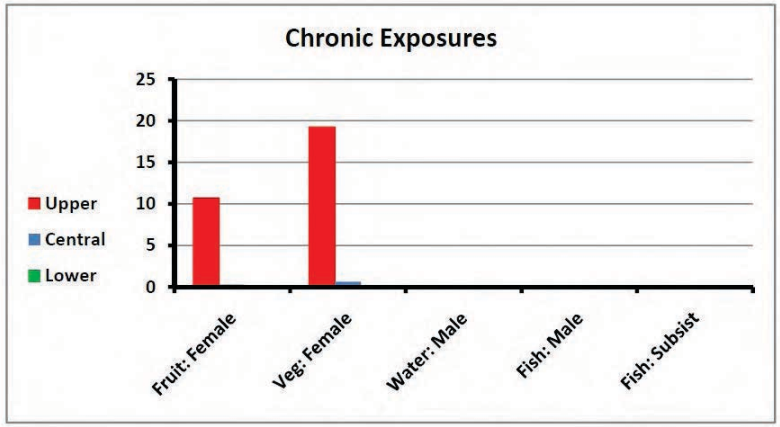
Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General PublicApplication

Application Rate: lb a.e./acre E03aV6

Scenario	Receptor	Hazard Quotients Central	Lower	Upper	Toxicity Value
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child	whole Child body	0.2	4E-02	2	1
Direct Spray of Woman	feet Adult Female and lower legs	0.3	8E-02	4	0.05
Water consumption (spill)	Child	0.4	3E-02	6	1
Fish consumption (spill)	Adult Male	7E-04	9E-05	7E-03	1
Fish consumption (spill)	Subsistence Populations	3E-03	4E-04	4E-02	1
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact	shorts Adult Female and T-shirt	0.5	0.2	1.2	0.05
Contaminated Fruit	Adult Female	0.7	0.3	16	0.05
Contaminated Vegetation	Adult Female	10	0.7	81	0.05
Swimming, one hour	Adult Female	8E-05	2E-08	1E-02	0.05
Water consumption	Child	9E-05	2E-08	1E-02	1
Fish consumption	Adult Male	2E-07	6E-11	1E-05	1
Fish consumption	Subsistence Populations	8E-07	3E-10	6E-05	1
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	0.3	8E-02	11	0.05
Contaminated Vegetation	Adult Female	0.6	1E-02	19	0.05
Water consumption	Adult Male	9E-06	6E-11	5E-04	0.05
Fish consumption	Adult Male	1E-09	1E-14	4E-08	0.05
Fish consumption	Subsistence Populations	8E-09	8E-14	3E-07	0.05



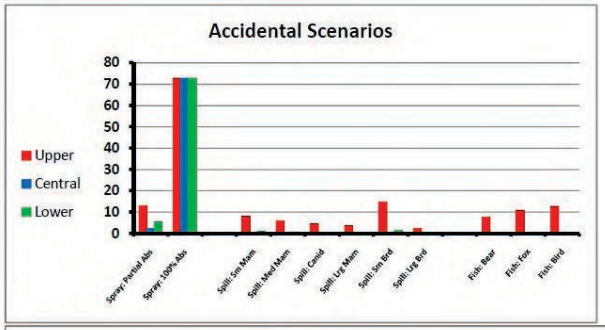


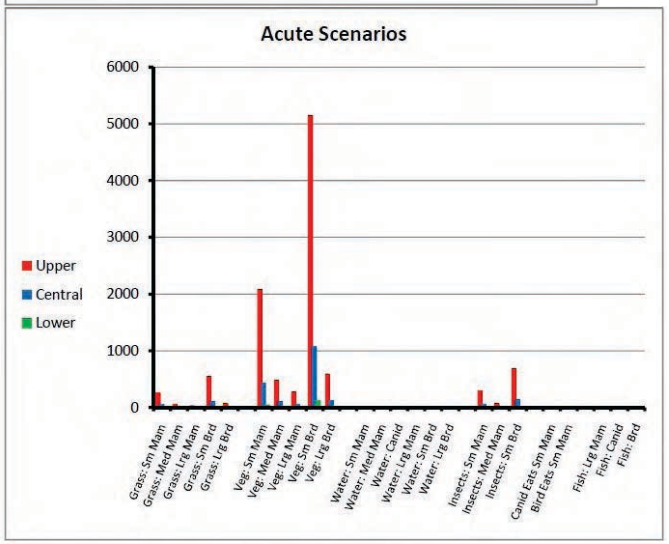


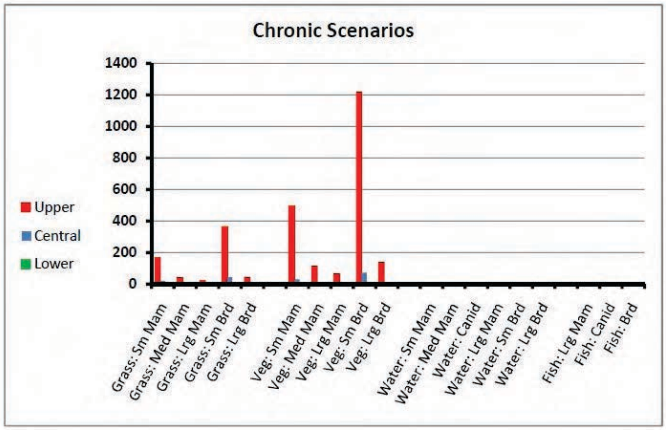
Summary of Exposure Assessments for the Terrestrial Animals G01V6

Application Rate: lb a.e./acre

Scenario	Receptor	mg/kg/day or mg/kg/event Central	Lower	Upper	Detail Worksheet
Accidental Acute Exposures					
Direct Spray					
first-order absorption	Small mammal (20g)	5.21E+00	2.06E+00	1.28E+01	F01a
100% absorption	Small mammal (20g)	7.27E+01	7.27E+01	7.27E+01	F01b
Contaminated Water					
Spill	Small mammal (20g)	7.76E-01	9.97E-02	7.98E+00	F02a
Spill	Larger Mammal (400g)	5.75E-01	7.39E-02	5.91E+00	F02b
Spill	Canid (5 kg)	4.47E-01	5.74E-02	4.59E+00	F02c
Spill	Large Mammal (70g)	3.43E-01	4.41E-02	3.53E+00	F02d
Spill	Small bird (10g)	1.43E+00	1.84E-01	1.47E+01	F02e
Spill	Large Bird (4 kg)	1.98E-01	2.54E-02	2.04E+00	F02f
Consumption of contaminated Fish					
Spill	Large Mammalian Carnivore (70 kg)	1.30E-01	1.67E-03	7.59E+00	F03a
Spill	Canid (5 kg)	1.87E-01	2.41E-03	1.09E+01	F03b
Spill	Fish-eating bird (2.4 kg)	2.17E-01	2.80E-03	1.27E+01	F03c
Non-Accidental Acute Exposures					
Contaminated Fruit (Lowest Residue Rate)					
	Small mammal (20g)	4.99E+01	6.58E+00	2.47E+02	F04a
	Larger Mammal (400g)	1.14E+01	1.50E+00	5.64E+01	F04b
	Large Mammal (70g)	6.49E+00	8.55E-01	3.21E+01	F04c
	Small bird (10g)	1.09E+02	1.44E+01	5.41E+02	F04d
	Large Bird (4 kg)	1.24E+01	1.64E+00	6.15E+01	F04e
Contaminated Vegetation (Short Grass - Highest Residue Rate)					
	Small mammal (20g)	4.32E+02	4.57E+01	2.08E+03	F05a
	Larger Mammal (400g)	9.86E+01	1.04E+01	4.75E+02	F05b
	Large Mammal	5.62E+01	5.95E+00	2.71E+02	F05c
	Small bird (10g)	1.07E+03	1.13E+02	5.15E+03	F05d
	Large Bird (4 kg)	1.21E+02	1.29E+01	5.85E+02	F05e
Contaminated Water					
	Small mammal (20g)	1.76E-04	6.59E-08	1.32E-02	F06a
	Larger Mammal (400g)	1.30E-04	4.88E-08	9.76E-03	F06b
	Canid (5 kg)	1.01E-04	3.79E-08	7.59E-03	F06c
	Large Mammal (70g)	7.77E-05	2.91E-08	5.83E-03	F06d
	Small bird (10g)	3.24E-04	1.21E-07	2.43E-02	F06e
	Large Bird (4 kg)	4.48E-05	1.68E-08	3.36E-03	F06f
Contaminated Insects					
	Small mammal (20g)	5.78E+01	5.78E+00	2.96E+02	F07a
	Larger Mammal (400g)	1.32E+01	1.32E+00	6.76E+01	F07b
	Small bird (10g)	1.31E+02	1.31E+01	6.73E+02	F07c
Consumption of small mammal (after direct spray) by predator					
	Canid (5 kg)	8.15E+00	8.15E+00	8.15E+00	F08a
	Carnivorous bird (640 g)	9.69E+00	9.69E+00	9.69E+00	F08b
Consumption of contaminated Fish					
	Large Mammalian Carnivore (70 kg)	3.29E-05	1.24E-09	1.40E-02	F09a
	Canid (5 kg)	4.74E-05	1.78E-09	2.01E-02	F09b
	Fish-eating bird (2.4 kg)	4.76E-05	1.79E-09	2.03E-02	F09c
Chronic/Longer Term Exposures					
Contaminated Fruit (Lowest Residue Rate)					
	Small mammal (20g)	1.94E+01	1.70E+00	1.66E+02	F10a
	Larger Mammal (400g)	4.43E+00	3.88E-01	3.79E+01	F10b
	Large Mammal (70g)	2.52E+00	2.21E-01	2.16E+01	F10c
	Small bird (10g)	4.25E+01	3.72E+00	3.64E+02	F10d
	Large Bird (4 kg)	4.83E+00	4.23E-01	4.14E+01	F10e
Contaminated Vegetation (Short Grass - Highest Residue Rate)					
	Small mammal (20g)	2.84E+01	8.06E-01	4.93E+02	F11a
	Larger Mammal (400g)	6.48E+00	1.84E-01	1.12E+02	F11b
	Large Mammal (70g)	3.69E+00	1.05E-01	6.41E+01	F11c
	Small bird (10g)	7.02E+01	1.99E+00	1.22E+03	F11d
	Large Bird (4 kg)	7.98E+00	2.27E-01	1.39E+02	F11e
Contaminated Water					
	Small mammal (20g)	8.78E-07	8.78E-12	3.07E-05	F12a
	Larger Mammal (400g)	6.51E-07	6.51E-12	2.28E-05	F12b
	Canid (5 kg)	5.06E-07	5.06E-12	1.77E-05	F12c
	Large Mammal (70g)	3.88E-07	3.88E-12	1.36E-05	F12d
	Small bird (10g)	1.62E-06	1.62E-11	5.66E-05	F12e
	Large Bird (4 kg)	2.24E-07	2.24E-12	7.84E-06	F12f
Consumption of contaminated Fish					
	Large Mammalian Carnivore (70 kg)	1.65E-07	1.65E-13	3.27E-05	F13a
	Canid (5 kg)	2.37E-07	2.37E-13	4.70E-05	F13b
	Fish-eating bird (2.4 kg)	2.38E-07	2.38E-13	4.73E-05	F13c

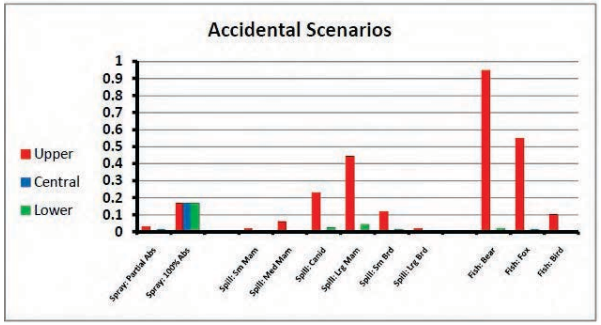


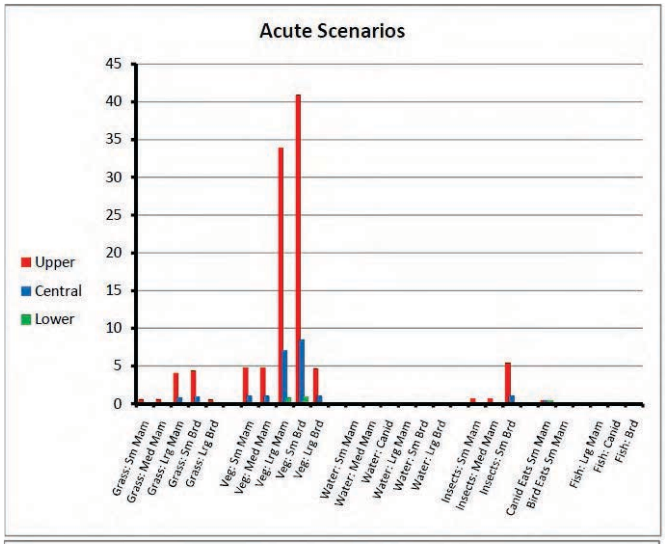


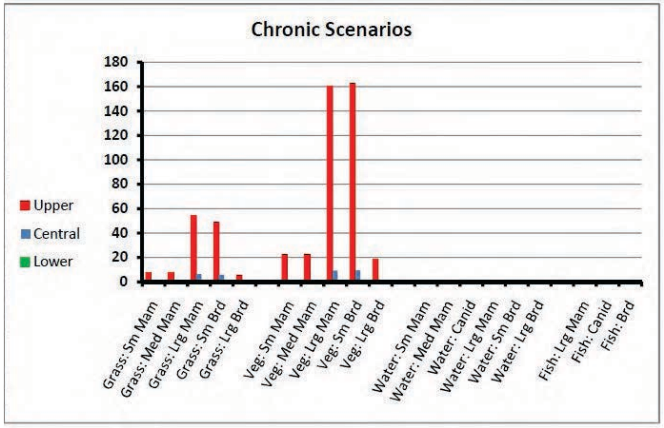


Summary of Hazard Quotients (Toxicity) for the Terrestrial Animals. G01V6

Application Rate:		lb a.e./acre			G01V6	
Scenario	**Receptor**	**Hazard Quotients**			**Toxicity Value**	
		Central	**Lower**	**Upper**		
Accidental Acute Exposures						
Direct Spray						
first-order absorption	Small mammal (20g)	1E-02	5E-03	3E-02	440	NOAEL*
100% absorption	Small mammal (20g)	0.2	0.2	0.2	440	NOAEL*
Contaminated Water						
Spill	Small mammal (20g)	2E-03	2E-04	2E-02	440	NOAEL*
Spill	Larger Mammal (400g)	6E-03	7E-04	6E-02	100	NOAEL
Spill	Canid (5 kg)	2E-02	3E-03	0.2	20	NOAEL*
Spill	Large Mammal (70g)	4E-02	6E-03	0.4	8	NOAEL*
Spill	Small bird (10g)	1E-02	1E-03	0.1	126	NOAEL
Spill	Large Bird (4 kg)	2E-03	2E-04	2E-02	126	NOAEL
Consumption of contaminated Fish						
Spill	Large Mammalian Carnivore (70 kg)	2E-02	2E-04	0.9	8	NOAEL*
Spill	Canid (5 kg)	9E-03	1E-04	0.5	20	NOAEL*
Spill	Fish-eating bird (2.4 kg)	2E-03	2E-05	0.1	126	NOAEL
Non-Accidental Acute Exposures						
Contaminated Fruit (Lowest Residue Rate)						
	Small mammal (20g)	0.1	1E-02	0.6	440	NOAEL*
	Larger Mammal (400g)	0.1	2E-02	0.6	100	NOAEL
	Large Mammal (70g)	0.8	0.1	4	8	NOAEL*
	Small bird (10g)	0.9	0.1	4	126	NOAEL
	Large Bird (4 kg)	1E-01	1E-02	0.5	126	NOAEL
Contaminated Vegetation (Short Grass - Highest Residue Rate)						
	Small mammal (20g)	1.0	0.1	5	440	NOAEL*
	Larger Mammal (400g)	1.0	0.1	5	100	NOAEL
	Large Mammal	7	0.7	34	8	NOAEL*
	Small bird (10g)	8	0.9	41	126	NOAEL
	Large Bird (4 kg)	1.0	0.1	5	126	NOAEL
Contaminated Water						
	Small mammal (20g)	4E-07	1E-10	3E-05	440	NOAEL*
	Larger Mammal (400g)	1E-06	5E-10	1E-04	100	NOAEL
	Canid (5 kg)	5E-06	2E-09	4E-04	20	NOAEL*
	Large Mammal (70g)	1E-05	4E-09	7E-04	8	NOAEL*
	Small bird (10g)	3E-06	1E-09	2E-04	126	NOAEL
	Large Bird (4 kg)	4E-07	1E-10	3E-05	126	NOAEL
Contaminated Insects						
	Small mammal (20g)	0.1	1E-02	0.7	440	NOAEL*
	Larger Mammal (400g)	0.1	1E-02	0.7	100	NOAEL
	Small bird (10g)	1.0	0.1	5	126	NOAEL
Consumption of small mammal (after direct spray) by predator						
	Canid (5 kg)	0.4	0.4	0.4	20	NOAEL*
	Carnivorous bird (640 g)	8E-02	8E-02	8E-02	126	NOAEL
Consumption of contaminated Fish						
	Large Mammalian Carnivore (70 kg)	4E-06	2E-10	2E-03	8	NOAEL*
	Canid (5 kg)	2E-06	9E-11	1E-03	20	NOAEL*
	Fish-eating bird (2.4 kg)	4E-07	1E-11	2E-04	126	NOAEL
Chronic/Longer Term Exposures						
Contaminated Fruit (Lowest Residue Rate)						
	Small mammal (20g)	0.9	8E-02	8	22	NOAEL*
	Larger Mammal (400g)	0.9	8E-02	8	5	NOAEL
	Large Mammal (70g)	6	0.6	54	0.4	NOAEL*
	Small bird (10g)	6	0.5	48	7.5	NOAEL
	Large Bird (4 kg)	0.6	6E-02	6	7.5	NOAEL
Contaminated Vegetation (Short Grass - Highest Residue Rate)						
	Small mammal (20g)	1.3	4E-02	22	22	NOAEL*
	Larger Mammal (400g)	1.3	4E-02	22	5	NOAEL
	Large Mammal (70g)	9	0.3	160	0.4	NOAEL*
	Small bird (10g)	9	0.3	162	7.5	NOAEL
	Large Bird (4 kg)	1.1	3E-02	18	7.5	NOAEL
Contaminated Water						
	Small mammal (20g)	4E-08	4E-13	1E-06	22	NOAEL*
	Larger Mammal (400g)	1E-07	1E-12	5E-06	5	NOAEL
	Canid (5 kg)	5E-07	5E-12	2E-05	1	NOAEL*
	Large Mammal (70g)	1E-06	1E-11	3E-05	0.4	NOAEL*
	Small bird (10g)	2E-07	2E-12	8E-06	7.5	NOAEL
	Large Bird (4 kg)	3E-08	3E-13	1E-06	7.5	NOAEL
Consumption of contaminated Fish						
	Large Mammalian Carnivore (70 kg)	4E-07	4E-13	8E-05	0.4	NOAEL*
	Canid (5 kg)	2E-07	2E-13	5E-05	1	NOAEL*
	Fish-eating bird (2.4 kg)	3E-08	3E-14	6E-06	7.5	NOAEL







Exposures and HQs for a Terrestrial Insect (Honeybee) Associated with Direct Spray or Drift Following Terrestrial Applications

Short Title				
Receptor				Abrev(Param->Receptor)
Duration				

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Toxicity Value (Spray)	**ToxVal**	620	mg/kg bw	BeeTox[Spray]
Application rate	**$ApRt_{lb/ac}$**	3	lb/acre	Prog!ApRt_C
Conversion factor for lbs/acre to mg/cm^2	**CnvF**	0.01121	mg/cm^2/lb/acre	
Application rate, mg/cm^2	**ApR_{mgcm}**	**$ApR_{lb/a}$ × CnvF**		
		0.03363	lb/acre	Eq
Body weight	**BW**	**0.000116**	kg	Param->Receptor.BW
	SA	1.42	cm^2	Param->Receptor.SA_WB
Proportion of body surface sprayed	**Prp_{SA}**	0.5	unitless	*Param->PrpSA*
Amount Deposited on Skin	**Amnt**	***ApR_{mgcm} × SA***	***× Prp_{SA}***	
		0.0238773	mg	Eq
Foliar Interception	**FolInt**	Lower	Central	Upper
		0	0.5	0.9

Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**	**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**
	0 feet	1	1	1	1
	25 feet	0.223	0.104	0.035	0.00832
	50 feet	0.171	0.05	0.0177	0.00433
	100 feet	0.0979	0.0248	0.00948	0.00241
	300 feet	0.0312	0.00753	0.0035	0.000941
	500 feet	0.0192	0.00391	0.00209	0.000579
	900 feet	0.0124	0.00166	0.00109	0.000312

Absorbed Doses (mg/kg bw) = Prop x FolInt x Amnt ÷ BW)				**HQ = Absorbed Doses/ToxVal**		
Aerial	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
0	*205.838793*	*102.9193966*	*20.58387931*	0.3	0.2	3E-02
25	*45.9020509*	*22.95102543*	*4.590205086*	7E-02	4E-02	7E-03
50	*35.1984336*	*17.59921681*	*3.519843362*	6E-02	3E-02	6E-03
100	*20.1516178*	*10.07580892*	*2.015161784*	3E-02	2E-02	3E-03
300	*6.42217034*	*3.211085172*	*0.642217034*	1E-02	5E-03	1E-03
500	*3.95210483*	*1.976052414*	*0.395210483*	6E-03	3E-03	6E-04
900	*2.55240103*	*1.276200517*	*0.255240103*	4E-03	2E-03	4E-04
Highboom Ground	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*205.838793*	*102.9193966*	*20.58387931*	0.3	0.2	3E-02
0	*21.4072345*	*10.70361724*	*2.140723448*	3E-02	2E-02	3E-03
25	*10.2919397*	*5.145969828*	*1.029193966*	2E-02	8E-03	2E-03
50	*5.10480207*	*2.552401034*	*0.510480207*	8E-03	4E-03	8E-04
100	*1.54996611*	*0.774983056*	*0.154996611*	2E-03	1E-03	2E-04
300	*0.80482968*	*0.402414841*	*0.080482968*	1E-03	6E-04	1E-04
500	*0.3416924*	*0.170846198*	*0.03416924*	6E-04	3E-04	6E-05

Low Ground	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*205.838793*	*102.9193966*	*20.58387931*	0.3	0.2	3E-02
Distance Downwind	*7.20435776*	*3.602178879*	*0.720435776*	1E-02	6E-03	1E-03
0	*3.64334664*	*1.821673319*	*0.364334664*	6E-03	3E-03	6E-04
25	*1.95135176*	*0.975675879*	*0.195135176*	3E-03	2E-03	3E-04
50	*0.72043578*	*0.360217888*	*0.072043578*	1E-03	6E-04	1E-04
100	*0.43020308*	*0.215101539*	*0.043020308*	7E-04	3E-04	7E-05
300	*0.22436428*	*0.112182142*	*0.022436428*	4E-04	2E-04	4E-05
Backpack	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*205.838793*	*102.9193966*	*20.58387931*	0.3	0.2	3E-02
Distance Downwind	*1.71257876*	*0.856289379*	*0.171257876*	3E-03	1E-03	3E-04
Distance Downwind	*0.89128197*	*0.445640987*	*0.089128197*	1E-03	7E-04	1E-04
0	*0.49607149*	*0.248035746*	*0.049607149*	8E-04	4E-04	8E-05
25	*0.1936943*	*0.096847152*	*0.01936943*	3E-04	2E-04	3E-05
50	*0.11918066*	*0.059590331*	*0.011918066*	2E-04	1E-04	2E-05
100	*0.0642217*	*0.032110852*	*0.00642217*	1E-04	5E-05	1E-05

Worksheet G03: Summary of Hazard Quotients for Aquatic Species

Application Rate: lb a.e./acre

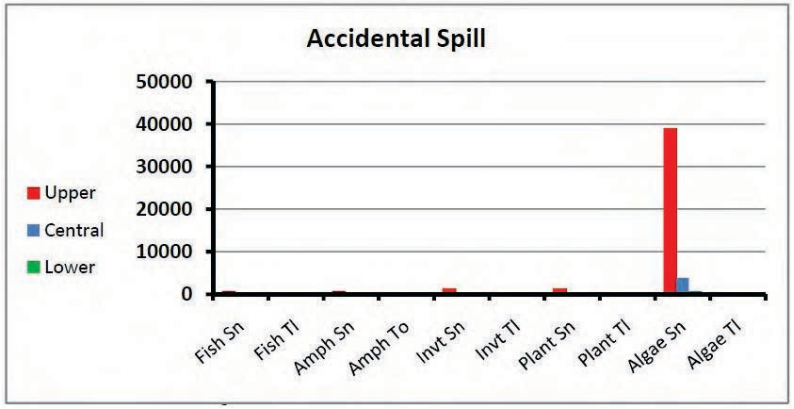
AqToxSumV6

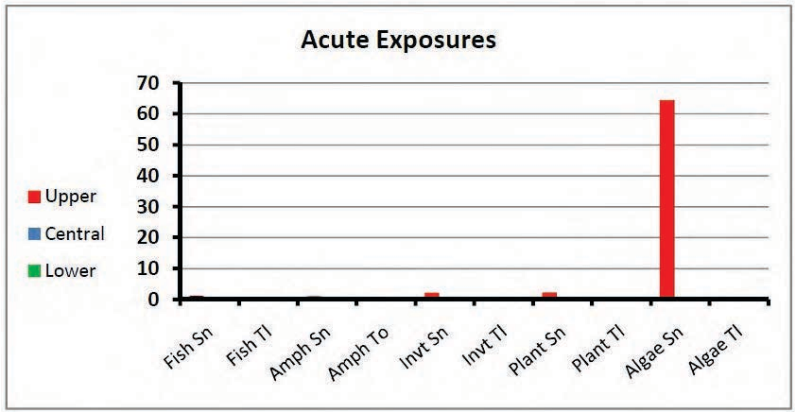
Scenario	Central	Lower	Upper	Worksheet
Accidental	5.299	0.6813	54.504	B04b
Peak EEC	0.0012	0.00000045	0.09	D06
Chronic	0.000006	6E-11	0.00021	D07

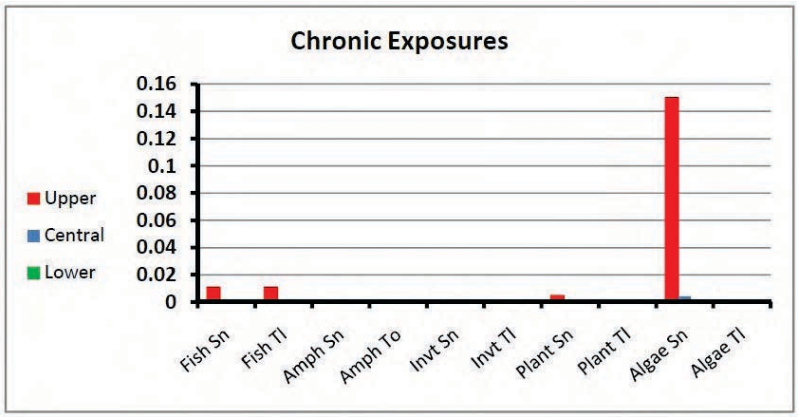
Hazard Quotients

Receptor	Type	Central	Lower	Upper	Toxicity Value	Toxicity Endpoint
Accidental Acute Exposures (dose in mg/kg/event)						
Fish	Sensitive	58	7	599	0.091	NOAEC
	Tolerant	7	0.9	73	0.75	NOAEC*
Amphibian	Sensitive	53	7	545	0.1	EC10
	Tolerant	1.3	0.2	13	4.2	NOAEL*
Invertebrate	Sensitive	118	15	1,211	0.045	NOAEC*
	Tolerant	1.5	0.2	15	3.6	NOAEC*
Macrophyte	Sensitive	123	16	1,268	0.75	NOEC
	Tolerant	17	2	176	0.1	NOEC
Algae	Sensitive	3,785	487	38,931	0.0014	NOEC
	Tolerant	5	0.7	55	1	NOEC
Non-Accidental Acute Exposures (dose in mg/kg/event)						
Fish	Sensitive	1E-02	5E-06	1.0	0.091	NOAEC
	Tolerant	2E-03	6E-07	0.1	0.75	NOAEC*
Amphibian	Sensitive	1E-02	5E-06	0.9	0.1	EC10
	Tolerant	3E-04	1E-07	2E-02	4.2	NOAEL*
Invertebrate	Sensitive	3E-02	1E-05	2	0.045	NOAEC*
	Tolerant	3E-04	1E-07	3E-02	3.6	NOAEC*
Macrophyte	Sensitive	3E-02	1E-05	2	0.043	NOEC
	Tolerant	4E-03	1E-06	0.3	0.31	NOEC
Algae	Sensitive	0.9	3E-04	64	0.0014	NOEC
	Tolerant	1E-03	5E-07	9E-02	1	NOEC
Chronic/Longer Term Exposures (dose in mg/kg/day)						
Fish	Sensitive	3E-04	3E-09	1E-02	0.019	NOAEC
	Tolerant	3E-04	3E-09	1E-02	0.019	NOAEC*
Amphibian	Sensitive	No toxicity data.			N/A	
	Tolerant	No toxicity data.			N/A	
Invertebrate	Sensitive	2E-05	2E-10	8E-04	0.25	LOAEC*
	Tolerant	3E-07	3E-12	1E-05	20	LOAEC*
Macrophyte	Sensitive	1E-04	1E-09	5E-03	0.043	NOEC*
	Tolerant	2E-05	2E-10	7E-04	0.31	NOEC*
Algae	Sensitive	4E-03	4E-08	0.2	0.0014	NOEC
	Tolerant	6E-06	6E-11	2E-04	1	NOEC

Note: NOEC*, NOAEC* or a similar designation - i.e., NOEC or NOAEC followed by an asterisk (*) -- indicates that the NOEC or similar value was estimated from an LC_{50} ,EC_{50}, or an LOEC. See the risk







Summary of Exposure Assessment and Risk Characterization for Terrestrial Plants from Runoff

Short Title Receptor Duration		Link to Gleams-Driver
User-Specified Gleams-Driver File	None	

Parameter/Assumption	Code/Range	Value		Units	Reference
Worksheet Application Rate	$ApRt_{WB}$		3	lb/acre	Worksheeet A01
Offsite Application Rates Inputs					
Run ID:	Risk Assessment				
Application Rate Used in Run	$ApRt_{Run}$	1		lb/acre	
Functional Off-site Application Rate	$ApRt_{Offsite}$	Central	0.0006	lb/acre	
		Lower	0.0000002		
		Upper	0.046		
Calculated Values					
Normalized Off-site Functional Application Rate	$NormApRt_{Offsite}$	Central	0.0006	Unitless	Eq
		Lower	0.0000002		Eq
		Upper	0.046		Eq
Off-site Application Rate at Workbook Application Rate	$ApRt_{WB}$	Central	0.0018	lb/acre	Eq
		Lower	0.0000006		Eq
		Upper	0.138		Eq
Toxicity Values (seedling emergence) in units of lbs/acre					
			Sensitive	Tolerant	
	Endpoint		NOEC	NOEC	
			0.02	2	Section 4.3.2.5
Hazard Quotients					
		Central	9E-02	9E-04	
		Lower	3E-05	3E-07	
		Upper	7	7E-02	

General Worksheet Note

Typically, this worksheet is filled in by WorksheetMaker using offsite application rates that are derived in the Forest Service risk assessment. Several different *Application Rates* are noted in the cells in this worksheet this note explains why this is done.

The **Worksheet Application Rate** refers to the application rate that is set by the user in Worksheet A01.

The next section of the worksheet (**Offsite Application Rate Inputs**) is initially set by the WorksheetMaker Program. The Application Rate Used in Run refers to the application rate used in the simulation software(typically Gleams-Driver) used to derived the Functional Off-site Application Rate. This is the application rate to the nontarget site based on runoff. In Forest Service risk assessments, a unit application rate of 1 lb/acre is always used. If you set a custom Gleams-Driver input file in Worksheet B04, the information from the Gleams- Driver input file will replace the values that had been initially filled in by the WorksheetMaker program. Alternatively, you can fill in any of these values manually.

In the **Calculated Values** section, this worksheet normalizes the Functional Offsite Application Rate. If the values are from a risk assessment (where an application rate of 1 lb/acre is always used in the Gleams-Driver run), these rates will be identical to the rats in the above section.

The **Toxicity Values** are typically those used in the risk assessment. You can change these if you have a good reason for doing so. Also, you can add columns it you want to show HQ values for other species of particular concern. To ensure that any values for new plants will format correctly, you should insert the new information between the Sensitive and Tolerant entries. To do this, select from the cell above labeled Tolerant (D24) down to the upper range of the hazard quotient (D30). While these cells are selected, do a *Right Mouse Click* and then scroll down to *Insert*. Then, select the *Shift Cells to Right* option. If you want to add more than one plant species, hit Control-Y to repeat this operation. If this is not clear, Press F1 (Help) and review the Excel Documentation for inserting cells into a worksheet or consult a reference book on Excel.

Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Drif.

Note: This is a custom worksheet. If you modify the application rate, you may need to manually reformat some of the HQ values.

Short Title	Drift to terrestrial plants			PlntDrift3Apps				
Receptor	Terrestrial vegetation							
Duration	Acute							
Parameter/ Assumption	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**				
Application Rate	ApRt	3	lb/acre	Worksheet A01				
Toxicity Values(Post-emergence in lb/ac)								
Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.5.				
Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.5.				
Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**							
		Aerial	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
0		1	1	1	1	unitless		
25		0.223	0.104	0.035	0.00832			
50		0.171	0.05	0.0177	0.00433			
100		0.0979	0.0248	0.00948	0.00241			
300		0.0312	0.00753	0.0035	0.000941			
500		0.0192	0.00391	0.00209	0.000579			
900		0.0124	0.00166	0.00109	0.000312			
Estimates of functional offsite application rate	**OfApRt**	***=ApRt x Prop***						
		Aerial	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
0		*3*	*3*	*3*	*3*	Eq		
25		*0.669*	*0.312*	*0.105*	*0.02496*	Eq		
50		*0.513*	*0.15*	*0.0531*	*0.01299*	Eq		
100		*0.2937*	*0.0744*	*0.02844*	*0.00723*	Eq		
300		*0.0936*	*0.02259*	*0.0105*	*0.002823*	Eq		
500		*0.0576*	*0.01173*	*0.00627*	*0.001737*	Eq		
900		*0.0372*	*0.00498*	*0.00327*	*0.000936*	Eq		
Hazard Quotients (Sensitive Species)	**HQ_{Sens}**	***= OfApRt / ToxVal*** $_{Sens}$						
		Aerial	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
0		**1,071**	**1,071**	**1,071**	**1,071**			
25		**239**	**111**	**38**	**9**			
50		**183**	**54**	**19**	**5**			
100		**105**	**27**	**10**	**3**			
300		**33**	**8**	**4**	**1.0**			
500		**21**	**4**	**2**	0.6			
900		**13**	**1.8**	**1.2**	0.3			
Hazard Quotients (Tolerant Species)								
0		**1.5**	**1.5**	**1.5**	**1.5**			
25		0.3	0.2	5E-02	1E-02			
50		0.3	8E-02	3E-02	6E-03			
100		0.1	4E-02	1E-02	4E-03			
300		5E-02	1E-02	5E-03	1E-03			
500		3E-02	6E-03	3E-03	9E-04			
900		2E-02	2E-03	2E-03	5E-04			

Potential exposure of non-target plants through the use of contaminated irrigation water based on estimates concentrations in ambient water.

Short Title				
Receptor				
Duration				Abrev(Dur)

Parameter/Assumption	Code / Range	Equation/ Value	Units	
Application Rate	**ApRt**	**3**	lb/acre	Prog!ApRt_C
Water contamination rate	**WCR**			
	Central	**0.0004**	mg/L per	
	Lower	**0.00000015**	lb/acre	
	Upper	**0.03**		
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	1	unitless	Prog!TEF_C
	Lower	1		Prog!TEF_L
	Upper	1		Prog!TEF_U
Concentration in irrigation water	**$Conc_{Wat}$**	***ApRt × WCR × TEF***		
	Central	0.0012	mg/L	Eq
	Lower	0.00000045		Eq
	Upper	0.09		Eq
Amount of irrigation water applied	**IrrigAmnt**			
	Central	1	inches	Param->Inches_C
	Lower	0.25		Param->Inches_L
	Upper	2		Param->Inches_U
Gallons per Acre-Foot	**GalPerAc-Ft**	325900	gal/acre-foot	Std!CnvFct.acrefoot2gal
Liters per Gallon	**LtPerGal**	3.785	liters/gal	Std!CnvFct.gal2lit
Liters of water applied per acre per inch of irrigation water (*rounded to nearest liter*)	**LpApl**	***GalPerAc-Ft × LtPerGal / 12***		
		102,794	Lit/acre-inch	Eq
Liters of water applied per acre	**LPA**	***IrrigAmnt × LpApl***		
	Central	102794	liters	Eq
	Lower	25698.5		Eq
	Upper	205588		Eq
Application Rate (mg/acre)	**$ApR_{mg/a}$**	***$Conc_{Wat}$ × LPA***		
	Central	123.3528	mg/acre	Eq
	Lower	0.011564325		Eq
	Upper	18502.92		Eq
Conversion factor for mg to lb	**Conv**	0.0000022		Std!CnvFct.mg2lb
Functional application rate (lb/acre)	**FncApR**	**$ApR_{mg/a}$ × Conv**		
	Central	0.000271376	lb/acre	Eq
	Lower	2.54415E-08		Eq
	Upper	0.040706424		Eq
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.4.
Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.4.

Hazard Quotients	HQs	Sensitive species	Tolerant species
	Central	1.E-01	1.E-04
	Lower	9.E-06	1.E-08
	Upper	**15**	2.E-02

Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Wind Erosion at the Specified Application Rate.

Short Title				PlntWind2
Receptor				
Duration				

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Application Rate	ApRt	3	lb/acre	Worksheet A01
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.5.
Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.5.
Soil losses due to wind ersion	**Loss_TonHa**			
	Central	5	Tons per	Scenario parameter
	Lower	1	hectare	Scenario parameter
	Upper	10	per year	Scenario parameter
Conversion for tons/ha to grams per cm^2	**Conv1**	0.01		
Soil losses in grams/square centimeter	**Loss_GrCm**			
	Central	*0.05*	g/cm^2	Eq
	Lower	*0.01*	per year	Eq
	Upper	*0.1*		Eq
Soil Density	**Dens**	2	g/cm^2	
Soil losses in cm/day	**Loss_CmDay**	***= Loss_GrCm /(Dens * 365)***		
	Central	*6.84932E-05*	cm per	Eq
	Lower	*1.36986E-05*	day	Eq
	Upper	*0.000136986*		Eq
Depth of incorporation	**Depth**	1	cm	Scenario parameter
Proportion of contaminated soil lost per day	**PropLost**			
	Central	6.84932E-05	unitless	
	Lower	1.36986E-05		
	Upper	0.000136986		
Estimates of functional offsite application rate	**OfApRt**	***=ApRt x PropLost***		
	Central	*0.000205479*	lb/acre	Eq
	Lower	*4.10959E-05*		Eq
	Upper	*0.000410959*		Eq
Hazard Quotients (Sensitive Species)	$\mathbf{HI_{Sens}}$	***= OfApRt / ToxVal$_{Sens}$***		
	Central	7E-02		
	Lower	1E-02		
	Upper	0.1		
Hazard Quotients (Tolerant Species)	$\mathbf{HI_{Tol}}$	*= OfApRt / ToxVal$_{Tol}$*		
	Central	1E-04		
	Lower	2E-05		
	Upper	2E-04		

Consumption of Contaminated Fruit/Large Insects by a Herbivorous Insect, acute exposure after a single application

Short Title		FdPropBW_Ac
Receptor		
Duration		
Material consumed	Fruit/Large Insects	

Parameter/Assumption	Code / Range	Equation/ Value	Units	
Application Rate (lbs/acre)	**ApRt**	**3**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg	Waldbauer 1968
	Lower	**0.6**	BW per day	Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**7**	mg/kg food	Worksheet A01
	Lower	**3.2**	per lb/acre	Worksheet A01
	Upper	**15**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*21*	mg/kg food	Eq
	Lower	*9.6*	item	Eq
	Upper	*45*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*27.3*	mg/kg bw	Eq
	Lower	*5.76*		Eq
	Upper	*99*		Eq

Consumption of Contaminated Broadleaf/Small Insects by a Herbivorous Insect, acute exposure after a single application

Short Title				FdPropBW_Ac
Receptor				
Duration				
Material consumed	Broadleaf/Small Insects			

Parameter/Assumption	Code / Range	Equation/ Value	Units	
Application Rate (lbs/acre)	**ApRt**	**3**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg	Waldbauer 1968
	Lower	**0.6**	BW per day	Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**45**	mg/kg food	Worksheet A01
	Lower	**15**	per lb/acre	Worksheet A01
	Upper	**135**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*135*	mg/kg food	Eq
	Lower	*45*	item	Eq
	Upper	*405*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*175.5*	mg/kg bw	Eq
	Lower	*27*		Eq
	Upper	*891*		Eq

Consumption of Contaminated Short grass by a Herbivorous Insect, acute exposure after a single application

Short Title				FdPropBW_Ac
Receptor				
Duration				
Material consumed	Short grass			
Parameter/Assumption	**Code / Range**	**Equation/ Value**	**Units**	
Application Rate (lbs/acre)	**ApRt**	**3**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg	Waldbauer 1968
	Lower	**0.6**	BW per day	Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**85**	mg/kg food	Worksheet A01
	Lower	**30**	per lb/acre	Worksheet A01
	Upper	**240**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*255*	mg/kg food	Eq
	Lower	*90*	item	Eq
	Upper	*720*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*331.5*	mg/kg bw	Eq
	Lower	*54*		Eq
	Upper	*1584*		Eq

Consumption of Contaminated Tall Grass by a Herbivorous Insect, acute exposure after a single application

Short Title				FdPropBW_Ac
Receptor				
Duration				
Material consumed	Tall Grass			
Parameter/Assumption	**Code / Range**	**Equation/ Value**	**Units**	
Application Rate (lbs/acre)	**ApRt**	**3**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg	Waldbauer 1968
	Lower	**0.6**	BW per day	Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**36**	mg/kg food	Worksheet A01
	Lower	**12**	per lb/acre	Worksheet A01
	Upper	**110**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*108*	mg/kg food	Eq
	Lower	*36*	item	Eq
	Upper	*330*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*140.4*	mg/kg bw	Eq
	Lower	*21.6*		Eq
	Upper	*726*		Eq

Summary of Exposure Assessments for the Herbivorous or Predatory Insects

Application Rate:	3	lb a.e./acre			InstHerbSum
Food Item	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
		Central	**Lower**	**Upper**	
Acute Exposures					
Fruit/Large Insects	Insect	27.3	5.76	99	G07a
Broadleaf/Small Insects	Insect	1.76E+02	2.70E+01	8.91E+02	G07b
Short Grass	Insect	3.32E+02	5.40E+01	1.58E+03	G07c
Long Grass	Insect	140.4	21.6	726	G07d

Summary of Hazard Quotients (Toxicity) for the Herbivorous or Predatory Insects

Application Rate:	3	lb a.e./acre			InstHerbSum	
Food Item	Receptor	Hazard Quotients			Toxicity Value	
		Central	Lower	Upper		
Acute Exposures						
Fruit/Large Insects	Insect	4E-02	9E-03	0.2	**620**	<LD50
Broadleaf/Small Insects	Insect	0.3	4E-02	**1.4**	**620**	<LD50
Short Grass	Insect	0.5	9E-02	**3**	**620**	<LD50
Long Grass	Insect	0.2	3E-02	**1.2**	**620**	<LD50

Attachment 1

USDA Forest Service Worksheets

Workbook 2

Proposed_max_8lb_Triclopyr_BEE.xlsm

Utilities

Triclopyr BEE Formulations: East Bay Regional Park District, Maximum Application Rate for all Areas

Forest Service Program Worksheets

Worksheet Version 5.00.64

General Notes

Prepared by: Patrick R Durkin
Program Version: 5.00.64
Database Used: FS WsMkr V5-01a.mdb
Template Workbook: FS WsMkr V5-01a.mdb
Base Workbook: FS WSMkr Blank V05-01a.xlsm

Color Codes in WorksheetMaker Version 5

WorksheetMaker Version 5 contains four general types of worksheets: front matter sheets, data sheets, calculation sheets, and results sheets. As detailed below, a consistent set of formatting/color are used in the first three types of sheets.

Color Codes used in Workbook for Front Matter, Data and Calculation Worksheets

Green shading	This is a default value or a user specified a value. You can change these values as you see fit but you should have a reason for doing so.
Yellow shading	This is a source for a link in other parts of the workbook. If you have good reason to change the value, you should note the change (with your reason) in the "Revisions" page.
Blue shading	This cell is linked to another cell in the workbook. **Do not change this value.** If you change any of these values, the workbook may not update correctly.
Blue shading blue border	This cell is linked to a Program parameter in Worksheet A01. **Do not change this value.** If you want the value to change, go to Worksheet A01 and change the value in that worksheet.
Purple Shading	Indicates (for information only) that the typical of order of Lower and Upper values is intentionally reversed. This is only used in the second (label) column.
Italics, no shading	The value in this cell is generated by a formula (the number that you see is the result of an equation). This cell is linked only to other cells in the worksheet. **Do not change this value.**

Risk Characterization Worksheets use a modified color scheme based on the value of the hazard quotient (see below). The format for these worksheets will change as you change the application rate or other other inputs.

Color Codes used in Workbook for Risk Characterization Worksheets

HQ ≥ 2	For hazard quotient greater than 2, the number is in **bold font** with a red background and rounded to the nearest integer.
HQ > 1 but < 2	For hazard quotient greater than 1 but less than two, the number is in **bold font** with a white background and rounded to one significant place after the decimal.
HQ ≥ 0.1 but <1	For hazard quotient greater than 0.1 but less than one, the number is in regular font with a white background and rounded to one significant place after the decimal.
HQ < 0.1	For hazard quotient less than 0.1, the number is in regular font with a white background. The number is expressed in scientific notation and rounded to one significant place -- e.g., 2E-02 rather than 0.02.

The specific version of the program that was used is given above along with information about the Access database (containing the information that was used to make this workbook), template workbook (the workbook containing the template worksheets), and base workbook (the workbook that served as the basis for this workbook). Except as noted under the chemical specific notes (next worksheet), these worksheets are substantially identical to those submitted with the SERA risk assessment.

If you want to modify the application rate used in this workbook, go to the A01 worksheet. In this worksheet, change the application rate and/or the application volume(s). **Note that all application rates must be in units of lb a.e./acre for weak acids or lbs a.i./acre for other pesticides.** Generally, you can tell that the pesticide is a weak acid if it is sold as a salt (e.g., sodium, potassium, etc) or if it is an ester. If you are unsure of how to do the conversion, consult the risk assessment or seek other assistance.

Both the application rate section and the application volume section of Worksheet A01 are structured to allow the input of a central rate as well as the lower and upper bounds of a range. In project-specific assessments**,** however, **all three values for the application rate – central, lower, and upper – should be identical**.

Prepared by: Patrick R Durkin
Program Version: 5.00.64
Database Used: FS WsMkr V5-01a.mdb **Template Workbook:** FS WsMkr V5-01a.mdb
Base Workbook: FS WSMkr Blank V05-01a.xlsm

Chemical specific notes

Risk Assessment: SERA TR-052-25-01b

Report Date: February, 2011

The area below is an embedded MS Word Document. Add chemical-specific notes as appropriate.

Revision Histroy

Note: If you make any modifications to this workbook, you should note them in the revision area below. The revision area by default cotains the text *NONE*. The revision area consists of a Microsoft Word document. Thus, once you activate the revision area, there may be a slight delay while EXCEL activates MS Word.

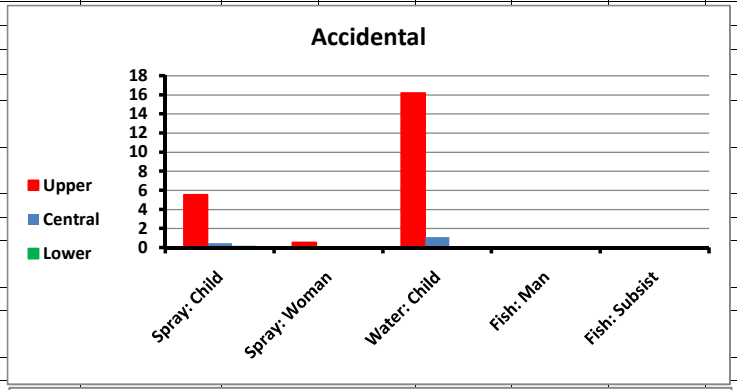
The area below is an embedded MS Word Document. Add revision notes as appropriate.

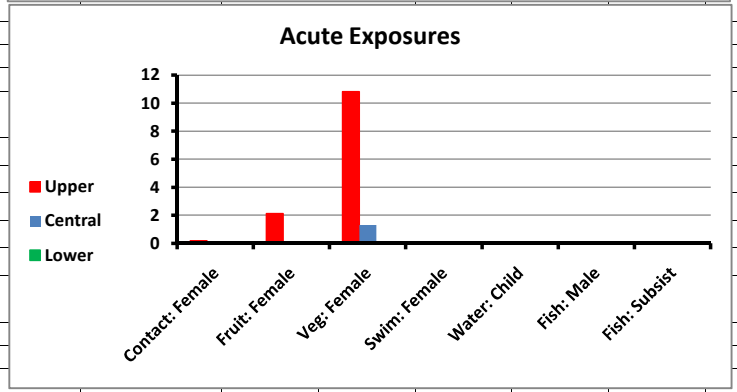
	A	B	C	D	E	F	G
1	**Worksheet E01: Summary of Worker Exposure Assessments**						
2	**Application Rate:**	**8**	**lb a.e./acre**			E01aV5-3Wrkr	
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**	
4			**Central**	**Lower**	**Upper**		
5	**Accidental/Incidental Exposures**						
6	Contaminated Gloves, 1 min.	Worker	0.0988	0.03168	0.988	C02a	
7	Contaminated Gloves, 1 hour	Worker	5.928	1.9008	59.28	C02b	
8	Spill on Hands, 1 hour	Worker	0.011291289	0.002763142	0.147147249	C03a	
9	Spill on lower legs, 1 hour	Worker	0.027824963	0.006809171	0.362612864	C03b	
10	**General Exposures**						
11	Backpack Applications:		0.0928928	0.008256	1.248	C01a	
12	Ground Broadcast Applications:		0.34048	0.01584	4.704	C01b	
13	Aerial Applications:		0.2352	0.00576	2.56	C01c	

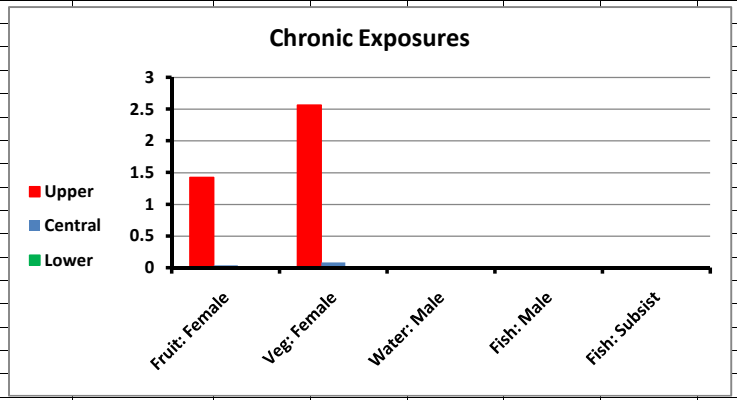
	A	B	C	D	E	F	G
1	**Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)**						
2	**Application Rate:**	**8**	**lb a.e./acre**			E01aV5-3Wrkr	
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**	
4			**Central**	**Lower**	**Upper**		
5	**Accidental/Incidental Exposures**						
6	Contaminated Gloves, 1 min.	Worker	1E-01	3E-02	1.0	**1**	
7	Contaminated Gloves, 1 hour	Worker	**6**	**1.9**	**59**	**1**	
8	Spill on Hands, 1 hour	Worker	1E-02	3E-03	0.1	**1**	
9	Spill on lower legs, 1 hour	Worker	3E-02	7E-03	0.4	**1**	
10	**General Exposures**						
11	**Chronic Exposures**						
12	Backpack Applications:		**1.9**	0.2	**25**	**0.05**	
13	Ground Broadcast Applications:		**7**	0.3	**94**	**0.05**	
14	Aerial Applications:		**5**	0.1	**51**	**0.05**	
15	**Acute Exposures** (Male Workers Only)						
16	Backpack Applications:		9E-02	8E-03	**1.2**	**1**	
17	Ground Broadcast Applications:		0.3	2E-02	**5**	**1**	
18	Aerial Applications:		0.2	6E-03	**3**	**1**	
19							
20–24	As discussed in Section 3.4.2, the custom worksheet includes a set of HQs based on general exposures using the acute RfD. The acute exposure HQs apply only to male workers. ***Risks to female workers must be based on the chronic HQs regardless of the duration of exposure.*** See Section 3.4.2 for the discussion.						

Worksheet E03: Summary of Exposure Assessments for the General Public

Application Rate:		lb a.e./acre			E03aV6
Scenario	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Direct Spray of Child, whole body	Child	4.27E-01	1.04E-01	5.56E+00	D01a
Direct Spray of Woman, feet and lower legs	Adult Female	4.29E-02	1.05E-02	**5.59E-01**	D01b
Water consumption (spill)	Child	1.08E+00	8.33E-02	**1.62E+01**	D05
Fish consumption (spill)	Adult Male	1.95E-03	2.46E-04	1.95E-02	D08a
Fish consumption (spill)	Subsistence Populations	9.49E-03	1.20E-03	9.49E-02	D08b
Vegetation Contact, shorts and T-shirt	Adult Female	7.28E-02	2.88E-02	1.79E-01	D02
Contaminated Fruit	Adult Female	9.85E-02	4.33E-02	**2.12E+00**	D03a
Contaminated Vegetation	Adult Female	**1.30E+00**	9.00E-02	**1.08E+01**	D03b
Swimming, one hour	Adult Female	1.10E-05	2.09E-09	1.65E-03	D11
Water consumption	Child	2.41E-04	5.50E-08	2.71E-02	D06
Fish consumption	Adult Male	4.33E-07	1.63E-10	3.25E-05	D09c
Fish consumption	Subsistence Populations	2.11E-06	7.92E-10	1.58E-04	D09d
Contaminated Fruit	Adult Female	3.83E-02	1.12E-02	**1.43E+00**	D04a
Contaminated Vegetation	Adult Female	8.52E-02	1.59E-03	**2.57E+00**	D04b
Water consumption	Adult Male	1.20E-06	7.34E-12	6.32E-05	D07
Fish consumption	Adult Male	1.37E-10	1.37E-15	4.80E-09	D09a
Fish consumption	Subsistence Populations	1.11E-09	1.11E-14	3.89E-08	D09b





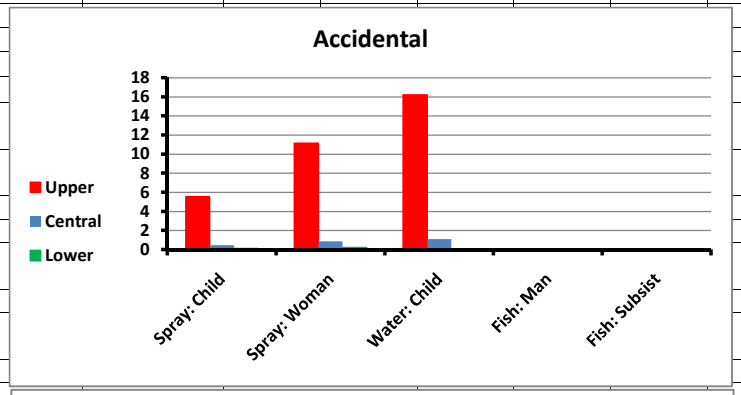


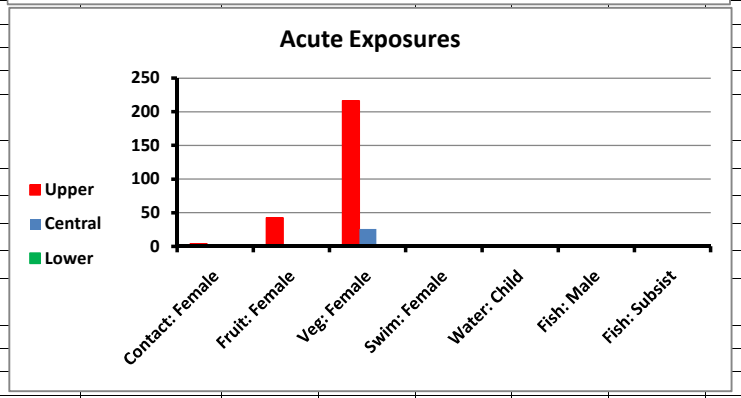
Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General Public

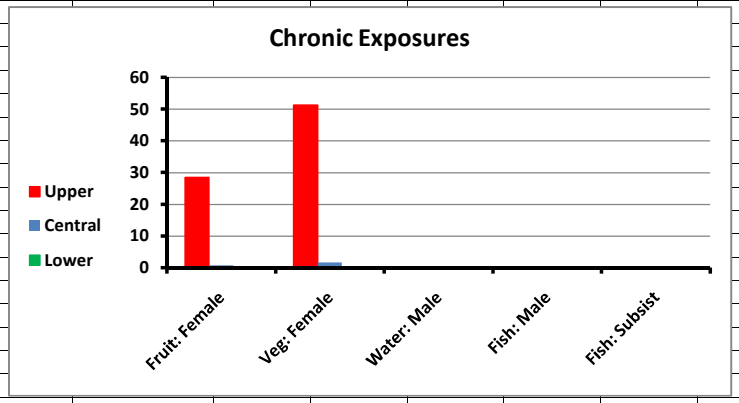
Application Rate: lb a.e./acre

E03aV6

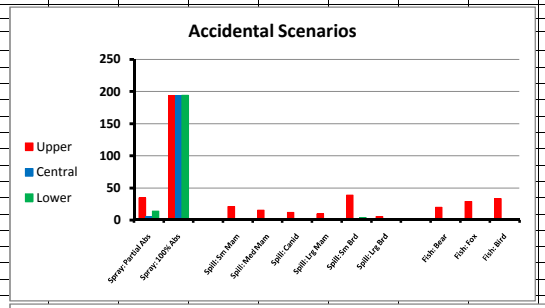
Scenario	Receptor	Hazard Quotients Central	Hazard Quotients Lower	Hazard Quotients Upper	Toxicity Value
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	0.4	0.1	**6**	1
Direct Spray of Woman, feet and lower legs	Adult Female	0.9	0.2	**11**	0.05
Water consumption (spill)	Child	**1.1**	8E-02	**16**	1
Fish consumption (spill)	Adult Male	2E-03	2E-04	2E-02	1
Fish consumption (spill)	Subsistence Populations	9E-03	1E-03	9E-02	1
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	**1.5**	0.6	**4**	0.05
Contaminated Fruit	Adult Female	**2.0**	0.9	**42**	0.05
Contaminated Vegetation	Adult Female	**26**	**1.8**	**217**	0.05
Swimming, one hour	Adult Female	2E-04	4E-08	3E-02	0.05
Water consumption	Child	2E-04	6E-08	3E-02	1
Fish consumption	Adult Male	4E-07	2E-10	3E-05	1
Fish consumption	Subsistence Populations	2E-06	8E-10	2E-04	1
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	0.8	0.2	**29**	0.05
Contaminated Vegetation	Adult Female	**1.7**	3E-02	**51**	0.05
Water consumption	Adult Male	2E-05	1E-10	1E-03	0.05
Fish consumption	Adult Male	3E-09	3E-14	1E-07	0.05
Fish consumption	Subsistence Populations	2E-08	2E-13	8E-07	0.05

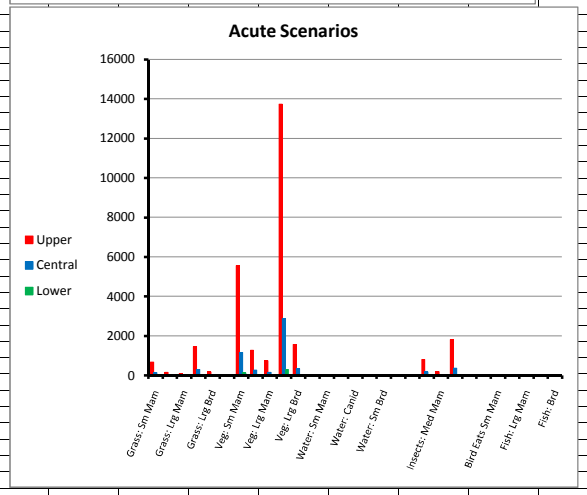


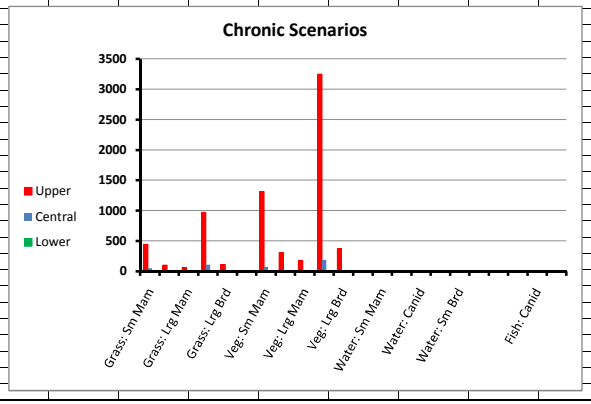




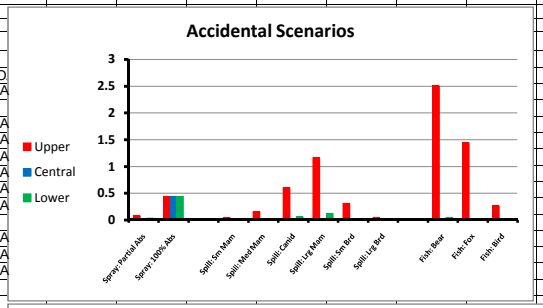
	A	B	C	D	E	F
1	**Summary of Exposure Assessments for the Terrestrial Animals**					G01V6
2	**Application Rate:**	8	lb a.e./acre			G01V6
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Accidental Acute Exposures**					
6	**Direct Spray**					
7	first-order absorption	Small mammal (20g)	1.39E+01	5.51E+00	3.43E+01	F01a
8	100% absorption	Small mammal (20g)	1.94E+02	1.94E+02	1.94E+02	F01b
9	**Contaminated Water**					
10	Spill	Small mammal (20g)	2.11E+00	2.66E-01	2.11E+01	F02a
11	Spill	Larger Mammal (400g)	1.56E+00	1.97E-01	1.56E+01	F02b
12	Spill	Canid (5 kg)	1.21E+00	1.53E-01	1.21E+01	F02c
13	Spill	Large Mammal (70g)	9.31E-01	1.18E-01	9.31E+00	F02d
14	Spill	Small bird (10g)	3.88E+00	4.90E-01	3.88E+01	F02e
15	Spill	Large Bird (4 kg)	5.37E-01	6.78E-02	5.37E+00	F02f
16	**Consumption of contaminated Fish**					
17	Spill	Large Mammalian Carnivore (70 kg)	3.53E-01	4.46E-03	2.00E+01	F03a
18	Spill	Canid (5 kg)	5.08E-01	6.42E-03	2.88E+01	F03b
19	Spill	Fish-eating bird (2.4 kg)	5.90E-01	7.46E-03	3.35E+01	F03c
20	**Non-Accidental Acute Exposures**					
21	**Contaminated Fruit (Lowest Residue Rate)**					
22		Small mammal (20g)	1.33E+02	1.75E+01	6.59E+02	F04a
23		Larger Mammal (400g)	3.04E+01	4.01E+00	1.50E+02	F04b
24		Large Mammal (70g)	1.73E+01	2.28E+00	8.57E+01	F04c
25		Small bird (10g)	2.91E+02	3.84E+01	1.44E+03	F04d
26		Large Bird (4 kg)	3.31E+01	4.37E+00	1.64E+02	F04e
27	**Contaminated Vegetation (Short Grass - Highest Residue Rate)**					
28		Small mammal (20g)	1.15E+03	1.22E+02	5.55E+03	F05a
29		Larger Mammal (400g)	2.63E+02	2.78E+01	1.27E+03	F05b
30		Large Mammal	1.50E+02	1.59E+01	7.22E+02	F05c
31		Small bird (10g)	2.85E+03	3.02E+02	1.37E+04	F05d
32		Large Bird (4 kg)	3.24E+02	3.43E+01	1.56E+03	F05e
33	**Contaminated Water**					
34		Small mammal (20g)	4.68E-04	1.76E-07	3.51E-02	F06a
35		Larger Mammal (400g)	3.47E-04	1.30E-07	2.60E-02	F06b
36		Canid (5 kg)	2.70E-04	1.01E-07	2.02E-02	F06c
37		Large Mammal (70g)	2.07E-04	7.77E-08	1.55E-02	F06d
38		Small bird (10g)	8.63E-04	3.24E-07	6.47E-02	F06e
39		Large Bird (4 kg)	1.19E-04	4.48E-08	8.96E-03	F06f
40	**Contaminated Insects**					
41		Small mammal (20g)	1.54E+02	1.54E+01	7.89E+02	F07a
42		Larger Mammal (400g)	3.52E+01	3.52E+00	1.80E+02	F07b
43		Small bird (10g)	3.51E+02	3.51E+01	1.80E+03	F07c
44	**Consumption of small mammal (after direct spray) by predator**					
45		Canid (5 kg)	2.17E+01	2.17E+01	2.17E+01	F08a
46		Carnivorous bird (640 g)	2.58E+01	2.58E+01	2.58E+01	F08b
47	**Consumption of contaminated Fish**					
48		Large Mammalian Carnivore (70 kg)	8.78E-05	3.29E-09	3.73E-02	F09a
49		Canid (5 kg)	1.26E-04	4.74E-09	5.37E-02	F09b
50		Fish-eating bird (2.4 kg)	1.27E-04	4.76E-09	5.40E-02	F09c
51	**Chronic/Longer Term Exposures**					
52	**Contaminated Fruit (Lowest Residue Rate)**					
53		Small mammal (20g)	5.17E+01	4.53E+00	4.43E+02	F10a
54		Larger Mammal (400g)	1.18E+01	1.04E+00	1.01E+02	F10b
55		Large Mammal (70g)	6.73E+00	5.90E-01	5.76E+01	F10c
56		Small bird (10g)	1.13E+02	9.92E+00	9.70E+02	F10d
57		Large Bird (4 kg)	1.29E+01	1.13E+00	1.10E+02	F10e
58	**Contaminated Vegetation (Short Grass - Highest Residue Rate)**					
59		Small mammal (20g)	7.57E+01	2.15E+00	1.31E+03	F11a
60		Larger Mammal (400g)	1.73E+01	4.91E-01	3.00E+02	F11b
61		Large Mammal (70g)	9.84E+00	2.80E-01	1.71E+02	F11c
62		Small bird (10g)	1.87E+02	5.32E+00	3.25E+03	F11d
63		Large Bird (4 kg)	2.13E+01	6.05E-01	3.69E+02	F11e
64	**Contaminated Water**					
65		Small mammal (20g)	2.34E-06	2.34E-11	8.20E-05	F12a
66		Larger Mammal (400g)	1.74E-06	1.74E-11	6.08E-05	F12b
67		Canid (5 kg)	1.35E-06	1.35E-11	4.72E-05	F12c
68		Large Mammal (70g)	1.04E-06	1.04E-11	3.63E-05	F12d
69		Small bird (10g)	4.31E-06	4.31E-11	1.51E-04	F12e
70		Large Bird (4 kg)	5.97E-07	5.97E-12	2.09E-05	F12f
71	**Consumption of contaminated Fish**					
72		Large Mammalian Carnivore (70 kg)	4.39E-07	4.39E-13	8.71E-05	F13a
73		Canid (5 kg)	6.32E-07	6.32E-13	1.25E-04	F13b
74		Fish-eating bird (2.4 kg)	6.35E-07	6.35E-13	1.26E-04	F13c
75						

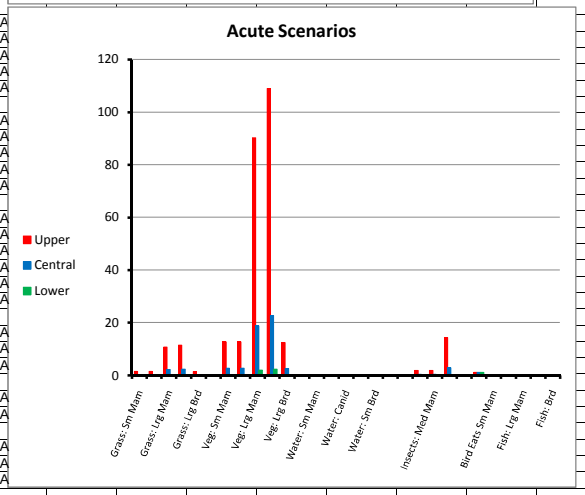


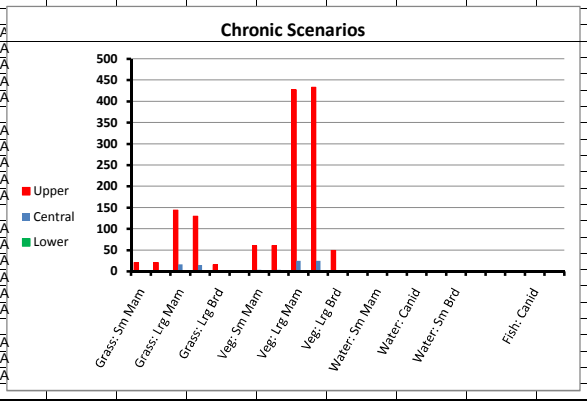




	A	B	C	D	E	F	G
1	**Summary of Hazard Quotients (Toxicity) for the Terrestrial Animals**					G01V6	
2	**Application Rate:**	8	lb a.e./acre			G01V6	
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**	
4			**Central**	**Lower**	**Upper**		
5	**Accidental Acute Exposures**						
6	**Direct Spray**						
7	first-order absorption	Small mammal (20g)	3E-02	1E-02	8E-02	440	NO
8	100% absorption	Small mammal (20g)	0.4	0.4	0.4	440	NOA
9	**Contaminated Water**						
10	Spill	Small mammal (20g)	5E-03	6E-04	5E-02	440	NOA
11	Spill	Larger Mammal (400g)	2E-02	2E-03	0.2	100	NOA
12	Spill	Canid (5 kg)	6E-02	8E-03	0.6	20	NOA
13	Spill	Large Mammal (70g)	0.1	1E-02	1.2	8	NOA
14	Spill	Small bird (10g)	3E-02	4E-03	0.3	126	NOA
15	Spill	Large Bird (4 kg)	4E-03	5E-04	4E-02	126	NOA
16	**Consumption of contaminated Fish**						
17	Spill	Large Mammalian Carnivore (70 kg)	4E-02	6E-04	3	8	NOA
18	Spill	Canid (5 kg)	3E-02	3E-04	1.4	20	NOA
19	Spill	Fish-eating bird (2.4 kg)	5E-03	6E-05	0.3	126	NOA
20	**Non-Accidental Acute Exposures**						
21	**Contaminated Fruit (Lowest Residue Rate)**						
22		Small mammal (20g)	0.3	4E-02	1.5	440	NOA
23		Larger Mammal (400g)	0.3	4E-02	1.5	100	NOA
24		Large Mammal (70g)	2	0.3	11	8	NOA
25		Small bird (10g)	2	0.3	11	126	NOA
26		Large Bird (4 kg)	0.3	3E-02	1.3	126	NOA
27	**Contaminated Vegetation (Short Grass - Highest Residue Rate)**						
28		Small mammal (20g)	3	0.3	13	440	NOA
29		Larger Mammal (400g)	3	0.3	13	100	NOA
30		Large Mammal	19	2.0	90	8	NOA
31		Small bird (10g)	23	2	109	126	NOA
32		Large Bird (4 kg)	3	0.3	12	126	NOA
33	**Contaminated Water**						
34		Small mammal (20g)	1E-06	4E-10	8E-05	440	NOA
35		Larger Mammal (400g)	3E-06	1E-09	3E-04	100	NOA
36		Canid (5 kg)	1E-05	5E-09	1E-03	20	NOA
37		Large Mammal (70g)	3E-05	1E-08	2E-03	8	NOA
38		Small bird (10g)	7E-06	3E-09	5E-04	126	NOA
39		Large Bird (4 kg)	9E-07	4E-10	7E-05	126	NOA
40	**Contaminated Insects**						
41		Small mammal (20g)	0.4	4E-02	1.8	440	NOA
42		Larger Mammal (400g)	0.4	4E-02	1.8	100	NOA
43		Small bird (10g)	3	0.3	14	126	NOA
44	**Consumption of small mammal (after direct spray) by predator**						
45		Canid (5 kg)	1.1	1.1	1.1	20	NOA
46		Carnivorous bird (640 g)	0.2	0.2	0.2	126	NOA
47	**Consumption of contaminated Fish**						
48		Large Mammalian Carnivore (70 kg)	1E-05	4E-10	5E-03	8	NOA
49		Canid (5 kg)	6E-06	2E-10	3E-03	20	NOA
50		Fish-eating bird (2.4 kg)	1E-06	4E-11	4E-04	126	NOA
51	**Chronic/Longer Term Exposures**						
52	**Contaminated Fruit (Lowest Residue Rate)**						
53		Small mammal (20g)	2	0.2	20	22	NOA
54		Larger Mammal (400g)	2	0.2	20	5	NOA
55		Large Mammal (70g)	17	1.5	144	0.4	NOA
56		Small bird (10g)	15	1.3	129	7.5	NOA
57		Large Bird (4 kg)	1.7	0.2	15	7.5	NOA
58	**Contaminated Vegetation (Short Grass - Highest Residue Rate)**						
59		Small mammal (20g)	3	1E-01	60	22	NOA
60		Larger Mammal (400g)	3	1E-01	60	5	NOA
61		Large Mammal (70g)	25	0.7	427	0.4	NOA
62		Small bird (10g)	25	0.7	433	7.5	NOA
63		Large Bird (4 kg)	3	8E-02	49	7.5	NOA
64	**Contaminated Water**						
65		Small mammal (20g)	1E-07	1E-12	4E-06	22	NOA
66		Larger Mammal (400g)	3E-07	3E-12	1E-05	5	NOA
67		Canid (5 kg)	1E-06	1E-11	5E-05	1	NOA
68		Large Mammal (70g)	3E-06	3E-11	9E-05	0.4	NOA
69		Small bird (10g)	6E-07	6E-12	2E-05	7.5	NOA
70		Large Bird (4 kg)	8E-08	8E-13	3E-06	7.5	NOA
71	**Consumption of contaminated Fish**						
72		Large Mammalian Carnivore (70 kg)	1E-06	1E-12	2E-04	0.4	NOA
73		Canid (5 kg)	6E-07	6E-13	1E-04	1	NOA
74		Fish-eating bird (2.4 kg)	8E-08	8E-14	2E-05	7.5	NOA
75							





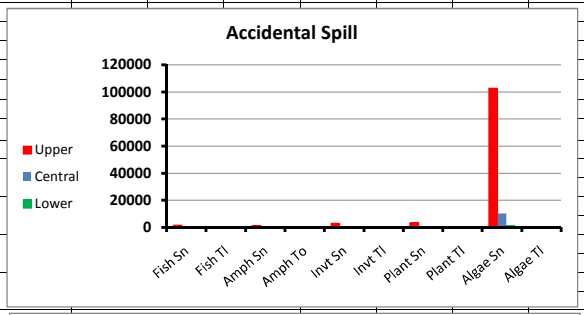


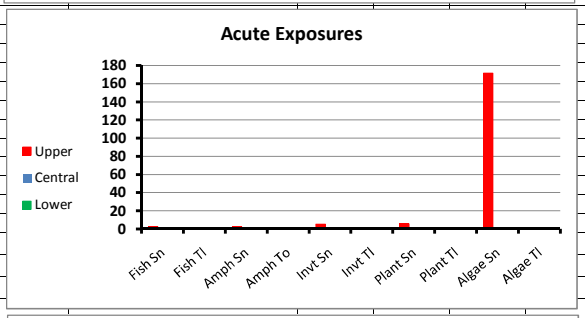
	A	B	C	D	E	F	G	H
1	**Exposures and HQs for a Terrestrial Insect (Honeybee) Associated with Direct Spray or Drift Following Terrestrial Applications**							
2	Short Title	Direct Spray or Drift						
3	Receptor	Honey Bee			Abrev(Param->Receptor)			
4	Duration	Acute						
5	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**			
6	Toxicity Value (Spray)	**ToxVal**	620	mg/kg bw	BeeTox[Spray]			
7	Application rate	**$ApRt_{lb/ac}$**	8	lb/acre	Prog!ApRt_C			
8	Conversion Factor for lbs/acre to mg/cm^2	**CnvF**	0.01121	mg/cm^2/lb/acre				
9	Application rate, mg/cm^2	**ApR_{mgcm}**	**$ApR_{lb/a}$ × CnvF**					
10			0.08968	lb/acre	Eq			
11	Body weight	**BW**	0.000116	kg	Param->Receptor.BW			
12		**SA**	1.42	cm^2	Param->Receptor.SA_WB			
13	Proportion of body surface sprayed	**Prp_{SA}**	0.5	unitless	*Param->PrpSA*			
14	Amount Deposited on Skin	**Amnt**	***ApR_{mgcm} × SA × Prp_{SA}***					
15			0.0636728	mg	Eq			
16	Foliar Interception	**FolInt**	Lower	Central	Upper			
17			0	0.5	0.9			
18								
19	Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**	**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**		
20	0	feet	1	1	1	1		
21	25	feet	0.223	0.104	0.035	0.00832		
22	50	feet	0.171	0.05	0.0177	0.00433		
23	100	feet	0.0979	0.0248	0.00948	0.00241		
24	300	feet	0.0312	0.00753	0.0035	0.000941		
25	500	feet	0.0192	0.00391	0.00209	0.000579		
26	900	feet	0.0124	0.00166	0.00109	0.000312		
27	**Absorbed Doses (mg/kg bw) = Prop x FolInt x Amnt ÷ BW)**				**HQ = Absorbed Doses/ToxVal**			
28	**Aerial**	**Foliar Interception**			Foliar Interception			
29	Distance Downwind	None	50%	90%	None	50%	90%	
30	0	*548.903448*	*274.4517241*	*54.89034483*	0.9	0.4	9E-02	
31	25	*122.405469*	*61.20273448*	*12.2405469*	0.2	1E-01	2E-02	
32	50	*93.8624897*	*46.93124483*	*9.386248966*	0.2	8E-02	2E-02	
33	100	*53.7376476*	*26.86882379*	*5.373764759*	9E-02	4E-02	9E-03	
34	300	*17.1257876*	*8.562893793*	*1.712578759*	3E-02	1E-02	3E-03	
35	500	*10.5389462*	*5.269473103*	*1.053894621*	2E-02	8E-03	2E-03	
36	900	*6.80640276*	*3.403201379*	*0.680640276*	1E-02	5E-03	1E-03	
37	**Highboom Ground**	**Foliar Interception**			Foliar Interception			
38	Distance Downwind	None	50%	90%	None	50%	90%	
39	Distance Downwind	*548.903448*	*274.4517241*	*54.89034483*	0.9	0.4	9E-02	
40	0	*57.0859586*	*28.54297931*	*5.708595862*	9E-02	5E-02	9E-03	
41	25	*27.4451724*	*13.72258621*	*2.744517241*	4E-02	2E-02	4E-03	
42	50	*13.6128055*	*6.806402759*	*1.361280552*	2E-02	1E-02	2E-03	
43	100	*4.13324297*	*2.066621483*	*0.413324297*	7E-03	3E-03	7E-04	
44	300	*2.14621248*	*1.073106241*	*0.214621248*	3E-03	2E-03	3E-04	
45	500	*0.91117972*	*0.455589862*	*0.091117972*	1E-03	7E-04	1E-04	
46	**Low Ground**	**Foliar Interception**			Foliar Interception			
47	Distance Downwind	None	50%	90%	None	50%	90%	
48	Distance Downwind	*548.903448*	*274.4517241*	*54.89034483*	0.9	0.4	9E-02	
49	Distance Downwind	*19.2116207*	*9.605810345*	*1.921162069*	3E-02	2E-02	3E-03	
50	0	*9.71559103*	*4.857795517*	*0.971559103*	2E-02	8E-03	2E-03	
51	25	*5.20360469*	*2.601802345*	*0.520360469*	8E-03	4E-03	8E-04	
52	50	*1.92116207*	*0.960581034*	*0.192116207*	3E-03	2E-03	3E-04	
53	100	*1.14720821*	*0.573604103*	*0.114720821*	2E-03	9E-04	2E-04	
54	300	*0.59830476*	*0.299152379*	*0.059830476*	1E-03	5E-04	1E-04	
55	**Backpack**	**Foliar Interception**			Foliar Interception			
56	Distance Downwind	None	50%	90%	None	50%	90%	
57	Distance Downwind	*548.903448*	*274.4517241*	*54.89034483*	0.9	0.4	9E-02	
58	Distance Downwind	*4.56687669*	*2.283438345*	*0.456687669*	7E-03	4E-03	7E-04	
59	Distance Downwind	*2.37675193*	*1.188375966*	*0.237675193*	4E-03	2E-03	4E-04	
60	0	*1.32285731*	*0.661428655*	*0.132285731*	2E-03	1E-03	2E-04	
61	25	*0.51651814*	*0.258259072*	*0.051651814*	8E-04	4E-04	8E-05	
62	50	*0.3178151*	*0.158907548*	*0.03178151*	5E-04	3E-04	5E-05	
63	100	*0.17125788*	*0.085628938*	*0.017125788*	3E-04	1E-04	3E-05	

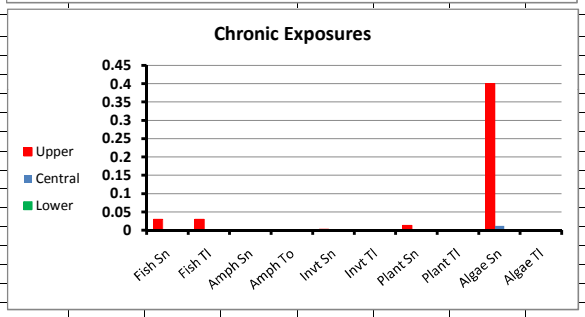
Worksheet G03: Summary of Hazard Quotients for Aquatic Species

Application Rate:	1	lb a.e./acre			AqToxSumV6	
Exposures		**Concentrations** (mg/L)				
	Scenario	**Central**	**Lower**	**Upper**	**Worksheet**	
	Accidental	14.383	1.8168	143.83	B04b	
	Peak EEC	0.0032	0.0000012	0.24	D06	
	Chronic	0.000016	1.6E-10	0.00056	D07	
Receptor	**Type**	**Hazard Quotients**			**Toxicity Value**	**Toxicity Endpoint**
		Central	**Lower**	**Upper**		
Accidental Acute Exposures						
Fish	Sensitive	**158**	**20**	**1,581**	**0.091**	NOAEC
	Tolerant	**19**	**2**	**192**	**0.75**	NOAEC*
Amphibian	Sensitive	**144**	**18**	**1,438**	**0.1**	EC10
	Tolerant	**3**	0.4	**34**	**4.2**	NOAEL*
Invertebrate	Sensitive	**320**	**40**	**3,196**	**0.045**	NOAEC*
	Tolerant	**4**	0.5	**40**	**3.6**	NOAEC*
Macrophyte	Sensitive	**334**	**42**	**3,345**	**0.043**	NOEC
	Tolerant	**46**	**6**	**464**	**0.31**	NOEC
Algae	Sensitive	**10,274**	**1,298**	**102,736**	**0.0014**	NOEC
	Tolerant	**14**	**1.8**	**144**	**1**	NOEC
Non-Accidental Acute Exposures						
Fish	Sensitive	4E-02	1E-05	**3**	**0.091**	NOAEC
	Tolerant	4E-03	2E-06	0.3	**0.75**	NOAEC*
Amphibian	Sensitive	3E-02	1E-05	**2**	**0.1**	EC10
	Tolerant	8E-04	3E-07	6E-02	**4.2**	NOAEL*
Invertebrate	Sensitive	7E-02	3E-05	**5**	**0.045**	NOAEC*
	Tolerant	9E-04	3E-07	7E-02	**3.6**	NOAEC*
Macrophyte	Sensitive	7E-02	3E-05	**6**	**0.043**	NOEC
	Tolerant	1E-02	4E-06	0.8	**0.31**	NOEC
Algae	Sensitive	**2**	9E-04	**171**	**0.0014**	NOEC
	Tolerant	3E-03	1E-06	0.2	**1**	NOEC
Chronic/Longer Term Exposures						
Fish	Sensitive	8E-04	8E-09	3E-02	**0.019**	NOAEC
	Tolerant	8E-04	8E-09	3E-02	**0.019**	NOAEC
Amphibian	Sensitive	No toxicity data.			N/A	
	Tolerant	No toxicity data.			N/A	
Invertebrate	Sensitive	6E-05	6E-10	2E-03	**0.25**	LOAEC
	Tolerant	8E-07	8E-12	3E-05	**20**	LOAEC*
Macrophyte	Sensitive	4E-04	4E-09	1E-02	**0.043**	NOEC
	Tolerant	5E-05	5E-10	2E-03	**0.31**	NOEC
Algae	Sensitive	1E-02	1E-07	0.4	**0.0014**	NOEC
	Tolerant	2E-05	2E-10	6E-04	**1**	NOEC

Note: NOEC*, NOAEC* or a similar designation - i.e., NOEC or NOAEC followed by an asterisk (*) -- indicates that the NOEC or similar value was estimated from an LC_{50} ,EC_{50}, or an LOEC. See the risk







	A	B	C	D	E	F
1	**Summary of Exposure Assessment and Risk Characterization for Terrestrial Plants from Runoff**					
2	Short Title	Runoff to terrestrial plants			-	
3	Receptor	Terrestrial vegetation				
4	Duration	Acute				
5	User-Specified Gleams-Driver File	**None**				
6	**Parameter/Assumption**	**Code / Range**	**Value**	**Units**	**Reference**	
7	Worksheet Application Rate	$ApRt_{WB}$	**8**	lb/acre	Worksheeet A01	
8	Offsite Application Rates Inputs					
9	Run ID:	Risk Assessment				
10	Application Rate Used in Run:	$ApRt_{Run}$	1	lb/acre		
11	Functional Off-site	$ApRt_{Offsite}$				
12	Application Rate	Central	0.0006	lb/acre		
13		Lower	0.0000002			
14		Upper	0.046			
15	Calculated Values					
16	Normalized Off-site	$NormApRt_{Offsite}$	$ApRt_{Offsite}$ / $ApRt_{Run}$			
17	Functional Application Rate	Central	0.0006	Unitless	Eq	
18		Lower	0.0000002		Eq	
19		Upper	0.046		Eq	
20	Off-site Application Rate at	$ApRt_{WB}$	$ApRt_{WB}$ x $NormApRt_{Offsite}$			
21	Workbook Application Rate	Central	0.0048	lb/acre	Eq	
22		Lower	0.0000016		Eq	
23		Upper	0.368		Eq	
24	Toxicity Values (seedling emergence) in units of lbs/acre					
25			Sensitive	Tolerant		
26		Endpoint	**NOEC**	**NOEC**		
27			**0.02**	**2**	Section 4.3.2.5.	
28	Hazard Quotients					
29		Central	0.2	2E-03		
30		Lower	8E-05	8E-07		
31		Upper	**18**	0.2		
32						
33						
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General Worksheet Note

Typically, this worksheet is filled in by WorksheetMaker using offsite application rates that are derived in the Forest Service risk assessment. Several different *Application Rates* are noted in the cells in this worksheet this note explains why this is done.

The **Worksheet Application Rate** refers to the application rate that is set by the user in Worksheet A01.

The next section of the worksheet (**Offsite Application Rate Inputs**) is initially set by the WorksheetMaker Program. The Application Rate Used in Run refers to the application rate used in the simulation software (typically Gleams-Driver) used to derived the Functional Off-site Application Rate. This is the application rate to the nontarget site based on runoff. In Forest Service risk assessments, a unit application rate of 1 lb/acre is always used. If you set a custom Gleams-Driver input file in Worksheet B04, the information from the Gleams-Driver input file will replace the values that had been initially filled in by the WorksheetMaker program. Alternatively, you can fill in any of these values manually.

In the **Calculated Values** section, this worksheet normalizes the Functional Offsite Application Rate. If the values are from a risk assessment (where an application rate of 1 lb/acre is always used in the Gleams-Driver run), these rates will be identical to the rats in the above section.

The **Toxicity Values** are typically those used in the risk assessment. You can change these if you have a good reason for doing so. Also, you can add columns it you want to show HQ values for other species of particular concern. To ensure that any values for new plants will format correctly, you should insert the new information between the Sensitive and Tolerant entries. To do this, select from the cell above labeled Tolerant (D24) down to the upper range of the hazard quotient (D30). While these cells are selected, do a *Right Mouse Click* and then scroll down to *Insert*. Then, select the *Shift Cells to Right* option. If you want to add more than one plant species, hit Control-Y to repeat this operation. If this is not clear, Press F1 (Help) and review the Excel Documentation for inserting cells into a worksheet or consult a reference book on Excel.

	A	B	C	D	E	F	G	H	I
1	**Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Drif.**								
2	Short Title	Drift to terrestrial plants			PlntDrift3Apps				
3	Receptor	Terrestrial vegetation							
4	Duration	Acute							
5	**Parameter/ Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**				
6	Application Rate	ApRt	**8**	lb/acre	Worksheet A01				
7	Toxicity Values(Post-emergence in lb/ac)								
8	Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.5.				
9	Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.5.				
10	Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**							
11			**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
12	0		1	1	1	1	unitless		
13	25		0.223	0.104	0.035	0.00832			
14	50		0.171	0.05	0.0177	0.00433			
15	100		0.0979	0.0248	0.00948	0.00241			
16	300		0.0312	0.00753	0.0035	0.000941			
17	500		0.0192	0.00391	0.00209	0.000579			
18	900		0.0124	0.00166	0.00109	0.000312			
19	Estimates of functional offsite application rate	**OfApRt**	***=ApRt x Prop***						
20			**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
21	0		*8*	*8*	*8*	*8*	Eq		
22	25		*1.784*	*0.832*	*0.28*	*0.06656*	Eq		
23	50		*1.368*	*0.4*	*0.1416*	*0.03464*	Eq		
24	100		*0.7832*	*0.1984*	*0.07584*	*0.01928*	Eq		
25	300		*0.2496*	*0.06024*	*0.028*	*0.007528*	Eq		
26	500		*0.1536*	*0.03128*	*0.01672*	*0.004632*	Eq		
27	900		*0.0992*	*0.01328*	*0.00872*	*0.002496*	Eq		
28									
29	Hazard Quotients (Sensitive Species)	**HQ_{Sens}**	***= OfApRt / ToxVal $_{Sens}$***						
30			**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
31	0		**2,857**	**2,857**	**2,857**	**2,857**			
32	25		**637**	**297**	**100**	**24**			
33	50		**489**	**143**	**51**	**12**			
34	100		**280**	**71**	**27**	**7**			
35	300		**89**	**22**	**10**	**3**			
36	500		**55**	**11**	**6**	**1.7**			
37	900		**35**	**5**	**3**	0.9			
38	Hazard Quotients (Tolerant Species)								
39	0		**4**	**4**	**4**	**4**			
40	25		0.9	0.4	0.1	3E-02			
41	50		0.7	0.2	7E-02	2E-02			
42	100		0.4	1E-01	4E-02	1E-02			
43	300		0.1	3E-02	1E-02	4E-03			
44	500		8E-02	2E-02	8E-03	2E-03			
45	900		5E-02	7E-03	4E-03	1E-03			
46									
47									
48									
49									
50									
51									
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53									
54									

Note: This is a custom worksheet. If you modify the application rate, you may need to manually reformat some of the HQ values.

	A	B	C	D	E
1	**Potential exposure of non-target plants through the use of contaminated irrigation water based on estimates concentrations in ambient water.**				
2	Short Title	Irrigation Water			
3	Receptor	Non-target plants			
4	Duration				Abrev(Dur)
5	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
6	Application Rate	**ApRt**	**8**	lb/acre	Prog!ApRt_C
7	Water contamination rate	**WCR**			
8		Central	**0.0004**	mg/L per lb/acre	
9		Lower	**0.00000015**		
10		Upper	**0.03**		
11	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
12		Central	1	unitless	Prog!TEF_C
13		Lower	1		Prog!TEF_L
14		Upper	1		Prog!TEF_U
15	Concentration in irrigation water	**$Conc_{Wat}$**	***ApRt × WCR × TEF***		
16		Central	0.0032	mg/L	Eq
17		Lower	0.0000012		Eq
18		Upper	0.24		Eq
19	Amount of irrigation water applied	**IrrigAmnt**			
20		Central	1	inches	Param->Inches_C
21		Lower	0.25		Param->Inches_L
22		Upper	2		Param->Inches_U
23	Gallons per Acre-Foot	**GalPerAc-Ft**	325900	gal/acre-foot	Std!CnvFct.acrefoot2gal
24	Liters per Gallon	**LtPerGal**	3.785	liters/gal	Std!CnvFct.gal2lit
25	Liters of water applied per acre per inch of irrigation water (*rounded to nearest liter*)	**LpApl**	***GalPerAc-Ft × LtPerGal / 12***		
26			102,794	Lit/acre-inch	Eq
27	Liters of water applied per acre	**LPA**	***IrrigAmnt × LpApl***		
28		Central	102794	liters	Eq
29		Lower	25698.5		Eq
30		Upper	205588		Eq
31	Application Rate (mg/acre)	**$ApR_{mg/a}$**	***$Conc_{Wat}$ × LPA***		
32		Central	328.9408	mg/acre	Eq
33		Lower	0.0308382		Eq
34		Upper	49341.12		Eq
35	Conversion factor for mg to lb	**Conv**	0.0000022		Std!CnvFct.mg2lb
36	Functional application rate (lb/acre)	**FncApR**	**$ApR_{mg/a}$ × Conv**		
37		Central	0.00072367	lb/acre	Eq
38		Lower	6.7844E-08		Eq
39		Upper	0.108550464		Eq
40	Toxicity Values(Post-emergence in lb/ac)				
41	Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.4.
42	Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.4.
43	Hazard Quotients	HQs	Sensitive species	Tolerant species	
44		Central	3.E-01	4.E-04	
45		Lower	2.E-05	3.E-08	
46		Upper	**39**	5.E-02	

	A	B	C	D	E
1	**Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Wind Erosion at the Specified Application Rate.**				
2	Short Title	Wind erosion, terrestrial plants			PlntWind2
3	Receptor	Terrestrial vegetation			
4	Duration	Acute			
5	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**
6	Application Rate	ApRt	**8**	lb/acre	Worksheet A01
7	Toxicity Values(Post-emergence in lb/ac)				
8	Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.5.
9	Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.5.
10	Soil losses due to wind ersion	**Loss_TonHa**			
11		Central	5	Tons per hectare per year	Scenario parameter
12		Lower	1		Scenario parameter
13		Upper	10		Scenario parameter
14	Conversion for tons/ha to grams per cm^2	**Conv1**	0.01		
15	Soil losses in grams/square centimeter	**Loss_GrCm**			
16		Central	*0.05*	g/cm^2 per year	Eq
17		Lower	*0.01*		Eq
18		Upper	*0.1*		Eq
19	Soil Density	**Dens**	2	g/cm^2	
20	Soil losses in cm/day	**Loss_CmDay**	***= Loss_GrCm /(Dens * 365)***		
21		Central	*6.84932E-05*	cm per day	Eq
22		Lower	*1.36986E-05*		Eq
23		Upper	*0.000136986*		Eq
24	Depth of incorporation	**Depth**	1	cm	Scenario parameter
25	Proportion of contaminated soil lost per day	**PropLost**			
26		Central	6.84932E-05	unitless	
27		Lower	1.36986E-05		
28		Upper	0.000136986		
29	Estimates of functional offsite application rate	**OfApRt**	***=ApRt x PropLost***		
30		Central	*0.000547945*	lb/acre	Eq
31		Lower	*0.000109589*		Eq
32		Upper	*0.00109589*		Eq
33	Hazard Quotients (Sensitive Species)	**HI_{Sens}**	***= OfApRt / ToxVal $_{Sens}$***		
34		Central	0.2		
35		Lower	4E-02		
36		Upper	0.4		
37	Hazard Quotients (Tolerant Species)	**HI_{Tol}**	*= OfApRt / ToxVal $_{Tol}$*		
38		Central	3E-04		
39		Lower	5E-05		
40		Upper	5E-04		

	A	B	C	D	E
1	**Consumption of Contaminated Fruit/Large Insects by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Fruit			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Fruit/Large Insects			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**8**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**7**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**3.2**		Worksheet A01
15		Upper	**15**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*56*	mg/kg food item	Eq
20		Lower	*25.6*		Eq
21		Upper	*120*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*72.8*	mg/kg bw	Eq
28		Lower	*15.36*		Eq
29		Upper	*264*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Broadleaf/Small Insects by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Broadleaf			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Broadleaf/Small Insects			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**8**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**45**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**15**		Worksheet A01
15		Upper	**135**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*360*	mg/kg food item	Eq
20		Lower	*120*		Eq
21		Upper	*1080*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*468*	mg/kg bw	Eq
28		Lower	*72*		Eq
29		Upper	*2376*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Short grass by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Short Grass			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Short grass			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**8**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**85**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**30**		Worksheet A01
15		Upper	**240**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*680*	mg/kg food item	Eq
20		Lower	*240*		Eq
21		Upper	*1920*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*884*	mg/kg bw	Eq
28		Lower	*144*		Eq
29		Upper	*4224*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Tall Grass by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Tallt Grass			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Tall Grass			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**8**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**36**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**12**		Worksheet A01
15		Upper	**110**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*288*	mg/kg food item	Eq
20		Lower	*96*		Eq
21		Upper	*880*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*374.4*	mg/kg bw	Eq
28		Lower	*57.6*		Eq
29		Upper	*1936*		Eq

	A	B	C	D	E	F	G	H	I
1	**Summary of Exposure Assessments for the Herbivorous or Predatory Insects**								
2	**Application Rate:**	8	**lb a.e./acre**			InstHerbSum			
3	**Food Item**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**			
4			**Central**	**Lower**	**Upper**				
5	**Acute Exposures**								
6	Fruit/Large Insects	Insect	72.8	15.36	264	G07a			
7	Broadleaf/Small Insects	Insect	4.68E+02	7.20E+01	2.38E+03	G07b			
8	Short Grass	Insect	8.84E+02	1.44E+02	4.22E+03	G07c			
9	Long Grass	Insect	374.4	57.6	1936	G07d			

	A	B	C	D	E	F	G	H	I
1	**Summary of Hazard Quotients (Toxicity) for the Herbivorous or Predatory Insects**								
2	**Application Rate:**	8	**lb a.e./acre**			InstHerbSum			
3	**Food Item**	**Receptor**	**Hazard Quotients**			**Toxicity Value**			
4			**Central**	**Lower**	**Upper**				
5	**Acute Exposures**								
6	Fruit/Large Insects	Insect	0.1	2E-02	0.4	**620**	<LD50		
7	Broadleaf/Small Insects	Insect	0.8	0.1	**4**	**620**	<LD50		
8	Short Grass	Insect	**1.4**	0.2	**7**	**620**	<LD50		
9	Long Grass	Insect	0.6	9E-02	**3**	**620**	<LD50		

Attachment 1

USDA Forest Service Worksheets

Workbook 3

Proposed_avg_3lb_-appv100_Triclopyr_BEE.xlsm

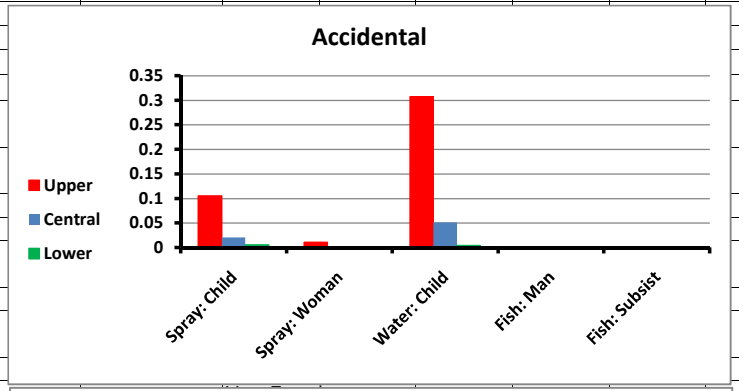
	A	B	C	D	E	F	G
1	**Worksheet E01: Summary of Worker Exposure Assessments**						
2	**Application Rate:**	**3**	**lb a.e./acre**			E01aV5-3Wrkr	
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**	
4			**Central**	**Lower**	**Upper**		
5	**Accidental/Incidental Exposures**						
6	Contaminated Gloves, 1 min.	Worker	0.00468	0.001584	0.01872	C02a	
7	Contaminated Gloves, 1 hour	Worker	0.2808	0.09504	1.1232	C02b	
8	Spill on Hands, 1 hour	Worker	0.000534851	0.000138157	0.002788053	C03a	
9	Spill on lower legs, 1 hour	Worker	0.001318025	0.000340459	0.00687056	C03b	
10	**General Exposures**						
11	Backpack Applications:		0.0348348	0.003096	0.468	C01a	
12	Ground Broadcast Applications:		0.12768	0.00594	1.764	C01b	
13	Aerial Applications:		0.0882	0.00216	0.96	C01c	

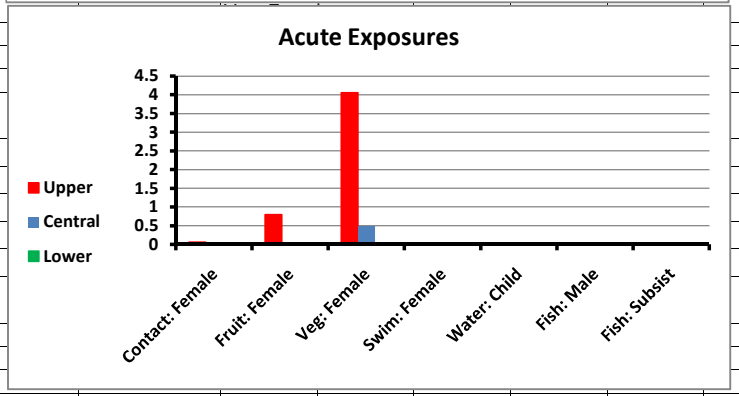
	A	B	C	D	E	F	G
1	**Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)**						
2	**Application Rate:**	3	**lb a.e./acre**			E01aV5-3Wrkr	
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity**	
4			**Central**	**Lower**	**Upper**	**Value**	
5	**Accidental/Incidental Exposures**						
6	Contaminated Gloves, 1 min.	Worker	5E-03	2E-03	2E-02	**1**	
7	Contaminated Gloves, 1 hour	Worker	0.3	1E-01	**1.1**	**1**	
8	Spill on Hands, 1 hour	Worker	5E-04	1E-04	3E-03	**1**	
9	Spill on lower legs, 1 hour	Worker	1E-03	3E-04	7E-03	**1**	
10	**General Exposures**						
11	**Chronic Exposures**						
12	Backpack Applications:		0.7	6E-02	**9**	**0.05**	
13	Ground Broadcast Applications:		**3**	0.1	**35**	**0.05**	
14	Aerial Applications:		**1.8**	4E-02	**19**	**0.05**	
15	**Acute Exposures** (Male Workers Only)						
16	Backpack Applications:		3E-02	3E-03	0.5	**1**	
17	Ground Broadcast Applications:		0.1	6E-03	**1.8**	**1**	
18	Aerial Applications:		9E-02	2E-03	1.0	**1**	
19							

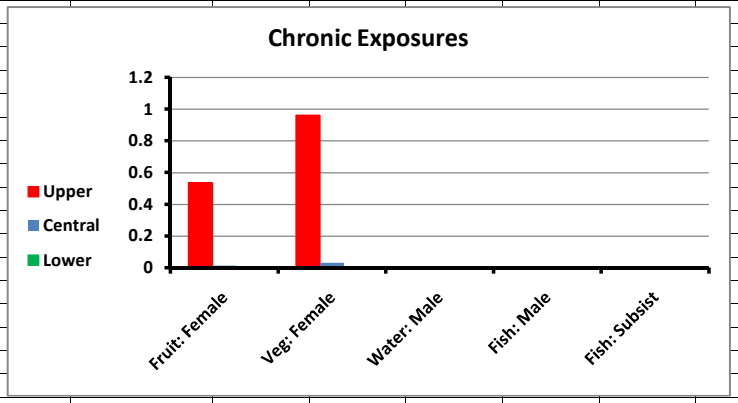
As discussed in Section 3.4.2, the custom worksheet includes a set of HQs based on general exposures using the acute RfD. The acute exposure HQs apply only to male workers. ***Risks to female workers must be based on the chronic HQs regardless of the duration of exposure.*** See Section 3.4.2 for the discussion.

Worksheet E03: Summary of Exposure Assessments for the General Public

Application Rate:	3	lb a.e./acre			E03aV6
Scenario	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	2.02E-02	5.22E-03	1.05E-01	D01a
Direct Spray of Woman, feet and lower legs	Adult Female	2.03E-03	5.24E-04	**1.06E-02**	D01b
Water consumption (spill)	Child	5.12E-02	4.17E-03	**3.07E-01**	D05
Fish consumption (spill)	Adult Male	9.23E-05	1.23E-05	3.69E-04	D08a
Fish consumption (spill)	Subsistence Populations	4.50E-04	6.00E-05	1.80E-03	D08b
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	2.50E-02	9.89E-03	6.16E-02	D02
Contaminated Fruit	Adult Female	3.70E-02	1.62E-02	**7.97E-01**	D03a
Contaminated Vegetation	Adult Female	**4.86E-01**	3.38E-02	**4.07E+00**	D03b
Swimming, one hour	Adult Female	4.12E-06	7.84E-10	6.18E-04	D11
Water consumption	Child	9.02E-05	2.06E-08	1.02E-02	D06
Fish consumption	Adult Male	1.63E-07	6.09E-11	1.22E-05	D09c
Fish consumption	Subsistence Populations	7.92E-07	2.97E-10	5.94E-05	D09d
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	1.44E-02	4.20E-03	**5.36E-01**	D04a
Contaminated Vegetation	Adult Female	3.19E-02	5.95E-04	**9.62E-01**	D04b
Water consumption	Adult Male	4.51E-07	2.75E-12	2.37E-05	D07
Fish consumption	Adult Male	5.14E-11	5.14E-16	1.80E-09	D09a
Fish consumption	Subsistence Populations	4.17E-10	4.17E-15	1.46E-08	D09b





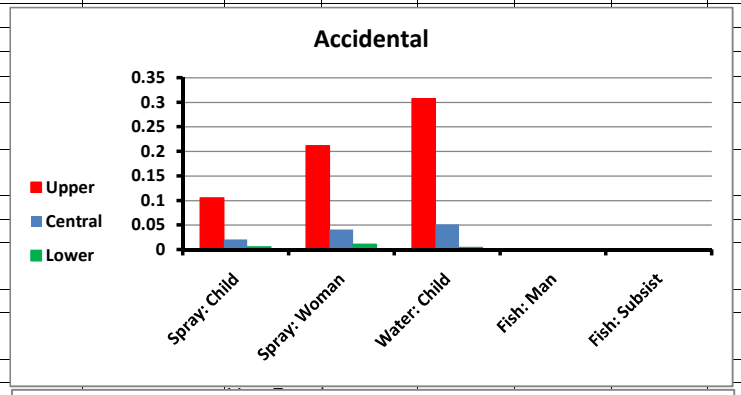


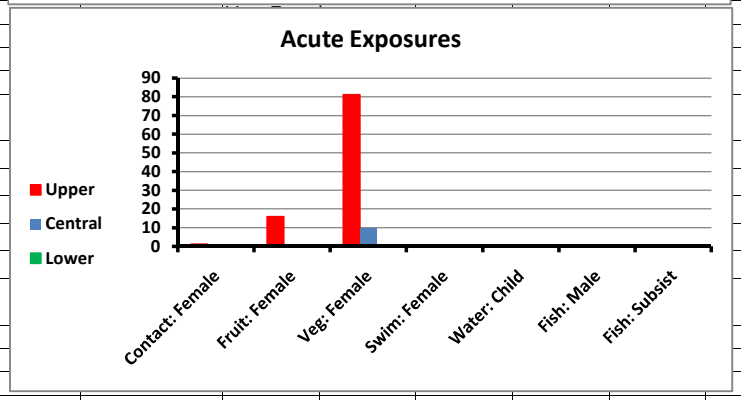
Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General Public

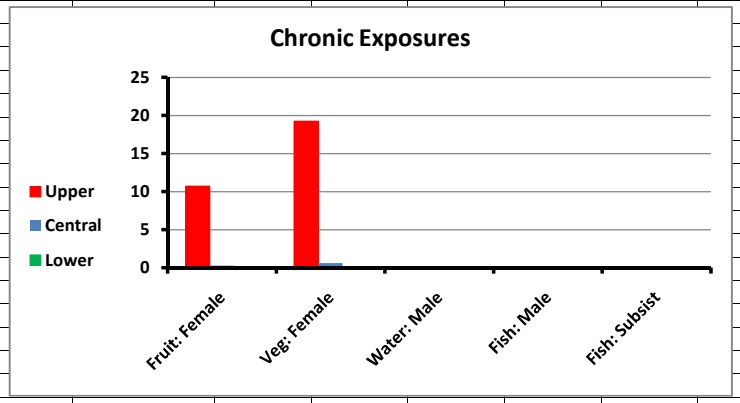
Application Rate: 3 **lb a.e./acre**

E03aV6

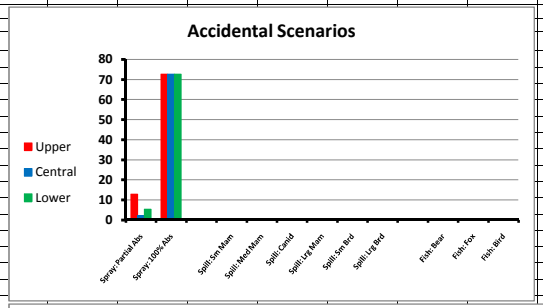
Scenario	Receptor	Hazard Quotients Central	Hazard Quotients Lower	Hazard Quotients Upper	Toxicity Value
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	2E-02	5E-03	0.1	1
Direct Spray of Woman, feet and lower legs	Adult Female	4E-02	1E-02	0.2	0.05
Water consumption (spill)	Child	5E-02	4E-03	0.3	1
Fish consumption (spill)	Adult Male	9E-05	1E-05	4E-04	1
Fish consumption (spill)	Subsistence Populations	4E-04	6E-05	2E-03	1
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	0.5	0.2	**1.2**	0.05
Contaminated Fruit	Adult Female	0.7	0.3	**16**	0.05
Contaminated Vegetation	Adult Female	**10**	0.7	**81**	0.05
Swimming, one hour	Adult Female	8E-05	2E-08	1E-02	0.05
Water consumption	Child	9E-05	2E-08	1E-02	1
Fish consumption	Adult Male	2E-07	6E-11	1E-05	1
Fish consumption	Subsistence Populations	8E-07	3E-10	6E-05	1
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	0.3	8E-02	**11**	0.05
Contaminated Vegetation	Adult Female	0.6	1E-02	**19**	0.05
Water consumption	Adult Male	9E-06	6E-11	5E-04	0.05
Fish consumption	Adult Male	1E-09	1E-14	4E-08	0.05
Fish consumption	Subsistence Populations	8E-09	8E-14	3E-07	0.05

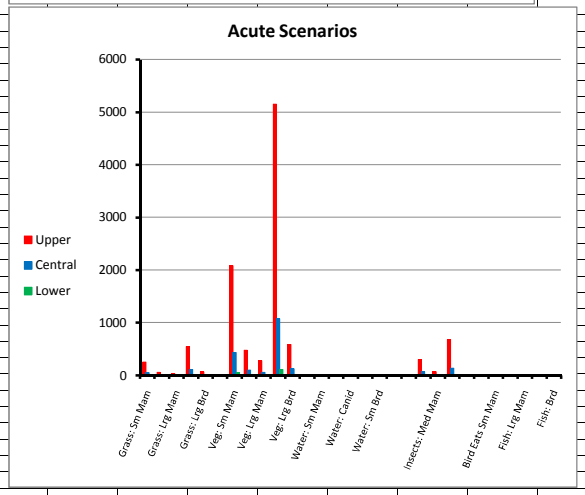


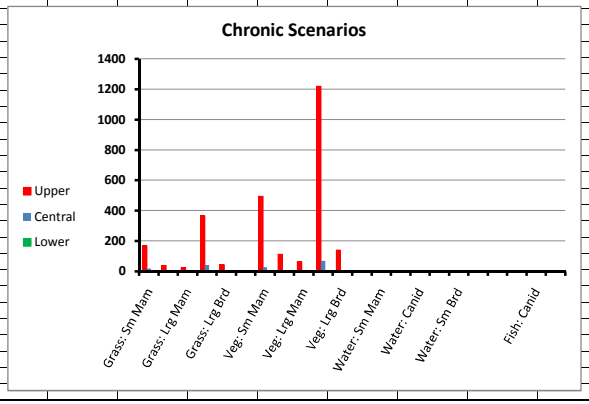




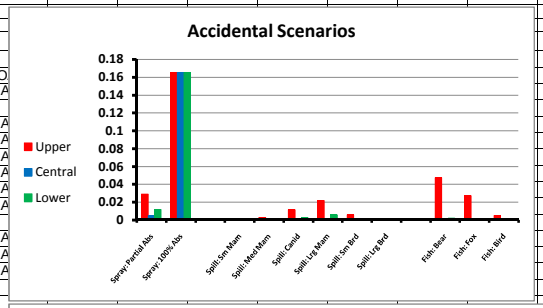
	A	B	C	D	E	F
1	**Summary of Exposure Assessments for the Terrestrial Animals**					G01V6
2	**Application Rate:**	3	**lb a.e./acre**			G01V6
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Accidental Acute Exposures**					
6	**Direct Spray**					
7	first-order absorption	Small mammal (20g)	5.21E+00	2.06E+00	1.28E+01	F01a
8	100% absorption	Small mammal (20g)	7.27E+01	7.27E+01	7.27E+01	F01b
9	**Contaminated Water**					
10	Spill	Small mammal (20g)	9.97E-02	1.33E-02	3.99E-01	F02a
11	Spill	Larger Mammal (400g)	7.39E-02	9.86E-03	2.96E-01	F02b
12	Spill	Canid (5 kg)	5.74E-02	7.66E-03	2.30E-01	F02c
13	Spill	Large Mammal (70g)	4.41E-02	5.88E-03	1.76E-01	F02d
14	Spill	Small bird (10g)	1.84E-01	2.45E-02	7.35E-01	F02e
15	Spill	Large Bird (4 kg)	2.54E-02	3.39E-03	1.02E-01	F02f
16	**Consumption of contaminated Fish**					
17	Spill	Large Mammalian Carnivore (70 kg)	1.67E-02	2.23E-04	3.79E-01	F03a
18	Spill	Canid (5 kg)	2.41E-02	3.21E-04	5.46E-01	F03b
19	Spill	Fish-eating bird (2.4 kg)	2.80E-02	3.73E-04	6.34E-01	F03c
20	**Non-Accidental Acute Exposures**					
21	**Contaminated Fruit (Lowest Residue Rate)**					
22		Small mammal (20g)	4.99E+01	6.58E+00	2.47E+02	F04a
23		Larger Mammal (400g)	1.14E+01	1.50E+00	5.64E+01	F04b
24		Large Mammal (70g)	6.49E+00	8.55E-01	3.21E+01	F04c
25		Small bird (10g)	1.09E+02	1.44E+01	5.41E+02	F04d
26		Large Bird (4 kg)	1.24E+01	1.64E+00	6.15E+01	F04e
27	**Contaminated Vegetation (Short Grass - Highest Residue Rate)**					
28		Small mammal (20g)	4.32E+02	4.57E+01	2.08E+03	F05a
29		Larger Mammal (400g)	9.86E+01	1.04E+01	4.75E+02	F05b
30		Large Mammal	5.62E+01	5.95E+00	2.71E+02	F05c
31		Small bird (10g)	1.07E+03	1.13E+02	5.15E+03	F05d
32		Large Bird (4 kg)	1.21E+02	1.29E+01	5.85E+02	F05e
33	**Contaminated Water**					
34		Small mammal (20g)	1.76E-04	6.59E-08	1.32E-02	F06a
35		Larger Mammal (400g)	1.30E-04	4.88E-08	9.76E-03	F06b
36		Canid (5 kg)	1.01E-04	3.79E-08	7.59E-03	F06c
37		Large Mammal (70g)	7.77E-05	2.91E-08	5.83E-03	F06d
38		Small bird (10g)	3.24E-04	1.21E-07	2.43E-02	F06e
39		Large Bird (4 kg)	4.48E-05	1.68E-08	3.36E-03	F06f
40	**Contaminated Insects**					
41		Small mammal (20g)	5.78E+01	5.78E+00	2.96E+02	F07a
42		Larger Mammal (400g)	1.32E+01	1.32E+00	6.76E+01	F07b
43		Small bird (10g)	1.31E+02	1.31E+01	6.73E+02	F07c
44	**Consumption of small mammal (after direct spray) by predator**					
45		Canid (5 kg)	8.15E+00	8.15E+00	8.15E+00	F08a
46		Carnivorous bird (640 g)	9.69E+00	9.69E+00	9.69E+00	F08b
47	**Consumption of contaminated Fish**					
48		Large Mammalian Carnivore (70 kg)	3.29E-05	1.24E-09	1.40E-02	F09a
49		Canid (5 kg)	4.74E-05	1.78E-09	2.01E-02	F09b
50		Fish-eating bird (2.4 kg)	4.76E-05	1.79E-09	2.03E-02	F09c
51	**Chronic/Longer Term Exposures**					
52	**Contaminated Fruit (Lowest Residue Rate)**					
53		Small mammal (20g)	1.94E+01	1.70E+00	1.66E+02	F10a
54		Larger Mammal (400g)	4.43E+00	3.88E-01	3.79E+01	F10b
55		Large Mammal (70g)	2.52E+00	2.21E-01	2.16E+01	F10c
56		Small bird (10g)	4.25E+01	3.72E+00	3.64E+02	F10d
57		Large Bird (4 kg)	4.83E+00	4.23E-01	4.14E+01	F10e
58	**Contaminated Vegetation (Short Grass - Highest Residue Rate)**					
59		Small mammal (20g)	2.84E+01	8.06E-01	4.93E+02	F11a
60		Larger Mammal (400g)	6.48E+00	1.84E-01	1.12E+02	F11b
61		Large Mammal (70g)	3.69E+00	1.05E-01	6.41E+01	F11c
62		Small bird (10g)	7.02E+01	1.99E+00	1.22E+03	F11d
63		Large Bird (4 kg)	7.98E+00	2.27E-01	1.39E+02	F11e
64	**Contaminated Water**					
65		Small mammal (20g)	8.78E-07	8.78E-12	3.07E-05	F12a
66		Larger Mammal (400g)	6.51E-07	6.51E-12	2.28E-05	F12b
67		Canid (5 kg)	5.06E-07	5.06E-12	1.77E-05	F12c
68		Large Mammal (70g)	3.88E-07	3.88E-12	1.36E-05	F12d
69		Small bird (10g)	1.62E-06	1.62E-11	5.66E-05	F12e
70		Large Bird (4 kg)	2.24E-07	2.24E-12	7.84E-06	F12f
71	**Consumption of contaminated Fish**					
72		Large Mammalian Carnivore (70 kg)	1.65E-07	1.65E-13	3.27E-05	F13a
73		Canid (5 kg)	2.37E-07	2.37E-13	4.70E-05	F13b
74		Fish-eating bird (2.4 kg)	2.38E-07	2.38E-13	4.73E-05	F13c
75						

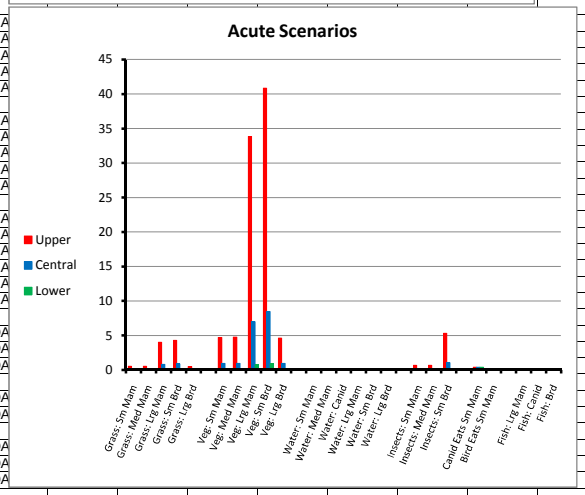


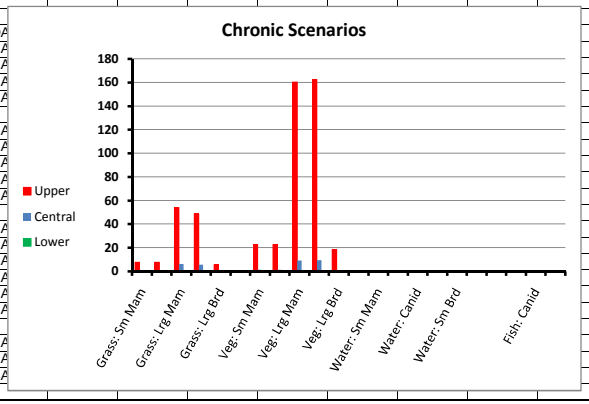




	A	B	C	D	E	F	G
1	**Summary of Hazard Quotients (Toxicity) for the Terrestrial Animals**					G01V6	
2	**Application Rate:**	3	**lb a.e./acre**			G01V6	
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**	
4			**Central**	**Lower**	**Upper**		
5	**Accidental Acute Exposures**						
6	**Direct Spray**						
7	first-order absorption	Small mammal (20g)	1E-02	5E-03	3E-02	440	NO
8	100% absorption	Small mammal (20g)	0.2	0.2	0.2	440	NOA
9	**Contaminated Water**						
10	Spill	Small mammal (20g)	2E-04	3E-05	9E-04	440	NOA
11	Spill	Larger Mammal (400g)	7E-04	1E-04	3E-03	100	NOA
12	Spill	Canid (5 kg)	3E-03	4E-04	1E-02	20	NOA
13	Spill	Large Mammal (70g)	6E-03	7E-04	2E-02	8	NOA
14	Spill	Small bird (10g)	1E-03	2E-04	6E-03	126	NOA
15	Spill	Large Bird (4 kg)	2E-04	3E-05	8E-04	126	NOA
16	**Consumption of contaminated Fish**						
17	Spill	Large Mammalian Carnivore (70 kg)	2E-03	3E-05	5E-02	8	NOA
18	Spill	Canid (5 kg)	1E-03	2E-05	3E-02	20	NOA
19	Spill	Fish-eating bird (2.4 kg)	2E-04	3E-06	5E-03	126	NOA
20	**Non-Accidental Acute Exposures**						
21	**Contaminated Fruit (Lowest Residue Rate)**						
22		Small mammal (20g)	0.1	1E-02	0.6	440	NOA
23		Larger Mammal (400g)	0.1	2E-02	0.6	100	NOA
24		Large Mammal (70g)	0.8	0.1	4	8	NOA
25		Small bird (10g)	0.9	0.1	4	126	NOA
26		Large Bird (4 kg)	1E-01	1E-02	0.5	126	NOA
27	**Contaminated Vegetation (Short Grass - Highest Residue Rate)**						
28		Small mammal (20g)	1.0	0.1	5	440	NOA
29		Larger Mammal (400g)	1.0	0.1	5	100	NOA
30		Large Mammal	7	0.7	34	8	NOA
31		Small bird (10g)	8	0.9	41	126	NOA
32		Large Bird (4 kg)	1.0	0.1	5	126	NOA
33	**Contaminated Water**						
34		Small mammal (20g)	4E-07	1E-10	3E-05	440	NOA
35		Larger Mammal (400g)	1E-06	5E-10	1E-04	100	NOA
36		Canid (5 kg)	5E-06	2E-09	4E-04	20	NOA
37		Large Mammal (70g)	1E-05	4E-09	7E-04	8	NOA
38		Small bird (10g)	3E-06	1E-09	2E-04	126	NOA
39		Large Bird (4 kg)	4E-07	1E-10	3E-05	126	NOA
40	**Contaminated Insects**						
41		Small mammal (20g)	0.1	1E-02	0.7	440	NOA
42		Larger Mammal (400g)	0.1	1E-02	0.7	100	NOA
43		Small bird (10g)	1.0	0.1	5	126	NOA
44	**Consumption of small mammal (after direct spray) by predator**						
45		Canid (5 kg)	0.4	0.4	0.4	20	NOA
46		Carnivorous bird (640 g)	8E-02	8E-02	8E-02	126	NOA
47	**Consumption of contaminated Fish**						
48		Large Mammalian Carnivore (70 kg)	4E-06	2E-10	2E-03	8	NOA
49		Canid (5 kg)	2E-06	9E-11	1E-03	20	NOA
50		Fish-eating bird (2.4 kg)	4E-07	1E-11	2E-04	126	NOA
51	**Chronic/Longer Term Exposures**						
52	**Contaminated Fruit (Lowest Residue Rate)**						
53		Small mammal (20g)	0.9	8E-02	8	22	NOA
54		Larger Mammal (400g)	0.9	8E-02	8	5	NOA
55		Large Mammal (70g)	6	0.6	54	0.4	NOA
56		Small bird (10g)	6	0.5	48	7.5	NOA
57		Large Bird (4 kg)	0.6	6E-02	6	7.5	NOA
58	**Contaminated Vegetation (Short Grass - Highest Residue Rate)**						
59		Small mammal (20g)	1.3	4E-02	22	22	NOA
60		Larger Mammal (400g)	1.3	4E-02	22	5	NOA
61		Large Mammal (70g)	9	0.3	160	0.4	NOA
62		Small bird (10g)	9	0.3	162	7.5	NOA
63		Large Bird (4 kg)	1.1	3E-02	18	7.5	NOA
64	**Contaminated Water**						
65		Small mammal (20g)	4E-08	4E-13	1E-06	22	NOA
66		Larger Mammal (400g)	1E-07	1E-12	5E-06	5	NOA
67		Canid (5 kg)	5E-07	5E-12	2E-05	1	NOA
68		Large Mammal (70g)	1E-06	1E-11	3E-05	0.4	NOA
69		Small bird (10g)	2E-07	2E-12	8E-06	7.5	NOA
70		Large Bird (4 kg)	3E-08	3E-13	1E-06	7.5	NOA
71	**Consumption of contaminated Fish**						
72		Large Mammalian Carnivore (70 kg)	4E-07	4E-13	8E-05	0.4	NOA
73		Canid (5 kg)	2E-07	2E-13	5E-05	1	NOA
74		Fish-eating bird (2.4 kg)	3E-08	3E-14	6E-06	7.5	NOA
75							







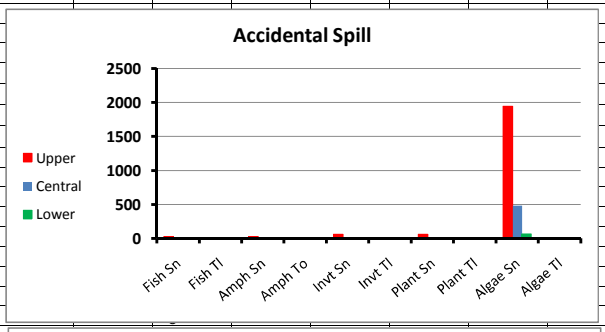
	A	B	C	D	E	F	G	H
1	**Exposures and HQs for a Terrestrial Insect (Honeybee) Associated with Direct Spray or Drift Following Terrestrial Applications**							
2	Short Title	Direct Spray or Drift						
3	Receptor	Honey Bee			Abrev(Param->Receptor)			
4	Duration	Acute						
5	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**			
6	Toxicity Value (Spray)	**ToxVal**	620	mg/kg bw	BeeTox[Spray]			
7	Application rate	**$ApRt_{lb/ac}$**	3	lb/acre	Prog!ApRt_C			
8	Conversion Factor for lbs/acre to mg/cm^2	**CnvF**	0.01121	mg/cm^2/lb/acre				
9	Application rate, mg/cm^2	**ApR_{mgcm}**	**$ApR_{lb/a}$ × CnvF**					
10			0.03363	lb/acre	Eq			
11	Body weight	**BW**	0.000116	kg	Param->Receptor.BW			
12		**SA**	1.42	cm^2	Param->Receptor.SA_WB			
13	Proportion of body surface sprayed	**Prp_{SA}**	0.5	unitless	*Param->PrpSA*			
14	Amount Deposited on Skin	**Amnt**	***ApR_{mgcm} × SA × Prp_{SA}***					
15			0.0238773	mg	Eq			
16	Foliar Interception	**FolInt**	Lower	Central	Upper			
17			0	0.5	0.9			
18								
19	Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**	**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**		
20	0	feet	1	1	1	1		
21	25	feet	0.223	0.104	0.035	0.00832		
22	50	feet	0.171	0.05	0.0177	0.00433		
23	100	feet	0.0979	0.0248	0.00948	0.00241		
24	300	feet	0.0312	0.00753	0.0035	0.000941		
25	500	feet	0.0192	0.00391	0.00209	0.000579		
26	900	feet	0.0124	0.00166	0.00109	0.000312		
27	**Absorbed Doses (mg/kg bw) = Prop x FolInt x Amnt ÷ BW)**				**HQ = Absorbed Doses/ToxVal**			
28	**Aerial**	**Foliar Interception**			Foliar Interception			
29	Distance Downwind	None	50%	90%	None	50%	90%	
30	0	*205.838793*	*102.9193966*	*20.58387931*	0.3	0.2	3E-02	
31	25	*45.9020509*	*22.95102543*	*4.590205086*	7E-02	4E-02	7E-03	
32	50	*35.1984336*	*17.59921681*	*3.519843362*	6E-02	3E-02	6E-03	
33	100	*20.1516178*	*10.07580892*	*2.015161784*	3E-02	2E-02	3E-03	
34	300	*6.42217034*	*3.211085172*	*0.642217034*	1E-02	5E-03	1E-03	
35	500	*3.95210483*	*1.976052414*	*0.395210483*	6E-03	3E-03	6E-04	
36	900	*2.55240103*	*1.276200517*	*0.255240103*	4E-03	2E-03	4E-04	
37	**Highboom Ground**	**Foliar Interception**			Foliar Interception			
38	Distance Downwind	None	50%	90%	None	50%	90%	
39	Distance Downwind	*205.838793*	*102.9193966*	*20.58387931*	0.3	0.2	3E-02	
40	0	*21.4072345*	*10.70361724*	*2.140723448*	3E-02	2E-02	3E-03	
41	25	*10.2919397*	*5.145969828*	*1.029193966*	2E-02	8E-03	2E-03	
42	50	*5.10480207*	*2.552401034*	*0.510480207*	8E-03	4E-03	8E-04	
43	100	*1.54996611*	*0.774983056*	*0.154996611*	2E-03	1E-03	2E-04	
44	300	*0.80482968*	*0.402414841*	*0.080482968*	1E-03	6E-04	1E-04	
45	500	*0.3416924*	*0.170846198*	*0.03416924*	6E-04	3E-04	6E-05	
46	**Low Ground**	**Foliar Interception**			Foliar Interception			
47	Distance Downwind	None	50%	90%	None	50%	90%	
48	Distance Downwind	*205.838793*	*102.9193966*	*20.58387931*	0.3	0.2	3E-02	
49	Distance Downwind	*7.20435776*	*3.602178879*	*0.720435776*	1E-02	6E-03	1E-03	
50	0	*3.64334664*	*1.821673319*	*0.364334664*	6E-03	3E-03	6E-04	
51	25	*1.95135176*	*0.975675879*	*0.195135176*	3E-03	2E-03	3E-04	
52	50	*0.72043578*	*0.360217888*	*0.072043578*	1E-03	6E-04	1E-04	
53	100	*0.43020308*	*0.215101539*	*0.043020308*	7E-04	3E-04	7E-05	
54	300	*0.22436428*	*0.112182142*	*0.022436428*	4E-04	2E-04	4E-05	
55	**Backpack**	**Foliar Interception**			Foliar Interception			
56	Distance Downwind	None	50%	90%	None	50%	90%	
57	Distance Downwind	*205.838793*	*102.9193966*	*20.58387931*	0.3	0.2	3E-02	
58	Distance Downwind	*1.71257876*	*0.856289379*	*0.171257876*	3E-03	1E-03	3E-04	
59	Distance Downwind	*0.89128197*	*0.445640987*	*0.089128197*	1E-03	7E-04	1E-04	
60	0	*0.49607149*	*0.248035746*	*0.049607149*	8E-04	4E-04	8E-05	
61	25	*0.1936943*	*0.096847152*	*0.01936943*	3E-04	2E-04	3E-05	
62	50	*0.11918066*	*0.059590331*	*0.011918066*	2E-04	1E-04	2E-05	
63	100	*0.0642217*	*0.032110852*	*0.00642217*	1E-04	5E-05	1E-05	

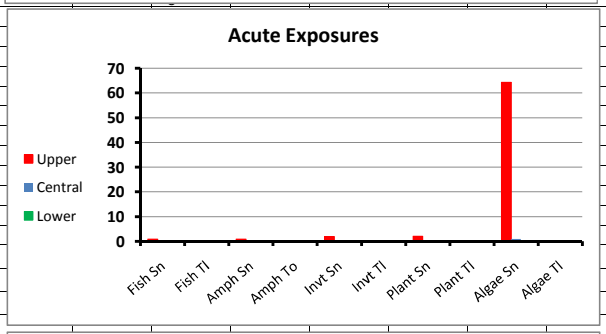
Worksheet G03: Summary of Hazard Quotients for Aquatic Species

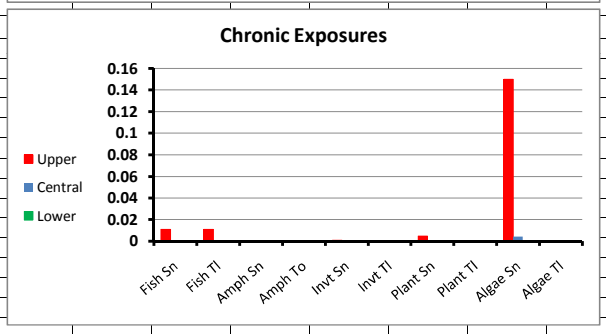
Application Rate:	1	lb a.e./acre			AqToxSumV6
Exposures		**Concentrations** (mg/L)			
	Scenario	**Central**	**Lower**	**Upper**	**Worksheet**
	Accidental	0.6813	0.09084	2.7252	B04b
	Peak EEC	0.0012	0.00000045	0.09	D06
	Chronic	0.000006	6E-11	0.00021	D07

Receptor	**Type**	**Hazard Quotients**			**Toxicity Value**	**Toxicity Endpoint**
		Central	**Lower**	**Upper**		
Accidental Acute Exposures						
Fish	Sensitive	**7**	1.0	**30**	**0.091**	NOAEC
	Tolerant	0.9	0.1	**4**	**0.75**	NOAEC*
Amphibian	Sensitive	**7**	0.9	**27**	**0.1**	EC10
	Tolerant	0.2	2E-02	0.6	**4.2**	NOAEL*
Invertebrate	Sensitive	**15**	**2**	**61**	**0.045**	NOAEC*
	Tolerant	0.2	3E-02	0.8	**3.6**	NOAEC*
Macrophyte	Sensitive	**16**	**2**	**63**	**0.043**	NOEC
	Tolerant	**2**	0.3	**9**	**0.31**	NOEC
Algae	Sensitive	**487**	**65**	**1,947**	**0.0014**	NOEC
	Tolerant	0.7	9E-02	**3**	**1**	NOEC
Non-Accidental Acute Exposures						
Fish	Sensitive	1E-02	5E-06	1.0	**0.091**	NOAEC
	Tolerant	2E-03	6E-07	0.1	**0.75**	NOAEC*
Amphibian	Sensitive	1E-02	5E-06	0.9	**0.1**	EC10
	Tolerant	3E-04	1E-07	2E-02	**4.2**	NOAEL*
Invertebrate	Sensitive	3E-02	1E-05	**2**	**0.045**	NOAEC*
	Tolerant	3E-04	1E-07	3E-02	**3.6**	NOAEC*
Macrophyte	Sensitive	3E-02	1E-05	**2**	**0.043**	NOEC
	Tolerant	4E-03	1E-06	0.3	**0.31**	NOEC
Algae	Sensitive	0.9	3E-04	**64**	**0.0014**	NOEC
	Tolerant	1E-03	5E-07	9E-02	**1**	NOEC
Chronic/Longer Term Exposures						
Fish	Sensitive	3E-04	3E-09	1E-02	**0.019**	NOAEC
	Tolerant	3E-04	3E-09	1E-02	**0.019**	NOAEC
Amphibian	Sensitive	No toxicity data.			N/A	
	Tolerant	No toxicity data.			N/A	
Invertebrate	Sensitive	2E-05	2E-10	8E-04	**0.25**	LOAEC
	Tolerant	3E-07	3E-12	1E-05	**20**	LOAEC*
Macrophyte	Sensitive	1E-04	1E-09	5E-03	**0.043**	NOEC
	Tolerant	2E-05	2E-10	7E-04	**0.31**	NOEC
Algae	Sensitive	4E-03	4E-08	0.2	**0.0014**	NOEC
	Tolerant	6E-06	6E-11	2E-04	**1**	NOEC

Note: NOEC*, NOAEC* or a similar designation - i.e., NOEC or NOAEC followed by an asterisk (*) -- indicates that the NOEC or similar value was estimated from an LC_{50} ,EC_{50}, or an LOEC. See the risk







	A	B	C	D	E	F
1	**Summary of Exposure Assessment and Risk Characterization for Terrestrial Plants from Runoff**					
2	Short Title	Runoff to terrestrial plants			Link to Gleams-Driver	
3	Receptor	Terrestrial vegetation				
4	Duration	Acute				
5	User-Specified Gleams-Driver File	**None**				
6	**Parameter/Assumption**	**Code / Range**	**Value**	**Units**	**Reference**	
7	Worksheet Application Rate	$ApRt_{WB}$	**3**	lb/acre	Worksheeet A01	
8	Offsite Application Rates Inputs					
9	Run ID:	Risk Assessment				
10	Application Rate Used in Run:	$ApRt_{Run}$	1	lb/acre		
11	Functional Off-site	$ApRt_{Offsite}$				
12	Application Rate	Central	0.0006	lb/acre		
13		Lower	0.0000002			
14		Upper	0.046			
15	Calculated Values					
16	Normalized Off-site	$NormApRt_{Offsite}$	$ApRt_{Offsite}$ / $ApRt_{Run}$			
17	Functional Application Rate	Central	0.0006	Unitless	Eq	
18		Lower	0.0000002		Eq	
19		Upper	0.046		Eq	
20	Off-site Application Rate at	$ApRt_{WB}$	$ApRt_{WB}$ x $NormApRt_{Offsite}$			
21	Workbook Application Rate	Central	0.0018	lb/acre	Eq	
22		Lower	0.0000006		Eq	
23		Upper	0.138		Eq	
24	Toxicity Values (seedling emergence) in units of lbs/acre					
25			Sensitive	Tolerant		
26		Endpoint	**NOEC**	**NOEC**		
27			**0.02**	**2**	Section 4.3.2.5.	
28	Hazard Quotients					
29		Central	9E-02	9E-04		
30		Lower	3E-05	3E-07		
31		Upper	**7**	7E-02		
32						

General Worksheet Note

Typically, this worksheet is filled in by WorksheetMaker using offsite application rates that are derived in the Forest Service risk assessment. Several different *Application Rates* are noted in the cells in this worksheet this note explains why this is done.

The **Worksheet Application Rate** refers to the application rate that is set by the user in Worksheet A01.

The next section of the worksheet (**Offsite Application Rate Inputs**) is initially set by the WorksheetMaker Program. The Application Rate Used in Run refers to the application rate used in the simulation software (typically Gleams-Driver) used to derived the Functional Off-site Application Rate. This is the application rate to the nontarget site based on runoff. In Forest Service risk assessments, a unit application rate of 1 lb/acre is always used. If you set a custom Gleams-Driver input file in Worksheet B04, the information from the Gleams-Driver input file will replace the values that had been initially filled in by the WorksheetMaker program. Alternatively, you can fill in any of these values manually.

In the **Calculated Values** section, this worksheet normalizes the Functional Offsite Application Rate. If the values are from a risk assessment (where an application rate of 1 lb/acre is always used in the Gleams-Driver run), these rates will be identical to the rats in the above section.

The **Toxicity Values** are typically those used in the risk assessment. You can change these if you have a good reason for doing so. Also, you can add columns it you want to show HQ values for other species of particular concern. To ensure that any values for new plants will format correctly, you should insert the new information between the Sensitive and Tolerant entries. To do this, select from the cell above labeled Tolerant (D24) down to the upper range of the hazard quotient (D30). While these cells are selected, do a *Right Mouse Click* and then scroll down to *Insert*. Then, select the *Shift Cells to Right* option. If you want to add more than one plant species, hit Control-Y to repeat this operation. If this is not clear, Press F1 (Help) and review the Excel Documentation for inserting cells into a worksheet or consult a reference book on Excel.

	A	B	C	D	E	F	G	H	I
1	**Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Drif.**								
2	Short Title	Drift to terrestrial plants			PlntDrift3Apps				
3	Receptor	Terrestrial vegetation							
4	Duration	Acute							
5	**Parameter/ Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**				
6	Application Rate	ApRt	**3**	lb/acre	Worksheet A01				
7	Toxicity Values(Post-emergence in lb/ac)								
8	Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.5.				
9	Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.5.				
10	Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**							
11			**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
12	0		1	1	1	1	unitless		
13	25		0.223	0.104	0.035	0.00832			
14	50		0.171	0.05	0.0177	0.00433			
15	100		0.0979	0.0248	0.00948	0.00241			
16	300		0.0312	0.00753	0.0035	0.000941			
17	500		0.0192	0.00391	0.00209	0.000579			
18	900		0.0124	0.00166	0.00109	0.000312			
19	Estimates of functional offsite application rate	**OfApRt**	***=ApRt x Prop***						
20			**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
21	0		*3*	*3*	*3*	*3*	Eq		
22	25		*0.669*	*0.312*	*0.105*	*0.02496*	Eq		
23	50		*0.513*	*0.15*	*0.0531*	*0.01299*	Eq		
24	100		*0.2937*	*0.0744*	*0.02844*	*0.00723*	Eq		
25	300		*0.0936*	*0.02259*	*0.0105*	*0.002823*	Eq		
26	500		*0.0576*	*0.01173*	*0.00627*	*0.001737*	Eq		
27	900		*0.0372*	*0.00498*	*0.00327*	*0.000936*	Eq		
28									
29	Hazard Quotients (Sensitive Species)	**HQ_{Sens}**	***= OfApRt / ToxVal $_{Sens}$***						
30			**Aerial**	**High Boom Ground Broadcast**	**Low Boom Ground Broadcast**	**Backpack**			
31	0		**1,071**	**1,071**	**1,071**	**1,071**			
32	25		**239**	**111**	**38**	**9**			
33	50		**183**	**54**	**19**	**5**			
34	100		**105**	**27**	**10**	**3**			
35	300		**33**	**8**	**4**	**1.0**			
36	500		**21**	**4**	**2**	0.6			
37	900		**13**	**1.8**	**1.2**	0.3			
38	Hazard Quotients (Tolerant Species)								
39	0		**1.5**	**1.5**	**1.5**	**1.5**			
40	25		0.3	0.2	5E-02	1E-02			
41	50		0.3	8E-02	3E-02	6E-03			
42	100		0.1	4E-02	1E-02	4E-03			
43	300		5E-02	1E-02	5E-03	1E-03			
44	500		3E-02	6E-03	3E-03	9E-04			
45	900		2E-02	2E-03	2E-03	5E-04			
46									
47									
48									
49									
50				Page 4 of 13					
51									
52									
53									
54									

Note: This is a custom worksheet. If you modify the application rate, you may need to manually reformat some of the HQ values.

	A	B	C	D	E
1	**Potential exposure of non-target plants through the use of contaminated irrigation water based on estimates concentrations in ambient water.**				
2	Short Title	Irrigation Water			
3	Receptor	Non-target plants			
4	Duration				Abrev(Dur)
5	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
6	Application Rate	**ApRt**	**3**	lb/acre	Prog!ApRt_C
7	Water contamination rate	**WCR**			
8		Central	**0.0004**	mg/L per lb/acre	
9		Lower	**0.00000015**		
10		Upper	**0.03**		
11	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
12		Central	1	unitless	Prog!TEF_C
13		Lower	1		Prog!TEF_L
14		Upper	1		Prog!TEF_U
15	Concentration in irrigation water	**$Conc_{Wat}$**	***ApRt × WCR × TEF***		
16		Central	0.0012	mg/L	Eq
17		Lower	0.00000045		Eq
18		Upper	0.09		Eq
19	Amount of irrigation water applied	**IrrigAmnt**			
20		Central	1	inches	Param->Inches_C
21		Lower	0.25		Param->Inches_L
22		Upper	2		Param->Inches_U
23	Gallons per Acre-Foot	**GalPerAc-Ft**	325900	gal/acre-foot	Std!CnvFct.acrefoot2gal
24	Liters per Gallon	**LtPerGal**	3.785	liters/gal	Std!CnvFct.gal2lit
25	Liters of water applied per acre per inch of irrigation water (*rounded to nearest liter*)	**LpApI**	***GalPerAc-Ft × LtPerGal / 12***		
26			102,794	Lit/acre-inch	Eq
27	Liters of water applied per acre	**LPA**	***IrrigAmnt × LpApI***		
28		Central	102794	liters	Eq
29		Lower	25698.5		Eq
30		Upper	205588		Eq
31	Application Rate (mg/acre)	**$ApR_{mg/a}$**	***$Conc_{Wat}$ × LPA***		
32		Central	123.3528	mg/acre	Eq
33		Lower	0.011564325		Eq
34		Upper	18502.92		Eq
35	Conversion factor for mg to lb	**Conv**	0.0000022		Std!CnvFct.mg2lb
36	Functional application rate (lb/acre)	**FncApR**	**$ApR_{mg/a}$ × Conv**		
37		Central	0.000271376	lb/acre	Eq
38		Lower	2.54415E-08		Eq
39		Upper	0.040706424		Eq
40	Toxicity Values(Post-emergence in lb/ac)				
41	Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.4.
42	Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.4.
43	Hazard Quotients	HQs	Sensitive species	Tolerant species	
44		Central	1.E-01	1.E-04	
45		Lower	9.E-06	1.E-08	
46		Upper	**15**	2.E-02	

	A	B	C	D	E
1	**Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Wind Erosion at the Specified Application Rate.**				
2	Short Title	Wind erosion, terrestrial plants			PlntWind2
3	Receptor	Terrestrial vegetation			
4	Duration	Acute			
5	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**
6	Application Rate	ApRt	**3**	lb/acre	Worksheet A01
7	Toxicity Values(Post-emergence in lb/ac)				
8	Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.5.
9	Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.5.
10	Soil losses due to wind ersion	**Loss_TonHa**			
11		Central	5	Tons per hectare per year	Scenario parameter
12		Lower	1		Scenario parameter
13		Upper	10		Scenario parameter
14	Conversion for tons/ha to grams per cm^2	**Conv1**	0.01		
15	Soil losses in grams/square centimeter	**Loss_GrCm**			
16		Central	*0.05*	g/cm^2 per year	Eq
17		Lower	*0.01*		Eq
18		Upper	*0.1*		Eq
19	Soil Density	**Dens**	2	g/cm^2	
20	Soil losses in cm/day	**Loss_CmDay**	***= Loss_GrCm /(Dens * 365)***		
21		Central	*6.84932E-05*	cm per day	Eq
22		Lower	*1.36986E-05*		Eq
23		Upper	*0.000136986*		Eq
24	Depth of incorporation	**Depth**	1	cm	Scenario parameter
25	Proportion of contaminated soil lost per day	**PropLost**			
26		Central	6.84932E-05	unitless	
27		Lower	1.36986E-05		
28		Upper	0.000136986		
29	Estimates of functional offsite application rate	**OfApRt**	***=ApRt x PropLost***		
30		Central	*0.000205479*	lb/acre	Eq
31		Lower	*4.10959E-05*		Eq
32		Upper	*0.000410959*		Eq
33	Hazard Quotients (Sensitive Species)	**HI_{Sens}**	***= OfApRt / ToxVal $_{Sens}$***		
34		Central	7E-02		
35		Lower	1E-02		
36		Upper	0.1		
37	Hazard Quotients (Tolerant Species)	**HI_{Tol}**	*= OfApRt / ToxVal $_{Tol}$*		
38		Central	1E-04		
39		Lower	2E-05		
40		Upper	2E-04		

	A	B	C	D	E
1	**Consumption of Contaminated Fruit/Large Insects by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Fruit			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Fruit/Large Insects			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**3**	lb/acre	Worksheet A01
8	Amount consumed per day	**Amnt**			
9	per unit body weight	Central	**1.3**	kg food/kg BW	Waldbauer 1968
10		Lower	**0.6**	per day	Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**7**	mg/kg food per	Worksheet A01
14		Lower	**3.2**	lb/acre	Worksheet A01
15		Upper	**15**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*21*	mg/kg food item	Eq
20		Lower	*9.6*		Eq
21		Upper	*45*		Eq
22	Toxic Equivalency Factor	**TEF**			
23	for formulation: (See risk	Central	**1**	Unitless	Worksheet A01
24	assessment if this has a value	Lower	**1**		Worksheet A01
25	other than 1.)	Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*27.3*	mg/kg bw	Eq
28		Lower	*5.76*		Eq
29		Upper	*99*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Broadleaf/Small Insects by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Broadleaf			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Broadleaf/Small Insects			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**3**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**45**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**15**		Worksheet A01
15		Upper	**135**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*135*	mg/kg food item	Eq
20		Lower	*45*		Eq
21		Upper	*405*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*175.5*	mg/kg bw	Eq
28		Lower	*27*		Eq
29		Upper	*891*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Short grass by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Short Grass			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Short grass			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**3**	lb/acre	Worksheet A01
8	Amount consumed per day	**Amnt**			
9	per unit body weight	Central	**1.3**	kg food/kg BW	Waldbauer 1968
10		Lower	**0.6**	per day	Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**85**	mg/kg food per	Worksheet A01
14		Lower	**30**	lb/acre	Worksheet A01
15		Upper	**240**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*255*	mg/kg food item	Eq
20		Lower	*90*		Eq
21		Upper	*720*		Eq
22	Toxic Equivalency Factor	**TEF**			
23	for formulation: (See risk	Central	**1**	Unitless	Worksheet A01
24	assessment if this has a value	Lower	**1**		Worksheet A01
25	other than 1.)	Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*331.5*	mg/kg bw	Eq
28		Lower	*54*		Eq
29		Upper	*1584*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Tall Grass by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Tallt Grass			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Tall Grass			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**3**	lb/acre	Worksheet A01
8	Amount consumed per day	**Amnt**			
9	per unit body weight	Central	**1.3**	kg food/kg BW	Waldbauer 1968
10		Lower	**0.6**	per day	Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**36**	mg/kg food per	Worksheet A01
14		Lower	**12**	lb/acre	Worksheet A01
15		Upper	**110**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*108*	mg/kg food item	Eq
20		Lower	*36*		Eq
21		Upper	*330*		Eq
22	Toxic Equivalency Factor	**TEF**			
23	for formulation: (See risk	Central	**1**	Unitless	Worksheet A01
24	assessment if this has a value	Lower	**1**		Worksheet A01
25	other than 1.)	Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*140.4*	mg/kg bw	Eq
28		Lower	*21.6*		Eq
29		Upper	*726*		Eq

	A	B	C	D	E	F	G	H	I
1	**Summary of Exposure Assessments for the Herbivorous or Predatory Insects**								
2	**Application Rate:**	3	**lb a.e./acre**			InstHerbSum			
3	**Food Item**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**			
4			**Central**	**Lower**	**Upper**				
5	**Acute Exposures**								
6	Fruit/Large Insects	Insect	27.3	5.76	99	G07a			
7	Broadleaf/Small Insects	Insect	1.76E+02	2.70E+01	8.91E+02	G07b			
8	Short Grass	Insect	3.32E+02	5.40E+01	1.58E+03	G07c			
9	Long Grass	Insect	140.4	21.6	726	G07d			

	A	B	C	D	E	F	G	H	I
1	**Summary of Hazard Quotients (Toxicity) for the Herbivorous or Predatory Insects**								
2	**Application Rate:**	3	**lb a.e./acre**			InstHerbSum			
3	**Food Item**	**Receptor**	**Hazard Quotients**			**Toxicity Value**			
4			**Central**	**Lower**	**Upper**				
5	**Acute Exposures**								
6	Fruit/Large Insects	Insect	4E-02	9E-03	0.2	**620**	<LD50		
7	Broadleaf/Small Insects	Insect	0.3	4E-02	**1.4**	**620**	<LD50		
8	Short Grass	Insect	0.5	9E-02	**3**	**620**	<LD50		
9	Long Grass	Insect	0.2	3E-02	**1.2**	**620**	<LD50		

Attachment 1

USDA Forest Service Worksheets

Workbook 4

Proposed_max_8lb_Triclopyr_appv100_BEE.xlsm

Utilities

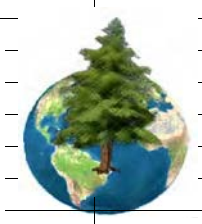
Triclopyr BEE Formulations: East Bay Regional Park District, Maximum Application Rate for all Areas

Forest Service Program Worksheets

Worksheet Version 5.00.64

Prepared by:

USDA, Forest Service



February 20, 2011

General Notes

Prepared by:	Patrick R Durkin
Program Version:	5.00.64
Database Used:	FS WsMkr V5-01a.mdb
Template Workbook:	FS WsMkr V5-01a.mdb
Base Workbook:	FS WSMkr Blank V05-01a.xlsm

Color Codes in WorksheetMaker Version 5

WorksheetMaker Version 5 contains four general types of worksheets: front matter sheets, data sheets, calculation sheets, and results sheets. As detailed below, a consistent set of formatting/color are used in the first three types of sheets.

Color Codes used in Workbook for Front Matter, Data and Calculation Worksheets

Green shading	This is a default value or a user specified a value. You can change these values as you see fit but you should have a reason for doing so.
Yellow shading	This is a source for a link in other parts of the workbook. If you have good reason to change the value, you should note the change (with your reason) in the "Revisions" page.
Blue shading	This cell is linked to another cell in the workbook. **Do not change this value.** If you change any of these values, the workbook may not update correctly.
Blue shading blue border	This cell is linked to a Program parameter in Worksheet A01. **Do not change this value.** If you want the value to change, go to Worksheet A01 and change the value in that worksheet.
Purple Shading	Indicates (for information only) that the typical of order of Lower and Upper values is intentionally reversed. This is only used in the second (label) column.
Italics, no shading	The value in this cell is generated by a formula (the number that you see is the result of an equation). This cell is linked only to other cells in the worksheet. **Do not change this value.**

Risk Characterization Worksheets use a modified color scheme based on the value of the hazard quotient (see below). The format for these worksheets will change as you change the application rate or other other inputs.

Color Codes used in Workbook for Risk Characterization Worksheets

HQ ≥ 2	For hazard quotient greater than 2, the number is in **bold font** with a red background and rounded to the nearest integer.
HQ > 1 but < 2	For hazard quotient greater than 1 but less than two, the number is in **bold font** with a white background and rounded to one significant place after the decimal.
HQ ≥ 0.1 but <1	For hazard quotient greater than 0.1 but less than one, the number is in regular font with a white background and rounded to one significant place after the decimal.
HQ < 0.1	For hazard quotient less than 0.1, the number is in regular font with a white background. The number is expressed in scientific notation and rounded to one significant place -- e.g., 2E-02 rather than 0.02.

The specific version of the program that was used is given above along with information about the Access database (containing the information that was used to make this workbook), template workbook (the workbook containing the template worksheets), and base workbook (the workbook that served as the basis for this workbook). Except as noted under the chemical specific notes (next worksheet), these worksheets are substantially identical to those submitted with the SERA risk assessment.

If you want to modify the application rate used in this workbook, go to the A01 worksheet. In this worksheet, change the application rate and/or the application volume(s). **Note that all application rates must be in units of lb a.e./acre for weak acids or lbs a.i./acre for other pesticides.** Generally, you can tell that the pesticide is a weak acid if it is sold as a salt (e.g., sodium, potassium, etc) or if it is an ester. If you are unsure of how to do the conversion, consult the risk assessment or seek other assistance.

Both the application rate section and the application volume section of Worksheet A01 are structured to allow the input of a central rate as well as the lower and upper bounds of a range. In project-specific assessments, however, **all three values for the application rate – central, lower, and upper – should be identical**.

	A	B	C	D	E	F	G	H	I	J
1	**Chemical specific notes**									
2			**Risk Assessment:**	**SERA TR-052-25-01b**						
3			**Report Date:**	**February, 2011**						
4										
5										
6	The area below is an embedded MS Word Document. Add chemical-specific notes as appropriate.									
7	This spreadsheet uses the maximum lbs/acre application rate from product label for use.									
8	Table 2-1 Proposed Herbicide Application Implementation									
9	All Garlon is assumed to be Garlon 4A									
10										
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Revision Histroy

Note: If you make any modifications to this workbook, you should note them in the revision area below. The revision area by default cotains the text *NONE*. The revision area consists of a Microsoft Word document. Thus, once you activate the revision area, there may be a slight delay while EXCEL activates MS Word.

The area below is an embedded MS Word Document. Add revision notes as appropriate.

NONE

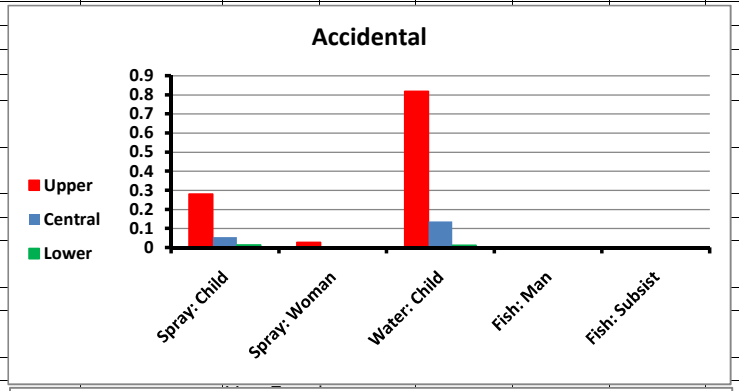
	A	B	C	D	E	F	G
1	**Worksheet E01: Summary of Worker Exposure Assessments**						
2	**Application Rate:**	**8**	**lb a.e./acre**			E01aV5-3Wrkr	
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**	
4			**Central**	**Lower**	**Upper**		
5	**Accidental/Incidental Exposures**						
6	Contaminated Gloves, 1 min.	Worker	0.01248	0.004224	0.04992	C02a	
7	Contaminated Gloves, 1 hour	Worker	0.7488	0.25344	2.9952	C02b	
8	Spill on Hands, 1 hour	Worker	0.001426268	0.000368419	0.007434808	C03a	
9	Spill on lower legs, 1 hour	Worker	0.003514732	0.000907889	0.018321492	C03b	
10	**General Exposures**						
11	Backpack Applications:		0.0928928	0.008256	1.248	C01a	
12	Ground Broadcast Applications:		0.34048	0.01584	4.704	C01b	
13	Aerial Applications:		0.2352	0.00576	2.56	C01c	

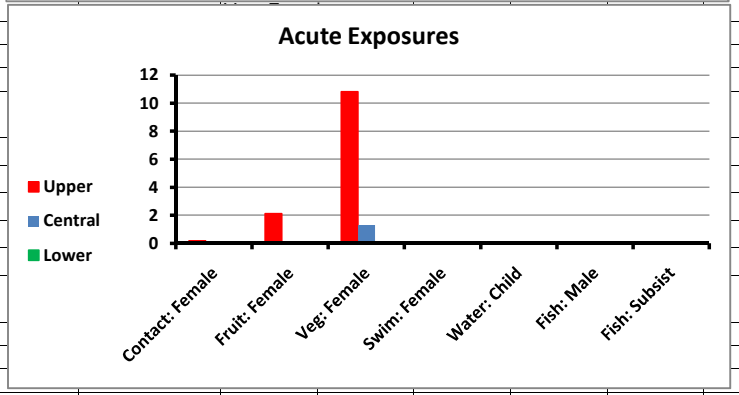
	A	B	C	D	E	F	G
1	**Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)**						
2	**Application Rate:**	**8**	**lb a.e./acre**			E01aV5-3Wrkr	
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity**	
4			**Central**	**Lower**	**Upper**	**Value**	
5	**Accidental/Incidental Exposures**						
6	Contaminated Gloves, 1 min.	Worker	1E-02	4E-03	5E-02	**1**	
7	Contaminated Gloves, 1 hour	Worker	0.7	0.3	**3**	**1**	
8	Spill on Hands, 1 hour	Worker	1E-03	4E-04	7E-03	**1**	
9	Spill on lower legs, 1 hour	Worker	4E-03	9E-04	2E-02	**1**	
10	**General Exposures**						
11	**Chronic Exposures**						
12	Backpack Applications:		**1.9**	0.2	**25**	**0.05**	
13	Ground Broadcast Applications:		**7**	0.3	**94**	**0.05**	
14	Aerial Applications:		**5**	0.1	**51**	**0.05**	
15	**Acute Exposures** (Male Workers Only)						
16	Backpack Applications:		9E-02	8E-03	**1.2**	**1**	
17	Ground Broadcast Applications:		0.3	2E-02	**5**	**1**	
18	Aerial Applications:		0.2	6E-03	**3**	**1**	

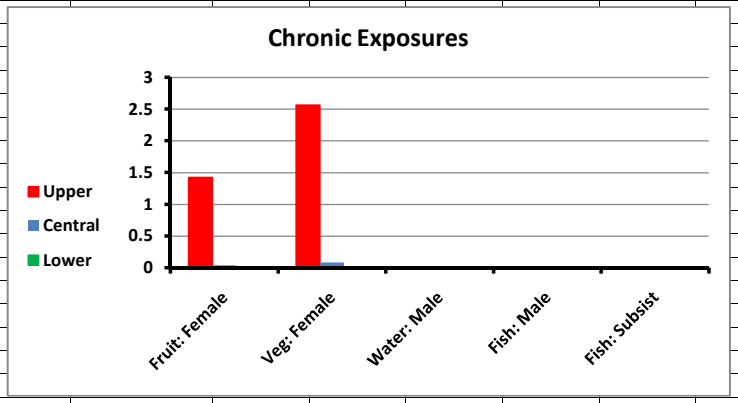
As discussed in Section 3.4.2, the custom worksheet includes a set of HQs based on general exposures using the acute RfD. The acute exposure HQs apply only to male workers. ***Risks to female workers must be based on the chronic HQs regardless of the duration of exposure.*** See Section 3.4.2 for the discussion.

Worksheet E03: Summary of Exposure Assessments for the General Public

Application Rate:	8	lb a.e./acre			E03aV6
Scenario	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	5.39E-02	1.39E-02	2.81E-01	D01a
Direct Spray of Woman, feet and lower legs	Adult Female	5.41E-03	1.40E-03	**2.82E-02**	D01b
Water consumption (spill)	Child	1.37E-01	1.11E-02	**8.20E-01**	D05
Fish consumption (spill)	Adult Male	2.46E-04	3.28E-05	9.84E-04	D08a
Fish consumption (spill)	Subsistence Populations	1.20E-03	1.60E-04	4.80E-03	D08b
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	7.28E-02	2.88E-02	1.79E-01	D02
Contaminated Fruit	Adult Female	9.85E-02	4.33E-02	**2.12E+00**	D03a
Contaminated Vegetation	Adult Female	**1.30E+00**	9.00E-02	**1.08E+01**	D03b
Swimming, one hour	Adult Female	1.10E-05	2.09E-09	1.65E-03	D11
Water consumption	Child	2.41E-04	5.50E-08	2.71E-02	D06
Fish consumption	Adult Male	4.33E-07	1.63E-10	3.25E-05	D09c
Fish consumption	Subsistence Populations	2.11E-06	7.92E-10	1.58E-04	D09d
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	3.83E-02	1.12E-02	**1.43E+00**	D04a
Contaminated Vegetation	Adult Female	8.52E-02	1.59E-03	**2.57E+00**	D04b
Water consumption	Adult Male	1.20E-06	7.34E-12	6.32E-05	D07
Fish consumption	Adult Male	1.37E-10	1.37E-15	4.80E-09	D09a
Fish consumption	Subsistence Populations	1.11E-09	1.11E-14	3.89E-08	D09b





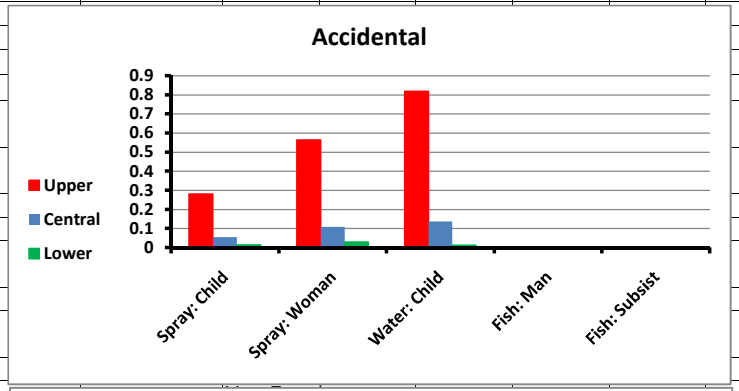


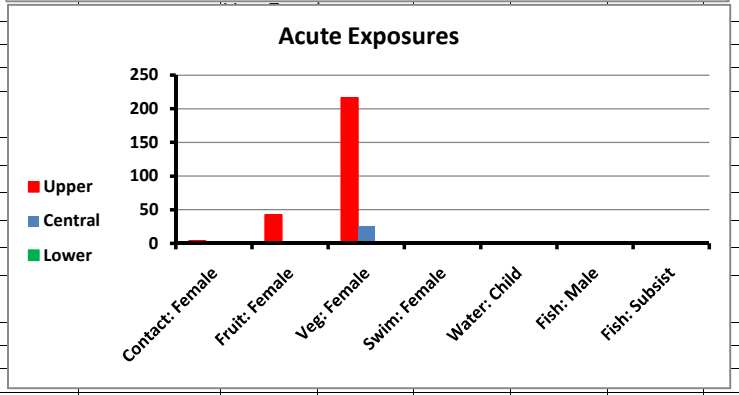
Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General Public

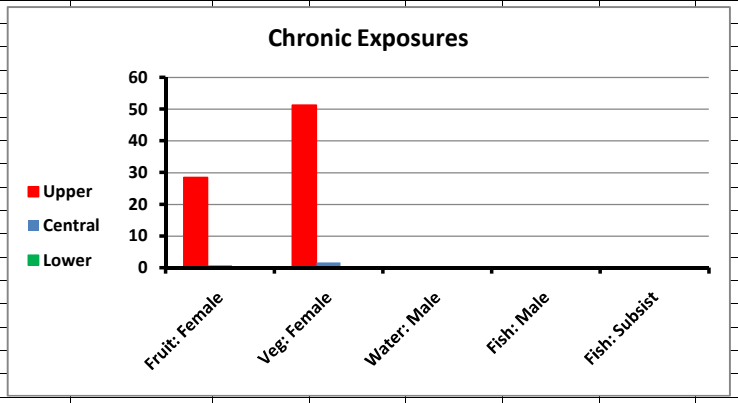
Application Rate: 8 **lb a.e./acre**

E03aV6

Scenario	Receptor	Hazard Quotients Central	Hazard Quotients Lower	Hazard Quotients Upper	Toxicity Value
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	5E-02	1E-02	0.3	1
Direct Spray of Woman, feet and lower legs	Adult Female	0.1	3E-02	0.6	0.05
Water consumption (spill)	Child	0.1	1E-02	0.8	1
Fish consumption (spill)	Adult Male	2E-04	3E-05	1E-03	1
Fish consumption (spill)	Subsistence Populations	1E-03	2E-04	5E-03	1
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	**1.5**	0.6	**4**	0.05
Contaminated Fruit	Adult Female	**2.0**	0.9	**42**	0.05
Contaminated Vegetation	Adult Female	**26**	**1.8**	**217**	0.05
Swimming, one hour	Adult Female	2E-04	4E-08	3E-02	0.05
Water consumption	Child	2E-04	6E-08	3E-02	1
Fish consumption	Adult Male	4E-07	2E-10	3E-05	1
Fish consumption	Subsistence Populations	2E-06	8E-10	2E-04	1
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	0.8	0.2	**29**	0.05
Contaminated Vegetation	Adult Female	**1.7**	3E-02	**51**	0.05
Water consumption	Adult Male	2E-05	1E-10	1E-03	0.05
Fish consumption	Adult Male	3E-09	3E-14	1E-07	0.05
Fish consumption	Subsistence Populations	2E-08	2E-13	8E-07	0.05







Attachment 1

USDA Forest Service Worksheets

Workbook 5

Proposed_max_1lb_Triclopyr_TEA.xlsm

Worksheet E01: Summary of Worker Exposure Assessments

Application Rate:	1	lb a.e./acre			E01aV5-3Wrkr
Scenario	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
		Central	**Lower**	**Upper**	
Accidental/Incidental Exposures					
Contaminated Gloves, 1 min.	Worker	0.00002304	0.0000066	0.0002592	C02a
Contaminated Gloves, 1 hour	Worker	0.0013824	0.000396	0.015552	C02b
Spill on Hands, 1 hour	Worker	0.000405326	8.6387E-05	0.005982619	C03a
Spill on lower legs, 1 hour	Worker	0.000998838	0.000212882	0.014742883	C03b
General Exposures					
Backpack Applications:		0.006006	0.00036	0.04	C01a
Ground Broadcast Applications:		0.0224	0.00066	0.1512	C01b
Aerial Applications:		0.0147	0.00024	0.08	C01c

Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)

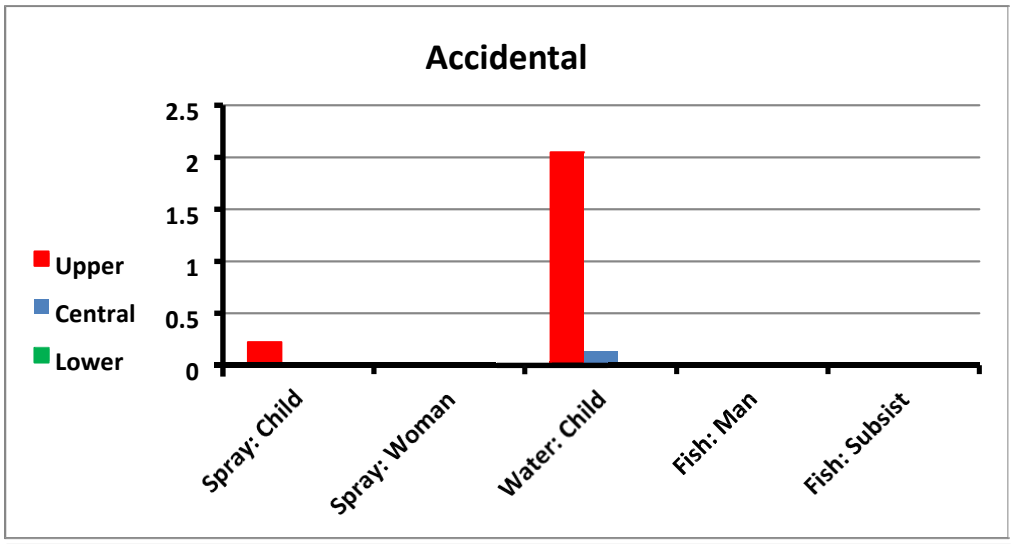
Application Rate:	1	lb a.e./acre			E01aV5-3Wrkr
Scenario	**Receptor**	**Hazard Quotients**			**Toxicity Value**
		Central	**Lower**	**Upper**	
Accidental/Incidental Exposures					
Contaminated Gloves, 1 min.	Worker	2E-05	7E-06	3E-04	1
Contaminated Gloves, 1 hour	Worker	1E-03	4E-04	2E-02	1
Spill on Hands, 1 hour	Worker	4E-04	9E-05	6E-03	1
Spill on lower legs, 1 hour	Worker	1E-03	2E-04	1E-02	1
General Exposures					
Chronic Exposures					
Backpack Applications:		0.1	7E-03	0.8	0.05
Ground Broadcast Applications:		0.4	1E-02	3	0.05
Aerial Applications:		0.3	5E-03	1.6	0.05
Acute Exposures (Male Workers Only)					
Backpack Applications:		6E-03	6E-03	6E-03	1
Ground Broadcast Applications:		2E-02	2E-02	2E-02	1
Aerial Applications:		1E-02	1E-02	1E-02	1

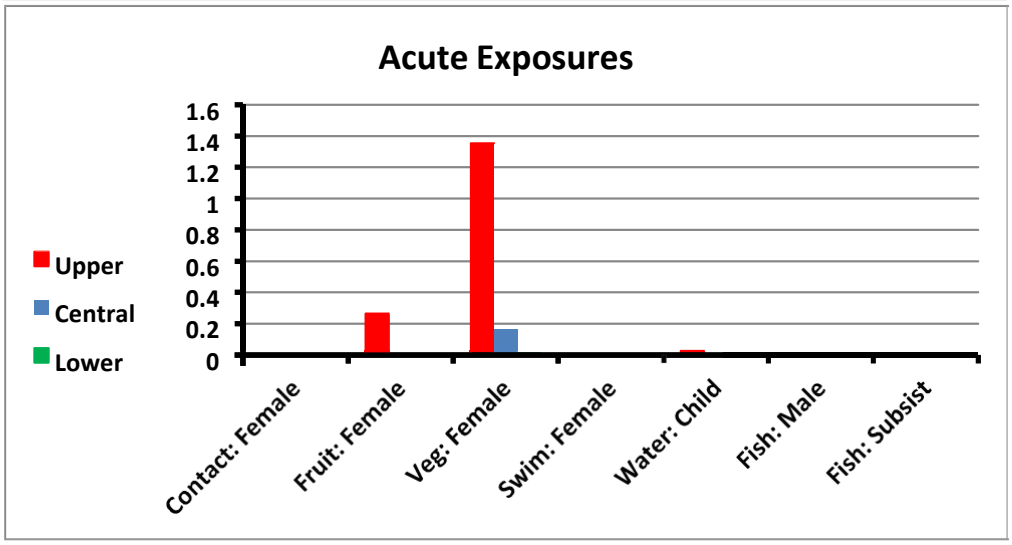
As discussed in Section 3.4.2, the custom worksheet includes a set of HQs based on general exposures using the acute RfD. The acute exposure HQs apply only to male workers. ***Risks to female workers must be based on the chronic HQs regardless of the duration of exposure.*** See Section 3.4.2 for the discussion.

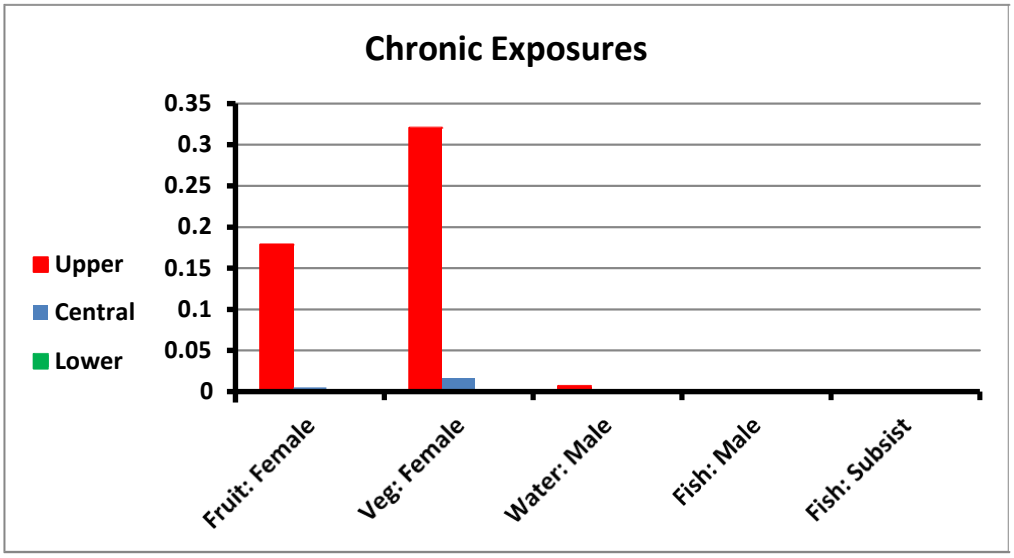
Worksheet E03: Summary of Exposure Assessments for the General Public

Application Rate: 1 **lb a.e./acre** E03aV6

Scenario	Receptor	Hazard Quotients			Detail Worksheet
		Central	Lower	Upper	
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	1.53E-02	3.26E-03	2.26E-01	D01a
Direct Spray of Woman, feet and lower legs	Adult Female	1.54E-03	3.28E-04	**2.27E-02**	D01b
Water consumption (spill)	Child	1.37E-01	1.04E-02	**2.05E+00**	D05
Fish consumption (spill)	Adult Male	2.46E-04	3.08E-05	2.46E-03	D08a
Fish consumption (spill)	Subsistence Populations	1.20E-03	1.50E-04	1.20E-02	D08b
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	2.20E-03	7.55E-04	6.37E-03	D02
Contaminated Fruit	Adult Female	1.23E-02	5.41E-03	**2.66E-01**	D03a
Contaminated Vegetation	Adult Female	1.62E-01	1.13E-02	**1.36E+00**	D03b
Swimming, one hour	Adult Female	1.90E-08	2.90E-12	3.42E-06	D11
Water consumption	Child	2.26E-04	4.59E-08	2.71E-02	D06
Fish consumption	Adult Male	4.06E-07	1.35E-10	3.25E-05	D09c
Fish consumption	Subsistence Populations	1.98E-06	6.60E-10	1.58E-04	D09d
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	4.79E-03	1.40E-03	**1.79E-01**	D04a
Contaminated Vegetation	Adult Female	1.61E-02	4.69E-04	**3.21E-01**	D04b
Water consumption	Adult Male	7.52E-05	9.17E-12	6.77E-03	D07
Fish consumption	Adult Male	8.57E-09	1.71E-15	5.14E-07	D09a
Fish consumption	Subsistence Populations	6.94E-08	1.39E-14	4.17E-06	D09b


Accidental
2.5
2
1.5
1
0.5
0
Upper
Central
Lower
Spray: Child
Spray: Woman
Water: Child
Fish: Man
Fish: Subsist


Acute Exposures
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Upper
Central
Lower
Contact: Female
Fruit: Female
Veg: Female
Swim: Female
Water: Child
Fish: Male
Fish: Subsist

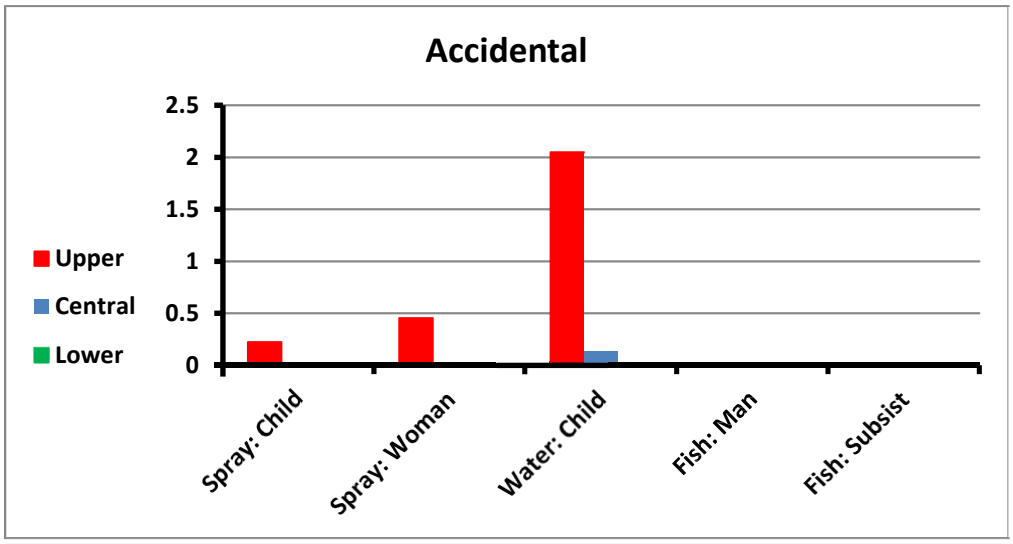

Chronic Exposures
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Upper
Central
Lower
Fruit: Female
Veg: Female
Water: Male
Fish: Male
Fish: Subsist

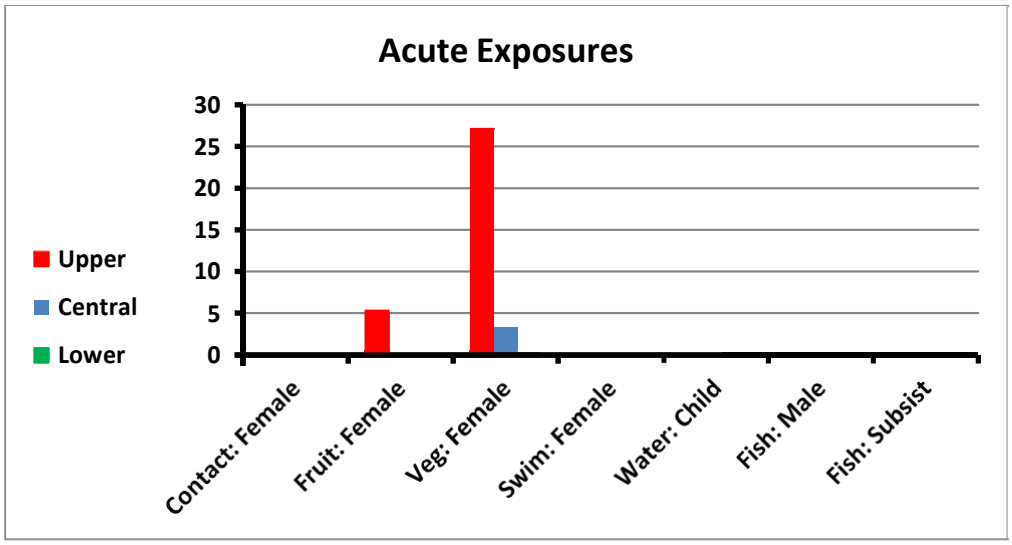
Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General Public

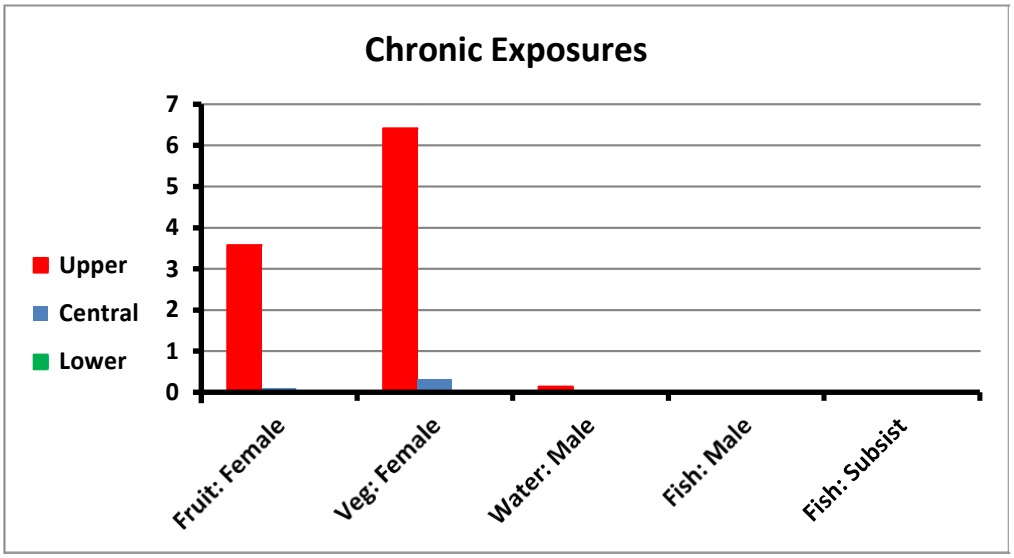
Application Rate: 1 lb a.e./acre

E03aV6

Scenario	Receptor	Hazard Quotients			Toxicity Value
		Central	Lower	Upper	
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	2E-02	3E-03	0.2	1
Direct Spray of Woman, feet and lower legs	Adult Female	3E-02	7E-03	0.5	0.05
Water consumption (spill)	Child	0.1	1E-02	2	1
Fish consumption (spill)	Adult Male	2E-04	3E-05	2E-03	1
Fish consumption (spill)	Subsistence Populations	1E-03	1E-04	1E-02	1
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	4E-02	2E-02	0.1	0.05
Contaminated Fruit	Adult Female	0.2	0.1	5	0.05
Contaminated Vegetation	Adult Female	3	0.2	27	0.05
Swimming, one hour	Adult Female	4E-07	6E-11	7E-05	0.05
Water consumption	Child	2E-04	5E-08	3E-02	1
Fish consumption	Adult Male	4E-07	1E-10	3E-05	1
Fish consumption	Subsistence Populations	2E-06	7E-10	2E-04	1
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	1E-01	3E-02	4	0.05
Contaminated Vegetation	Adult Female	0.3	9E-03	6	0.05
Water consumption	Adult Male	2E-03	2E-10	0.1	0.05
Fish consumption	Adult Male	2E-07	3E-14	1E-05	0.05
Fish consumption	Subsistence Populations	1E-06	3E-13	8E-05	0.05


Accidental
2.5
2
1.5
1
0.5
0
Upper
Central
Lower
Spray: Child
Spray: Woman
Water: Child
Fish: Man
Fish: Subsist


Acute Exposures
30
25
20
15
10
5
0
Upper
Central
Lower
Contact: Female
Fruit: Female
Veg: Female
Swim: Female
Water: Child
Fish: Male
Fish: Subsist


Chronic Exposures
7
6
5
4
3
2
1
0
Upper
Central
Lower
Fruit: Female
Veg: Female
Water: Male
Fish: Male
Fish: Subsist

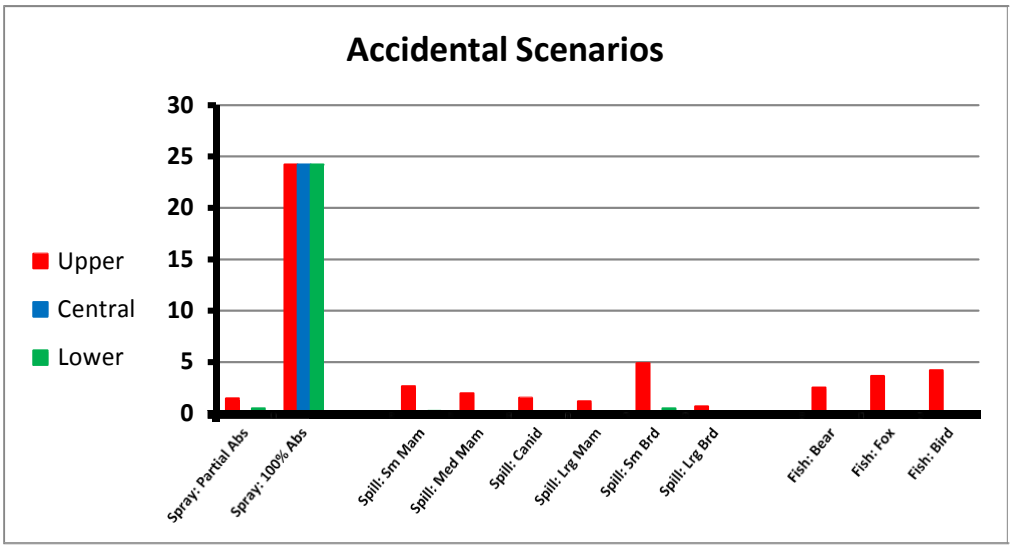
Worksheet E03: Summary of Exposure Assessments for the General Public G01V6

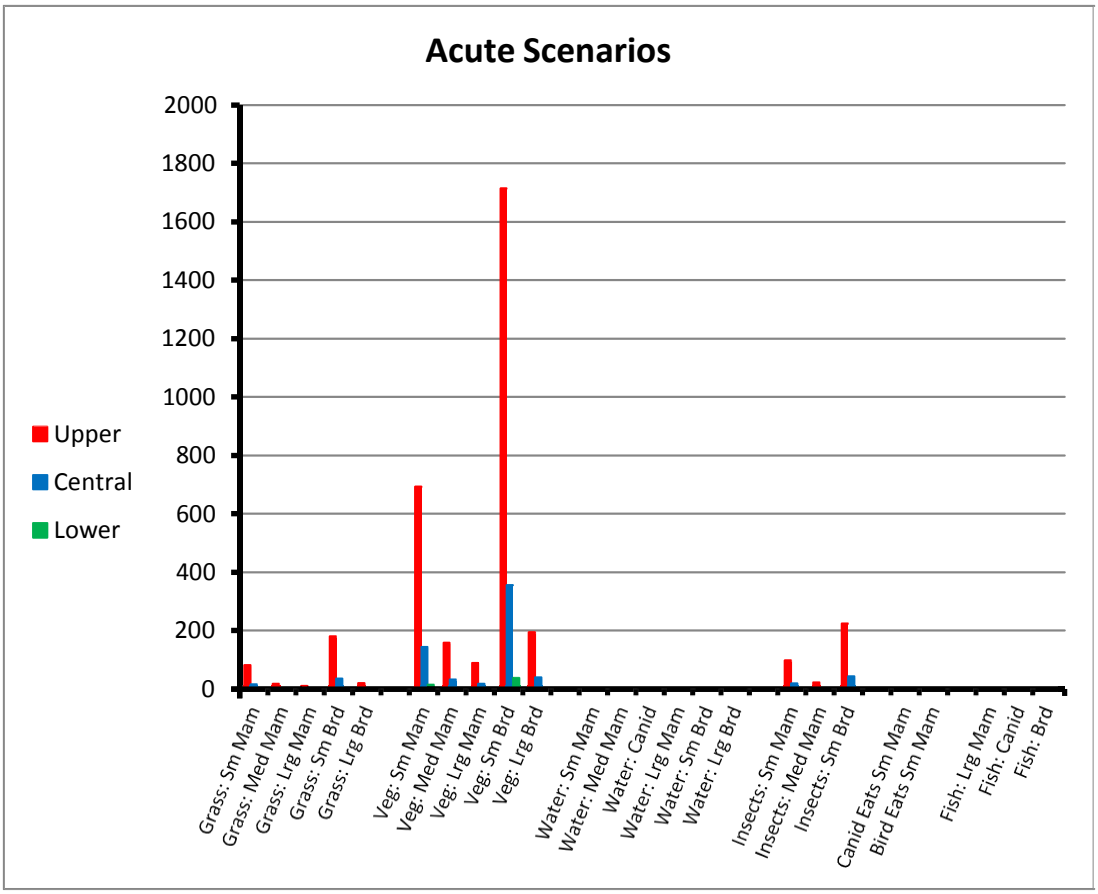
Application Rate: lb a.e./acre G01V6

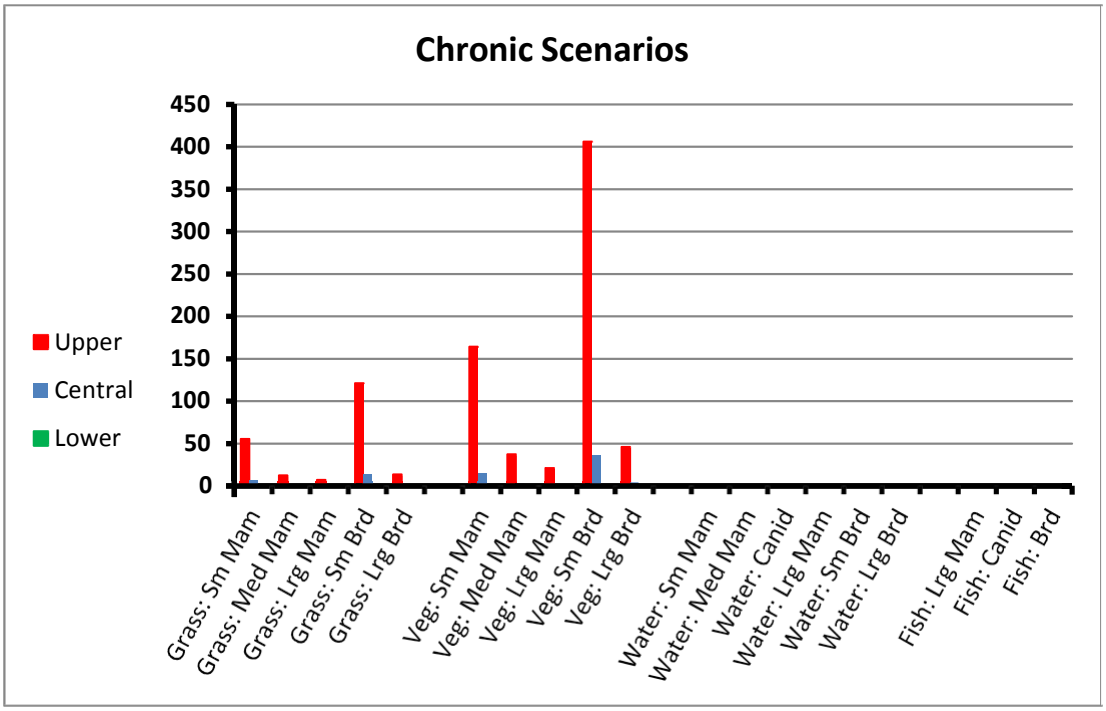
Scenario	Receptor	mg/kg/day or mg/kg/event Central	Lower	Upper	Detail Worksheet
Accidental Acute Exposures					
Direct Spray					
first-order absorption	Small mammal (20g)	5.07E-01	1.74E-01	1.47E+00	F01a
100% absorption	Small mammal (20g)	2.42E+01	2.42E+01	2.42E+01	F01b
Contaminated Water					
Spill	Small mammal (20g)	2.66E-01	3.32E-02	2.66E+00	F02a
Spill	Larger Mammal (400g)	1.97E-01	2.46E-02	1.97E+00	F02b
Spill	Canid (5 kg)	1.53E-01	1.91E-02	1.53E+00	F02c
Spill	Large Mammal (70g)	1.18E-01	1.47E-02	1.18E+00	F02d
Spill	Small bird (10g)	4.90E-01	6.12E-02	4.90E+00	F02e
Spill	Large Bird (4 kg)	6.78E-02	8.48E-03	6.78E-01	F02f
Consumption of contaminated Fish					
Spill	Large Mammalian Carnivore (70 kg)	4.46E-02	5.58E-04	2.53E+00	F03a
Spill	Canid (5 kg)	6.42E-02	8.03E-04	3.64E+00	F03b
Spill	Fish-eating bird (2.4 kg)	7.46E-02	9.32E-04	4.23E+00	F03c
Non-Accidental Acute Exposures					
Contaminated Fruit (Lowest Residue Rate)					
	Small mammal (20g)	1.66E+01	2.19E+00	8.23E+01	F04a
	Larger Mammal (400g)	3.80E+00	5.01E-01	1.88E+01	F04b
	Large Mammal (70g)	2.16E+00	2.85E-01	1.07E+01	F04c
	Small bird (10g)	3.64E+01	4.80E+00	1.80E+02	F04d
	Large Bird (4 kg)	4.14E+00	5.46E-01	2.05E+01	F04e
Contaminated Vegetation (Short Grass - Highest Residue Rate)					
	Small mammal (20g)	1.44E+02	1.52E+01	6.94E+02	F05a
	Larger Mammal (400g)	3.29E+01	3.48E+00	1.58E+02	F05b
	Large Mammal	1.87E+01	1.98E+00	9.02E+01	F05c
	Small bird (10g)	3.56E+02	3.77E+01	1.72E+03	F05d
	Large Bird (4 kg)	4.05E+01	4.29E+00	1.95E+02	F05e
Contaminated Water					
	Small mammal (20g)	4.39E-04	1.46E-07	3.51E-02	F06a
	Larger Mammal (400g)	3.25E-04	1.08E-07	2.60E-02	F06b
	Canid (5 kg)	2.53E-04	8.43E-08	2.02E-02	F06c
	Large Mammal (70g)	1.94E-04	6.47E-08	1.55E-02	F06d
	Small bird (10g)	8.09E-04	2.70E-07	6.47E-02	F06e
	Large Bird (4 kg)	1.12E-04	3.73E-08	8.96E-03	F06f
Contaminated Insects					
	Small mammal (20g)	1.93E+01	1.93E+00	9.86E+01	F07a
	Larger Mammal (400g)	4.40E+00	4.40E-01	2.25E+01	F07b
	Small bird (10g)	4.38E+01	4.38E+00	2.24E+02	F07c
Consumption of small mammal (after direct spray) by predator					
	Canid (5 kg)	2.72E+00	2.72E+00	2.72E+00	F08a
	Carnivorous bird (640 g)	3.23E+00	3.23E+00	3.23E+00	F08b
Consumption of contaminated Fish					
	Large Mammalian Carnivore (70 kg)	8.23E-05	2.74E-09	3.73E-02	F09a
	Canid (5 kg)	1.19E-04	3.95E-09	5.37E-02	F09b
	Fish-eating bird (2.4 kg)	1.19E-04	3.97E-09	5.40E-02	F09c

Chronic/Longer Term Exposures

Contaminated Fruit (Lowest Residue Rate)				
Small mammal (20g)	6.47E+00	5.67E-01	5.54E+01	F10a
Larger Mammal (400g)	1.48E+00	1.29E-01	1.26E+01	F10b
Large Mammal (70g)	8.41E-01	7.37E-02	7.20E+00	F10c
Small bird (10g)	1.42E+01	1.24E+00	1.21E+02	F10d
Large Bird (4 kg)	1.61E+00	1.41E-01	1.38E+01	F10e
Contaminated Vegetation (Short Grass - Highest Residue Rate)				
Small mammal (20g)	1.43E+01	6.35E-01	1.64E+02	F11a
Larger Mammal (400g)	3.27E+00	1.45E-01	3.75E+01	F11b
Large Mammal (70g)	1.86E+00	8.26E-02	2.14E+01	F11c
Small bird (10g)	3.54E+01	1.57E+00	4.06E+02	F11d
Large Bird (4 kg)	4.02E+00	1.79E-01	4.62E+01	F11e
Contaminated Water				
Small mammal (20g)	1.46E-04	2.93E-11	8.78E-03	F12a
Larger Mammal (400g)	1.08E-04	2.17E-11	6.51E-03	F12b
Canid (5 kg)	8.43E-05	1.69E-11	5.06E-03	F12c
Large Mammal (70g)	6.47E-05	1.29E-11	3.88E-03	F12d
Small bird (10g)	2.70E-04	5.39E-11	1.62E-02	F12e
Large Bird (4 kg)	3.73E-05	7.47E-12	2.24E-03	F12f
Consumption of contaminated Fish				
Large Mammalian Carnivore (70 kg)	2.74E-05	5.49E-13	9.33E-03	F13a
Canid (5 kg)	3.95E-05	7.90E-13	1.34E-02	F13b
Fish-eating bird (2.4 kg)	3.97E-05	7.94E-13	1.35E-02	F13c


Accidental Scenarios
30
25
20
15
10
5
0
Upper
Central
Lower
Spray: Partial Abs
Spray: 100% Abs
Spill: Sm Mam
Spill: Med Mam
Spill: Canid
Spill: Lrg Mam
Spill: Sm Brd
Spill: Lrg Brd
Fish: Bear
Fish: Fox
Fish: Bird


Acute Scenarios
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Insects: Sm Mam
Insects: Med Mam
Insects: Sm Brd
Canid Eats Sm Mam
Bird Eats Sm Mam
Fish: Lrg Mam
Fish: Canid
Fish: Brd


Chronic Scenarios
450
400
350
300
250
200
150
100
50
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Fish: Lrg Mam
Fish: Canid
Fish: Brd

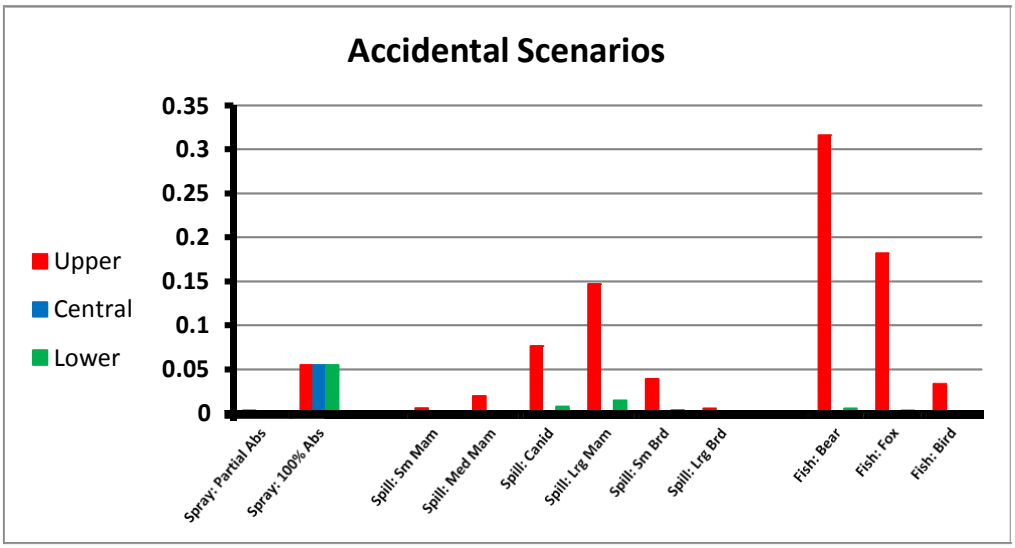
Summary of Hazard Quotients (Toxicity) for4 the Terrestrial Animals G01V6

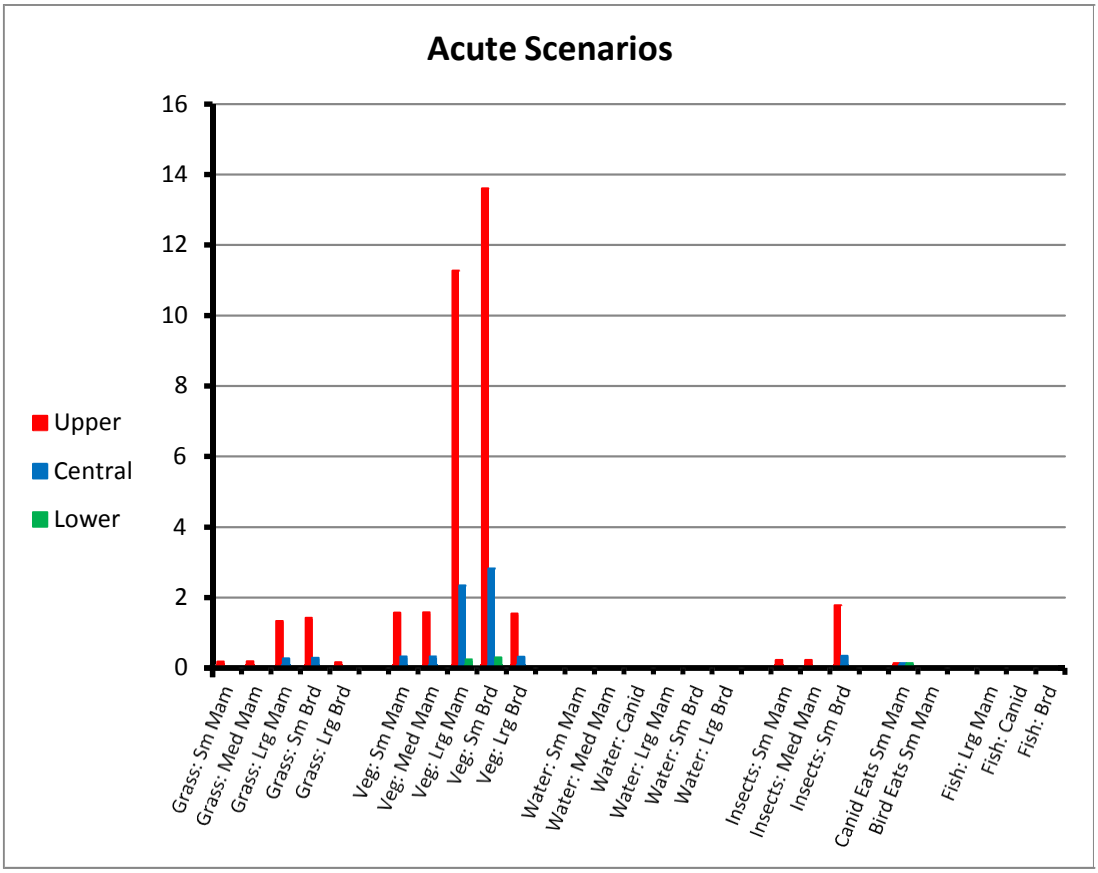
Application Rate: lb a.e./acre G01V6

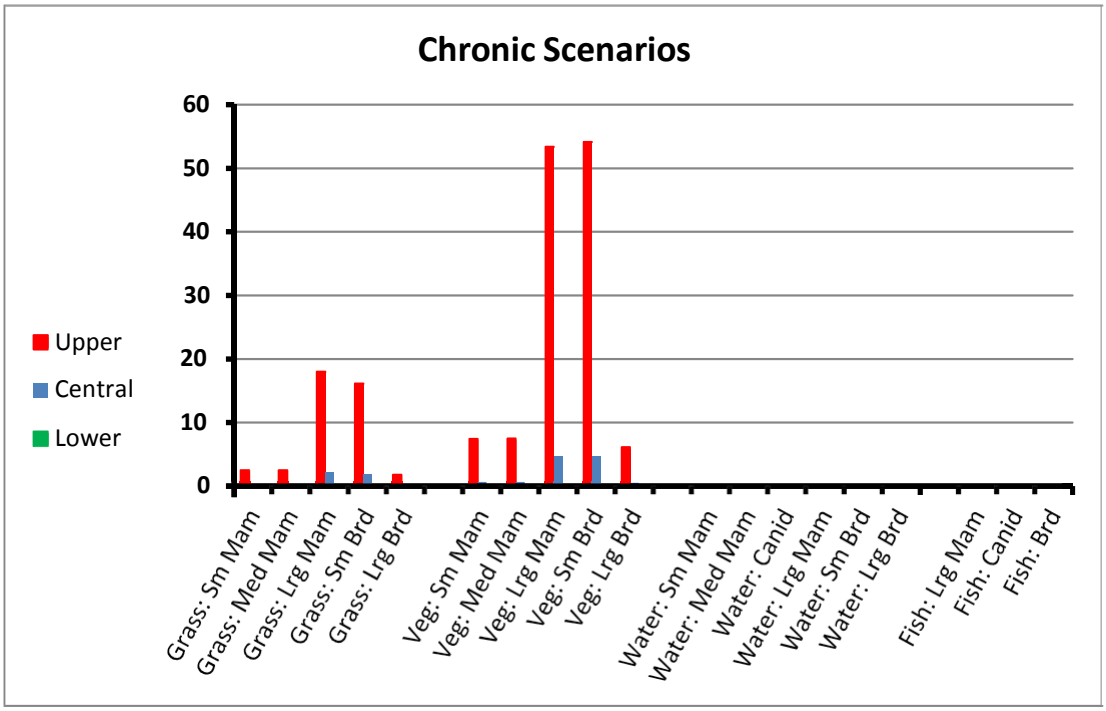
Scenario	Receptor	Hazard Quotients Central	Hazard Quotients Lower	Hazard Quotients Upper	Toxicity Value	
Accidental Acute Exposures						
Direct Spray						
first-order absorption	Small mammal (20g)	1E-03	4E-04	3E-03	440	NOAEL*
100% absorption	Small mammal (20g)	6E-02	6E-02	6E-02	440	NOAEL*
Contaminated Water						
Spill	Small mammal (20g)	6E-04	8E-05	6E-03	440	NOAEL*
Spill	Larger Mammal (400g)	2E-03	2E-04	2E-02	100	NOAEL
Spill	Canid (5 kg)	8E-03	1E-03	8E-02	20	NOAEL*
Spill	Large Mammal (70g)	1E-02	2E-03	0.1	8	NOAEL*
Spill	Small bird (10g)	4E-03	5E-04	4E-02	126	NOAEL
Spill	Large Bird (4 kg)	5E-04	7E-05	5E-03	126	NOAEL
Consumption of contaminated Fish						
Spill	Large Mammalian Carnivore (70 kg)	6E-03	7E-05	0.3	8	NOAEL*
Spill	Canid (5 kg)	3E-03	4E-05	0.2	20	NOAEL*
Spill	Fish-eating bird (2.4 kg)	6E-04	7E-06	3E-02	126	NOAEL
Non-Accidental Acute Exposures						
Contaminated Fruit (Lowest Residue Rate)						
	Small mammal (20g)	4E-02	5E-03	0.2	440	NOAEL*
	Larger Mammal (400g)	4E-02	5E-03	0.2	100	NOAEL
	Large Mammal (70g)	0.3	4E-02	1.3	8	NOAEL*
	Small bird (10g)	0.3	4E-02	1.4	126	NOAEL
	Large Bird (4 kg)	3E-02	4E-03	0.2	126	NOAEL
Contaminated Vegetation (Short Grass - Highest Residue Rate)						
	Small mammal (20g)	0.3	3E-02	1.6	440	NOAEL*
	Larger Mammal (400g)	0.3	3E-02	1.6	100	NOAEL
	Large Mammal	2	0.2	11	8	NOAEL*
	Small bird (10g)	3	0.3	14	126	NOAEL
	Large Bird (4 kg)	0.3	3E-02	1.5	126	NOAEL
Contaminated Water						
	Small mammal (20g)	1E-06	3E-10	8E-05	440	NOAEL*
	Larger Mammal (400g)	3E-06	1E-09	3E-04	100	NOAEL
	Canid (5 kg)	1E-05	4E-09	1E-03	20	NOAEL*
	Large Mammal (70g)	2E-05	8E-09	2E-03	8	NOAEL*
	Small bird (10g)	6E-06	2E-09	5E-04	126	NOAEL
	Large Bird (4 kg)	9E-07	3E-10	7E-05	126	NOAEL
Contaminated Insects						
	Small mammal (20g)	4E-02	4E-03	0.2	440	NOAEL*
	Larger Mammal (400g)	4E-02	4E-03	0.2	100	NOAEL
	Small bird (10g)	0.3	3E-02	1.8	126	NOAEL
Consumption of small mammal (after direct spray) by predator						
	Canid (5 kg)	0.1	0.1	0.1	20	NOAEL*
	Carnivorous bird (640 g)	3E-02	3E-02	3E-02	126	NOAEL
Consumption of contaminated Fish						
	Large Mammalian Carnivore (70 kg)	1E-05	3E-10	5E-03	8	NOAEL*
	Canid (5 kg)	6E-06	2E-10	3E-03	20	NOAEL*
	Fish-eating bird (2.4 kg)	9E-07	3E-11	4E-04	126	NOAEL

Chronic/Longer Term Exposures

Contaminated Fruit (Lowest Residue Rate)					
Small mammal (20g)	0.3	3E-02	3	22	NOAEL*
Larger Mammal (400g)	0.3	3E-02	3	5	NOAEL
Large Mammal (70g)	2	0.2	18	0.4	NOAEL*
Small bird (10g)	1.9	0.2	16	7.5	NOAEL
Large Bird (4 kg)	0.2	2E-02	1.8	7.5	NOAEL
Contaminated Vegetation (Short Grass - Highest Residue Rate)					
Small mammal (20g)	0.7	3E-02	7	22	NOAEL*
Larger Mammal (400g)	0.7	3E-02	7	5	NOAEL
Large Mammal (70g)	5	0.2	53	0.4	NOAEL*
Small bird (10g)	5	0.2	54	7.5	NOAEL
Large Bird (4 kg)	0.5	2E-02	6	7.5	NOAEL
Contaminated Water					
Small mammal (20g)	7E-06	1E-12	4E-04	22	NOAEL*
Larger Mammal (400g)	2E-05	4E-12	1E-03	5	NOAEL
Canid (5 kg)	8E-05	2E-11	5E-03	1	NOAEL*
Large Mammal (70g)	2E-04	3E-11	1E-02	0.4	NOAEL*
Small bird (10g)	4E-05	7E-12	2E-03	7.5	NOAEL
Large Bird (4 kg)	5E-06	1E-12	3E-04	7.5	NOAEL
Consumption of contaminated Fish					
Large Mammalian Carnivore (70 kg)	7E-05	1E-12	2E-02	0.4	NOAEL*
Canid (5 kg)	4E-05	8E-13	1E-02	1	NOAEL*
Fish-eating bird (2.4 kg)	5E-06	1E-13	2E-03	7.5	NOAEL


Accidental Scenarios
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Upper
Central
Lower
Spray: Partial Abs
Spray: 100% Abs
Spill: Sm Mam
Spill: Med Mam
Spill: Canid
Spill: Lrg Mam
Spill: Sm Brd
Spill: Lrg Brd
Fish: Bear
Fish: Fox
Fish: Bird


Acute Scenarios
16
14
12
10
8
6
4
2
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Insects: Sm Mam
Insects: Med Mam
Insects: Sm Brd
Canid Eats Sm Mam
Bird Eats Sm Mam
Fish: Lrg Mam
Fish: Canid
Fish: Brd


Chronic Scenarios
60
50
40
30
20
10
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Fish: Lrg Mam
Fish: Canid
Fish: Brd

Exposures and HQs for a Terrestrial Insect (Honeybee) Associated with Direct Spray or Drift Following Terrestrial Applications

Short Title				Abrev(Param->Receptor)
Receptor				
Duration				

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Toxicity Value (Spray)	**ToxVal**	**620**	mg/kg bw	BeeTox[Spray]
Application rate	**$ApRt_{lb/ac}$**	**1**	lb/acre	Prog!ApRt_C
Conversion Factor for lbs/acre to mg/cm^2	**CnvF**	**0.01121**	mg/cm^2/lb/acre	
Application rate, mg/cm^2	**ApR_{mgcm}**	**$ApR_{lb/a}$ × CnvF**		
		0.01121	lb/acre	Eq
Body weight	**BW**	**0.000116**	kg	Param->Receptor.BW
	SA	**1.42**	cm^2	Param->Receptor.SA_WB
Proportion of body surface sprayed	**Prp_{SA}**	**0.5**	unitless	***Param->PrpSA***
Amount Deposited on Skin	**Amnt**	***ApR_{mgcm} × SA × Prp_{SA}***		
		0.0079591	mg	Eq

Foliar Interception	Lower	Central	Upper
	0	0.5	0.9

Proportion of Drift at distances downwind in feet [0 feet = direct spray]	Prop	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack
0	feet	1	1	1	1
25	feet	0.223	0.104	0.035	0.00832
50	feet	0.171	0.05	0.0177	0.00433
100	feet	0.0979	0.0248	0.00948	0.00241
300	feet	0.0312	0.00753	0.0035	0.000941
500	feet	0.0192	0.00391	0.00209	0.000579
900	feet	0.0124	0.00166	0.00109	0.000312

Absorbed Doses (mg/kg bw) = Prop x FolInt x Amnt ÷ BW)				**HQ = Absorbed Doses/ToxVal**		
Aerial	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
0	*68.612931*	*34.30646552*	*6.861293103*	0.1	6E-02	1E-02
25	*15.3006836*	*7.65034181*	*1.530068362*	2E-02	1E-02	2E-03
50	*11.7328112*	*5.866405603*	*1.173281121*	2E-02	9E-03	2E-03
100	*6.71720595*	*3.358602974*	*0.671720595*	1E-02	5E-03	1E-03
300	*2.14072345*	*1.070361724*	*0.214072345*	3E-03	2E-03	3E-04
500	*1.31736828*	*0.658684138*	*0.131736828*	2E-03	1E-03	2E-04
900	*0.85080034*	*0.425400172*	*0.085080034*	1E-03	7E-04	1E-04
Highboom Ground	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*68.612931*	*34.30646552*	*6.861293103*	0.1	6E-02	1E-02
0	*7.13574483*	*3.567872414*	*0.713574483*	1E-02	6E-03	1E-03
25	*3.43064655*	*1.715323276*	*0.343064655*	6E-03	3E-03	6E-04
50	*1.70160069*	*0.850800345*	*0.170160069*	3E-03	1E-03	3E-04
100	*0.51665537*	*0.258327685*	*0.051665537*	8E-04	4E-04	8E-05
300	*0.26827656*	*0.13413828*	*0.026827656*	4E-04	2E-04	4E-05
500	*0.11389747*	*0.056948733*	*0.011389747*	2E-04	9E-05	2E-05

Low Ground	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*68.612931*	*34.30646552*	*6.861293103*	0.1	6E-02	1E-02
Distance Downwind	*2.40145259*	*1.200726293*	*0.240145259*	4E-03	2E-03	4E-04
0	*1.21444888*	*0.60722444*	*0.121444888*	2E-03	1E-03	2E-04
25	*0.65045059*	*0.325225293*	*0.065045059*	1E-03	5E-04	1E-04
50	*0.24014526*	*0.120072629*	*0.024014526*	4E-04	2E-04	4E-05
100	*0.14340103*	*0.071700513*	*0.014340103*	2E-04	1E-04	2E-05
300	*0.07478809*	*0.037394047*	*0.007478809*	1E-04	6E-05	1E-05

Backpack	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*68.612931*	*34.30646552*	*6.861293103*	0.1	6E-02	1E-02
Distance Downwind	*0.57085959*	*0.285429793*	*0.057085959*	9E-04	5E-04	9E-05
Distance Downwind	*0.29709399*	*0.148546996*	*0.029709399*	5E-04	2E-04	5E-05
0	*0.16535716*	*0.082678582*	*0.016535716*	3E-04	1E-04	3E-05
25	*0.06456477*	*0.032282384*	*0.006456477*	1E-04	5E-05	1E-05
50	*0.03972689*	*0.019863444*	*0.003972689*	6E-05	3E-05	6E-06
100	*0.02140723*	*0.010703617*	*0.002140723*	3E-05	2E-05	3E-06

Worksheet G03: Summary of Hazard Quotients for Aquatic Species

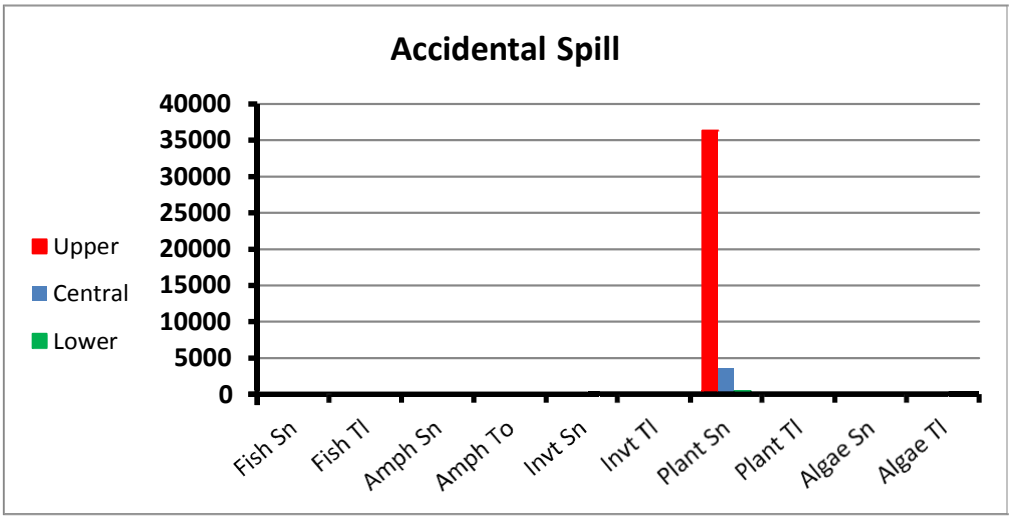
Application Rate: 1 lb a.e./acre

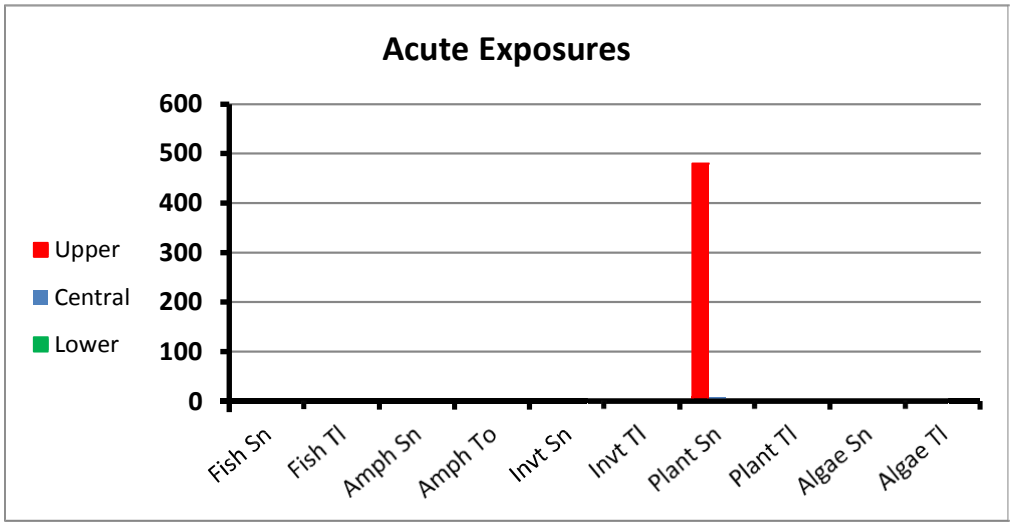
AqToxSumV6

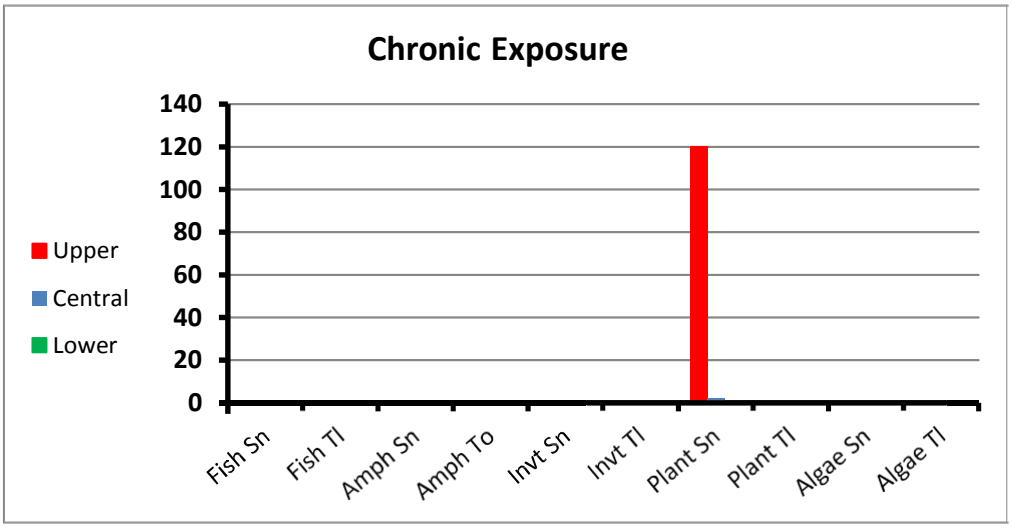
Exposures	Concentrations (mg/L)			
Scenario	Central	Lower	Upper	Worksheet
Accidental	1.8168	0.2271	18.168	B04b
Peak EEC	0.003	0.000001	0.24	D06
Chronic	0.001	2E-10	0.06	D07

Receptor	Type	Hazard Quotients Central	Lower	Upper	Toxicity Value	Toxicity Endpoint
Accidental Acute Exposures						
Fish	Sensitive	9E-02	1E-02	0.9	20	NOAEC*
	Tolerant	9E-03	1E-03	9E-02	210	NOAEC*
Amphibian	Sensitive	1E-02	2E-03	0.1	125	NOEC
	Tolerant	1E-02	2E-03	0.1	125	NOEC
Invertebrate	Sensitive	7E-02	9E-03	0.7	25	NOAEC*
	Tolerant	6E-03	7E-04	6E-02	320	NOAEC*
Macrophyte	Sensitive	**3,634**	**454**	**36,336**	0.0005	NOEC
	Tolerant	0.3	4E-02	**3**	5.6	NOEC
Algae	Sensitive	**8**	1.0	**79**	0.23	NOEC
	Tolerant	0.5	6E-02	**5**	4	NOEC
Accidental Acute Exposures						
Fish	Sensitive	2E-04	5E-08	1E-02	20	NOAEC*
	Tolerant	1E-05	5E-09	1E-03	210	NOAEC*
Amphibian	Sensitive	2E-05	8E-09	2E-03	125	NOEC
	Tolerant	2E-05	8E-09	2E-03	125	NOEC
Invertebrate	Sensitive	1E-04	4E-08	1E-02	25	NOAEC*
	Tolerant	9E-06	3E-09	8E-04	320	NOAEC*
Macrophyte	Sensitive	**6**	2E-03	**480**	0.0005	NOEC
	Tolerant	5E-04	2E-07	4E-02	5.6	NOEC
Algae	Sensitive	1E-02	4E-06	**1.0**	0.23	NOEC
	Tolerant	8E-04	3E-07	6E-02	4	NOEC
Chronic/Longer Term Exposures						
Fish	Sensitive	1E-04	3E-11	8E-03	7.4	NOAEC*
	Tolerant	1E-05	3E-12	8E-04	78	NOAEC*
Amphibian	Sensitive	No toxicity			N/A	
	Tolerant	No toxicity			N/A	
Invertebrate	Sensitive	4E-05	8E-12	2E-03	25	NOAEC
	Tolerant	4E-05	8E-12	2E-03	25	NOAEC
Macrophyte	Sensitive	**2**	4E-07	**120**	0.0005	NOEC
	Tolerant	2E-04	4E-11	1E-02	5.6	NOEC
Algae	Sensitive	4E-03	9E-10	0.3	0.23	NOEC
	Tolerant	3E-04	5E-11	2E-02	4	NOEC

Note: NOEC*, NOAEC* or a similar designation - i.e., NOEC or NOAEC followed by an asterisk (*) -- indicates that the NOEC or similar value was estimated from an LC_{50} ,EC_{50}, or an LOEC. See the risk


Accidental Spill
40000
35000
30000
25000
20000
15000
10000
5000
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl


Acute Exposures
600
500
400
300
200
100
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl


Chronic Exposure
140
120
100
80
60
40
20
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl

Summary of Exposure Assessment and Risk Characterization for Terrestrial Plants from Runoff

Short Title	Runoff to terrestrial plants	**Link to Gleam**
Receptor	Terrestrial vegetation	
Duration	Acute	
User-Specified Gleams-Driver File	None	**Driver**

Parameter/Assumption	Code / Range	Value	Units	Reference
Worksheet Application Rate	$ApRt_{WB}$	**1**	lb/acre	Worksheeet A01
Offsite Application Rates Inputs				
Run ID:	Risk Assessment			
Application Rate Used in Run:	$ApRt_{Run}$	1	lb/acre	
Functional Off-site Application Rate	Central	0.0027	lb/acre	
	Lower	0.000001		
	Upper	0.011		
Calculated Values				
Normalized Off-site Functional Application Rate	$NormApRt_{Offsite}$	$ApRt_{Offsite}$ / $ApRt_{Run}$		
	Central	0.0027	Unitless	Eq
	Lower	0.000001		Eq
	Upper	0.011		Eq
Off-site Application Rate at Workbook Application Rate	$ApRt_{WB}$	$ApRt_{WB}$ x $NormApRt_{Offsite}$		
	Central	0.0027	lb/acre	Eq
	Lower	0.000001		Eq
	Upper	0.011		Eq
Toxicity Values (seedling emergence) in units of lbs/acre				
		Sensitive	Tolerant	
	Endpoint	**NOEC**	**NOEC**	
		0.0028	**0.23**	Section 4.3.2.4.
Hazard Quotients				
	Central	1.0	1E-02	
	Lower	4E-04	4E-06	
	Upper	**4**	5E-02	

General Worksheet Note

Typically, this worksheet is filled in by WorksheetMaker using offsite application rates that are derived in the Forest Service risk assessment. Several different *Application Rates* are noted in the cells in this worksheet this note explains why this is done.

The **Worksheet Application Rate** refers to the application rate that is set by the user in Worksheet A01.

The next section of the worksheet (**Offsite Application Rate Inputs**) is initially set by the WorksheetMaker Program. The Application Rate Used in Run refers to the application rate used in the simulation software (typically Gleams-Driver) used to derived the Functional Off-site Application Rate. This is the application rate to the nontarget site based on runoff. In Forest Service risk assessments, a unit application rate of 1 lb/acre is always used. If you set a custom Gleams-Driver input file in Worksheet B04, the information from the Gleams-Driver input file will replace the values that had been initially filled in by the WorksheetMaker program. Alternatively, you can fill in any of these values manually.

In the **Calculated Values** section, this worksheet normalizes the Functional Offsite Application Rate. If the values are from a risk assessment (where an application rate of 1 lb/acre is always used in the Gleams-Driver run), these rates will be identical to the rats in the above section.

The **Toxicity Values** are typically those used in the risk assessment. You can change these if you have a good reason for doing so. Also, you can add columns it you want to show HQ values for other species of particular concern. To ensure that any values for new plants will format correctly, you should insert the new information between the Sensitive and Tolerant entries. To do this, select from the cell above labeled Tolerant (D24) down to the upper range of the hazard quotient (D30). While these cells are selected, do a *Right Mouse Click* and then scroll down to *Insert*. Then, select the *Shift Cells to Right* option. If you want to add more than one plant species, hit Control-Y to repeat this operation. If this is not clear, Press F1 (Help) and review the Excel Documentation for inserting cells into a worksheet or consult a reference book on Excel.

Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Drift After Broadcast Foliar Application

Short Title	Drift to terrestrial plants	PlntDrift3Apps
Receptor	Terrestrial vegetation	
Duration	Acute	
User-Specified Gleams-Driver File	None	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Worksheet Application Rate	ApRt	1	lb/acre	Worksheet A01
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.4.
Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.4.
Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**			

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack	
0	1	1	1	1	unitless
25	0.223	0.104	0.035	0.00832	
50	0.171	0.05	0.0177	0.00433	
100	0.0979	0.0248	0.00948	0.00241	
300	0.0312	0.00753	0.0035	0.000941	
500	0.0192	0.00391	0.00209	0.000579	
900	0.0124	0.00166	0.00109	0.000312	

Estimates of functional offsite application rate **OfApRt** ***=ApRt x Prop***

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack	
0	*1*	*1*	*1*	*1*	Eq
25	*0.223*	*0.104*	*0.035*	*0.00832*	Eq
50	*0.171*	*0.05*	*0.0177*	*0.00433*	Eq
100	*0.0979*	*0.0248*	*0.00948*	*0.00241*	Eq
300	*0.0312*	*0.00753*	*0.0035*	*0.000941*	Eq
500	*0.0192*	*0.00391*	*0.00209*	*0.000579*	Eq
900	*0.0124*	*0.00166*	*0.00109*	*0.000312*	Eq

Hazard Quotients (Sensitive Species) HQ_{Sens} = ***OfApRt / ToxVal*** $_{Sens}$

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack
0	**357**	**357**	**357**	**357**
25	**80**	**37**	**13**	**3**
50	**61**	**18**	**6**	**1.5**
100	**35**	**9**	**3**	0.9
300	**11**	**3**	**1.3**	0.3
500	**7**	**1.4**	0.7	0.2
900	**4**	0.6	0.4	0.1

Hazard Quotients (Tolerant Species)

0	0.5	0.5	0.5	0.5
25	0.1	5E-02	2E-02	4E-03
50	9E-02	3E-02	9E-03	2E-03
100	5E-02	1E-02	5E-03	1E-03
300	2E-02	4E-03	2E-03	5E-04
500	1E-02	2E-03	1E-03	3E-04
900	6E-03	8E-04	5E-04	2E-04

Potential exposure of non-target plants through the use of contaminated irrigation water based on estimates concentrations in ambient water.

Short Title	Irrigation Water			
Receptor				
Duration	Non-target plants			Abrev(Dur)

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Application Rate	**ApRt**	1	lb/acre	Prog!ApRt_C
Water contamination rate	**WCR**			
	Central	1.8168	mg/L per	
	Lower	0.2271	lb/acre	
	Upper	18.168		
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	1	unitless	Prog!TEF_C
	Lower	1		Prog!TEF_L
	Upper	1		Prog!TEF_U
Concentration in irrigation water	**$Conc_{Wat}$**	***ApRt × WCR × TEF***		
	Central	0.003	mg/L	Eq
	Lower	0.000001		Eq
	Upper	0.24		Eq
Amount of irrigation water applied	**IrrigAmnt**			
	Central	1	inches	Param->Inches_C
	Lower	0.25		Param->Inches_L
	Upper	2		Param->Inches_U
Gallons per Acre-Foot	**GalPerAc-Ft**	325900	gal/acre-foot	Std!CnvFct.acrefoot2gal
Liters per Gallon	**LtPerGal**	3.785	liters/gal	Std!CnvFct.gal2lit
Liters of water applied per acre per inch of irrigation water (*rounded to nearest liter*)	**LpApI**	***GalPerAc-Ft × LtPerGal / 12***		
		102,794	Lit/acre-inch	Eq
Liters of water applied per acre	**LPA**	***IrrigAmnt × LpApI***		
	Central	102794	liters	Eq
	Lower	25698.5		Eq
	Upper	205588		Eq
Application Rate (mg/acre)	**$ApR_{mg/a}$**	***$Conc_{Wat}$ × LPA***		
	Central	308.382	mg/acre	Eq
	Lower	0.0256985		Eq
	Upper	49341.12		Eq
Conversion factor for mg to lb	**Conv**	0.0000022		Std!CnvFct.mg2lb
Functional application rate (lb/acre)	**FncApR**	**$ApR_{mg/a}$ × Conv**		
	Central	0.00067844	lb/acre	Eq
	Lower	5.65367E-08		Eq
	Upper	0.108550464		Eq
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	**NOEC**	0.0028	lb/acre	Section 4.3.2.4.
Tolerant species	**NOEC**	2	lb/acre	Section 4.3.2.4.

Hazard Quotients

HQs	Sensitive species	Tolerant species
Central	2.E-01	3.E-04
Lower	2.E-05	3.E-08
Upper	39	5.E-02

Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Wind Erosion at the Specified Application Rate.

Short Title	Wind erosion, terrestrial plants	PlntWind2
Receptor	Terrestrial vegetation	
Duration	Acute	
User-Specified Gleams-Driver File	None	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Worksheet Application Rate	ApRt	1	lb/acre	Worksheet A01
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	NOEC	0.0028	lb/acre	Section 4.3.2.4.
Tolerant species	NOEC	2	lb/acre	Section 4.3.2.4.
Soil losses due to wind ersion	Loss_TonHa			
	Central	5	Tons per	Scenario parameter
	Lower	1	hectare per	Scenario parameter
	Upper	10	year	Scenario parameter
Conversion for tons/ha to grams per cm^2	Conv1	0.01		
Soil losses in grams/square centimeter	Loss_GrCm			
	Central	*0.05*	g/cm^2 per	Eq
	Lower	*0.01*	year	Eq
	Upper	*0.1*		Eq
Soil Density	Dens	2	g/cm^2	
Soil losses in cm/day	Loss_CmDay	*= Loss_GrCm /(Dens * 365)*		
	Central	*6.84932E-05*	cm per day	Eq
	Lower	*1.36986E-05*		Eq
	Upper	*0.000136986*		Eq
Depth of incorporation	Depth	1	cm	Scenario parameter
Proportion of contaminated soil lost per day	PropLost			
	Central	6.84932E-05	unitless	
	Lower	1.36986E-05		
	Upper	0.000136986		
Estimates of functional offsite application rate		**OfApRt =*ApRt x PropLost***		
	Central	*6.84932E-05*	lb/acre	Eq
	Lower	*1.36986E-05*		Eq
	Upper	*0.000136986*		Eq
Hazard Quotients (Sensitive Species)		HI_{Sens} = *OfApRt / ToxVal* $_{Sens}$		
	Central	2E-02		
	Lower	5E-03		
	Upper	5E-02		
Hazard Quotients (Tolerant Species)		HI_{Tol} = *OfApRt / ToxVal* $_{Tol}$		
	Central	3E-05		
	Lower	7E-06		
	Upper	7E-05		

Consumption of Contaminated Fruit/Large Insects by a Herbivorous Insect, acute exposure after a single application

Short Title	Fruit	FdPropBW_Ac
Receptor	Herbivorous Insect	
Duration	Acute	
Material consumed	Fruit/Large Insects	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Application Rate (lbs/acre)	**ApRt**	1	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	1.3	kg food/kg BW per day	Waldbauer 1968
	Lower	0.6		Reichle et al. 1973
	Upper	2.2		Waldbauer 1968
Residue Rates	**rr**			
	Central	7	mg/kg food per lb/acre	Worksheet A01
	Lower	3.2		Worksheet A01
	Upper	15		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*7*	mg/kg food item	Eq
	Lower	*3.2*		Eq
	Upper	*15*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	1	Unitless	Worksheet A01
	Lower	1		Worksheet A01
	Upper	1		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*9.1*	mg/kg bw	Eq
	Lower	*1.92*		Eq
	Upper	*33*		Eq

Consumption of Contaminated Broadleaf/Small Insects by a Herbivorous Insect, acute exposure after a single application

Short Title	Broadleaf	FdPropBW_Ac
Receptor	Herbivorous Insect	
Duration	Acute	
Material consumed	Broadleaf/Small Insects	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Application Rate (lbs/acre)	**ApRt**	1	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	1.3	kg food/kg BW per day	Waldbauer 1968
	Lower	0.6		Reichle et al. 1973
	Upper	2.2		Waldbauer 1968
Residue Rates	**rr**			
	Central	45	mg/kg food per lb/acre	Worksheet A01
	Lower	15		Worksheet A01
	Upper	135		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*45*	mg/kg food item	Eq
	Lower	*15*		Eq
	Upper	*135*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	1	Unitless	Worksheet A01
	Lower	1		Worksheet A01
	Upper	1		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*58.5*	mg/kg bw	Eq
	Lower	*9*		Eq
	Upper	*297*		Eq

Consumption of Contaminated Short grass by a Herbivorous Insect, acute exposure after a single application

Short Title	Short Grass			FdPropBW_Ac
Receptor	Herbivorous Insect			
Duration	Acute			
Material consumed	Short grass			

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
	Lower	**0.6**		Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**80**	mg/kg food per lb/acre	Worksheet A01
	Lower	**60**		Worksheet A01
	Upper	**240**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*85*	mg/kg food item	Eq
	Lower	*30*		Eq
	Upper	*240*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*110.5*	mg/kg bw	Eq
	Lower	*18*		Eq
	Upper	*528*		Eq

Consumption of Contaminated Tall Grass by a Herbivorous Insect, acute exposure after a single application

Short Title	Tallt Grass	FdPropBW_Ac
Receptor	Herbivorous Insect	
Duration	Acute	
Material consumed	Tall grass	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Application Rate (lbs/acre)	**ApRt**	1	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	1.3	kg food/kg BW per day	Waldbauer 1968
	Lower	0.6		Reichle et al. 1973
	Upper	2.2		Waldbauer 1968
Residue Rates	**rr**			
	Central	36	mg/kg food per lb/acre	Worksheet A01
	Lower	12		Worksheet A01
	Upper	110		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*36*	mg/kg food item	Eq
	Lower	*12*		Eq
	Upper	*110*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	1	Unitless	Worksheet A01
	Lower	1		Worksheet A01
	Upper	1		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*46.8*	mg/kg bw	Eq
	Lower	*7.2*		Eq
	Upper	*242*		Eq

Summary of Exposure Assessments for the Herbivorous or Predatory Insects

Application Rate:	1	lb a.e./acre			InstHerbSum
Food Item	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
		Central	**Lower**	**Upper**	
Accidental Exposures					
Fruit/Large Insects	Insect	9.1	1.92	33	G07a
Broadleaf/Small Insects	Insect	5.85E+01	9.00E+00	2.97E+02	G07b
Short Grass	Insect	1.11E+02	1.80E+01	5.28E+02	G07c
Long Grass	Insect	46.8	7.2	242	G07d

Summary of Exposure Assessments for the Herbivorous or Predatory Insects

Application Rate:	1	lb a.e./acre			InstHerbSum	
Food Item	**Receptor**	**mg/kg/day or mg/kg/event**			**Toxicity Value**	
		Central	**Lower**	**Upper**		
Accidental Exposures						
Fruit/Large Insects	Insect	1E-02	3E-03	5E-02	**620**	<LD50
Broadleaf/Small Insects	Insect	9E-02	1E-02	0.5	**620**	<LD50
Short Grass	Insect	0.2	3E-02	0.9	**620**	<LD50
Long Grass	Insect	8E-02	1E-02	0.4	**620**	<LD50

Attachment 1

USDA Forest Service Worksheets

Workbook 6

Proposed_max_1lb_appv100_Triclopyr_TEA.xlsm

Utilities

Triclopyr TEA Formulations:
Terrestrial Applications

Forest Service Program Worksheets

Worksheet Version 5.00.64

February 20, 2011

General Notes

Prepared by: Patrick R Durkin
Program Version: 5.00.64
Database Used: FS WsMkr V5-01a.mdb
Template Workbook: FS WsMkr V5-01a.mdb
Base Workbook: FS WSMkr Blank V05-01a.xlsm

Color Codes in WorksheetMaker Version 5

WorksheetMaker Version 5 contains four general types of worksheets: front matter sheets, data sheets, calculation sheets, and results sheets. As detailed below, a consistent set of formatting/color are used in the first three types of sheets.

Color Codes used in Workbook for Front Matter, Data and Calculation Worksheets

Green shading	This is a default value or a user specified a value. You can change these values as you see fit but you should have a reason for doing so.
Yellow shading	This is a source for a link in other parts of the workbook. If you have good reason to change the value, you should note the change (with your reason) in the "Revisions" page.
Blue shading	This cell is linked to another cell in the workbook. **Do not change this value.** If you change any of these values, the workbook may not update correctly.
Blue shading blue border	This cell is linked to a Program parameter in Worksheet A01. **Do not change this value.** If you want the value to change, go to Worksheet A01 and change the value in that worksheet.
Purple Shading	Indicates (for information only) that the typical of order of Lower and Upper values is intentionally reversed. This is only used in the second (label) column.
Italics, no shading	The value in this cell is generated by a formula (the number that you see is the result of an equation). This cell is linked only to other cells in the worksheet. **Do not change this value.**

Risk Characterization Worksheets use a modified color scheme based on the value of the hazard quotient (see below). The format for these worksheets will change as you change the application rate or other other inputs.

Color Codes used in Workbook for Risk Characterization Worksheets

HQ **≥** 2	For hazard quotient greater than 2, the number is in **bold font** with a red background and rounded to the nearest integer.
HQ > 1 but < 2	For hazard quotient greater than 1 but less than two, the number is in **bold font** with a white background and rounded to one significant place after the decimal.
HQ ≥ 0.1 but <1	For hazard quotient greater than 0.1 but less than one, the number is in regular font with a white background and rounded to one significant place after the decimal.
HQ < 0.1	For hazard quotient less than 0.1, the number is in regular font with a white background. The number is expressed in scientific notation and rounded to one significant place -- e.g., 2E-02 rather than 0.02.

The specific version of the program that was used is given above along with information about the Access database (containing the information that was used to make this workbook), template workbook (the workbook containing the template worksheets), and base workbook (the workbook that served as the basis for this workbook). Except as noted under the chemical specific notes (next worksheet), these worksheets are substantially identical to those submitted with the SERA risk assessment.

If you want to modify the application rate used in this workbook, go to the A01 worksheet. In this worksheet, change the application rate and/or the application volume(s). **Note that all application rates must be in units of lb a.e./acre for weak acids or lbs a.i./acre for other pesticides.** Generally, you can tell that the pesticide is a weak acid if it is sold as a salt (e.g., sodium, potassium, etc) or if it is an ester. If you are unsure of how to do the conversion, consult the risk assessment or seek other assistance.

Both the application rate section and the application volume section of Worksheet A01 are structured to allow the input of a central rate as well as the lower and upper bounds of a range. In project-specific assessments**,** however, **all three values for the application rate – central, lower, and upper – should be identical**.

Chemical specific notes

Risk Assessment: **SERA TR-052-25-01b**

Report Date: **February, 2011**

The area below is an embedded MS Word Document. Add chemical-specific notes as appropriate.

Revision Histroy

Note: If you make any modifications to this workbook, you should note them in the revision area below. The revision area by default cotains the text *NONE*. The revision area consists of a Microsoft Word document. Thus, once you activate the revision area, there may be a slight delay while EXCEL activates MS Word.

The area below is an embedded MS Word Document. Add revision notes as appropriate.

NONE

Worksheet E01: Summary of Worker Exposure Assessments

Application Rate:		lb a.e./acre			E01aV5-3Wrkr
Scenario	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Accidental/Incidental Exposures					
Contaminated Gloves, 1 min.	Worker	0.00000288	0.00000088	0.00001296	C02a
Contaminated Gloves, 1 hour	Worker	0.0001728	0.0000528	0.0007776	C02b
Spill on Hands, 1 hour	Worker	5.06657E-05	1.15183E-05	0.000299131	C03a
Spill on lower legs, 1 hour	Worker	0.000124855	2.83843E-05	0.000737144	C03b
General Exposures					
	Backpack Applications:	0.006006	0.00036	0.04	C01a
	Ground Broadcast Applications:	0.0224	0.00066	0.1512	C01b
	Aerial Applications:	0.0147	0.00024	0.08	C01c

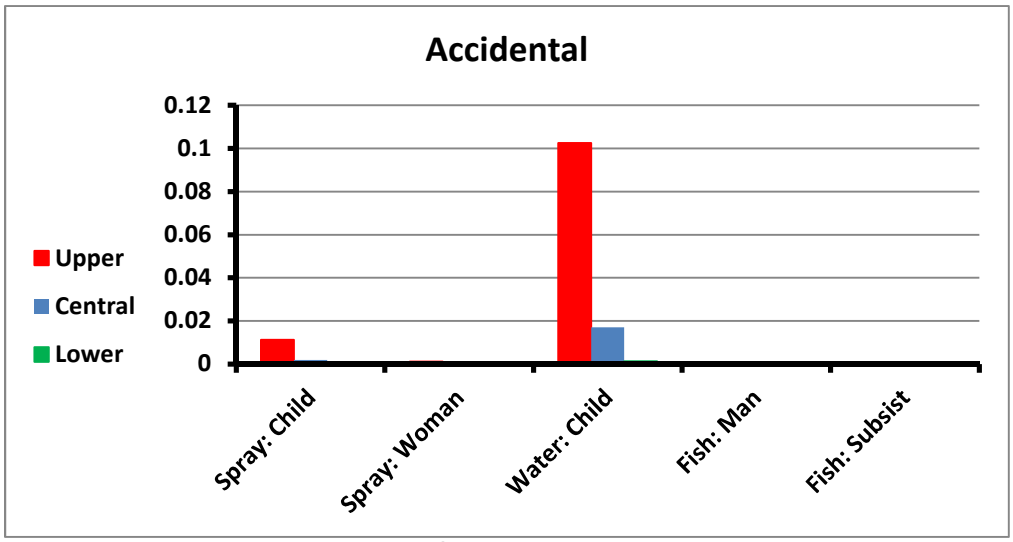
Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)

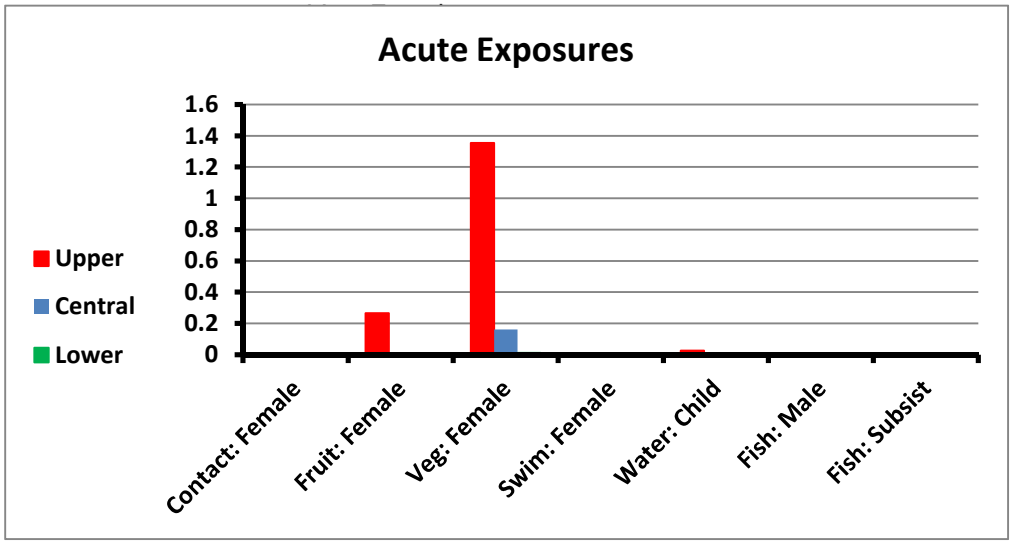
Application Rate:	1	lb a.e./acre			E01aV5-3Wrkr
Scenario	**Receptor**	**Hazard Quotients**			**Toxicity Value**
		Central	**Lower**	**Upper**	
Accidental/Incidental Exposures					
Contaminated Gloves, 1 min.	Worker	3E-06	9E-07	1E-05	1
Contaminated Gloves, 1 hour	Worker	2E-04	5E-05	8E-04	1
Spill on Hands, 1 hour	Worker	5E-05	1E-05	3E-04	1
Spill on lower legs, 1 hour	Worker	1E-04	3E-05	7E-04	1
General Exposures					
Chronic Exposures					
	Backpack Applications:	0.1	7E-03	0.8	0.05
	Ground Broadcast Applications:	0.4	1E-02	3	0.05
	Aerial Applications:	0.3	5E-03	1.6	0.05
Acute Exposures (Male Workers Only)					
	Backpack Applications:	6E-03	6E-03	6E-03	1
	Ground Broadcast Applications:	2E-02	2E-02	2E-02	1
	Aerial Applications:	1E-02	1E-02	1E-02	1

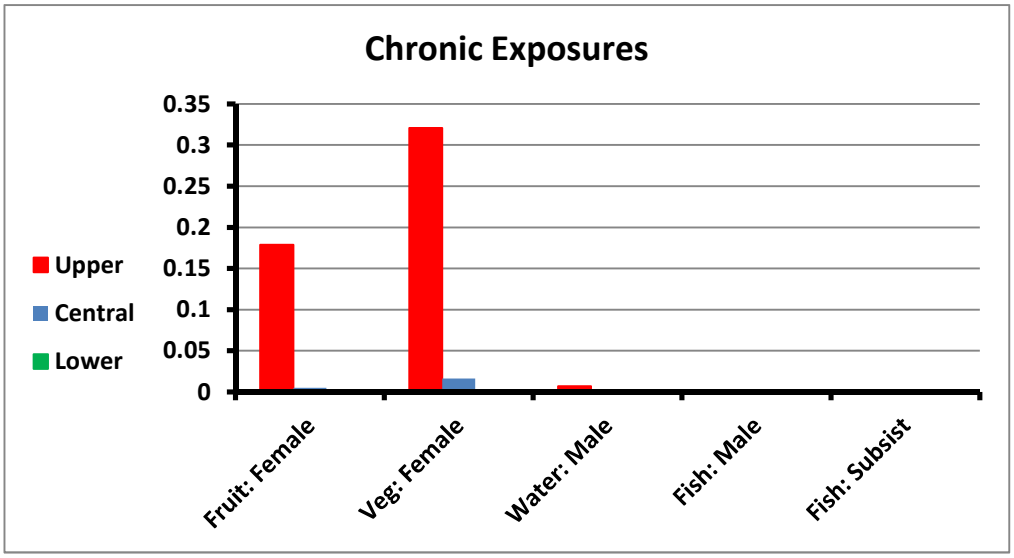
As discussed in Section 3.4.2, the custom worksheet includes a set of HQs based on general exposures using the acute RfD. The acute exposure HQs apply only to male workers. ***Risks to female workers must be based on the chronic HQs regardless of the duration of exposure.*** See Section 3.4.2 for the discussion.

Worksheet E03: Summary of Exposure Assessments for the General Public

Application Rate:	1	lb a.e./acre			E03aV6
Scenario	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
		Central	**Lower**	**Upper**	
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	1.91E-03	4.35E-04	1.13E-02	D01a
Direct Spray of Woman, feet and lower legs	Adult Female	1.92E-04	4.37E-05	**1.14E-03**	D01b
Water consumption (spill)	Child	1.71E-02	1.39E-03	**1.02E-01**	D05
Fish consumption (spill)	Adult Male	3.08E-05	4.10E-06	1.23E-04	D08a
Fish consumption (spill)	Subsistence Populations	1.50E-04	2.00E-05	6.00E-04	D08b
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	2.20E-03	7.55E-04	6.37E-03	D02
Contaminated Fruit	Adult Female	1.23E-02	5.41E-03	**2.66E-01**	D03a
Contaminated Vegetation	Adult Female	**1.62E-01**	1.13E-02	**1.36E+00**	D03b
Swimming, one hour	Adult Female	1.90E-08	2.90E-12	3.42E-06	D11
Water consumption	Child	2.26E-04	4.59E-08	2.71E-02	D06
Fish consumption	Adult Male	4.06E-07	1.35E-10	3.25E-05	D09c
Fish consumption	Subsistence Populations	1.98E-06	6.60E-10	1.58E-04	D09d
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	4.79E-03	1.40E-03	**1.79E-01**	D04a
Contaminated Vegetation	Adult Female	1.61E-02	4.69E-04	**3.21E-01**	D04b
Water consumption	Adult Male	7.52E-05	9.17E-12	6.77E-03	D07
Fish consumption	Adult Male	8.57E-09	1.71E-15	5.14E-07	D09a
Fish consumption	Subsistence Populations	6.94E-08	1.39E-14	4.17E-06	D09b

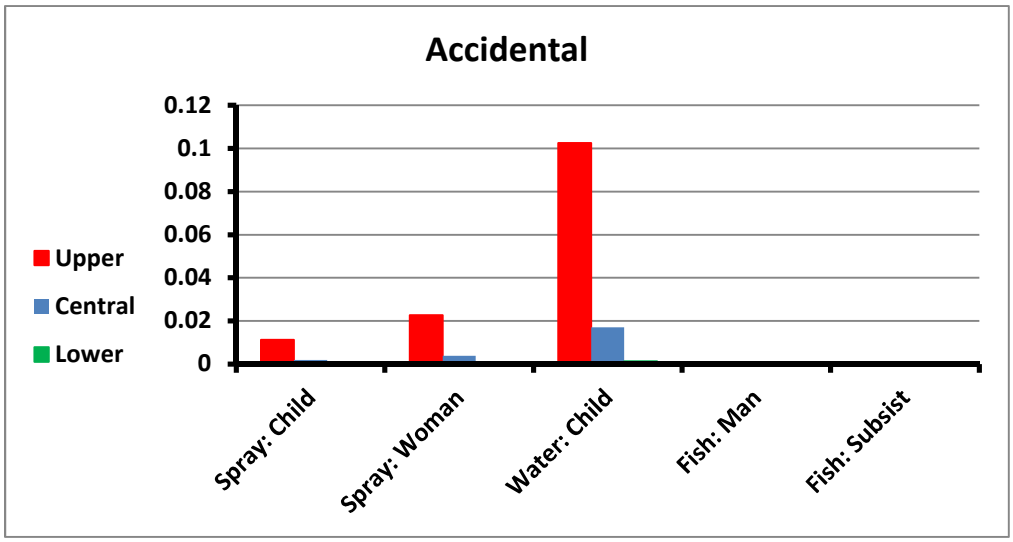

Accidental
0.12
0.1
0.08
0.06
0.04
0.02
0
Upper
Central
Lower
Spray: Child
Spray: Woman
Water: Child
Fish: Man
Fish: Subsist

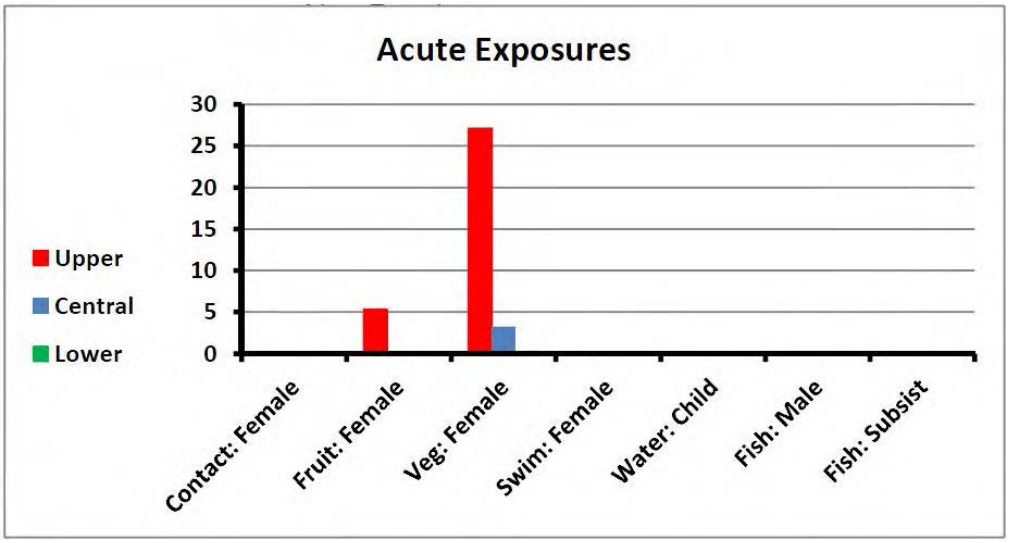

Acute Exposures
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Upper
Central
Lower
Contact: Female
Fruit: Female
Veg: Female
Swim: Female
Water: Child
Fish: Male
Fish: Subsist

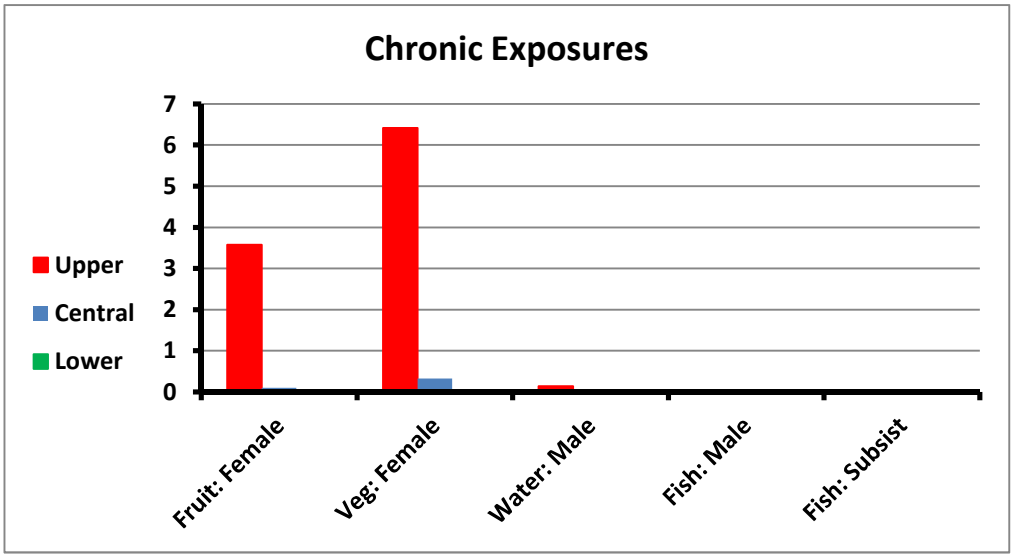

Chronic Exposures
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Upper
Central
Lower
Fruit: Female
Veg: Female
Water: Male
Fish: Male
Fish: Subsist

Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General Public

Application Rate:	1	lb a.e./acre			E03aV6
Scenario	**Receptor**	**Hazard Quotients**			**Toxicity Value**
		Central	**Lower**	**Upper**	
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	2E-03	4E-04	1E-02	1
Direct Spray of Woman, feet and lower legs	Adult Female	4E-03	9E-04	2E-02	0.05
Water consumption (spill)	Child	2E-02	1E-03	0.1	1
Fish consumption (spill)	Adult Male	3E-05	4E-06	1E-04	1
Fish consumption (spill)	Subsistence Populations	1E-04	2E-05	6E-04	1
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	4E-02	2E-02	0.1	0.05
Contaminated Fruit	Adult Female	0.2	0.1	5	0.05
Contaminated Vegetation	Adult Female	3	0.2	27	0.05
Swimming, one hour	Adult Female	4E-07	6E-11	7E-05	0.05
Water consumption	Child	2E-04	5E-08	3E-02	1
Fish consumption	Adult Male	4E-07	1E-10	3E-05	1
Fish consumption	Subsistence Populations	2E-06	7E-10	2E-04	1
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	1E-01	3E-02	4	0.05
Contaminated Vegetation	Adult Female	0.3	9E-03	6	0.05
Water consumption	Adult Male	2E-03	2E-10	0.1	0.05
Fish consumption	Adult Male	2E-07	3E-14	1E-05	0.05
Fish consumption	Subsistence Populations	1E-06	3E-13	8E-05	0.05


Accidental
0.12
0.1
0.08
0.06
0.04
0.02
0
Upper
Central
Lower
Spray: Child
Spray: Woman
Water: Child
Fish: Man
Fish: Subsist


Acute Exposures
30
25
20
15
10
5
0
Upper
Central
Lower
Contact: Female
Fruit: Female
Veg: Female
Swim: Female
Water: Child
Fish: Male
Fish: Subsist


Chronic Exposures
7
6
5
4
3
2
1
0
Upper
Central
Lower
Fruit: Female
Veg: Female
Water: Male
Fish: Male
Fish: Subsist

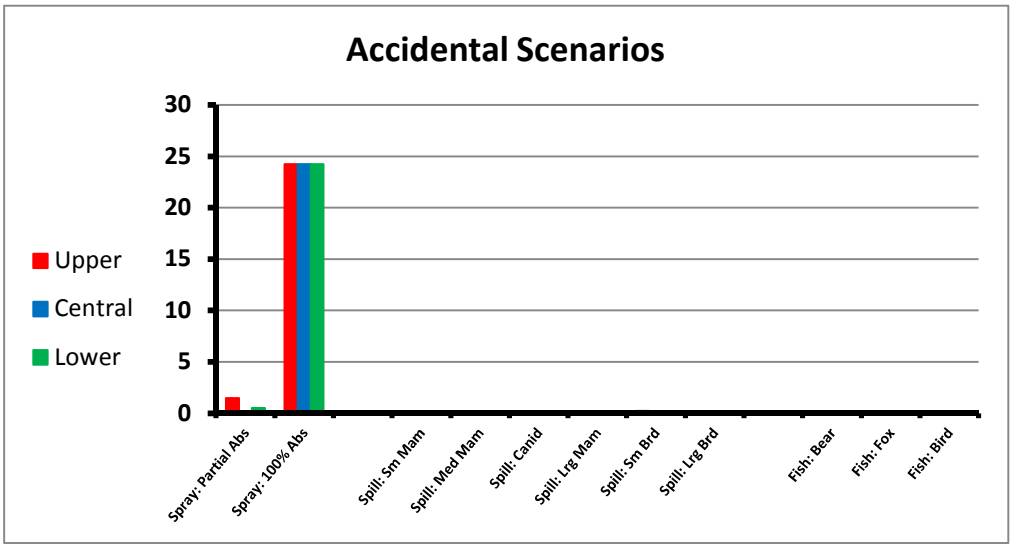
Summary of Exposure Assessments for the Terrestrial Animals

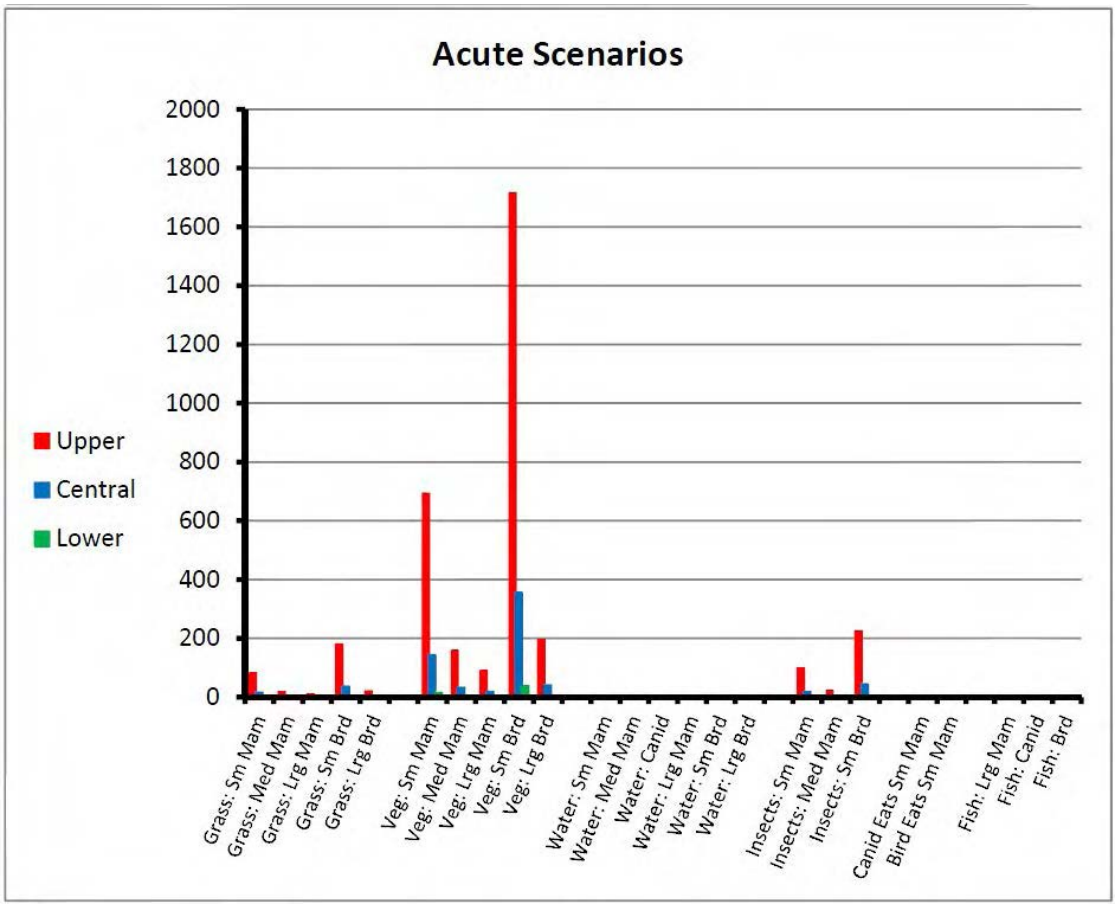
G01V6

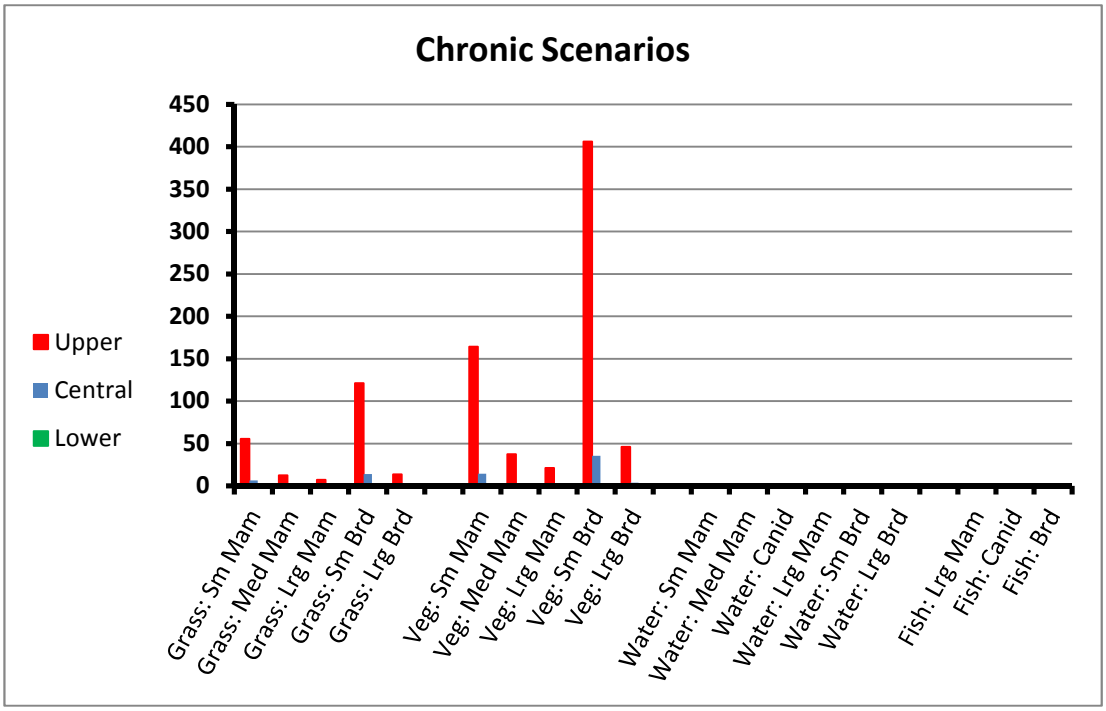
Application Rate:	1	lb a.e./acre			G01V6
Scenario	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Accidental Acute Exposures					
Direct Spray					
first-order absorption	Small mammal (20g)	5.07E-01	1.74E-01	1.47E+00	F01a
100% absorption	Small mammal (20g)	2.42E+01	2.42E+01	2.42E+01	F01b
Contaminated Water					
Spill	Small mammal (20g)	3.32E-02	4.43E-03	1.33E-01	F02a
Spill	Larger Mammal (400g)	2.46E-02	3.29E-03	9.86E-02	F02b
Spill	Canid (5 kg)	1.91E-02	2.55E-03	7.66E-02	F02c
Spill	Large Mammal (70g)	1.47E-02	1.96E-03	5.88E-02	F02d
Spill	Small bird (10g)	6.12E-02	8.17E-03	2.45E-01	F02e
Spill	Large Bird (4 kg)	8.48E-03	1.13E-03	3.39E-02	F02f
Consumption of contaminated Fish					
Spill	Large Mammalian Carnivore (70 kg)	5.58E-03	7.44E-05	1.26E-01	F03a
Spill	Canid (5 kg)	8.03E-03	1.07E-04	1.82E-01	F03b
Spill	Fish-eating bird (2.4 kg)	9.32E-03	1.24E-04	2.11E-01	F03c
Non-Accidental Acute Exposures					
Contaminated Fruit (Lowest Residue Rate)					
	Small mammal (20g)	1.66E+01	2.19E+00	8.23E+01	F04a
	Larger Mammal (400g)	3.80E+00	5.01E-01	1.88E+01	F04b
	Large Mammal (70g)	2.16E+00	2.85E-01	1.07E+01	F04c
	Small bird (10g)	3.64E+01	4.80E+00	1.80E+02	F04d
	Large Bird (4 kg)	4.14E+00	5.46E-01	2.05E+01	F04e
Contaminated Vegetation (Short Grass - Highest Residue Rate)					
	Small mammal (20g)	1.44E+02	1.52E+01	6.94E+02	F05a
	Larger Mammal (400g)	3.29E+01	3.48E+00	1.58E+02	F05b
	Large Mammal	1.87E+01	1.98E+00	9.02E+01	F05c
	Small bird (10g)	3.56E+02	3.77E+01	1.72E+03	F05d
	Large Bird (4 kg)	4.05E+01	4.29E+00	1.95E+02	F05e
Contaminated Water					
	Small mammal (20g)	4.39E-04	1.46E-07	3.51E-02	F06a
	Larger Mammal (400g)	3.25E-04	1.08E-07	2.60E-02	F06b
	Canid (5 kg)	2.53E-04	8.43E-08	2.02E-02	F06c
	Large Mammal (70g)	1.94E-04	6.47E-08	1.55E-02	F06d
	Small bird (10g)	8.09E-04	2.70E-07	6.47E-02	F06e
	Large Bird (4 kg)	1.12E-04	3.73E-08	8.96E-03	F06f
Contaminated Insects					
	Small mammal (20g)	1.93E+01	1.93E+00	9.86E+01	F07a
	Larger Mammal (400g)	4.40E+00	4.40E-01	2.25E+01	F07b
	Small bird (10g)	4.38E+01	4.38E+00	2.24E+02	F07c
Consumption of small mammal (after direct spray) by predator					
	Canid (5 kg)	2.72E+00	2.72E+00	2.72E+00	F08a
	Carnivorous bird (640 g)	3.23E+00	3.23E+00	3.23E+00	F08b
Consumption of contaminated Fish					
	Large Mammalian Carnivore (70 kg)	8.23E-05	2.74E-09	3.73E-02	F09a
	Canid (5 kg)	1.19E-04	3.95E-09	5.37E-02	F09b
	Fish-eating bird (2.4 kg)	1.19E-04	3.97E-09	5.40E-02	F09c

Chronic/Longer Term Exposures

Contaminated Fruit (Lowest Residue Rate)				
Small mammal (20g)	6.47E+00	5.67E-01	5.54E+01	F10a
Larger Mammal (400g)	1.48E+00	1.29E-01	1.26E+01	F10b
Large Mammal (70g)	8.41E-01	7.37E-02	7.20E+00	F10c
Small bird (10g)	1.42E+01	1.24E+00	1.21E+02	F10d
Large Bird (4 kg)	1.61E+00	1.41E-01	1.38E+01	F10e
Contaminated Vegetation (Short Grass - Highest Residue Rate)				
Small mammal (20g)	1.43E+01	6.35E-01	1.64E+02	F11a
Larger Mammal (400g)	3.27E+00	1.45E-01	3.75E+01	F11b
Large Mammal (70g)	1.86E+00	8.26E-02	2.14E+01	F11c
Small bird (10g)	3.54E+01	1.57E+00	4.06E+02	F11d
Large Bird (4 kg)	4.02E+00	1.79E-01	4.62E+01	F11e
Contaminated Water				
Small mammal (20g)	1.46E-04	2.93E-11	8.78E-03	F12a
Larger Mammal (400g)	1.08E-04	2.17E-11	6.51E-03	F12b
Canid (5 kg)	8.43E-05	1.69E-11	5.06E-03	F12c
Large Mammal (70g)	6.47E-05	1.29E-11	3.88E-03	F12d
Small bird (10g)	2.70E-04	5.39E-11	1.62E-02	F12e
Large Bird (4 kg)	3.73E-05	7.47E-12	2.24E-03	F12f
Consumption of contaminated Fish				
Large Mammalian Carnivore (70 kg)	2.74E-05	5.49E-13	9.33E-03	F13a
Canid (5 kg)	3.95E-05	7.90E-13	1.34E-02	F13b
Fish-eating bird (2.4 kg)	3.97E-05	7.94E-13	1.35E-02	F13c


Accidental Scenarios
30
25
20
15
10
5
0
Upper
Central
Lower
Spray: Partial Abs
Spray: 100% Abs
Spill: Sm Mam
Spill: Med Mam
Spill: Canid
Spill: Lrg Mam
Spill: Sm Brd
Spill: Lrg Brd
Fish: Bear
Fish: Fox
Fish: Bird


Acute Scenarios
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Insects: Sm Mam
Insects: Med Mam
Insects: Sm Brd
Canid Eats Sm Mam
Bird Eats Sm Mam
Fish: Lrg Mam
Fish: Canid
Fish: Brd

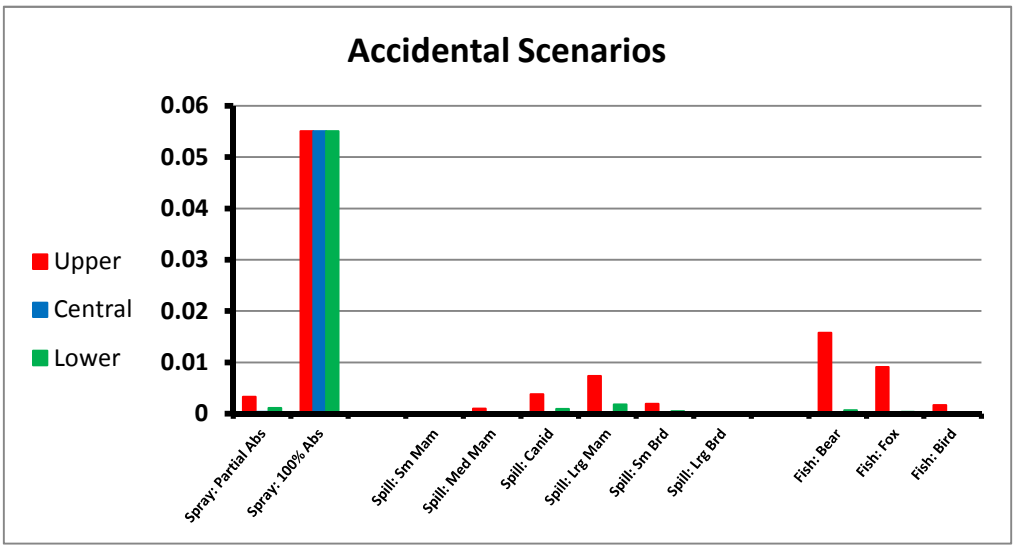

Chronic Scenarios
450
400
350
300
250
200
150
100
50
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Fish: Lrg Mam
Fish: Canid
Fish: Brd

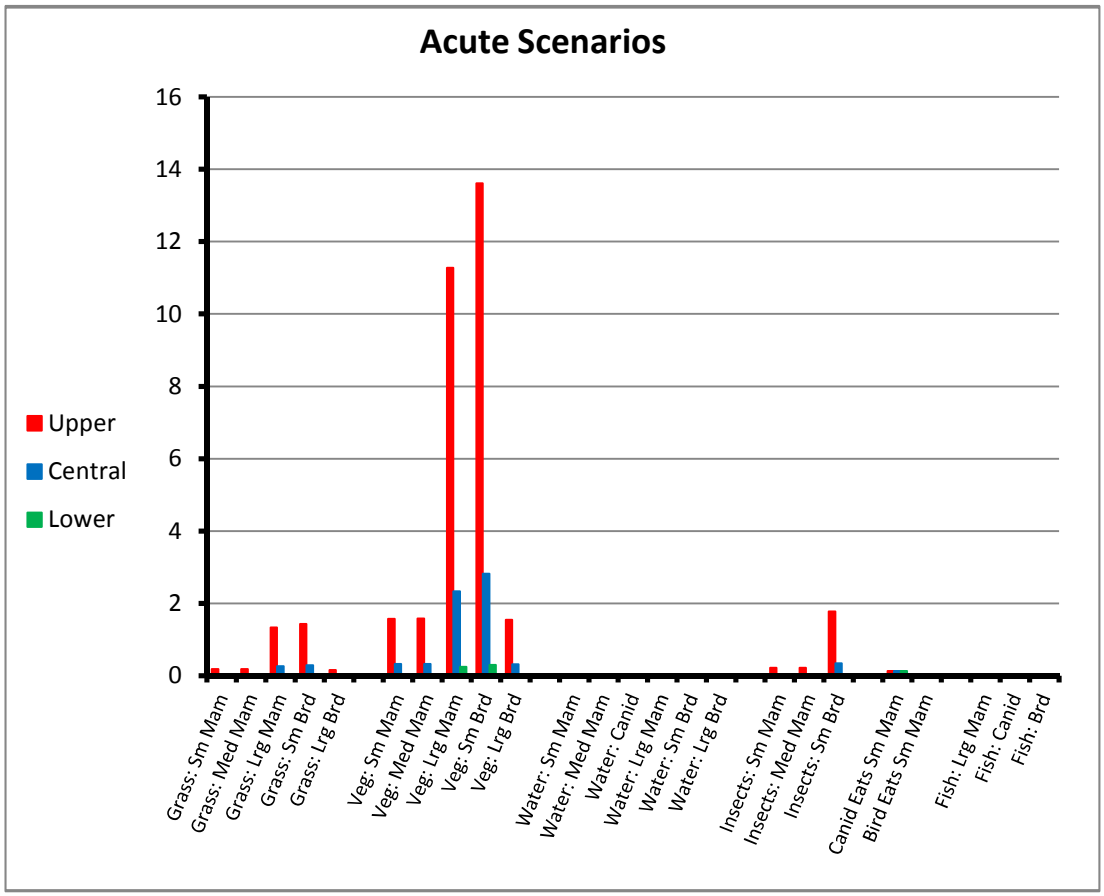
Summary of Hazard Quotients (Toxicity) for the Terrestrial Animals

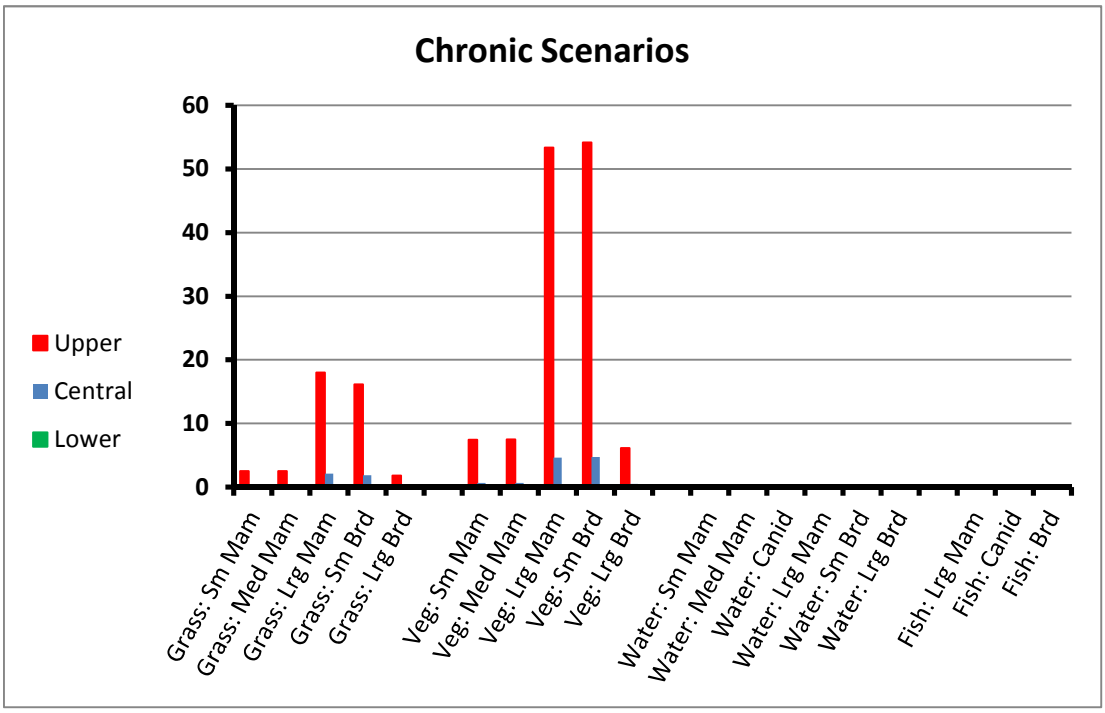
G01V6

Application Rate:	1	lb a.e./acre			G01V6	
Scenario	Receptor	Hazard Quotients			Toxicity Value	
		Central	Lower	Upper		
Accidental Acute Exposures						
Direct Spray						
first-order absorption	Small mammal (20g)	1E-03	4E-04	3E-03	440	NOAEL*
100% absorption	Small mammal (20g)	6E-02	6E-02	6E-02	440	NOAEL*
Contaminated Water						
Spill	Small mammal (20g)	8E-05	1E-05	3E-04	440	NOAEL*
Spill	Larger Mammal (400g)	2E-04	3E-05	1E-03	100	NOAEL
Spill	Canid (5 kg)	1E-03	1E-04	4E-03	20	NOAEL*
Spill	Large Mammal (70g)	2E-03	2E-04	7E-03	8	NOAEL*
Spill	Small bird (10g)	5E-04	6E-05	2E-03	126	NOAEL
Spill	Large Bird (4 kg)	7E-05	9E-06	3E-04	126	NOAEL
Consumption of contaminated Fish						
Spill	Large Mammalian Carnivore (70 kg)	7E-04	9E-06	2E-02	8	NOAEL*
Spill	Canid (5 kg)	4E-04	5E-06	9E-03	20	NOAEL*
Spill	Fish-eating bird (2.4 kg)	7E-05	1E-06	2E-03	126	NOAEL
Non-Accidental Acute Exposures						
Contaminated Fruit (Lowest Residue Rate)						
	Small mammal (20g)	4E-02	5E-03	0.2	440	NOAEL*
	Larger Mammal (400g)	4E-02	5E-03	0.2	100	NOAEL
	Large Mammal (70g)	0.3	4E-02	**1.3**	8	NOAEL*
	Small bird (10g)	0.3	4E-02	**1.4**	126	NOAEL
	Large Bird (4 kg)	3E-02	4E-03	0.2	126	NOAEL
Contaminated Vegetation (Short Grass - Highest Residue Rate)						
	Small mammal (20g)	0.3	3E-02	**1.6**	440	NOAEL*
	Larger Mammal (400g)	0.3	3E-02	**1.6**	100	NOAEL
	Large Mammal	**2**	0.2	**11**	8	NOAEL*
	Small bird (10g)	**3**	0.3	**14**	126	NOAEL
	Large Bird (4 kg)	0.3	3E-02	**1.5**	126	NOAEL
Contaminated Water						
	Small mammal (20g)	1E-06	3E-10	8E-05	440	NOAEL*
	Larger Mammal (400g)	3E-06	1E-09	3E-04	100	NOAEL
	Canid (5 kg)	1E-05	4E-09	1E-03	20	NOAEL*
	Large Mammal (70g)	2E-05	8E-09	2E-03	8	NOAEL*
	Small bird (10g)	6E-06	2E-09	5E-04	126	NOAEL
	Large Bird (4 kg)	9E-07	3E-10	7E-05	126	NOAEL
Contaminated Insects						
	Small mammal (20g)	4E-02	4E-03	0.2	440	NOAEL*
	Larger Mammal (400g)	4E-02	4E-03	0.2	100	NOAEL
	Small bird (10g)	0.3	3E-02	**1.8**	126	NOAEL
Consumption of small mammal (after direct spray) by predator						
	Canid (5 kg)	0.1	0.1	0.1	20	NOAEL*
	Carnivorous bird (640 g)	3E-02	3E-02	3E-02	126	NOAEL
Consumption of contaminated Fish						
	Large Mammalian Carnivore (70 kg)	1E-05	3E-10	5E-03	8	NOAEL*
	Canid (5 kg)	6E-06	2E-10	3E-03	20	NOAEL*
	Fish-eating bird (2.4 kg)	9E-07	3E-11	4E-04	126	NOAEL

Contaminated Fruit (Lowest Residue Rate)				
Small mammal (20g)	0.3	3E-02		NOAEL*
Larger Mammal (400g)	0.3	3E-02		NOAEL
Large Mammal (70g)		0.2		NOAEL*
Small bird (10g)	**1.9**	0.2		NOAEL
Large Bird (4 kg)	0.2	2E-02	**1.8**	NOAEL
Contaminated Vegetation (Short Grass - Highest Residue Rate)				
Small mammal (20g)	0.7	3E-02		NOAEL*
Larger Mammal (400g)	0.7	3E-02		NOAEL
Large Mammal (70g)		0.2		NOAEL*
Small bird (10g)		0.2		NOAEL
Large Bird (4 kg)	0.5	2E-02		NOAEL
Contaminated Water				
Small mammal (20g)	7E-06	1E-12	4E-04	NOAEL*
Larger Mammal (400g)	2E-05	4E-12	1E-03	NOAEL
Canid (5 kg)	8E-05	2E-11	5E-03	NOAEL*
Large Mammal (70g)	2E-04	3E-11	1E-02	NOAEL*
Small bird (10g)	4E-05	7E-12	2E-03	NOAEL
Large Bird (4 kg)	5E-06	1E-12	3E-04	NOAEL
Consumption of contaminated Fish				
Large Mammalian Carnivore (70 kg)	7E-05	1E-12	2E-02	NOAEL*
Canid (5 kg)	4E-05	8E-13	1E-02	NOAEL*
Fish-eating bird (2.4 kg)	5E-06	1E-13	2E-03	NOAEL


Accidental Scenarios
0.06
0.05
0.04
0.03
0.02
0.01
0
Upper
Central
Lower
Spray: Partial Abs
Spray: 100% Abs
Spill: Sm Mam
Spill: Med Mam
Spill: Canid
Spill: Lrg Mam
Spill: Sm Brd
Spill: Lrg Brd
Fish: Bear
Fish: Fox
Fish: Bird


Acute Scenarios
16
14
12
10
8
6
4
2
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Insects: Sm Mam
Insects: Med Mam
Insects: Sm Brd
Canid Eats Sm Mam
Bird Eats Sm Mam
Fish: Lrg Mam
Fish: Canid
Fish: Brd


Chronic Scenarios
60
50
40
30
20
10
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Fish: Lrg Mam
Fish: Canid
Fish: Brd

Exposures and HQs for a Terrestrial Insect (Honeybee) Associated with Direct Spray or Drift Following Terrestrial Applications

Short Title	Direct Spray or Drift	
Receptor	Honey Bee	Abrev(Param->Receptor)
Duration	Acute	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Toxicity Value (Spray)	**ToxVal**	**620**	mg/kg bw	BeeTox[Spray]
Application rate	**$ApRt_{lb/ac}$**	**1**	lb/acre	Prog!ApRt_C
Conversion Factor for lbs/acre to mg/cm^2	**CnvF**	0.01121	mg/cm^2/lb/acre	
Application rate, mg/cm^2	**ApR_{mgcm}**	**$ApR_{lb/a}$ × CnvF**		
		0.01121	lb/acre	Eq
Body weight	**BW**	**0.000116**	kg	Param->Receptor.BW
	SA	**1.42**	cm^2	Param->Receptor.SA_WB
Proportion of body surface sprayed	**Prp_{SA}**	0.5	unitless	***Param->PrpSA***
Amount Deposited on Skin (Direct Spray)	**Amnt**	***ApR_{mgcm}× SA × Prp_{SA}***		
		0.0079591	mg	Eq
Foliar Interception	**FolInt**	Lower	Central	Upper
		0	0.5	0.9

Proportion of Drift at distances downwind in feet [0 feet = direct spray]	Prop	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack
0	feet	1	1	1	1
25	feet	0.223	0.104	0.035	0.00832
50	feet	0.171	0.05	0.0177	0.00433
100	feet	0.0979	0.0248	0.00948	0.00241
300	feet	0.0312	0.00753	0.0035	0.000941
500	feet	0.0192	0.00391	0.00209	0.000579
900	feet	0.0124	0.00166	0.00109	0.000312

Absorbed Doses (mg/kg bw) = Prop x FolInt x Amnt ÷ BW)				HQ = Absorbed Doses/ToxVal		
Aerial	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
0	*68.612931*	*34.30646552*	*6.8612931*	0.1	6E-02	1E-02
25	*15.300684*	*7.65034181*	*1.53006836*	2E-02	1E-02	2E-03
50	*11.732811*	*5.866405603*	*1.17328112*	2E-02	9E-03	2E-03
100	*6.7172059*	*3.358602974*	*0.67172059*	1E-02	5E-03	1E-03
300	*2.1407234*	*1.070361724*	*0.21407234*	3E-03	2E-03	3E-04
500	*1.3173683*	*0.658684138*	*0.13173683*	2E-03	1E-03	2E-04
900	*0.8508003*	*0.425400172*	*0.08508003*	1E-03	7E-04	1E-04
Highboom Ground	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*68.612931*	*34.30646552*	*6.8612931*	0.1	6E-02	1E-02
0	*7.1357448*	*3.567872414*	*0.71357448*	1E-02	6E-03	1E-03
25	*3.4306466*	*1.715323276*	*0.34306466*	6E-03	3E-03	6E-04
50	*1.7016007*	*0.850800345*	*0.17016007*	3E-03	1E-03	3E-04
100	*0.5166554*	*0.258327685*	*0.05166554*	8E-04	4E-04	8E-05
300	*0.2682766*	*0.13413828*	*0.02682766*	4E-04	2E-04	4E-05
500	*0.1138975*	*0.056948733*	*0.01138975*	2E-04	9E-05	2E-05

Low Ground	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*68.612931*	*34.30646552*	*6.8612931*	0.1	6E-02	1E-02
Distance Downwind	*2.4014526*	*1.200726293*	*0.24014526*	4E-03	2E-03	4E-04
0	*1.2144489*	*0.60722444*	*0.12144489*	2E-03	1E-03	2E-04
25	*0.6504506*	*0.325225293*	*0.06504506*	1E-03	5E-04	1E-04
50	*0.2401453*	*0.120072629*	*0.02401453*	4E-04	2E-04	4E-05
100	*0.143401*	*0.071700513*	*0.0143401*	2E-04	1E-04	2E-05
300	*0.0747881*	*0.037394047*	*0.00747881*	1E-04	6E-05	1E-05
Backpack	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*68.612931*	*34.30646552*	*6.8612931*	0.1	6E-02	1E-02
Distance Downwind	*0.5708596*	*0.285429793*	*0.05708596*	9E-04	5E-04	9E-05
Distance Downwind	*0.297094*	*0.148546996*	*0.0297094*	5E-04	2E-04	5E-05
0	*0.1653572*	*0.082678582*	*0.01653572*	3E-04	1E-04	3E-05
25	*0.0645648*	*0.032282384*	*0.00645648*	1E-04	5E-05	1E-05
50	*0.0397269*	*0.019863444*	*0.00397269*	6E-05	3E-05	6E-06
100	*0.0214072*	*0.010703617*	*0.00214072*	3E-05	2E-05	3E-06

Worksheet G03: Summary of Hazard Quotients for Aquatic Species

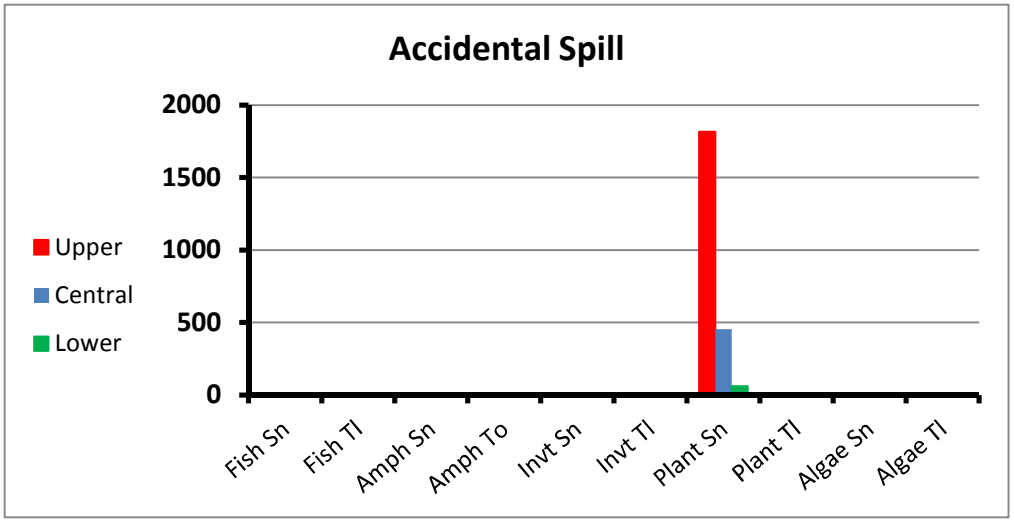
Application Rate: 1 lb a.e./acre

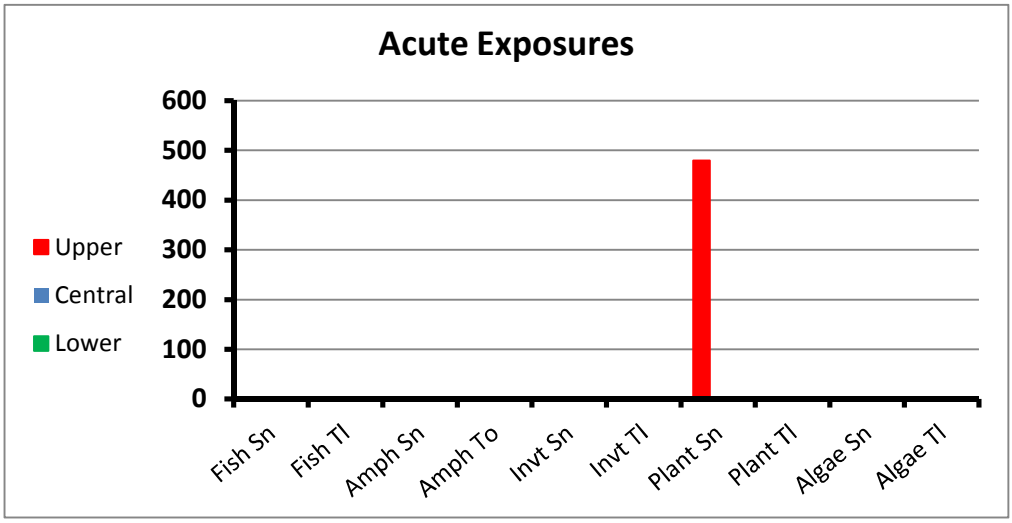
AqToxSumV6

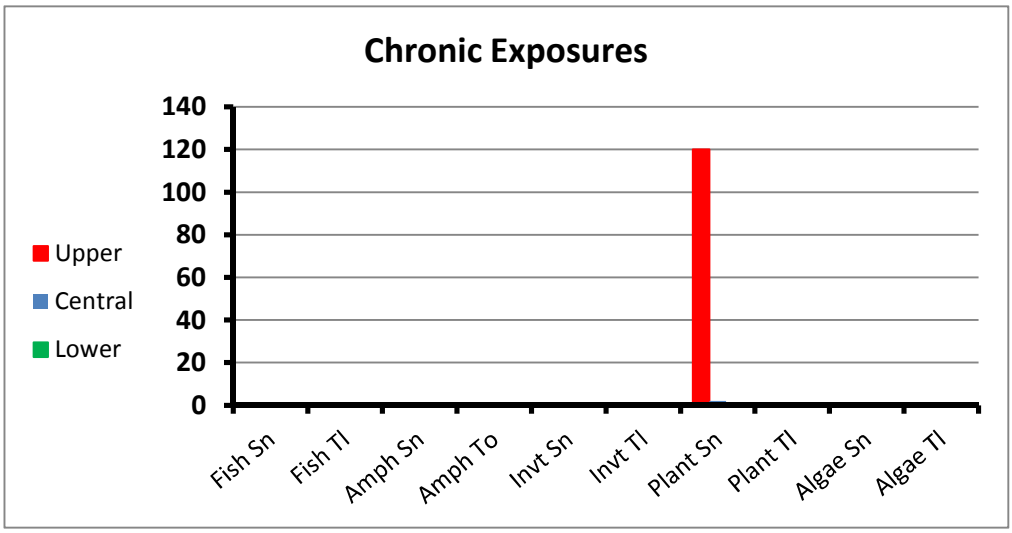
Scenario	Central	Lower	Upper	Worksheet
Accidental Spill	0.2271	0.03028	0.9084	B04b
Peak EEC	0.003	0.000001	0.24	D06
Chronic	0.001	2E-10	0.06	D07

Receptor	Type	Hazard Quotients Central	Hazard Quotients Lower	Hazard Quotients Upper	Toxicity Value	Toxicity Endpoint
Accidental Acute Exposures						
Fish	Sensitive	1E-02	2E-03	5E-02	20	NOAEC*
	Tolerant	1E-03	1E-04	4E-03	210	NOAEC*
Amphibian	Sensitive	2E-03	2E-04	7E-03	125	NOEC
	Tolerant	2E-03	2E-04	7E-03	125	NOEC
Invertebrate	Sensitive	9E-03	1E-03	4E-02	25	NOAEC*
	Tolerant	7E-04	9E-05	3E-03	320	NOAEC*
Macrophyte	Sensitive	**454**	**61**	**1,817**	0.0005	NOEC
	Tolerant	4E-02	5E-03	0.2	5.6	NOEC
Algae	Sensitive	1.0	0.1	**4**	0.23	NOEC
	Tolerant	6E-02	8E-03	0.2	4	NOEC
Non-Accidental Acute Exposures						
Fish	Sensitive	2E-04	5E-08	1E-02	20	NOAEC*
	Tolerant	1E-05	5E-09	1E-03	210	NOAEC*
Amphibian	Sensitive	2E-05	8E-09	2E-03	125	NOEC
	Tolerant	2E-05	8E-09	2E-03	125	NOEC
Invertebrate	Sensitive	1E-04	4E-08	1E-02	25	NOAEC*
	Tolerant	9E-06	3E-09	8E-04	320	NOAEC*
Macrophyte	Sensitive	**6**	2E-03	**480**	0.0005	NOEC
	Tolerant	5E-04	2E-07	4E-02	5.6	NOEC
Algae	Sensitive	1E-02	4E-06	**1.0**	0.23	NOEC
	Tolerant	8E-04	3E-07	6E-02	4	NOEC
Chronic/Longer Term Exposures						
Fish	Sensitive	1E-04	3E-11	8E-03	7.4	NOAEC*
	Tolerant	1E-05	3E-12	8E-04	78	NOAEC*
Amphibian	Sensitive	No toxicity data.			N/A	
	Tolerant	No toxicity data.			N/A	
Invertebrate	Sensitive	4E-05	8E-12	2E-03	25	NOAEC
	Tolerant	4E-05	8E-12	2E-03	25	NOAEC
Macrophyte	Sensitive	**2**	4E-07	**120**	0.0005	NOEC
	Tolerant	2E-04	4E-11	1E-02	5.6	NOEC
Algae	Sensitive	4E-03	9E-10	0.3	0.23	NOEC
	Tolerant	3E-04	5E-11	2E-02	4	NOEC

Note: NOEC*, NOAEC* or a similar designation - i.e., NOEC or NOAEC followed by an asterisk (*) -- indicates that the NOEC or similar value was estimated from an LC_{50},EC_{50}, or an LOEC. See the risk assessment for details.


Accidental Spill
2000
1500
1000
500
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl


Acute Exposures
600
500
400
300
200
100
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl


Chronic Exposures
140
120
100
80
60
40
20
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl

Summary of Exposure Assessment and Risk Characterization for Terrestrial Plants from Runoff

Link to Gleams-Driver

Short Title	Runoff to terrestrial plants
Receptor	Terrestrial vegetation
Duration	Acute
User-Specified Gleams-Driver File	None

Parameter/Assumption	Code / Range	Value	Units	Reference
Worksheet Application Rate	$ApRt_{WB}$	1	lb/acre	Worksheeet A01
Offsite Application Rates Inputs				
Run ID:	Risk Assessment			
Application Rate Used in Run:	$ApRt_{Run}$	1	lb/acre	
Functional Off-site Application Rate	$ApRt_{Offsite}$			
	Central	0.0027	lb/acre	
	Lower	0.000001		
	Upper	0.011		
Calculated Values				
Normalized Off-site Functional Application Rate	$NormApRt_{Offsite}$	$ApRt_{Offsite}$ / $ApRt_{Run}$		
	Central	0.0027	Unitless	Eq
	Lower	0.000001		Eq
	Upper	0.011		Eq
Off-site Application Rate at Workbook Application Rate	$ApRt_{WB}$	$ApRt_{WB}$ x $NormApRt_{Offsite}$		
	Central	0.0027	lb/acre	Eq
	Lower	0.000001		Eq
	Upper	0.011		Eq
Toxicity Values (seedling emergence) in units of lbs/acre				
		Sensitive	Tolerant	
	Endpoint	NOEC	NOEC	
		0.0028	0.23	Section 4.3.2.4.
Hazard Quotients				
	Central	1.0	1E-02	
	Lower	4E-04	4E-06	
	Upper	4	5E-02	

General Worksheet Note

Typically, this worksheet is filled in by WorksheetMaker using offsite application rates that are derived in the Forest Service risk assessment. Several different *Application Rates* are noted in the cells in this worksheet this note explains why this is done.

The **Worksheet Application Rate** refers to the application rate that is set by the user in Worksheet A01.

The next section of the worksheet (**Offsite Application Rate Inputs**) is initially set by the WorksheetMaker Program. The Application Rate Used in Run refers to the application rate used in the simulation software (typically Gleams-Driver) used to derived the Functional Off-site Application Rate. This is the application rate to the nontarget site based on runoff. In Forest Service risk assessments, a unit application rate of 1 lb/acre is always used. If you set a custom Gleams-Driver input file in Worksheet B04, the information from the Gleams-Driver input file will replace the values that had been initially filled in by the WorksheetMaker program. Alternatively, you can fill in any of these values manually.

In the **Calculated Values** section, this worksheet normalizes the Functional Offsite Application Rate. If the values are from a risk assessment (where an application rate of 1 lb/acre is always used in the Gleams-Driver run), these rates will be identical to the rats in the above section.

The **Toxicity Values** are typically those used in the risk assessment. You can change these if you have a good reason for doing so. Also, you can add columns it you want to show HQ values for other species of particular concern. To ensure that any values for new plants will format correctly, you should insert the new information between the Sensitive and Tolerant entries. To do this, select from the cell above labeled Tolerant (D24) down to the upper range of the hazard quotient (D30). While these cells are selected, do a *Right Mouse Click* and then scroll down to *Insert*. Then, select the *Shift Cells to Right* option. If you want to add more than one plant species, hit Control-Y to repeat this operation. If this is not clear, Press F1 (Help) and review the Excel Documentation for inserting cells into a worksheet or consult a reference book on Excel.

Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Drift After Broadcast Foliar Application.

Short Title				PlntDrift3Apps
Receptor				
Duration				

Parameter/ Assumption	Range	Value	Units	Designation
Application Rate	ApRt	1	lb/acre	Worksheet A01
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	NOEC	0.0028	lb/acre	Section 4.3.2.4.
Tolerant species	NOEC	2	lb/acre	Section 4.3.2.4.
Proportion of Drift at distances downwind in feet [0 feet = direct spray]	Prop			

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack	
0	1	1	1	1	unitless
25	0.223	0.104	0.035	0.00832	
50	0.171	0.05	0.0177	0.00433	
100	0.0979	0.0248	0.00948	0.00241	
300	0.0312	0.00753	0.0035	0.000941	
500	0.0192	0.00391	0.00209	0.000579	
900	0.0124	0.00166	0.00109	0.000312	

Estimates of functional offsite application rate **OfApRt** ***=ApRt x Prop***

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack	
0	*1*	*1*	*1*	*1*	Eq
25	*0.223*	*0.104*	*0.035*	*0.00832*	Eq
50	*0.171*	*0.05*	*0.0177*	*0.00433*	Eq
100	*0.0979*	*0.0248*	*0.00948*	*0.00241*	Eq
300	*0.0312*	*0.00753*	*0.0035*	*0.000941*	Eq
500	*0.0192*	*0.00391*	*0.00209*	*0.000579*	Eq
900	*0.0124*	*0.00166*	*0.00109*	*0.000312*	Eq

Hazard Quotients (Sensitive Species) **HQ_{Sens}** ***= OfApRt / $ToxVal_{Sens}$***

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack
0	**357**	**357**	**357**	**357**
25	**80**	**37**	**13**	**3**
50	**61**	**18**	**6**	**1.5**
100	**35**	**9**	**3**	0.9
300	**11**	**3**	**1.3**	0.3
500	**7**	**1.4**	0.7	0.2
900	**4**	0.6	0.4	0.1

Hazard Quotients
(Tolerant Species)

0	0.5	0.5	0.5	0.5
25	0.1	5E-02	2E-02	4E-03
50	9E-02	3E-02	9E-03	2E-03
100	5E-02	1E-02	5E-03	1E-03
300	2E-02	4E-03	2E-03	5E-04
500	1E-02	2E-03	1E-03	3E-04
900	6E-03	8E-04	5E-04	2E-04

Potential exposure of non-target plants through the use of contaminated irrigation water based on estimates concentrations in ambient water.

Short Title				
Receptor				
Duration				Abrev(Dur)

Parameter/Assumption	Range	Value	Units	Reference/Designation
Application Rate	**ApRt**	**1**	lb/acre	Prog!ApRt_C
Water contamination rate	**WCR**			
	Central	**0.2271**	mg/L per	
	Lower	**0.03028**	lb/acre	
	Upper	**0.9084**		
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	1	unitless	Prog!TEF_C
	Lower	1		Prog!TEF_L
	Upper	1		Prog!TEF_U
Concentration in irrigation water	**$Conc_{Wat}$**	***ApRt × WCR × TEF***		
	Central	0.003	mg/L	Eq
	Lower	0.000001		Eq
	Upper	0.24		Eq
Amount of irrigation water applied	**IrrigAmnt**			
	Central	1	inches	Param->Inches_C
	Lower	0.25		Param->Inches_L
	Upper	2		Param->Inches_U
Gallons per Acre-Foot	**GalPerAc-Ft**	325900	gal/acre-foot	Std!CnvFct.acrefoot2gal
Liters per Gallon	**LtPerGal**	3.785	liters/gal	Std!CnvFct.gal2lit
Liters of water applied per acre per inch of irrigation water (*rounded to nearest liter*)	**LpApl**	***GalPerAc-Ft × LtPerGal / 12***		
		102,794	Lit/acre-inch	Eq
Liters of water applied per acre	**LPA**	***IrrigAmnt × LpApl***		
	Central	102794	liters	Eq
	Lower	25698.5		Eq
	Upper	205588		Eq
Application Rate (mg/acre)	**$ApR_{mg/a}$**	***$Conc_{Wat}$ × LPA***		
	Central	308.382	mg/acre	Eq
	Lower	0.0256985		Eq
	Upper	49341.12		Eq
Conversion factor for mg to lb	**Conv**	0.0000022		Std!CnvFct.mg2lb
Functional application rate (lb/acre)	**FncApR**	**$ApR_{mg/a}$ × Conv**		
	Central	0.00067844	lb/acre	Eq
	Lower	5.65367E-08		Eq
	Upper	0.108550464		Eq
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.4.
Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.4.

Hazard Quotients

HQs	Sensitive species	Tolerant species
Central	2.E-01	3.E-04
Lower	2.E-05	3.E-08
Upper	**39**	5.E-02

Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Wind Erosion at the Specified Application Rate.

Short Title				PlntWind2
Receptor				
Duration				
Parameter/Assumption	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**
Application Rate	ApRt	**1**	lb/acre	Worksheet A01
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	**NOEC**	**0.0028**	lb/acre	Section 4.3.2.4.
Tolerant species	**NOEC**	**2**	lb/acre	Section 4.3.2.4.
Soil losses due to wind ersion	**Loss_TonHa**			
	Central	5	Tons per	Scenario parameter
	Lower	1	hectare	Scenario parameter
	Upper	10	per year	Scenario parameter
Conversion for tons/ha to grams per cm^2	**Conv1**	0.01		
Soil losses in grams/square centimeter	**Loss_GrCm**			
	Central	*0.05*	g/cm^2	Eq
	Lower	*0.01*	per year	Eq
	Upper	*0.1*		Eq
Soil Density	**Dens**	2	g/cm^2	
Soil losses in cm/day	**Loss_CmDay**	***= Loss_GrCm /(Dens * 365)***		
	Central	*6.84932E-05*	cm per	Eq
	Lower	*1.36986E-05*	day	Eq
	Upper	*0.000136986*		Eq
Depth of incorporation	**Depth**	1	cm	Scenario parameter
Proportion of contaminated soil lost per day	**PropLost**			
	Central	6.84932E-05	unitless	
	Lower	1.36986E-05		
	Upper	0.000136986		
Estimates of functional offsite application rate	**OfApRt**	***=ApRt x PropLost***		
	Central	*6.84932E-05*	lb/acre	Eq
	Lower	*1.36986E-05*		Eq
	Upper	*0.000136986*		Eq
Hazard Quotients (Sensitive Species)	**HI_{Sens}**	***= OfApRt / $ToxVal_{Sens}$***		
	Central	2E-02		
	Lower	5E-03		
	Upper	5E-02		
Hazard Quotients (Tolerant Species)	**HI_{Tol}**	*= OfApRt / $ToxVal_{Tol}$*		
	Central	3E-05		
	Lower	7E-06		
	Upper	7E-05		

Consumption of Contaminated Fruit/Large Insects by a Herbivorous Insect, acute exposure after a single application

Short Title		FdPropBW_Ac
Receptor		
Duration		
Material consumed	Fruit/Large Insects	

Parameter/Assumption	Range	Value	Units	Reference/Designation
Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg	Waldbauer 1968
	Lower	**0.6**	BW per day	Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**7**	mg/kg food	Worksheet A01
	Lower	**3.2**	per lb/acre	Worksheet A01
	Upper	**15**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*7*	mg/kg food	Eq
	Lower	*3.2*	item	Eq
	Upper	*15*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*9.1*	mg/kg bw	Eq
	Lower	*1.92*		Eq
	Upper	*33*		Eq

Consumption of Contaminated Broadleaf/Small Insects by a Herbivorous Insect, acute exposure after a single application

Short Title	Broadleaf	FdPropBW_Ac
Receptor	Herbivorous Insect	
Duration	Acute	
Material consumed	Broadleaf/Small Insects	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
	Lower	**0.6**		Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**45**	mg/kg food per lb/acre	Worksheet A01
	Lower	**15**		Worksheet A01
	Upper	**135**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*45*	mg/kg food item	Eq
	Lower	*15*		Eq
	Upper	*135*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*58.5*	mg/kg bw	Eq
	Lower	*9*		Eq
	Upper	*297*		Eq

Consumption of Contaminated Short grass by a Herbivorous Insect, acute exposure after a single application

Short Title	Short Grass	FdPropBW_Ac
Receptor	Herbivorous Insect	
Duration	Acute	
Material consumed	Short grass	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
	Lower	**0.6**		Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**85**	mg/kg food per lb/acre	Worksheet A01
	Lower	**30**		Worksheet A01
	Upper	**240**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*85*	mg/kg food item	Eq
	Lower	*30*		Eq
	Upper	*240*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*110.5*	mg/kg bw	Eq
	Lower	*18*		Eq
	Upper	*528*		Eq

Consumption of Contaminated Tall Grass by a Herbivorous Insect, acute exposure after a single application

Short Title	Tallt Grass	FdPropBW_Ac
Receptor	Herbivorous Insect	
Duration	Acute	
Material consumed	Tall Grass	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
	Lower	**0.6**		Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Residue Rates	**rr**			
	Central	**36**	mg/kg food per lb/acre	Worksheet A01
	Lower	**12**		Worksheet A01
	Upper	**110**		Worksheet A01
Drift	**Drift**	1	proportion	***Scenario parameter***
Proportion remaining after washing	**PropR**	1	proportion	***Scenario parameter***
Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
	Central	*36*	mg/kg food item	Eq
	Lower	*12*		Eq
	Upper	*110*		Eq
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	Unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Dose	**Dose**	***Conc × Amnt***		
	Central	*46.8*	mg/kg bw	Eq
	Lower	*7.2*		Eq
	Upper	*242*		Eq

Summary of Exposure Assessments for the Herbivorous or Predatory Insects

Application Rate:	1	lb a.e./acre			InstHerbSum
Food Item	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Acute Exposures					
Fruit/Large Insects	Insect	9.1	1.92	33	G07a
Broadleaf/Small Insects	Insect	5.85E+01	9.00E+00	2.97E+02	G07b
Short Grass	Insect	1.11E+02	1.80E+01	5.28E+02	G07c
Long Grass	Insect	46.8	7.2	242	G07d

Summary of Hazard Quotients (Toxicity) for the Herbivorous or Predatory Insects

Application Rate:	1	lb a.e./acre			InstHerbSum	
Food Item	Receptor	Hazard Quotients			Toxicity Value	
		Central	Lower	Upper		
Acute Exposures						
Fruit/Large Insects	Insect	1E-02	3E-03	5E-02	**620**	<LD50
Broadleaf/Small Insects	Insect	9E-02	1E-02	0.5	**620**	<LD50
Short Grass	Insect	0.2	3E-02	0.9	**620**	<LD50
Long Grass	Insect	8E-02	1E-02	0.4	**620**	<LD50

Attachment 1

USDA Forest Service Worksheets

Workbook 7

Proposed_Imazapyr-max_01lb_Terrestrial.xlsm

Combine HQs from Multiple Workbooks

Utilities

Arsenal, Backpack Directed Foliar :Imazapyr

Check Workbook

☑ Skip Autocheck

Attachment 1 to Imazapry Risk Assessment, SERA TR-052-29-02b

WorksheetMaker Version 6.00.07

Submitted to:
Paul Mistretta, COR
USDA/Forest Service, Southern Region
1720 Peachtree RD, NW
Atlanta, Georgia 30309

USDA Forest Service Contract: **AG-3187-C-06-0010**
USDA Forest Order Number: **AG-43ZP-D-10-0012**
SERA Internal Task No. **52-29**

Submitted by:
Patrick R. Durkin
Syracuse Environmental Research Associates, Inc.
8125 Solomon Seal
Manlius, New York 13104

December 16, 2011

DISCLAIMER

WorksheetMaker is an EXCEL application developed by Syracuse Environmental Research Associates, Incorporated (SERA, Inc.) for the USDA Forest Service. WorksheetMaker is designed for use by Forest Service personnel or individuals working for the Forest Service.

WorksheetMaker as well as the EXCEL workbooks prepared by WorksheetMaker are made freely available to the general public. While due diligence has been used in the development of WorksheetMaker, neither the USDA Forest Service nor SERA Inc. make any representations or warranties regarding the quality, accuracy, or suitability of WorksheetMaker, the workbooks developed by WorksheetMaker, or modifications to these workbooks for any specific analysis or application.

General Notes

Prepared by: Patrick R Durkin
Program Version: 6.00.07
Database Used: FS WsMkr V06-00-01.mdb
Template Workbook: FS WsMkr V06-00-01.mdb
Base Workbook: FS WSMkr Blank V06-00-01.xlsm

Color Codes in WorksheetMaker

WorksheetMaker contains four general types of worksheets: front matter sheets, data sheets, calculation sheets, and results sheets. As detailed below, a consistent set of formatting/color are used in the first three types of sheets.

Color Codes used in Workbook for Front Matter, Data and Calculation Worksheets

Green shading	This is a default value or a user specified a value. You can change these values as you see fit but you should have a reason for doing so.
Yellow shading	This is a source for a link in other parts of the workbook. If you have good reason to change the value, you should note the change (with your reason) in the "Revisions" page.
Blue shading	This cell is linked to another cell in the workbook. **Do not change this value.** If you change any of these values, the workbook may not update correctly.
Blue shading blue border	This cell is linked to a Program parameter in Worksheet A01. **Do not change this value.** If you want the value to change, go to Worksheet A01 and change the value in that worksheet.
Purple Shading	Indicates (for information only) that the typical of order of Lower and Upper values is intentionally reversed. This is only used in the second (label) column.
Italics, no shading	The value in this cell is generated by a formula (the number that you see is the result of an equation). This cell is linked only to other cells in the worksheet. **Do not change this value.**

Risk Characterization Worksheets use a modified color scheme based on the value of the hazard quotient (see below). The format for these worksheets will change as you change the application rate or other other inputs.

Color Codes used in Workbook for Risk Characterization Worksheets

HQ ≥ 2	For hazard quotient greater than 2, the number is in **bold font** with a red background and rounded to the nearest integer.
HQ > 1 but < 2	For hazard quotient greater than 1 but less than two, the number is in **bold font** with a white background and rounded to one significant place after the decimal.
HQ ≥ 0.1 but <1	For hazard quotient greater than 0.1 but less than one, the number is in regular font with a white background and rounded to one significant place after the decimal.
HQ < 0.1	For hazard quotient less than 0.1, the number is in regular font with a white background. The number is expressed in scientific notation and rounded to one significant place -- e.g., 2E-02 rather than 0.02.

The specific version of the program that was used is given above along with information about the Access database (containing the information that was used to make this workbook), template workbook (the workbook containing the template worksheets), and base workbook (the workbook that served as the basis for this workbook). Except as noted under the chemical specific notes (next worksheet), these worksheets are substantially identical to those submitted with the SERA risk assessment.

If you want to modify the application rate used in this workbook, go to the A01 worksheet. In this worksheet, change the application rate and/or the application volume(s). **Note that all application rates must be in units of lb a.e./acre for weak acids or lbs a.i./acre for other pesticides.** Generally, you can tell that the pesticide is a weak acid if it is sold as a salt (e.g., sodium, potassium, etc) or if it is an ester. If you are unsure of how to do the conversion, consult the risk assessment or seek other assistance.

Chemical specific notes

Risk Assessment: SERA TR-052-29-03a
Report Date: December 16, 2011

The area below is an embedded MS Word Document. Add chemical-specific notes as appropriate.

This workbook is released with the final report for the 2011 risk assessment on imazapyr.

Revision Histroy

Note: If you make any modifications to this workbook, you should note them in the revision area below. The revision area by default cotains the text *NONE*. The revision area consists of a Microsoft Word document. Thus, once you activate the revision area, there may be a slight delay while EXCEL activates MS Word.

The area below is an embedded MS Word Document. Add revision notes as appropriate.

NONE

Worksheet E01: Summary of Worker Exposure Assessments

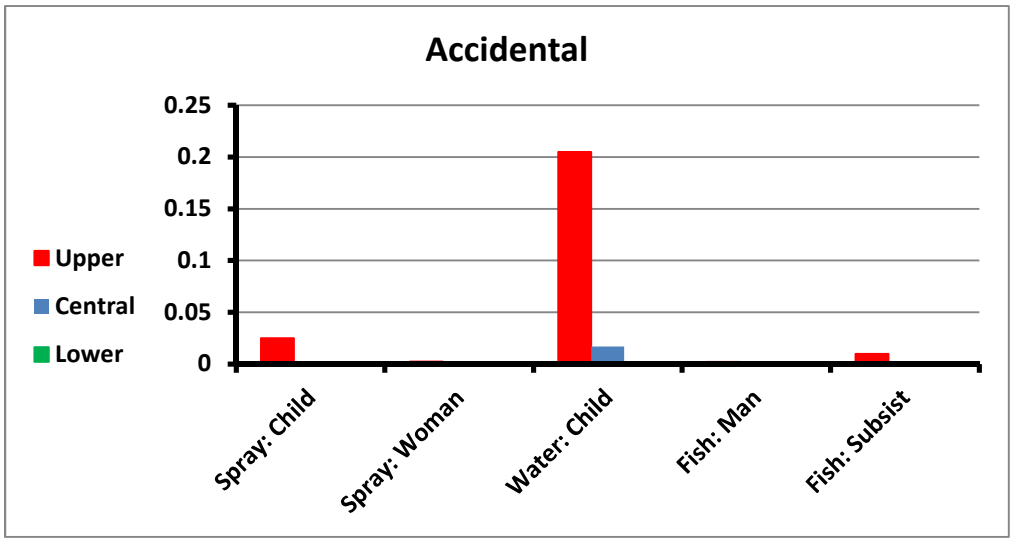
Application Rate:	0.1	lb a.e./acre			E01aV5-3Wrkr
Scenario	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Accidental/Incidental Exposures					
Contaminated Gloves, 1 min.	Worker	0.00000672	0.000000672	0.0000528	C02a
Contaminated Gloves, 1 hour	Worker	0.0004032	0.00004032	0.003168	C02b
Spill on Hands, 1 hour	Worker	6.33252E-05	5.06769E-06	0.000667192	C03a
Spill on lower legs, 1 hour	Worker	0.000156051	1.24882E-05	0.001644152	C03b
General Exposures					
	Backpack Applications:	0.0006006	0.000045	0.008	C01a
	Ground Broadcast Applications:	0.00224	0.000066	0.01512	C01b
	Aerial Applications:	0.00147	0.000024	0.008	C01c

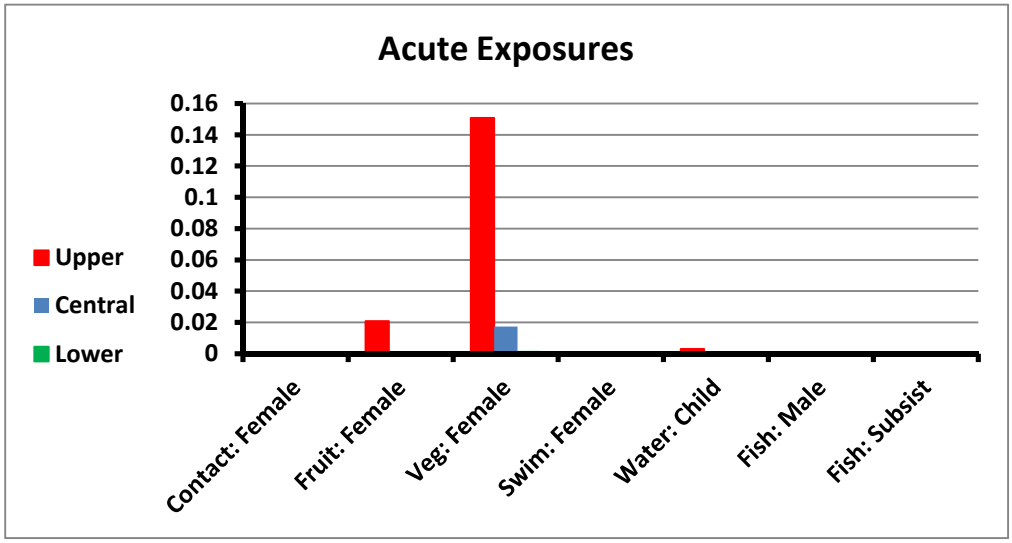
Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)

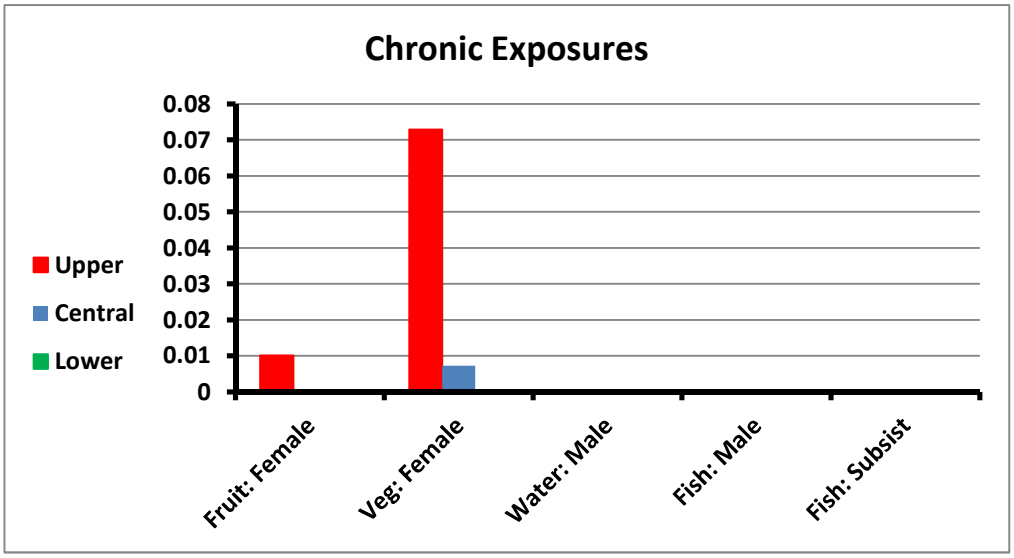
Application Rate:	0.1	lb a.e./acre			E01aV5-3Wrkr
Scenario	Receptor	Hazard Quotients			Toxicity Value
		Central	Lower	Upper	
Accidental/Incidental Exposures					
Contaminated Gloves, 1 min.	Worker	3E-06	3E-07	2E-05	2.5
Contaminated Gloves, 1 hour	Worker	2E-04	2E-05	1E-03	2.5
Spill on Hands, 1 hour	Worker	3E-05	2E-06	3E-04	2.5
Spill on lower legs, 1 hour	Worker	6E-05	5E-06	7E-04	2.5
General Exposures					
	Backpack Applications:	2E-04	2E-05	3E-03	2.5
	Ground Broadcast Applications:	9E-04	3E-05	6E-03	2.5
	Aerial Applications:	6E-04	1E-05	3E-03	2.5

Worksheet E03: Summary of Exposure Assessments for the General Public

Application Rate:	0.1	lb a.e./acre			E03aV6
Scenario	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	2.39E-03	1.91E-04	2.52E-02	D01a
Direct Spray of Woman, feet and lower legs	Adult Female	2.40E-04	1.92E-05	2.53E-03	D01b
Water consumption (spill)	Child	1.71E-02	4.17E-04	2.05E-01	D05
Fish consumption (spill)	Adult Male	2.56E-04	1.03E-05	2.05E-03	D08a
Fish consumption (spill)	Subsistence Populations	1.25E-03	5.00E-05	9.99E-03	D08b
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	2.23E-04	8.99E-05	5.75E-04	D02
Contaminated Fruit	Adult Female	1.25E-03	5.40E-04	2.08E-02	D03a
Contaminated Vegetation	Adult Female	1.73E-02	1.13E-03	1.51E-01	D03b
Swimming, one hour	Adult Female	2.96E-08	6.65E-12	7.55E-07	D11
Water consumption	Child	1.50E-04	4.13E-08	2.93E-03	D06
Fish consumption	Adult Male	2.26E-06	1.02E-09	2.93E-05	D09c
Fish consumption	Subsistence Populations	1.10E-05	4.95E-09	1.43E-04	D09d
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	5.28E-04	1.28E-04	1.01E-02	D04a
Contaminated Vegetation	Adult Female	7.27E-03	2.67E-04	7.29E-02	D04b
Water consumption	Adult Male	2.00E-05	6.00E-09	4.11E-04	D07
Fish consumption	Adult Male	5.00E-08	2.14E-11	8.57E-07	D09a
Fish consumption	Subsistence Populations	4.05E-07	1.74E-10	6.94E-06	D09b

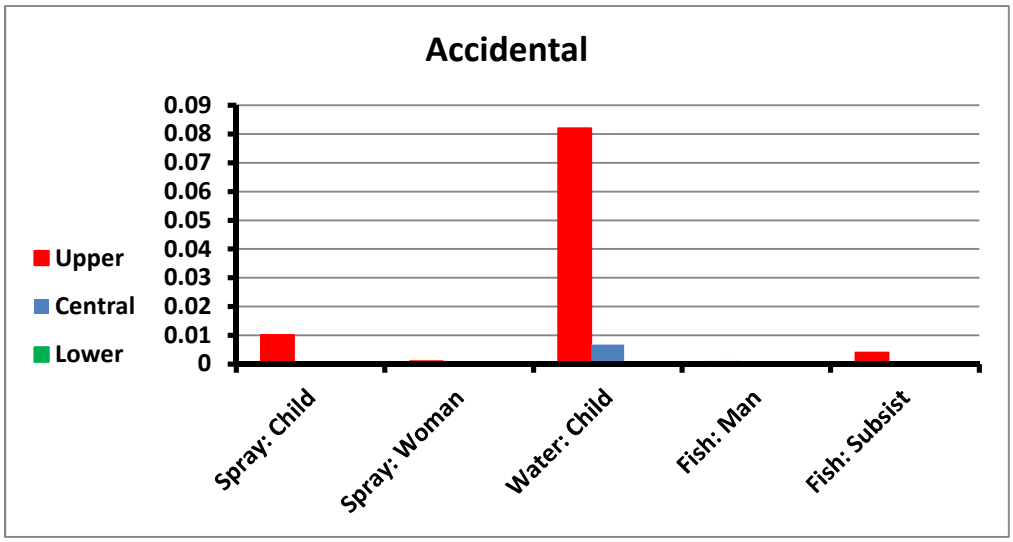

Accidental
0.25
0.2
0.15
0.1
0.05
0
Upper
Central
Lower
Spray: Child
Spray: Woman
Water: Child
Fish: Man
Fish: Subsist

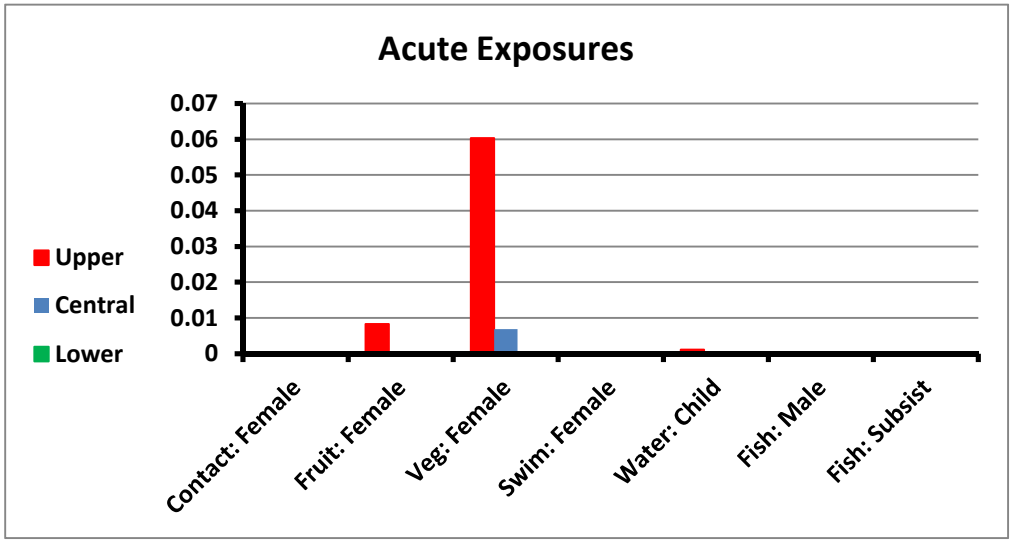

Acute Exposures
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Upper
Central
Lower
Contact: Female
Fruit: Female
Veg: Female
Swim: Female
Water: Child
Fish: Male
Fish: Subsist

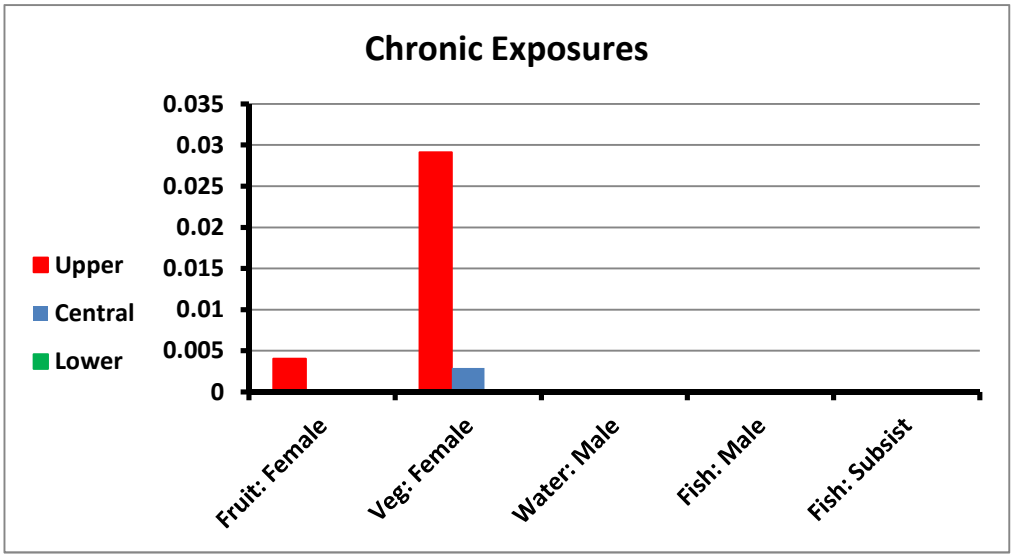

Chronic Exposures
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Upper
Central
Lower
Fruit: Female
Veg: Female
Water: Male
Fish: Male
Fish: Subsist

Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General Public

Application Rate:	0.1	lb a.e./acre			E03aV6
Scenario	Receptor	Hazard Quotients			Toxicity Value
		Central	Lower	Upper	
Accidental Acute Exposures (dose in mg/kg/event)					
Direct Spray of Child, whole body	Child	1E-03	8E-05	1E-02	2.5
Direct Spray of Woman, feet and lower legs	Adult Female	1E-04	8E-06	1E-03	2.5
Water consumption (spill)	Child	7E-03	2E-04	8E-02	2.5
Fish consumption (spill)	Adult Male	1E-04	4E-06	8E-04	2.5
Fish consumption (spill)	Subsistence Populations	5E-04	2E-05	4E-03	2.5
Non-Accidental Acute Exposures (dose in mg/kg/event)					
Vegetation Contact, shorts and T-shirt	Adult Female	9E-05	4E-05	2E-04	2.5
Contaminated Fruit	Adult Female	5E-04	2E-04	8E-03	2.5
Contaminated Vegetation	Adult Female	7E-03	5E-04	6E-02	2.5
Swimming, one hour	Adult Female	1E-08	3E-12	3E-07	2.5
Water consumption	Child	6E-05	2E-08	1E-03	2.5
Fish consumption	Adult Male	9E-07	4E-10	1E-05	2.5
Fish consumption	Subsistence Populations	4E-06	2E-09	6E-05	2.5
Chronic/Longer Term Exposures (dose in mg/kg/day)					
Contaminated Fruit	Adult Female	2E-04	5E-05	4E-03	2.5
Contaminated Vegetation	Adult Female	3E-03	1E-04	3E-02	2.5
Water consumption	Adult Male	8E-06	2E-09	2E-04	2.5
Fish consumption	Adult Male	2E-08	9E-12	3E-07	2.5
Fish consumption	Subsistence Populations	2E-07	7E-11	3E-06	2.5


Accidental
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Upper
Central
Lower
Spray: Child
Spray: Woman
Water: Child
Fish: Man
Fish: Subsist


Acute Exposures
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Upper
Central
Lower
Contact: Female
Fruit: Female
Veg: Female
Swim: Female
Water: Child
Fish: Male
Fish: Subsist


Chronic Exposures
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Upper
Central
Lower
Fruit: Female
Veg: Female
Water: Male
Fish: Male
Fish: Subsist

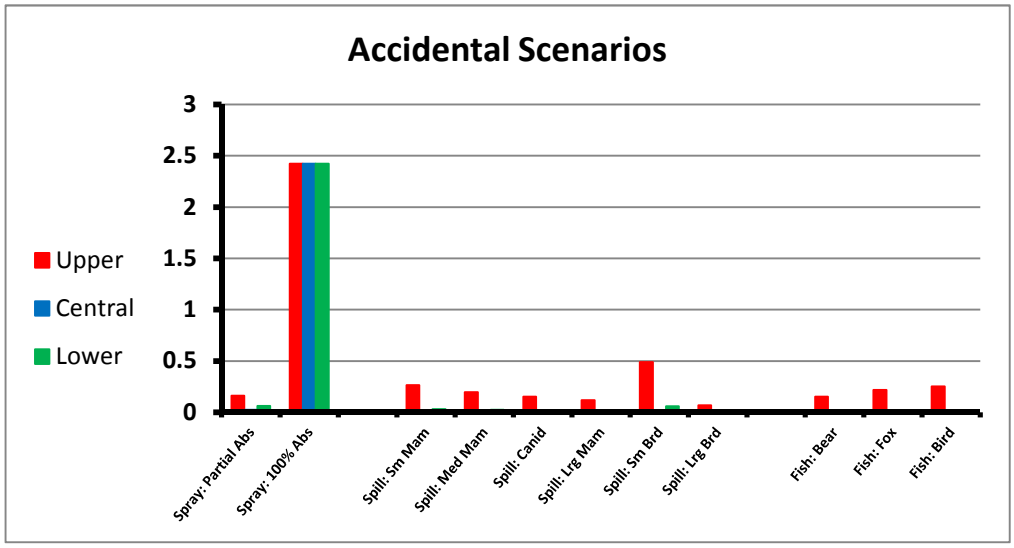
Summary of Exposure Assessments for the Terrestrial Animals

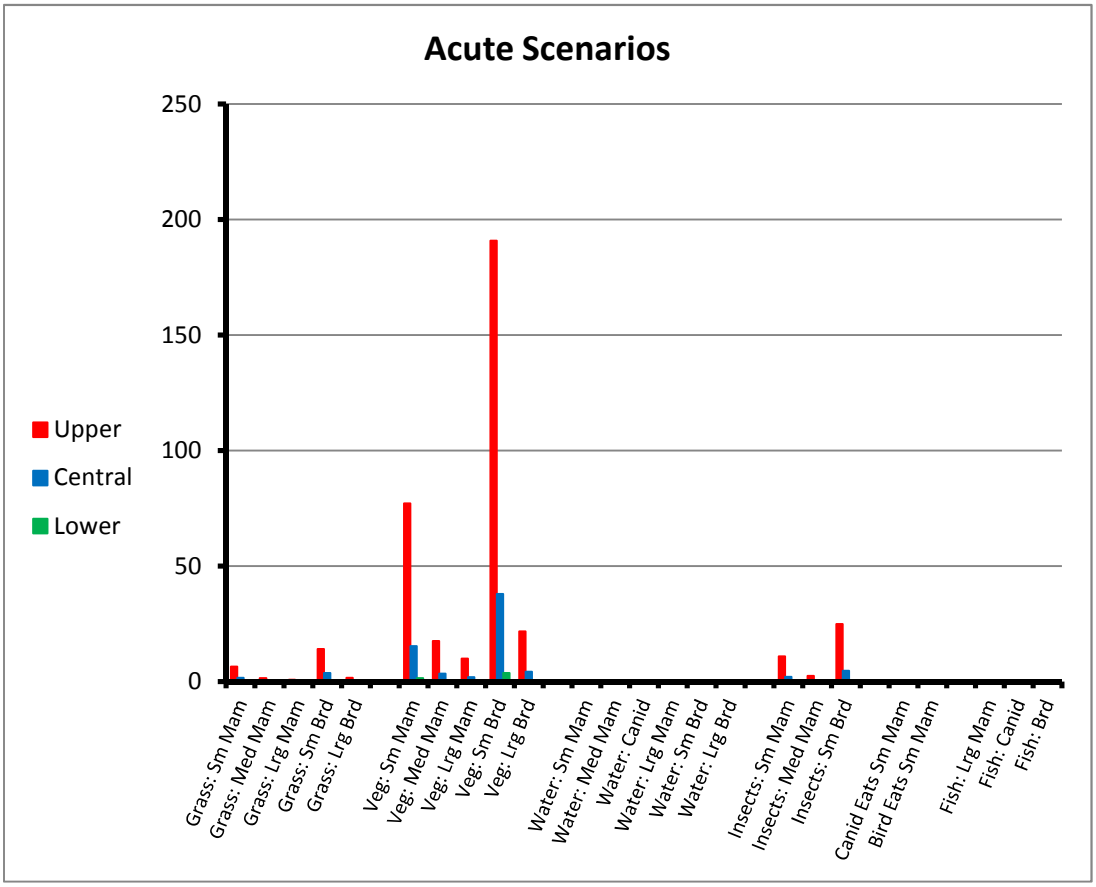
G01V6

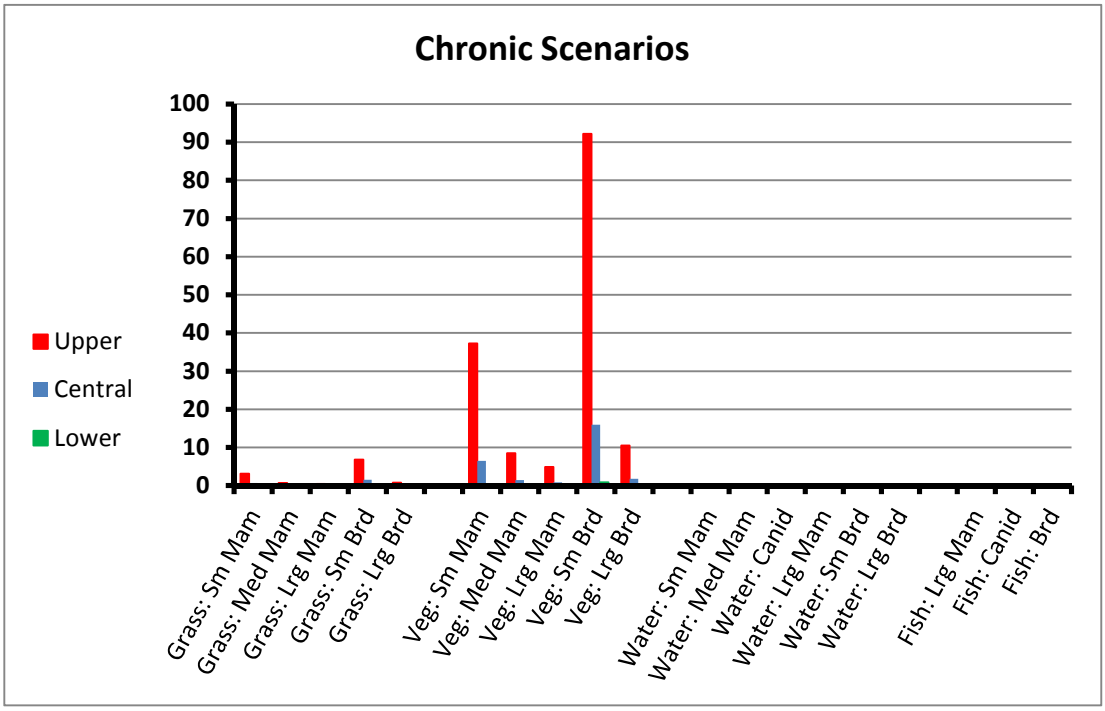
Application Rate:	0.1	lb a.e./acre			G01V6
Scenario	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Accidental Acute Exposures					
Direct Spray					
first-order absorption	Small mammal (20g)	6.32E-02	2.55E-02	1.63E-01	F01a
100% absorption	Small mammal (20g)	2.42E+00	2.42E+00	2.42E+00	F01b
Contaminated Water					
Spill	Small mammal (20g)	3.32E-02	1.33E-03	2.66E-01	F02a
Spill	Larger Mammal (400g)	2.46E-02	9.86E-04	1.97E-01	F02b
Spill	Canid (5 kg)	1.91E-02	7.66E-04	1.53E-01	F02c
Spill	Large Mammal (70g)	1.47E-02	5.88E-04	1.18E-01	F02d
Spill	Small bird (10g)	6.12E-02	2.45E-03	4.90E-01	F02e
Spill	Large Bird (4 kg)	8.48E-03	3.39E-04	6.78E-02	F02f
Consumption of contaminated Fish					
Spill	Large Mammalian Carnivore (70 kg)	3.36E-03	1.34E-05	1.52E-01	F03a
Spill	Canid (5 kg)	4.84E-03	1.93E-05	2.19E-01	F03b
Spill	Fish-eating bird (2.4 kg)	5.61E-03	2.25E-05	2.55E-01	F03c
Non-Accidental Acute Exposures					
Contaminated Fruit (Lowest Residue Rate)					
	Small mammal (20g)	1.69E+00	2.19E-01	6.46E+00	F04a
	Larger Mammal (400g)	3.87E-01	4.99E-02	1.48E+00	F04b
	Large Mammal (70g)	2.20E-01	2.84E-02	8.40E-01	F04c
	Small bird (10g)	3.71E+00	4.79E-01	1.41E+01	F04d
	Large Bird (4 kg)	4.22E-01	5.44E-02	1.61E+00	F04e
Contaminated Vegetation (Short Grass - Highest Residue Rate)					
	Small mammal (20g)	1.53E+01	1.53E+00	7.72E+01	F05a
	Larger Mammal (400g)	3.51E+00	3.49E-01	1.76E+01	F05b
	Large Mammal	2.00E+00	1.99E-01	1.00E+01	F05c
	Small bird (10g)	3.80E+01	3.78E+00	1.91E+02	F05d
	Large Bird (4 kg)	4.32E+00	4.30E-01	2.17E+01	F05e
Contaminated Water					
	Small mammal (20g)	2.93E-04	1.32E-07	3.81E-03	F06a
	Larger Mammal (400g)	2.17E-04	9.76E-08	2.82E-03	F06b
	Canid (5 kg)	1.69E-04	7.59E-08	2.19E-03	F06c
	Large Mammal (70g)	1.29E-04	5.83E-08	1.68E-03	F06d
	Small bird (10g)	5.39E-04	2.43E-07	7.01E-03	F06e
	Large Bird (4 kg)	7.47E-05	3.36E-08	9.71E-04	F06f
Contaminated Insects					
	Small mammal (20g)	2.05E+00	1.93E-01	1.10E+01	F07a
	Larger Mammal (400g)	4.69E-01	4.42E-02	2.51E+00	F07b
	Small bird (10g)	4.67E+00	4.40E-01	2.50E+01	F07c
Consumption of small mammal (after direct spray) by predator					
	Canid (5 kg)	2.72E-01	2.72E-01	2.72E-01	F08a
	Carnivorous bird (640 g)	3.23E-01	3.23E-01	3.23E-01	F08b
Consumption of contaminated Fish					
	Large Mammalian Carnivore (70 kg)	2.96E-05	1.33E-09	2.18E-03	F09a
	Canid (5 kg)	4.26E-05	1.92E-09	3.14E-03	F09b
	Fish-eating bird (2.4 kg)	4.94E-05	2.23E-09	3.64E-03	F09c

Chronic/Longer Term Exposures

Contaminated Fruit (Lowest Residue Rate)				
Small mammal (20g)	7.13E-01	5.18E-02	3.12E+00	F10a
Larger Mammal (400g)	1.63E-01	1.18E-02	7.13E-01	F10b
Large Mammal (70g)	9.27E-02	6.73E-03	4.06E-01	F10c
Small bird (10g)	1.56E+00	1.13E-01	6.83E+00	F10d
Large Bird (4 kg)	1.77E-01	1.29E-02	7.77E-01	F10e
Contaminated Vegetation (Short Grass - Highest Residue Rate)				
Small mammal (20g)	6.46E+00	3.62E-01	3.73E+01	F11a
Larger Mammal (400g)	1.47E+00	8.27E-02	8.51E+00	F11b
Large Mammal (70g)	8.40E-01	4.71E-02	4.85E+00	F11c
Small bird (10g)	1.60E+01	8.96E-01	9.22E+01	F11d
Large Bird (4 kg)	1.82E+00	1.02E-01	1.05E+01	F11e
Contaminated Water				
Small mammal (20g)	1.02E-04	4.39E-08	1.76E-03	F12a
Larger Mammal (400g)	7.59E-05	3.25E-08	1.30E-03	F12b
Canid (5 kg)	5.90E-05	2.53E-08	1.01E-03	F12c
Large Mammal (70g)	4.53E-05	1.94E-08	7.77E-04	F12d
Small bird (10g)	1.89E-04	8.09E-08	3.24E-03	F12e
Large Bird (4 kg)	2.61E-05	1.12E-08	4.48E-04	F12f
Consumption of contaminated Fish				
Large Mammalian Carnivore (70 kg)	1.04E-05	4.44E-10	1.01E-03	F13a
Canid (5 kg)	1.49E-05	6.39E-10	1.45E-03	F13b
Fish-eating bird (2.4 kg)	1.73E-05	7.42E-10	1.68E-03	F13c


Accidental Scenarios
Upper
Central
Lower
3
2.5
2
1.5
1
0.5
0
Spray: Partial Abs
Spray: 100% Abs
Spill: Sm Mam
Spill: Med Mam
Spill: Canid
Spill: Lrg Mam
Spill: Sm Brd
Spill: Lrg Brd
Fish: Bear
Fish: Fox
Fish: Bird


Acute Scenarios
Upper
Central
Lower
250
200
150
100
50
0
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Insects: Sm Mam
Insects: Med Mam
Insects: Sm Brd
Canid Eats Sm Mam
Bird Eats Sm Mam
Fish: Lrg Mam
Fish: Canid
Fish: Brd


Chronic Scenarios
100
90
80
70
60
50
40
30
20
10
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Fish: Lrg Mam
Fish: Canid
Fish: Brd

Summary of Hazard Quotients (Toxicity) for the Terrestrial Animals

G01V6

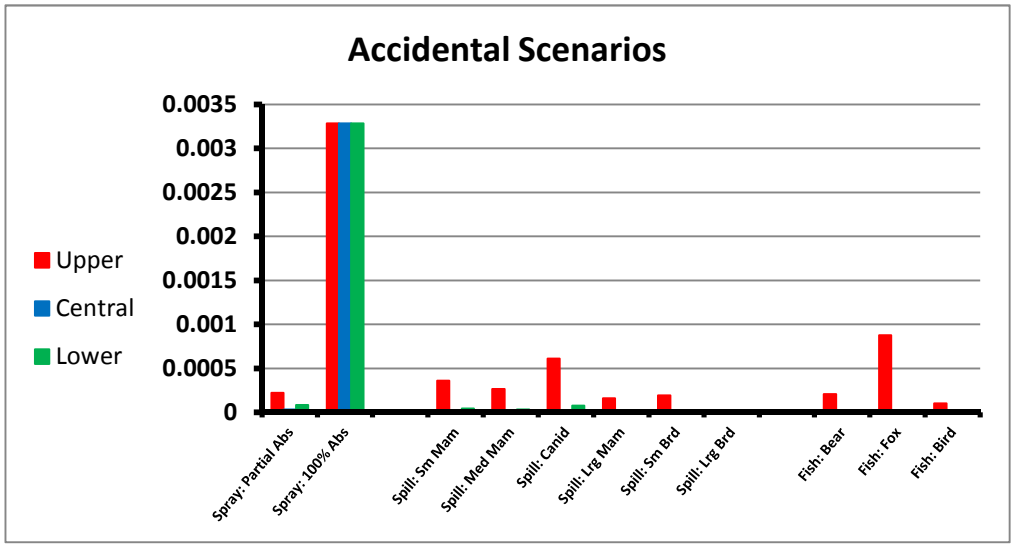
Application Rate: 0.1 lb a.e./acre

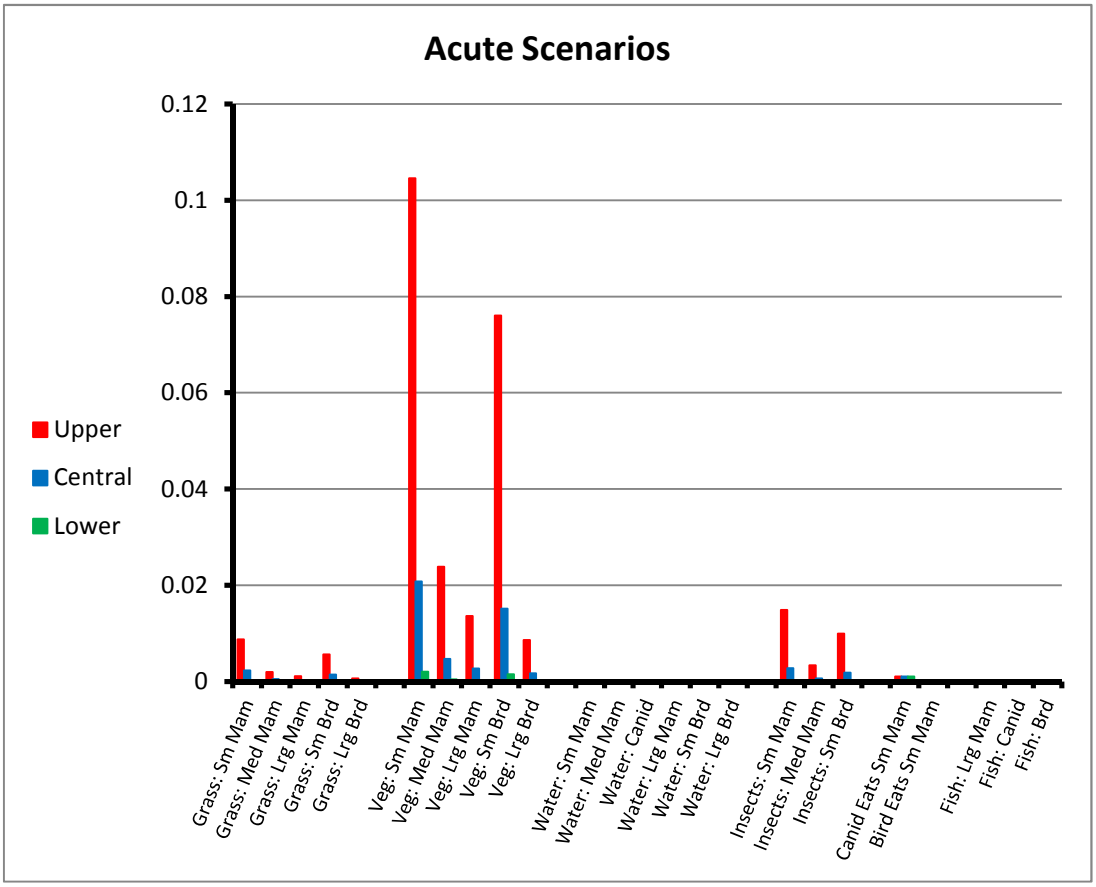
G01V6

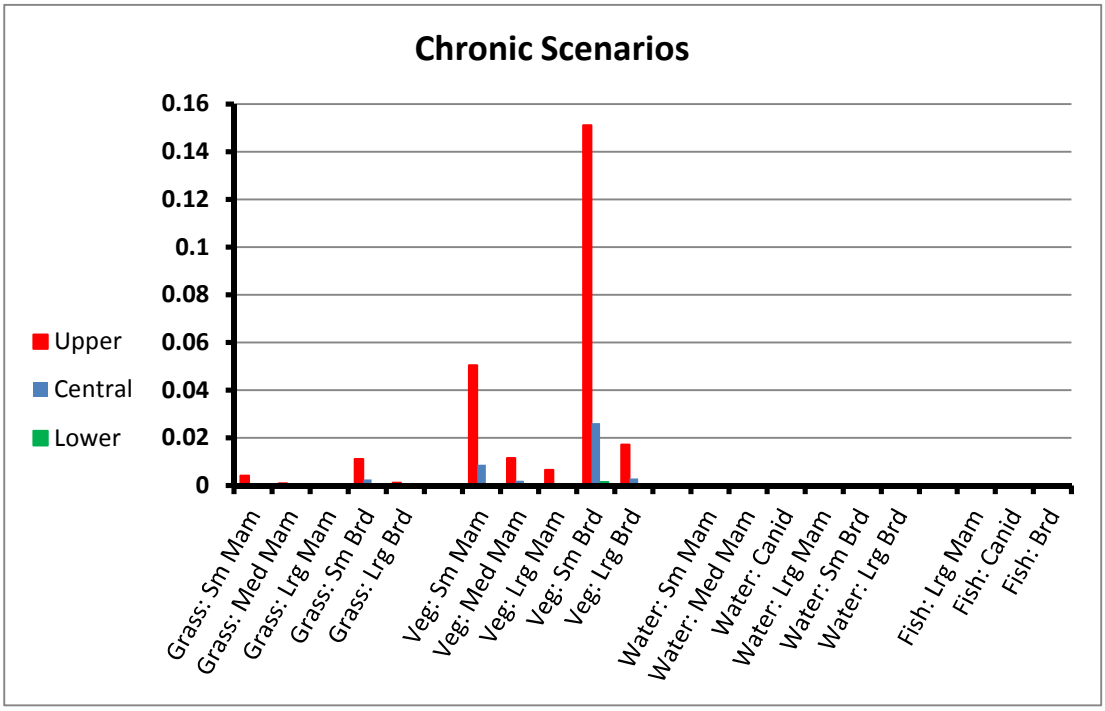
Scenario	Receptor	Hazard Quotients Central	Hazard Quotients Lower	Hazard Quotients Upper	Toxicity Value	
Accidental Acute Exposures						
Direct Spray						
first-order absorption	Small mammal (20g)	9E-05	3E-05	2E-04	738	NOAEL
100% absorption	Small mammal (20g)	3E-03	3E-03	3E-03	738	NOAEL
Contaminated Water						
Spill	Small mammal (20g)	5E-05	2E-06	4E-04	738	NOAEL
Spill	Larger Mammal (400g)	3E-05	1E-06	3E-04	738	NOAEL
Spill	Canid (5 kg)	8E-05	3E-06	6E-04	250	NOAEL
Spill	Large Mammal (70g)	2E-05	8E-07	2E-04	738	NOAEL
Spill	Small bird (10g)	2E-05	1E-06	2E-04	2510	NOAEL
Spill	Large Bird (4 kg)	3E-06	1E-07	3E-05	2510	NOAEL
Consumption of contaminated Fish						
Spill	Large Mammalian Carnivore (70 kg)	5E-06	2E-08	2E-04	738	NOAEL
Spill	Canid (5 kg)	2E-05	8E-08	9E-04	250	NOAEL
Spill	Fish-eating bird (2.4 kg)	2E-06	9E-09	1E-04	2510	NOAEL
Non-Accidental Acute Exposures						
Contaminated Fruit (Lowest Residue Rate)						
	Small mammal (20g)	2E-03	3E-04	9E-03	738	NOAEL
	Larger Mammal (400g)	5E-04	7E-05	2E-03	738	NOAEL
	Large Mammal (70g)	3E-04	4E-05	1E-03	738	NOAEL
	Small bird (10g)	1E-03	2E-04	6E-03	2510	NOAEL
	Large Bird (4 kg)	2E-04	2E-05	6E-04	2510	NOAEL
Contaminated Vegetation (Short Grass - Highest Residue Rate)						
	Small mammal (20g)	2E-02	2E-03	0.1	738	NOAEL
	Larger Mammal (400g)	5E-03	5E-04	2E-02	738	NOAEL
	Large Mammal	3E-03	3E-04	1E-02	738	NOAEL
	Small bird (10g)	2E-02	2E-03	8E-02	2510	NOAEL
	Large Bird (4 kg)	2E-03	2E-04	9E-03	2510	NOAEL
Contaminated Water						
	Small mammal (20g)	4E-07	2E-10	5E-06	738	NOAEL
	Larger Mammal (400g)	3E-07	1E-10	4E-06	738	NOAEL
	Canid (5 kg)	7E-07	3E-10	9E-06	250	NOAEL
	Large Mammal (70g)	2E-07	8E-11	2E-06	738	NOAEL
	Small bird (10g)	2E-07	1E-10	3E-06	2510	NOAEL
	Large Bird (4 kg)	3E-08	1E-11	4E-07	2510	NOAEL
Contaminated Insects						
	Small mammal (20g)	3E-03	3E-04	1E-02	738	NOAEL
	Larger Mammal (400g)	6E-04	6E-05	3E-03	738	NOAEL
	Small bird (10g)	2E-03	2E-04	1E-02	2510	NOAEL
Consumption of small mammal (after direct spray) by predator						
	Canid (5 kg)	1E-03	1E-03	1E-03	250	NOAEL
	Carnivorous bird (640 g)	1E-04	1E-04	1E-04	2510	NOAEL
Consumption of contaminated Fish						
	Large Mammalian Carnivore (70 kg)	4E-08	2E-12	3E-06	738	NOAEL
	Canid (5 kg)	2E-07	8E-12	1E-05	250	NOAEL
	Fish-eating bird (2.4 kg)	2E-08	9E-13	1E-06	2510	NOAEL

Chronic/Longer Term Exposures

Contaminated Fruit (Lowest Residue Rate)					
Small mammal (20g)	1E-03	7E-05	4E-03	**738**	NOAEL
Larger Mammal (400g)	2E-04	2E-05	1E-03	**738**	NOAEL
Large Mammal (70g)	1E-04	9E-06	6E-04	**738**	NOAEL
Small bird (10g)	3E-03	2E-04	1E-02	**610**	NOAEL
Large Bird (4 kg)	3E-04	2E-05	1E-03	**610**	NOAEL
Contaminated Vegetation (Short Grass - Highest Residue Rate)					
Small mammal (20g)	9E-03	5E-04	5E-02	**738**	NOAEL
Larger Mammal (400g)	2E-03	1E-04	1E-02	**738**	NOAEL
Large Mammal (70g)	1E-03	6E-05	7E-03	**738**	NOAEL
Small bird (10g)	3E-02	1E-03	0.2	**610**	NOAEL
Large Bird (4 kg)	3E-03	2E-04	2E-02	**610**	NOAEL
Contaminated Water					
Small mammal (20g)	1E-07	6E-11	2E-06	**738**	NOAEL
Larger Mammal (400g)	1E-07	4E-11	2E-06	**738**	NOAEL
Canid (5 kg)	2E-07	1E-10	4E-06	**250**	NOAEL
Large Mammal (70g)	6E-08	3E-11	1E-06	**738**	NOAEL
Small bird (10g)	3E-07	1E-10	5E-06	**610**	NOAEL
Large Bird (4 kg)	4E-08	2E-11	7E-07	**610**	NOAEL
Consumption of contaminated Fish					
Large Mammalian Carnivore (70 kg)	1E-08	6E-13	1E-06	**738**	NOAEL
Canid (5 kg)	6E-08	3E-12	6E-06	**250**	NOAEL
Fish-eating bird (2.4 kg)	3E-08	1E-12	3E-06	**610**	NOAEL


Accidental Scenarios
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
Upper
Central
Lower
Spray: Partial Abs
Spray: 100% Abs
Spill: Sm Mam
Spill: Med Mam
Spill: Canid
Spill: Lrg Mam
Spill: Sm Brd
Spill: Lrg Brd
Fish: Bear
Fish: Fox
Fish: Bird


Acute Scenarios
0.12
0.1
0.08
0.06
0.04
0.02
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Insects: Sm Mam
Insects: Med Mam
Insects: Sm Brd
Canid Eats Sm Mam
Bird Eats Sm Mam
Fish: Lrg Mam
Fish: Canid
Fish: Brd


Chronic Scenarios
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Upper
Central
Lower
Grass: Sm Mam
Grass: Med Mam
Grass: Lrg Mam
Grass: Sm Brd
Grass: Lrg Brd
Veg: Sm Mam
Veg: Med Mam
Veg: Lrg Mam
Veg: Sm Brd
Veg: Lrg Brd
Water: Sm Mam
Water: Med Mam
Water: Canid
Water: Lrg Mam
Water: Sm Brd
Water: Lrg Brd
Fish: Lrg Mam
Fish: Canid
Fish: Brd

Worksheet G03: Summary of Hazard Quotients for Aquatic Species

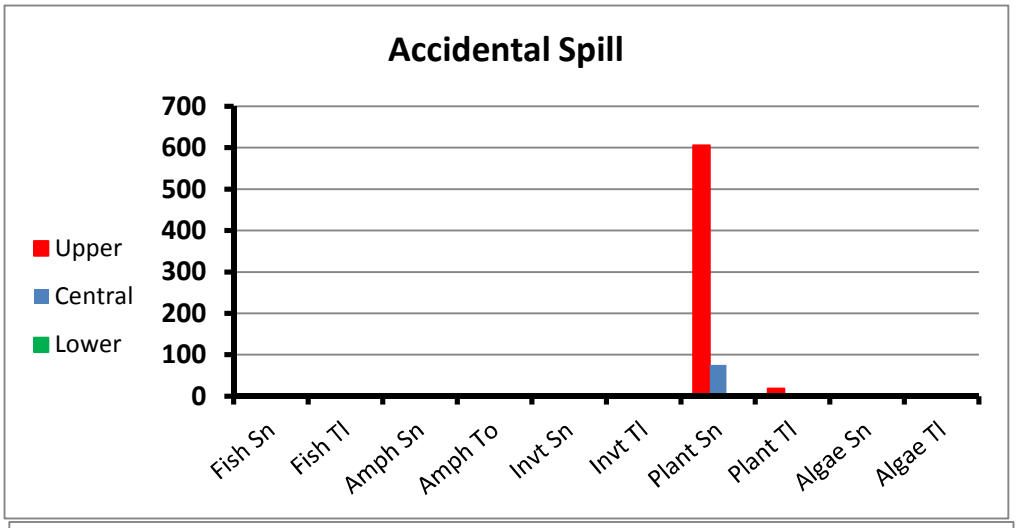
Application Rate: 1 lb a.e./acre

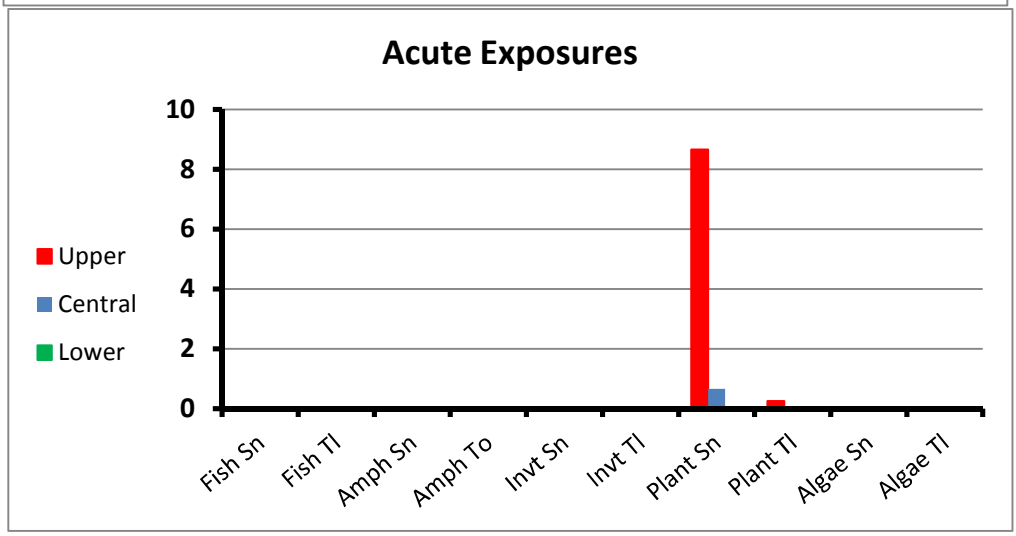
AqToxSumV6

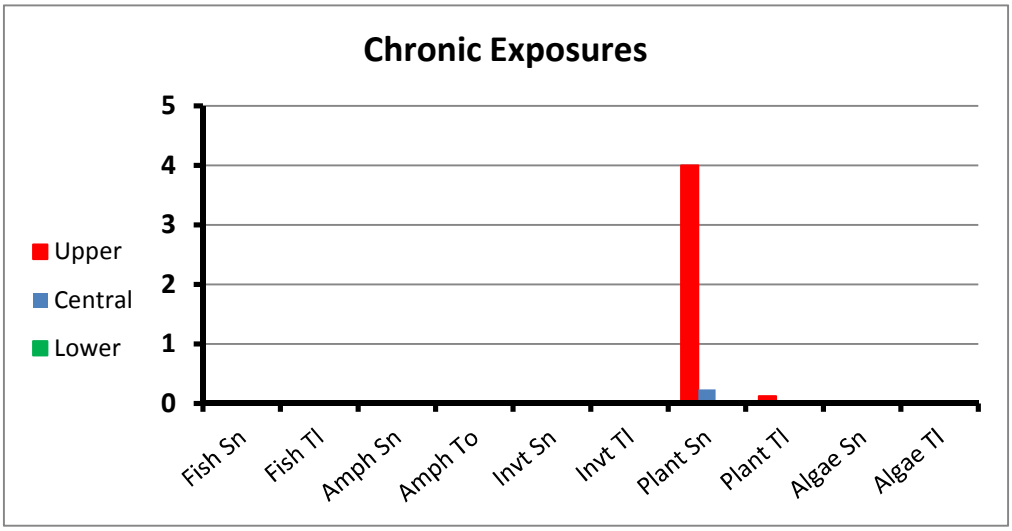
Exposures	Concentrations (mg/L)				
	Scenario	**Central**	**Lower**	**Upper**	**Worksheet**
	Accidental Spill	0.2271	0.009084	1.8168	B04b
	Peak EEC	0.002	0.0000009	0.026	B04a
	Chronic	0.0007	0.0000003	0.012	B04a

Receptor	Type	Hazard Quotients Central	Hazard Quotients Lower	Hazard Quotients Upper	Toxicity Value	Toxicity Endpoint
Accidental Acute Exposures						
Fish	Sensitive	2E-02	9E-04	0.2	**10.4**	NOAEC
	Tolerant	No toxicity data.			N/A	
Amphibian	Sensitive	No toxicity data.			N/A	
	Tolerant	No toxicity data.			N/A	
Invertebrate	Sensitive	No toxicity data.			N/A	
	Tolerant	6E-03	2E-04	4E-02	**41**	NOAEC
Macrophyte	Sensitive	**76**	**3**	**606**	**0.003**	NOAEC
	Tolerant	**2**	9E-02	**18**	**0.1**	NOAEC
Algae	Sensitive	3E-02	1E-03	0.2	**7.6**	NOAEC
	Tolerant	4E-03	2E-04	4E-02	**50.9**	NOEC
Non-Accidental Acute Exposures						
Fish	Sensitive	2E-04	9E-08	3E-03	**10.4**	NOAEC
	Tolerant	No toxicity data.			N/A	
Amphibian	Sensitive	No toxicity data.			N/A	
	Tolerant	No toxicity data.			N/A	
Invertebrate	Sensitive	No toxicity data.			N/A	
	Tolerant	5E-05	2E-08	6E-04	**41**	NOAEC
Macrophyte	Sensitive	0.7	3E-04	**9**	**0.003**	NOAEC
	Tolerant	2E-02	9E-06	0.3	**0.1**	NOAEC
Algae	Sensitive	3E-04	1E-07	3E-03	**7.6**	NOAEC
	Tolerant	4E-05	2E-08	5E-04	**50.9**	NOEC
Chronic/Longer Term Exposures						
Fish	Sensitive	2E-04	8E-08	3E-03	**4**	NOAEC*
	Tolerant	6E-05	3E-08	1E-03	**12**	NOEC
Amphibian	Sensitive	No toxicity data.			N/A	
	Tolerant	No toxicity data.			N/A	
Invertebrate	Sensitive	No toxicity data.			N/A	
	Tolerant	6E-05	3E-08	1E-03	**12**	NOAEC
Macrophyte	Sensitive	0.2	1E-04	**4**	**0.003**	NOAEC
	Tolerant	7E-03	3E-06	0.1	**0.1**	NOAEC
Algae	Sensitive	9E-05	4E-08	2E-03	**7.6**	NOAEC
	Tolerant	1E-05	6E-09	2E-04	**50.9**	NOEC

Note: NOEC*, NOAEC* or a similar designation - i.e., NOEC or NOAEC followed by an asterisk (*) -- indicates that the NOEC or similar value was estimated from an LC_{50} ,EC_{50}, or an LOEC. See the risk assessment for details.


Accidental Spill
700
600
500
400
300
200
100
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl


Acute Exposures
10
8
6
4
2
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl


Chronic Exposures
5
4
3
2
1
0
Upper
Central
Lower
Fish Sn
Fish Tl
Amph Sn
Amph To
Invt Sn
Invt Tl
Plant Sn
Plant Tl
Algae Sn
Algae Tl

Summary of Exposure Assessment and Risk Characterization for Terrestrial Plants from Runoff

Link to Gleams-Driver

Short Title	Runoff to terrestrial plants
Receptor	Terrestrial vegetation
Duration	Acute
User-Specified Gleams-Driver File	None

Parameter/Assumption	Code / Range	Value	Units	Reference
Worksheet Application Rate	$ApRt_{WB}$	**0.1**	lb/acre	Worksheeet A01
Offsite Application Rates Inputs				
Run ID:	Risk Assessment			
Application Rate Used in Run:	$ApRt_{Run}$	1	lb/acre	
Functional Off-site Application Rate	$ApRt_{Offsite}$			
	Central	0.0056	lb/acre	
	Lower	0.0000034		
	Upper	0.227		
Calculated Values				
Normalized Off-site Functional Application Rate	$NormApRt_{Offsite}$	$ApRt_{Offsite}$ / $ApRt_{Run}$		
	Central	0.0056	Unitless	Eq
	Lower	0.0000034		Eq
	Upper	0.227		Eq
Off-site Application Rate at Workbook Application Rate	$ApRt_{WB}$	$ApRt_{WB}$ x $NormApRt_{Offsite}$		
	Central	0.00056	lb/acre	Eq
	Lower	0.00000034		Eq
	Upper	0.0227		Eq
Toxicity Values (seedling emergence) in units of lbs/acre				
		Sensitive	Tolerant	
	Endpoint	**NOAEL**	**NOAEL**	
		0.00017	**0.0156**	Table 21
Hazard Quotients				
	Central	**3**	4E-02	
	Lower	2E-03	2E-05	
	Upper	**134**	**1.5**	

General Worksheet Note

Typically, this worksheet is filled in by WorksheetMaker using offsite application rates that are derived in the Forest Service risk assessment. Several different *Application Rates* are noted in the cells in this worksheet this note explains why this is done.

The **Worksheet Application Rate** refers to the application rate that is set by the user in Worksheet A01.

The next section of the worksheet (**Offsite Application Rate Inputs**) is initially set by the WorksheetMaker Program. The Application Rate Used in Run refers to the application rate used in the simulation software (typically Gleams-Driver) used to derived the Functional Off-site Application Rate. This is the application rate to the nontarget site based on runoff. In Forest Service risk assessments, a unit application rate of 1 lb/acre is always used. If you set a custom Gleams-Driver input file in Worksheet B04, the information from the Gleams-Driver input file will replace the values that had been initially filled in by the WorksheetMaker program. Alternatively, you can fill in any of these values manually.

In the **Calculated Values** section, this worksheet normalizes the Functional Offsite Application Rate. If the values are from a risk assessment (where an application rate of 1 lb/acre is always used in the Gleams-Driver run), these rates will be identical to the rats in the above section.

The **Toxicity Values** are typically those used in the risk assessment. You can change these if you have a good reason for doing so. Also, you can add columns it you want to show HQ values for other species of particular concern. To ensure that any values for new plants will format correctly, you should insert the new information between the Sensitive and Tolerant entries. To do this, select from the cell above labeled Tolerant (D24) down to the upper range of the hazard quotient (D30). While these cells are selected, do a *Right Mouse Click* and then scroll down to *Insert*. Then, select the *Shift Cells to Right* option. If you want to add more than one plant species, hit Control-Y to repeat this operation. If this is not clear, Press F1 (Help) and review the Excel Documentation for inserting cells into a worksheet or consult a reference book on Excel.

Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Drift After Aerial Broadcast Foliar Application.

Short Title	Drift to terrestrial plants	PlntDrift3Apps
Receptor	Terrestrial vegetation	
Duration	Acute	

Parameter/ Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Application Rate	ApRt	**0.1**	lb/acre	Worksheet A01
Toxicity Values(Post-emergence in lb/ac)				
Sensitive species	**NOAEL**	**0.000064**	lb/acre	Table 21
Tolerant species	**NOAEL**	**0.4**	lb/acre	Table 21
Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**			

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack	
0	1	1	1	1	unitless
25	0.223	0.104	0.035	0.00832	
50	0.171	0.05	0.0177	0.00433	
100	0.0979	0.0248	0.00948	0.00241	
300	0.0312	0.00753	0.0035	0.000941	
500	0.0192	0.00391	0.00209	0.000579	
900	0.0124	0.00166	0.00109	0.000312	

Estimates of functional offsite application rate **OffsiteApRt** ***=ApRt x Prop***

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack	
0	*0.1*	*0.1*	*0.1*	*0.1*	Eq
25	*0.0223*	*0.0104*	*0.0035*	*0.000832*	Eq
50	*0.0171*	*0.005*	*0.00177*	*0.000433*	Eq
100	*0.00979*	*0.00248*	*0.000948*	*0.000241*	Eq
300	*0.00312*	*0.000753*	*0.00035*	*0.0000941*	Eq
500	*0.00192*	*0.000391*	*0.000209*	*0.0000579*	Eq
900	*0.00124*	*0.000166*	*0.000109*	*0.0000312*	Eq

Hazard Quotients (Sensitive Species) **HQ_{Sens}** ***= OffsiteApRt / $ToxVal_{Sens}$***

	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack
0	**1,563**	**1,563**	**1,563**	**1,563**
25	**348**	**163**	**55**	**13**
50	**267**	**78**	**28**	**7**
100	**153**	**39**	**15**	**4**
300	**49**	**12**	**5**	**1.5**
500	**30**	**6**	**3**	0.9
900	**19**	**3**	**1.7**	0.5

Hazard Quotients (Tolerant Species)	HQ_{Tol} = *OffsiteApRt / ToxVal*$_{Tol}$			
0	0.3	0.3	0.3	0.3
25	6E-02	3E-02	9E-03	2E-03
50	4E-02	1E-02	4E-03	1E-03
100	2E-02	6E-03	2E-03	6E-04
300	8E-03	2E-03	9E-04	2E-04
500	5E-03	1E-03	5E-04	1E-04
900	3E-03	4E-04	3E-04	8E-05

Potential exposure of non-target plants through the use of contaminated irrigation water based on estimates concentrations in ambient water.

Short Title	Irrigation Water			PlntWatIrrg
Receptor	Non-target plants			
Duration	Peak			

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Application Rate	**ApRt**	**0.1**	lb/acre	Worksheet A01
Toxicity Values (Post-emergence in lb/ac)				
Sensitive species	**NOAEL**	**0.000064**	lb/acre	Table 21
Tolerant species	**NOAEL**	**0.4**	lb/acre	Table 21
Water contamination rate	**WCR**			
	Central	**0.02**	mg/L per	Section 3.2.3.4.6
	Lower	**0.000009**	lb/acre	Section 3.2.3.4.6
	Upper	**0.26**		Section 3.2.3.4.6
Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
	Central	**1**	unitless	Worksheet A01
	Lower	**1**		Worksheet A01
	Upper	**1**		Worksheet A01
Concentration in irrigation water	**$Conc_{Wat}$**	***ApRt × WCR × TEF***		
	Central	*0.002*	mg/L	Eq
	Lower	*0.0000009*		Eq
	Upper	*0.026*		Eq
Amount of irrigation water applied	**IrrigAmnt**			
	Central	1	inches	Scenario parameter
	Lower	0.25		Scenario parameter
	Upper	2		Scenario parameter
Gallons per Acre-Foot	**GalPerAc-Ft**	**325900**	gal/acre-foot	Budavari 1989
Liters per Gallon	**LtPerGal**	**3.785**	liters/gal	Budavari 1989
Liters of water applied per acre per inch of irrigation water (*rounded to nearest liter*)	**LpApl**	***GalPerAc-Ft × LtPerGal / 12***	Lit/acre-inch	
		102794		Eq
Liters of water applied per acre	**LPA**	***IrrigAmnt × LpApl***		
	Central	*102794*	liters	Eq
	Lower	*25698.5*		Eq
	Upper	*205588*		Eq
Application Rate (mg/acre)	**$ApR_{mg/a}$**	***$Conc_{Wat}$ × LPA***		
	Central	*205.588*	mg/acre	Eq
	Lower	*0.02312865*		Eq
	Upper	*5345.288*		Eq
Conversion factor for mg to lb	**Conv**	**0.000002204**		Budavari 1989
Functional application rate (lb/acre)	**FncApR**	**$ApR_{mg/a}$ × Conv**		
	Central	*0.000453116*	lb/acre	Eq
	Lower	*5.09755E-08*		Eq
	Upper	*0.011781015*		Eq

Hazard Quotients (Sensitive Species)	**HI_{Sens}**	**= *FncApRt / ToxVal*$_{Sens}$**
	Central	**7**
	Lower	8E-04
	Upper	**184**
Hazard Quotients (Tolerant Species)	**HI_{Tol}**	**= *FncApRt / ToxVal*$_{Tol}$**
	Central	1E-03
	Lower	1E-07
	Upper	3E-02

Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Wind Erosion at the Specified Application Rate.

Short Title	Wind erosion, terrestrial plants			PlntWind2
Receptor	Terrestrial vegetation			
Duration	Acute			
Parameter/Assumption	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**
Application Rate	ApRt	**0.1**	lb/acre	Worksheet A01
Toxicity Values (Post-emergence in lb/ac)				
Sensitive species	**NOAEL**	**0.000064**	lb/acre	Table 21
Tolerant species	**NOAEL**	**0.4**	lb/acre	Table 21
Soil losses due to wind ersion	**Loss_TonHa**			
	Central	5	Tons per	Scenario parameter
	Lower	1	hectare	Scenario parameter
	Upper	10	per year	Scenario parameter
Conversion for tons/ha to grams per cm^2	**Conv1**	0.01		
Soil losses in grams/square centimeter	**Loss_GrCm**			
	Central	*0.05*	g/cm^2	Eq
	Lower	*0.01*	per year	Eq
	Upper	*0.1*		Eq
Soil Density	**Dens**	2	g/cm^2	
Soil losses in cm/day	**Loss_CmDay**	***= Loss_GrCm /(Dens * 365)***		
	Central	*6.84932E-05*	cm per	Eq
	Lower	*1.36986E-05*	day	Eq
	Upper	*0.000136986*		Eq
Depth of incorporation	**Depth**	1	cm	Scenario parameter
Proportion of contaminated soil lost per day	**PropLost**			
	Central	6.84932E-05	unitless	
	Lower	1.36986E-05		
	Upper	0.000136986		
Estimates of functional offsite application rate	**OfsiteApRt**	***=ApRt x PropLost***		
	Central	*6.84932E-06*	lb/acre	Eq
	Lower	*1.36986E-06*		Eq
	Upper	*1.36986E-05*		Eq
Hazard Quotients (Sensitive Species)	**HI_{Sens}**	***= OffsiteApRt / $ToxVal_{Sens}$***		
	Central	0.1		
	Lower	2E-02		
	Upper	0.2		
Hazard Quotients (Tolerant Species)	**HI_{Tol}**	***= OffsiteApRt / $ToxVal_{Tol}$***		
	Central	2E-05		
	Lower	3E-06		
	Upper	3E-05		

Consumption of Fruit by a Herbivorous Insect, Acute exposure.

Short Title	Fruit	FdPropBWV6
Receptor	Herbivorous Insect	
Duration	Acute	Scenario parameter
Material consumed	Fruit	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Commodity				
Concentration on vegetation	**Conc**			
	Central	**0.746484375**	mg/kg food	='B05a'!Acute_C
	Lower	**0.321254883**		='B05a'!Acute_L
	Upper	**1.675137016**		='B05a'!Acute_U
Receptor				
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
	Lower	**0.6**		Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Estimate				
Dose	**Dose**	***Conc × Amnt***		
	Central	*0.970429688*	mg/kg bw	Eq
	Lower	*0.19275293*		Eq
	Upper	*3.685301436*		Eq

Consumption of Broadleaf/Small Insects by a Herbivorous Insect, Acute exposure.

Short Title	Broadleaf Vegetation	FdPropBWV6
Receptor	Herbivorous Insect	
Duration	Acute	Scenario parameter
Material consumed	Broadleaf/Small Insects	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Commodity				
Concentration on vegetation	**Conc**			
	Central	**4.798828125**	mg/kg food	='B05b'!Acute_C
	Lower	**1.505882263**		='B05b'!Acute_L
	Upper	**15.07623315**		='B05b'!Acute_U
Receptor				
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
	Lower	**0.6**		Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Estimate				
Dose	**Dose**	***Conc × Amnt***		
	Central	*6.238476563*	mg/kg bw	Eq
	Lower	*0.903529358*		Eq
	Upper	*33.16771292*		Eq

Consumption of Short grass by a Herbivorous Insect, Acute exposure.

Short Title	Short Grass	FdPropBWV6
Receptor	Herbivorous Insect	
Duration		Scenario parameter
Material consumed	Short grass	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Commodity				
Concentration on vegetation	**Conc**			
	Central	**9.064453125**	mg/kg food	='B05c'!Acute_C
	Lower	**3.011764526**		='B05c'!Acute_L
	Upper	**26.80219226**		='B05c'!Acute_U
Receptor				
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
	Lower	**0.6**		Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Estimate				
Dose	**Dose**	***Conc × Amnt***		
	Central	*11.78378906*	mg/kg bw	Eq
	Lower	*1.807058716*		Eq
	Upper	*58.96482297*		Eq

Consumption of Tall Grass by a Herbivorous Insect, Acute exposure.

Short Title		FdPropBWV6
Receptor	Herbivorous Insect	
Duration		Scenario parameter
Material consumed		

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/Designation
Commodity				
Concentration on vegetation	**Conc**			
	Central	**3.8390625**	mg/kg food	='B05d'!Acute_C
	Lower	**1.204705811**		='B05d'!Acute_L
	Upper	**12.28433812**		='B05d'!Acute_U
Receptor				
Amount consumed per day per unit body weight	**Amnt**			
	Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
	Lower	**0.6**		Reichle et al. 1973
	Upper	**2.2**		Waldbauer 1968
Estimate				
Dose	**Dose**	***Conc × Amnt***		
	Central	*4.99078125*	mg/kg bw	Eq
	Lower	*0.722823486*		Eq
	Upper	*27.02554386*		Eq

Summary of Exposure Assessments for the Herbivorous or Predatory Insects

Application Rate:	0.1	lb a.e./acre			InstHerbSum
Food Item	Receptor	mg/kg/day or mg/kg/event			Detail Worksheet
		Central	Lower	Upper	
Acute Exposures					
Fruit/Large Insects	Insect	0.9704297	0.192753	3.685301	G07a
Broadleaf/Small Insects	Insect	6.24E+00	9.04E-01	3.32E+01	G07b
Short Grass	Insect	1.18E+01	1.81E+00	5.90E+01	G07c
Long Grass	Insect	4.9907813	0.722823	27.02554	G07d

Summary of Hazard Quotients (Toxicity) for the Herbivorous or Predatory Insects

Application Rate:	0.1	lb a.e./acre			InstHerbSum	
Food Item	Receptor	Hazard Quotients			Toxicity Value	
		Central	Lower	Upper		
Acute Exposures						
Fruit/Large Insects	Insect	1E-03	2E-04	4E-03	**860**	NOAEL
Broadleaf/Small Insects	Insect	7E-03	1E-03	4E-02	**860**	NOAEL
Short Grass	Insect	1E-02	2E-03	7E-02	**860**	NOAEL
Long Grass	Insect	6E-03	8E-04	3E-02	**860**	NOAEL

Exposures and HQs for a Terrestrial Insect (Honeybee) Associated with Direct Spray or Drift Following Terrestrial Applications

Short Title	Direct Spray or Drift	BeeSprayHQs3Apps
Receptor	Honeybee	
Duration	Acute	

Parameter/Assumption	Code / Range	Equation/ Value	Units	Reference/ Designation
Toxicity Value (Spray)	**ToxVal**	**860**	mg/kg bw	NOAEL
Application rate	**$ApRt_{lb/ac}$**	**0.1**	lb/acre	Worksheet A01
Conversion Factor for lbs/acre to mg/cm^2	**CnvF**	0.01121	mg/cm^2/lb/acre	
Application rate, mg/cm^2	**ApR_{mgcm}**	**$ApR_{lb/a}$ × CnvF**		
		0.001121	lb/acre	Eq
Body weight	**BW**	**0.000116**	kg	Winston 1987
	SA	**1.42**	cm^2	Humphery and Dykes 2008
Proportion of body surface sprayed	**Prp_{SA}**	0.5	unitless	***Scenario parameter***
Amount Deposited on Skin (Direct Spray)	**Amnt**	***ApR_{mgcm}× SA × Prp_{SA}***		
		0.00079591	mg	Eq
Foliar Interception	**FolInt**	Lower	Central	Upper
		0	0.5	0.9

Proportion of Drift at distances downwind in feet [0 feet = direct spray]	Prop	Aerial	High Boom Ground Broadcast	Low Boom Ground Broadcast	Backpack
0	feet	1	1	1	1
25	feet	0.223	0.104	0.035	0.00832
50	feet	0.171	0.05	0.0177	0.00433
100	feet	0.0979	0.0248	0.00948	0.00241
300	feet	0.0312	0.00753	0.0035	0.000941
500	feet	0.0192	0.00391	0.00209	0.000579
900	feet	0.0124	0.00166	0.00109	0.000312

Doses (mg/kg bw) = Prop x FolInt x Amnt ÷ BW)				HQ = Absorbed Doses/ToxVal		
Aerial	**Foliar Interception**			**Foliar Interception**		
Distance Downwind	None	50%	90%	None	50%	90%
0	*6.8612931*	*3.430646552*	*0.68612931*	8E-03	4E-03	8E-04
25	*1.5300684*	*0.765034181*	*0.15300684*	2E-03	9E-04	2E-04
50	*1.1732811*	*0.58664056*	*0.11732811*	1E-03	7E-04	1E-04
100	*0.6717206*	*0.335860297*	*0.06717206*	8E-04	4E-04	8E-05
300	*0.2140723*	*0.107036172*	*0.02140723*	2E-04	1E-04	2E-05
500	*0.1317368*	*0.065868414*	*0.01317368*	2E-04	8E-05	2E-05
900	*0.08508*	*0.042540017*	*0.008508*	1E-04	5E-05	1E-05
Highboom Ground	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*6.8612931*	*3.430646552*	*0.68612931*	8E-03	4E-03	8E-04
0	*0.7135745*	*0.356787241*	*0.07135745*	8E-04	4E-04	8E-05
25	*0.3430647*	*0.171532328*	*0.03430647*	4E-04	2E-04	4E-05
50	*0.1701601*	*0.085080034*	*0.01701601*	2E-04	1E-04	2E-05
100	*0.0516655*	*0.025832769*	*0.00516655*	6E-05	3E-05	6E-06
300	*0.0268277*	*0.013413828*	*0.00268277*	3E-05	2E-05	3E-06
500	*0.0113897*	*0.005694873*	*0.00113897*	1E-05	7E-06	1E-06

Low Ground	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*6.8612931*	*3.430646552*	*0.68612931*	8E-03	4E-03	8E-04
Distance Downwind	*0.2401453*	*0.120072629*	*0.02401453*	3E-04	1E-04	3E-05
0	*0.1214449*	*0.060722444*	*0.01214449*	1E-04	7E-05	1E-05
25	*0.0650451*	*0.032522529*	*0.00650451*	8E-05	4E-05	8E-06
50	*0.0240145*	*0.012007263*	*0.00240145*	3E-05	1E-05	3E-06
100	*0.0143401*	*0.007170051*	*0.00143401*	2E-05	8E-06	2E-06
300	*0.0074788*	*0.003739405*	*0.00074788*	9E-06	4E-06	9E-07
Backpack	**Foliar Interception**			Foliar Interception		
Distance Downwind	None	50%	90%	None	50%	90%
Distance Downwind	*6.8612931*	*3.430646552*	*0.68612931*	8E-03	4E-03	8E-04
Distance Downwind	*0.057086*	*0.028542979*	*0.0057086*	7E-05	3E-05	7E-06
Distance Downwind	*0.0297094*	*0.0148547*	*0.00297094*	3E-05	2E-05	3E-06
0	*0.0165357*	*0.008267858*	*0.00165357*	2E-05	1E-05	2E-06
25	*0.0064565*	*0.003228238*	*0.00064565*	8E-06	4E-06	8E-07
50	*0.0039727*	*0.001986344*	*0.00039727*	5E-06	2E-06	5E-07
100	*0.0021407*	*0.001070362*	*0.00021407*	2E-06	1E-06	2E-07

Attachment 1

USDA Forest Service Worksheets

Workbook 8

Glyphosate_Attachment_1a_Roundup_OriginalBackpackDirectedFoliar.xls

Utilities

Roundup Original, Backpack Directed Foliar, Glyphosate (more toxic formulations)

Attachment 1a: Backpack Application Worksheets for Glyphosate Human Health and Ecological Risk Assessment

Final Report

Worksheet Version **5.00.64**

Submitted to:
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USDA Forest Service Contract: **AG-3187-C-06-0010**
USDA Forest Order Number: **AG-43ZP-D-09-0031**
SERA Internal Task No. **52-22**

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November 29, 2010

General Notes

Prepared by:	Patrick R Durkin
Program Version:	5.00.64
Database Used:	FS WsMkr V5-01a.mdb
Template Workbook:	FS WsMkr V5-01a.mdb
Base Workbook:	FS WSMkr Blank V05-01a.xls

Color Codes in WorksheetMaker Version 5

WorksheetMaker Version 5 contains four general types of worksheets: front matter sheets, data sheets, calculation sheets, and results sheets. As detailed below, a consistent set of formatting/color are used in the first three types of sheets.

Color Codes used in Workbook for Front Matter, Data and Calculation Worksheets

Green shading	This is a default value or a user specified a value. You can change these values as you see fit but you should have a reason for doing so.
Yellow shading	This is a source for a link in other parts of the workbook. If you have good reason to change the value, you should note the change (with your reason) in the "Revisions" page.
Blue shading	This cell is linked to another cell in the workbook. **Do not change this value.** If you change any of these values, the workbook may not update correctly.
Blue shading blue border	This cell is linked to a Program parameter in Worksheet A01. **Do not change this value.** If you want the value to change, go to Worksheet A01 and change the value in that worksheet.
Purple Shading	Indicates (for information only) that the typical of order of Lower and Upper values is intentionally reversed. This is only used in the second (label) column.
Italics, no shading	The value in this cell is generated by a formula (the number that you see is the result of an equation). This cell is linked only to other cells in the worksheet. **Do not change this value.**

Risk Characterization Worksheets use a modified color scheme based on the value of the hazard quotient (see below). The format for these worksheets will change as you change the application rate or other other inputs.

Color Codes used in Workbook for Risk Characterization Worksheets

HQ ≥ 2	For hazard quotient greater than 2, the number is in **bold font** with a red background and rounded to the nearest integer.
HQ > 1 but < 2	For hazard quotient greater than 1 but less than two, the number is in **bold font** with a white background and rounded to one significant place after the decimal.
HQ ≥ 0.1 but <1	For hazard quotient greater than 0.1 but less than one, the number is in regular font with a white background and rounded to one significant place after the decimal.
HQ < 0.1	For hazard quotient less than 0.1, the number is in regular font with a white background. The number is expressed in scientific notation and rounded to one significant place -- e.g., 2E-02 rather than 0.02.

The specific version of the program that was used is given above along with information about the Access database (containing the information that was used to make this workbook), template workbook (the workbook containing the template worksheets), and base workbook (the workbook that served as the basis for this workbook). Except as noted under the chemical specific notes (next worksheet), these worksheets are substantially identical to those submitted with the SERA risk assessment.

If you want to modify the application rate used in this workbook, go to the A01 worksheet. In this worksheet, change the application rate and/or the application volume(s). **Note that all application rates must be in units of lb a.e./acre for weak acids or lbs a.i./acre for other pesticides.** Generally, you can tell that the pesticide is a weak acid if it is sold as a salt (e.g., sodium, potassium, etc) or if it is an ester. If you are unsure of how to do the conversion, consult the risk assessment or seek other assistance.

Both the application rate section and the application volume section of Worksheet A01 are structured to allow the input of a central rate as well as the lower and upper bounds of a range. In project-specific assessments, however, **all three values for the application rate – central, lower, and upper – should be identical**.

	A	B	C	D	E	F	G	H	I
1	**Chemical specific notes**								
2			**Risk Assessment:**	**SERA TR-052-22-03a**					
3			**Report Date:**	**November, 2010**					
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Revision Histroy

Note: If you make any modifications to this workbook, you should note them in the revision area below. The revision area by default cotains the text *NONE*. The revision area consists of a Microsoft Word document. Thus, once you activate the revision area, there may be a slight delay while EXCEL activates MS Word.

NONE

	A	B	C	D	E	F
1	**Worksheet E01: Summary of Worker Exposure Assessments**					
2	**Application Rate:**	1	**lb a.e./acre**			E01aV5-1Wrkr
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Accidental/Incidental Exposures**					
6	Contaminated Gloves, 1 min.	Worker	0.0000036	3.552E-07	0.00003024	C02a
7	Contaminated Gloves, 1 hour	Worker	0.000216	0.000021312	0.0018144	C02b
8	Spill on Hands, 1 hour	Worker	0.000472223	5.99001E-05	0.002302848	C03a
9	Spill on lower legs, 1 hour	Worker	0.001163693	0.000147611	0.005674876	C03b
10	**General Exposures**					
11		Worker	0.006006	0.00045	0.08	C01

	A	B	C	D	E	F
1	**Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)**					
2	**Application Rate:**	1	**lb a.e./acre**			E01aV5-1Wrkr
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**
4			**Central**	**Lower**	**Upper**	
5	**Accidental/Incidental Exposures**					
6	Contaminated Gloves, 1 min.	Worker	2E-06	2E-07	2E-05	2
7	Contaminated Gloves, 1 hour	Worker	1E-04	1E-05	9E-04	2
8	Spill on Hands, 1 hour	Worker	2E-04	3E-05	1E-03	2
9	Spill on lower legs, 1 hour	Worker	6E-04	7E-05	3E-03	2
10	**General Exposures**					
11		Worker	3E-03	2E-04	4E-02	2

	A	B	C	D	E	F
1	**Worksheet E03: Summary of Exposure Assessments for the General Public**					
2	**Application Rate:**	**1**	**lb a.e./acre**			E03aV5
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Accidental Acute Exposures (dose in mg/kg/event)**					
6	Direct Spray of Child, whole body	Child	0.017841515	0.002263143	0.087006114	D01a
7	Direct Spray of Woman, feet and lower legs	Adult Female	0.001792358	0.000227355	0.008740629	D01b
8	Water consumption (spill)	Child	0.341503759	0.016665383	2.049022556	D05
9	Fish consumption (spill)	Adult Male	0.003895738	0.000311659	0.015582953	D08a
10	Fish consumption (spill)	Subsistence Populations	0.01898556	0.001518845	0.07594224	D08b
11	**Non-Accidental Acute Exposures (dose in mg/kg/event)**					
12	Vegetation Contact, shorts and T-shirt	Adult Female	0.001030448	0.000327826	0.002495607	D02
13	Contaminated Fruit	Adult Female	0.01176	0.005376	0.1866	D03a
14	Contaminated Vegetation	Adult Female	0.162	0.01125	1.35	D03b
15	Swimming, one hour	Adult Female	4.35703E-09	1.27014E-10	1.38078E-07	D11
16	Water consumption	Child	0.000827068	5.96241E-05	0.009360902	D06
17	Fish consumption	Adult Male	9.43486E-06	1.11503E-06	7.11903E-05	D09c
18	Fish consumption	Subsistence Populations	0.00004598	0.000005434	0.00034694	D09d
19	**Chronic/Longer Term Exposures (dose in mg/kg/day)**					
20	Contaminated Fruit	Adult Female	0.00188144	0.000860087	0.029853456	D04a
21	Contaminated Vegetation	Adult Female	0.025917791	0.001799847	0.215981592	D04b
22	Water consumption	Adult Male	5.42857E-06	0.00000176	0.000198857	D07
23	Fish consumption	Adult Male	1.03143E-08	4.77714E-09	3.14857E-07	D09a
24	Fish consumption	Subsistence Populations	8.35457E-08	3.86949E-08	2.55034E-06	D09b

	A	B	C	D	E	F
1	**Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General Public**					
2	**Application Rate:**	1	**lb a.e./acre**			E03aV5
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**
4			**Central**	**Lower**	**Upper**	
5	**Accidental Acute Exposures (dose in mg/kg/event)**					
6	Direct Spray of Child, whole body	Child	9E-03	1E-03	4E-02	2
7	Direct Spray of Woman, feet and lower legs	Adult Female	9E-04	1E-04	4E-03	2
8	Water consumption (spill)	Child	0.2	8E-03	**1.0**	2
9	Fish consumption (spill)	Adult Male	2E-03	2E-04	8E-03	2
10	Fish consumption (spill)	Subsistence Populations	9E-03	8E-04	4E-02	2
11	**Non-Accidental Acute Exposures (dose in mg/kg/event)**					
12	Vegetation Contact, shorts and T-shirt	Adult Female	5E-04	2E-04	1E-03	2
13	Contaminated Fruit	Adult Female	6E-03	3E-03	9E-02	2
14	Contaminated Vegetation	Adult Female	8E-02	6E-03	0.7	2
15	Swimming, one hour	Adult Female	2E-09	6E-11	7E-08	2
16	Water consumption	Child	4E-04	3E-05	5E-03	2
17	Fish consumption	Adult Male	5E-06	6E-07	4E-05	2
18	Fish consumption	Subsistence Populations	2E-05	3E-06	2E-04	2
19	**Chronic/Longer Term Exposures (dose in mg/kg/day)**					
20	Contaminated Fruit	Adult Female	9E-04	4E-04	1E-02	2
21	Contaminated Vegetation	Adult Female	1E-02	9E-04	0.1	2
22	Water consumption	Adult Male	3E-06	9E-07	1E-04	2
23	Fish consumption	Adult Male	5E-09	2E-09	2E-07	2
24	Fish consumption	Subsistence Populations	4E-08	2E-08	1E-06	2

	A	B	C	D	E	F
1	**Summary of Exposure Assessments for the Terrestrial Animals**					
2	**Application Rate:**	1	**lb a.e./acre**			G01V5
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Accidental Acute Exposures**					
6	**Direct Spray**					
7	first-order absorption	Small mammal	2.37E-01	7.55E-02	5.75E-01	F01
8	100% absorption	Small mammal	2.42E+01	2.42E+01	2.42E+01	F02
9	**Contaminated Water**					
10	Spill	Small Mammal	6.65E-01	5.32E-02	2.66E+00	F05a
11	Spill	Canid	3.83E-01	3.06E-02	1.53E+00	F05c
12	Spill	Large Mammal	2.94E-01	2.35E-02	1.18E+00	F05d
13	Spill	Small Bird	1.22E+00	9.80E-02	4.90E+00	F05b
14	Spill	Large Bird	1.70E-01	1.36E-02	6.78E-01	F05e
15	**Consumption of contaminated Fish**					
16	Spill	Fish-eating bird	2.36E-01	9.45E-03	1.42E+00	F08
17	**Non-Accidental Acute Exposures**					
18	**Contaminated Vegetation**					
19	Fruit	Small Mammal	1.18E+00	5.38E-01	2.52E+00	F03a
20	Grass	Small Mammal	1.43E+01	5.05E+00	4.04E+01	F03b
21	Grass	Large Mammal	1.87E+01	6.61E+00	5.29E+01	F10
22	Grass	Large Bird	2.96E+01	1.04E+01	8.34E+01	F12
23	**Contaminated Water**					
24		Small Mammal	1.61E-03	1.90E-04	1.22E-02	F06a
25		Canid	9.27E-04	1.10E-04	7.00E-03	F06c
26		Large Mammal	7.12E-04	8.42E-05	5.37E-03	F06d
27		Small Bird	0.0029665	0.000351	0.022384	F06b
28		Large Bird	0.0004107	4.85E-05	0.003099	F06e
29	**Contaminated Insects**					
30		Small Mammal	2.31E+01	7.71E+00	6.94E+01	F14a
31		Small Bird	3.77E+01	1.26E+01	1.13E+02	F14b
32	**Consumption of small mammal (after direct spray) by predator**					
33		Carnivorous mammal	2.10E+00	2.10E+00	2.10E+00	F16a
34		Carnivorous bird	3.23E+00	3.23E+00	3.23E+00	F16b
35	**Consumption of contaminated Fish**					
36		Fish-eating bird	5.72E-04	3.38E-05	6.47E-03	F09a
37	**Chronic/Longer Term Exposures**					
38	**Contaminated Vegetation**					
39	On-site	Small Mammal	1.88E-02	4.31E-03	8.07E-02	F04a
40	Off-Site		8.16E-05	1.04E-05	6.72E-04	F04b
41	On-Site	Large Mammal	8.99E-01	1.06E-01	8.46E+00	F11a
42	Off-Site		1.30E-02	2.55E-03	7.04E-02	F11b
43	On-Site	Large Bird	1.42E+00	1.67E-01	1.33E+01	F13a
44	Off-Site		2.05E-02	4.02E-03	1.11E-01	F13b
45	**Contaminated Water**					
46		Small Mammal	2.78E-05	1.29E-05	8.49E-04	F07a
47		Canid	1.60E-05	7.42E-06	4.89E-04	F07c
48		Large Mammal	1.23E-05	5.70E-06	3.75E-04	F07d
49		Small Bird	5.12E-05	2.37E-05	1.56E-03	F07b
50		Large Bird	7.09E-06	3.29E-06	2.17E-04	F07e
51	**Consumption of contaminated Fish**					
52		Fish-eating bird	9.88E-06	2.29E-06	4.52E-04	F09b

	A	B	C	D	E	F	G
1	**Summary of Hazard Quotients (Toxicity) for the Terrestrial Animals**						
2	**Application Rate:**	1	**lb a.e./acre**			G01V5	
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**	
4			**Central**	**Lower**	**Upper**		
5	**Accidental Acute Exposures**						
6	**Direct Spray**						
7	first-order absorption	Small mammal	1E-03	4E-04	3E-03	175	NOAEL
8	100% absorption	Small mammal	0.1	0.1	0.1	175	NOAEL
9	**Contaminated Water**						
10	Spill	Small Mammal	4E-03	3E-04	2E-02	175	NOAEL
11	Spill	Canid	2E-03	2E-04	9E-03	175	NOAEL
12	Spill	Large Mammal	2E-03	1E-04	7E-03	175	NOAEL
13	Spill	Small Bird	2E-03	2E-04	9E-03	540	NOAEL
14	Spill	Large Bird	3E-04	3E-05	1E-03	540	NOAEL
15	**Consumption of contaminated Fish**						
16	Spill	Fish-eating bird	4E-04	2E-05	3E-03	540	NOAEL
17	**Non-Accidental Acute Exposures**						
18	**Contaminated Vegetation**						
19	Fruit	Small Mammal	7E-03	3E-03	1E-02	175	NOAEL
20	Grass	Small Mammal	8E-02	3E-02	0.2	175	NOAEL
21	Grass	Large Mammal	0.1	4E-02	0.3	175	NOAEL
22	Grass	Large Bird	5E-02	2E-02	0.2	540	NOAEL
23	**Contaminated Water**						
24		Small Mammal	9E-06	1E-06	7E-05	175	NOAEL
25		Canid	5E-06	6E-07	4E-05	175	NOAEL
26		Large Mammal	4E-06	5E-07	3E-05	175	NOAEL
27		Small Bird	5E-06	6E-07	4E-05	540	NOAEL
28		Large Bird	8E-07	9E-08	6E-06	540	NOAEL
29	**Contaminated Insects**						
30		Small Mammal	0.1	4E-02	0.4	175	NOAEL
31		Small Bird	7E-02	2E-02	0.2	540	NOAEL
32	**Consumption of small mammal (after direct spray) by predator**						
33		Carnivorous mammal	1E-02	1E-02	1E-02	175	NOAEL
34		Carnivorous bird	6E-03	6E-03	6E-03	540	NOAEL
35	**Consumption of contaminated Fish**						
36		Fish-eating bird	1E-06	6E-08	1E-05	540	NOAEL
37	**Chronic/Longer Term Exposures**						
38	**Contaminated Vegetation**						
39	On-site	Small Mammal	1E-04	2E-05	5E-04	175	NOAEL
40	Off-Site		5E-07	6E-08	4E-06	175	NOAEL
41	On-Site	Large Mammal	5E-03	6E-04	5E-02	175	NOAEL
42	Off-Site		7E-05	1E-05	4E-04	175	NOAEL
43	On-Site	Large Bird	3E-02	4E-03	0.3	43	NOAEL
44	Off-Site		5E-04	9E-05	3E-03	43	NOAEL
45	**Contaminated Water**						
46		Small Mammal	2E-07	7E-08	5E-06	175	NOAEL
47		Canid	9E-08	4E-08	3E-06	175	NOAEL
48		Large Mammal	7E-08	3E-08	2E-06	175	NOAEL
49		Small Bird	1E-06	6E-07	4E-05	43	NOAEL
50		Large Bird	2E-07	8E-08	5E-06	43	NOAEL
51	**Consumption of contaminated Fish**						
52		Fish-eating bird	2E-07	5E-08	1E-05	43	NOAEL

	A	B	C	D	E	F	G
1	**Worksheet G03: Summary of Hazard Quotients for Aquatic Species**						
2	**Application Rate:**	**1**	**lb a.e./acre**			AqToxSumV5	
3	**Exposures**		**Concentrations** (mg/L)				
4		**Scenario**	**Central**	**Lower**	**Upper**	**Worksheet**	
5		**Accidental**	4.542	0.36336	18.168	D05	
6		**Peak EEC**	0.011	0.0013	0.083	D06	
7		**Chronic**	0.00019	0.000088	0.0058	D07	
8	**Receptor**	**Type**	**Hazard Quotients**			**Toxicity Value**	**Toxicity Endpoint**
9			**Central**	**Lower**	**Upper**		
10	**Accidental Acute Exposures**						
11	Fish	Sensitive	**95**	**8**	**379**	**0.048**	NOAEC*
12		Tolerant	**9**	0.7	**36**	**0.5**	NOAEC*
13	Amphibian	Sensitive	**114**	**9**	**454**	**0.04**	NOAEC*
14		Tolerant	**1.7**	0.1	**7**	**2.6**	NOAEC*
15	Invertebrate	Sensitive	**61**	**5**	**242**	**0.075**	NOAEC*
16		Tolerant	**2.0**	0.2	**8**	**2.3**	NOAEC*
17	Macrophyte	Sensitive	**55**	**4**	**222**	**0.082**	NOAEC
18		Tolerant	3E-02	2E-03	0.1	**170**	NOAEC
19	Algae	Sensitive	**55**	**4**	**222**	**0.082**	NOAEC
20		Tolerant	**1.2**	1E-01	**5**	**3.8**	EC10
21	**Non-Accidental Acute Exposures**						
22	Fish	Sensitive	0.2	3E-02	**1.7**	**0.048**	NOAEC*
23		Tolerant	2E-02	3E-03	0.2	**0.5**	NOAEC*
24	Amphibian	Sensitive	0.3	3E-02	**2**	**0.04**	NOAEC*
25		Tolerant	4E-03	5E-04	3E-02	**2.6**	NOAEC*
26	Invertebrate	Sensitive	0.1	2E-02	**1.1**	**0.075**	NOAEC*
27		Tolerant	5E-03	6E-04	4E-02	**2.3**	NOAEC*
28	Macrophyte	Sensitive	0.1	2E-02	**1.0**	**0.082**	NOAEC
29		Tolerant	6E-05	8E-06	5E-04	**170**	NOAEC
30	Algae	Sensitive	0.1	2E-02	**1.0**	**0.082**	NOAEC
31		Tolerant	3E-03	3E-04	2E-02	**3.8**	EC10
32	**Chronic/Longer Term Exposures**						
33	Fish	Sensitive	4E-03	2E-03	0.1	**0.048**	NOAEC*
34		Tolerant	4E-04	2E-04	1E-02	**0.5**	NOAEC*
35	Amphibian	Sensitive	5E-03	2E-03	0.1	**0.04**	NOAEC*
36		Tolerant	7E-05	3E-05	2E-03	**2.6**	NOAEC*
37	Invertebrate	Sensitive	3E-03	1E-03	8E-02	**0.075**	NOAEC*
38		Tolerant	8E-05	4E-05	3E-03	**2.3**	NOAEC*
39	Macrophyte	Sensitive	2E-03	1E-03	7E-02	**0.082**	NOAEC
40		Tolerant	1E-06	5E-07	3E-05	**170**	NOAEC
41	Algae	Sensitive	2E-03	1E-03	7E-02	**0.082**	NOAEC
42		Tolerant	5E-05	2E-05	2E-03	**3.8**	EC10
43							
44	Note: NOEC*, NOAEC* or a similar designation - i.e., NOEC or NOAEC followed by an asterisk (*) --						
45	indicates that the NOEC or similar value was estimated from an LC_{50} ,EC_{50}, or an LOEC. See the risk						
46							

	A	B	C	D	E	F
1	**Summary of Exposure Assessment and Risk Characterization for Terrestrial Plants from Runoff**					
2	Short Title	Runoff to terrestrial plants			Link to Gleams-Driver	
3	Receptor	Terrestrial vegetation				
4	Duration	Acute				
5	User-Specified Gleams-Driver File	**None**				
6	**Parameter/Assumption**	**Code / Range**	**Value**	**Units**	**Reference**	
7	Worksheet Application Rate	$ApRt_{WB}$	**1**	lb/acre	Worksheeet A01	
8	Offsite Application Rates Inputs					
9	Run ID:	Risk Assessment				
10	Application Rate Used in Run:	$ApRt_{Run}$	1	lb/acre		
11	Functional Off-site	$ApRt_{Offsite}$				
12	Application Rate	Central	0.00315	lb/acre		
13		Lower	0.0000001			
14		Upper	0.089			
15	Calculated Values					
16	Normalized Off-site	$NormApRt_{Offsite}$	$ApRt_{Offsite}$ / $ApRt_{Run}$			
17	Functional Application Rate	Central	0.00315	Unitless	Eq	
18		Lower	0.0000001		Eq	
19		Upper	0.089		Eq	
20	Off-site Application Rate at	$ApRt_{WB}$	$ApRt_{WB}$ x $NormApRt_{Offsite}$			
21	Workbook Application Rate	Central	0.00315	lb/acre	Eq	
22		Lower	0.0000001		Eq	
23		Upper	0.089		Eq	
24	Toxicity Values (seedling emergence) in units of lbs/acre					
25			Sensitive	Tolerant		
26		Endpoint	**NOEC**	**NOEC**		
27			**3.6**	**5**	Table 29	
28	Hazard Quotients					
29		Central	9E-04	6E-04		
30		Lower	3E-08	2E-08		
31		Upper	2E-02	2E-02		
32						

General Worksheet Note

Typically, this worksheet is filled in by WorksheetMaker using offsite application rates that are derived in the Forest Service risk assessment. Several different *Application Rates* are noted in the cells in this worksheet this note explains why this is done.

The **Worksheet Application Rate** refers to the application rate that is set by the user in Worksheet A01.

The next section of the worksheet (**Offsite Application Rate Inputs**) is initially set by the WorksheetMaker Program. The Application Rate Used in Run refers to the application rate used in the simulation software (typically Gleams-Driver) used to derived the Functional Off-site Application Rate. This is the application rate to the nontarget site based on runoff. In Forest Service risk assessments, a unit application rate of 1 lb/acre is always used. If you set a custom Gleams-Driver input file in Worksheet B04, the information from the Gleams-Driver input file will replace the values that had been initially filled in by the WorksheetMaker program. Alternatively, you can fill in any of these values manually.

In the **Calculated Values** section, this worksheet normalizes the Functional Offsite Application Rate. If the values are from a risk assessment (where an application rate of 1 lb/acre is always used in the Gleams-Driver run), these rates will be identical to the rats in the above section.

The **Toxicity Values** are typically those used in the risk assessment. You can change these if you have a good reason for doing so. Also, you can add columns it you want to show HQ values for other species of particular concern. To ensure that any values for new plants will format correctly, you should insert the new information between the Sensitive and Tolerant entries. To do this, select from the cell above labeled Tolerant (D24) down to the upper range of the hazard quotient (D30). While these cells are selected, do a *Right Mouse Click* and then scroll down to *Insert*. Then, select the *Shift Cells to Right* option. If you want to add more than one plant species, hit Control-Y to repeat this operation. If this is not clear, Press F1 (Help) and review the Excel Documentation for inserting cells into a worksheet or consult a reference book on Excel.

	A	B	C	D	E
1	**Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Drift After Backpack Directed Foliar Application.**				
2	Short Title	Drift to terrestrial plants			PlntDrift2
3	Receptor	Terrestrial vegetation			
4	Duration	Acute			
5	**Parameter/ Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**
6	Application Rate	ApRt	**1**	lb/acre	Worksheet A01
7	Toxicity Values(Post-emergence in lb/ac)				
8	Sensitive species	**NOEC**	**0.0013**	lb/acre	Table 29
9	Tolerant species	**NOEC**	**0.445**	lb/acre	Table 29
10	Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**			
11	0		1	unitless	
12	25		0.00832		
13	50		0.00433		
14	100		0.00241		
15	300		0.000941		
16	500		0.000579		
17	900		0.000312		
18	Estimates of functional offsite application rate	**OfApRt**	***=ApRt x Prop***		
19	0		*1*	lb/acre	Eq
20	25		*0.00832*		Eq
21	50		*0.00433*		Eq
22	100		*0.00241*		Eq
23	300		*0.000941*		Eq
24	500		*0.000579*		Eq
25	900		*0.000312*		Eq
26	Hazard Quotients (Sensitive Species)	**HQ_{Sens}**	***= OfApRt / ToxVal $_{Sens}$***		
27	0		**769**		
28	25		**6**		
29	50		**3**		
30	100		**1.9**		
31	300		0.7		
32	500		0.4		
33	900		0.2		
34	Hazard Quotients (Tolerant Species)	**HQ_{Tol}**	*= OfApRt / ToxVal $_{Tol}$*		
35	0		**2**		
36	25		2E-02		
37	50		1E-02		
38	100		5E-03		
39	300		2E-03		
40	500		1E-03		
41	900		7E-04		

	A	B	C	D	E
1	**Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Wind Erosion at the Specified Application Rate.**				
2	Short Title	Wind erosion, terrestrial plants			PlntWind2
3	Receptor	Terrestrial vegetation			
4	Duration	Acute			
5	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**
6	Application Rate	ApRt	**1**	lb/acre	Worksheet A01
7	Toxicity Values(Post-emergence in lb/ac)				
8	Sensitive species	**NOEC**	**0.0013**	lb/acre	Table 29
9	Tolerant species	**NOEC**	**0.445**	lb/acre	Table 29
10	Soil losses due to wind ersion	**Loss_TonHa**			
11		Central	5	Tons per hectare per year	Scenario parameter
12		Lower	1		Scenario parameter
13		Upper	10		Scenario parameter
14	Conversion for tons/ha to grams per cm^2	**Conv1**	0.01		
15	Soil losses in grams/square centimeter	**Loss_GrCm**			
16		Central	*0.05*	g/cm^2 per year	Eq
17		Lower	*0.01*		Eq
18		Upper	*0.1*		Eq
19	Soil Density	**Dens**	2	g/cm^2	
20	Soil losses in cm/day	**Loss_CmDay**	***= Loss_GrCm /(Dens * 365)***		
21		Central	*6.84932E-05*	cm per day	Eq
22		Lower	*1.36986E-05*		Eq
23		Upper	*0.000136986*		Eq
24	Depth of incorporation	**Depth**	1	cm	Scenario parameter
25	Proportion of contaminated soil lost per day	**PropLost**			
26		Central	6.84932E-05	unitless	
27		Lower	1.36986E-05		
28		Upper	0.000136986		
29	Estimates of functional offsite application rate	**OfApRt**	***=ApRt x PropLost***		
30		Central	*6.84932E-05*	lb/acre	Eq
31		Lower	*1.36986E-05*		Eq
32		Upper	*0.000136986*		Eq
33	Hazard Quotients (Sensitive Species)	**HI_{Sens}**	***= OfApRt / ToxVal $_{Sens}$***		
34		Central	5E-02		
35		Lower	1E-02		
36		Upper	0.1		
37	Hazard Quotients (Tolerant Species)	**HI_{Tol}**	*= OfApRt / ToxVal $_{Tol}$*		
38		Central	2E-04		
39		Lower	3E-05		
40		Upper	3E-04		

	A	B	C	D	E
1	**Consumption of Contaminated Fruit/Large Insects by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Fruit			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Fruit/Large Insects			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**7**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**3.2**		Worksheet A01
15		Upper	**15**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*7*	mg/kg food item	Eq
20		Lower	*3.2*		Eq
21		Upper	*15*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*9.1*	mg/kg bw	Eq
28		Lower	*1.92*		Eq
29		Upper	*33*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Broadleaf/Small Insects by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Broadleaf			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Broadleaf/Small Insects			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**45**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**15**		Worksheet A01
15		Upper	**135**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*45*	mg/kg food item	Eq
20		Lower	*15*		Eq
21		Upper	*135*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*58.5*	mg/kg bw	Eq
28		Lower	*9*		Eq
29		Upper	*297*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Short grass by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Short Grass			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Short grass			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
8	Amount consumed per day	**Amnt**			
9	per unit body weight	Central	**1.3**	kg food/kg BW	Waldbauer 1968
10		Lower	**0.6**	per day	Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**85**	mg/kg food per	Worksheet A01
14		Lower	**30**	lb/acre	Worksheet A01
15		Upper	**240**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*85*	mg/kg food item	Eq
20		Lower	*30*		Eq
21		Upper	*240*		Eq
22	Toxic Equivalency Factor	**TEF**			
23	for formulation: (See risk	Central	**1**	Unitless	Worksheet A01
24	assessment if this has a value	Lower	**1**		Worksheet A01
25	other than 1.)	Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*110.5*	mg/kg bw	Eq
28		Lower	*18*		Eq
29		Upper	*528*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Tall Grass by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Tallt Grass			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Tall Grass			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**1**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**36**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**12**		Worksheet A01
15		Upper	**110**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*36*	mg/kg food item	Eq
20		Lower	*12*		Eq
21		Upper	*110*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*46.8*	mg/kg bw	Eq
28		Lower	*7.2*		Eq
29		Upper	*242*		Eq

	A	B	C	D	E	F
1	**Summary of Exposure Assessments for the Herbivorous or Predatory Insects**					
2	**Application Rate:**	1	**lb a.e./acre**			InstHerbSum
3	**Food Item**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Acute Exposures**					
6	Fruit/Large Insects	Insect	9.1	1.92	33	G07a
7	Broadleaf/Small Insects	Insect	5.85E+01	9.00E+00	2.97E+02	G07b
8	Short Grass	Insect	1.11E+02	1.80E+01	5.28E+02	G07c
9	Long Grass	Insect	46.8	7.2	242	G07d

	A	B	C	D	E	F	G
1	**Summary of Hazard Quotients (Toxicity) for the Herbivorous or Predatory Insects**						
2	**Application Rate:**	1	**lb a.e./acre**			InstHerbSum	
3	**Food Item**	**Receptor**	**Hazard Quotients**			**Toxicity Value**	
4			**Central**	**Lower**	**Upper**		
5	**Acute Exposures**						
6	Fruit/Large Insects	Insect	2E-02	4E-03	8E-02	**430**	NOEC
7	Broadleaf/Small Insects	Insect	0.1	2E-02	0.7	**430**	NOEC
8	Short Grass	Insect	0.3	4E-02	**1.2**	**430**	NOEC
9	Long Grass	Insect	0.1	2E-02	0.6	**430**	NOEC

Attachment 1

USDA Forest Service Worksheets

Workbook 9

Glyphosate_Attachment_1a_Roundup_OriginalBackpackDirectedFoliar.xls

Utilities

Roundup Original, Backpack Directed Foliar, Glyphosate (more toxic formulations)

Attachment 1a: Backpack Application Worksheets for Glyphosate Human Health and Ecological Risk Assessment

Final Report

Worksheet Version 5.00.64

Submitted to:
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USDA Forest Service Contract: **AG-3187-C-06-0010**
USDA Forest Order Number: **AG-43ZP-D-09-0031**
SERA Internal Task No. **52-22**

Submitted by:
Patrick R. Durkin
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November 29, 2010

General Notes

Prepared by:	Patrick R Durkin
Program Version:	5.00.64
Database Used:	FS WsMkr V5-01a.mdb
Template Workbook:	FS WsMkr V5-01a.mdb
Base Workbook:	FS WSMkr Blank V05-01a.xls

Color Codes in WorksheetMaker Version 5

WorksheetMaker Version 5 contains four general types of worksheets: front matter sheets, data sheets, calculation sheets, and results sheets. As detailed below, a consistent set of formatting/color are used in the first three types of sheets.

Color Codes used in Workbook for Front Matter, Data and Calculation Worksheets

Green shading	This is a default value or a user specified a value. You can change these values as you see fit but you should have a reason for doing so.
Yellow shading	This is a source for a link in other parts of the workbook. If you have good reason to change the value, you should note the change (with your reason) in the "Revisions" page.
Blue shading	This cell is linked to another cell in the workbook. **Do not change this value.** If you change any of these values, the workbook may not update correctly.
Blue shading blue border	This cell is linked to a Program parameter in Worksheet A01. **Do not change this value.** If you want the value to change, go to Worksheet A01 and change the value in that worksheet.
Purple Shading	Indicates (for information only) that the typical of order of Lower and Upper values is intentionally reversed. This is only used in the second (label) column.
Italics, no shading	The value in this cell is generated by a formula (the number that you see is the result of an equation). This cell is linked only to other cells in the worksheet. **Do not change this value.**

Risk Characterization Worksheets use a modified color scheme based on the value of the hazard quotient (see below). The format for these worksheets will change as you change the application rate or other other inputs.

Color Codes used in Workbook for Risk Characterization Worksheets

HQ ≥ 2	For hazard quotient greater than 2, the number is in **bold font** with a red background and rounded to the nearest integer.
HQ > 1 but < 2	For hazard quotient greater than 1 but less than two, the number is in **bold font** with a white background and rounded to one significant place after the decimal.
HQ ≥ 0.1 but <1	For hazard quotient greater than 0.1 but less than one, the number is in regular font with a white background and rounded to one significant place after the decimal.
HQ < 0.1	For hazard quotient less than 0.1, the number is in regular font with a white background. The number is expressed in scientific notation and rounded to one significant place -- e.g., 2E-02 rather than 0.02.

The specific version of the program that was used is given above along with information about the Access database (containing the information that was used to make this workbook), template workbook (the workbook containing the template worksheets), and base workbook (the workbook that served as the basis for this workbook). Except as noted under the chemical specific notes (next worksheet), these worksheets are substantially identical to those submitted with the SERA risk assessment.

If you want to modify the application rate used in this workbook, go to the A01 worksheet. In this worksheet, change the application rate and/or the application volume(s). **Note that all application rates must be in units of lb a.e./acre for weak acids or lbs a.i./acre for other pesticides.** Generally, you can tell that the pesticide is a weak acid if it is sold as a salt (e.g., sodium, potassium, etc) or if it is an ester. If you are unsure of how to do the conversion, consult the risk assessment or seek other assistance.

Both the application rate section and the application volume section of Worksheet A01 are structured to allow the input of a central rate as well as the lower and upper bounds of a range. In project-specific assessments, however, **all three values for the application rate – central, lower, and upper – should be identical**.

	A	B	C	D	E	F	G	H	I
1	**Chemical specific notes**								
2			**Risk Assessment:**	**SERA TR-052-22-03a**					
3			**Report Date:**	**November, 2010**					
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Revision Histroy

Note: If you make any modifications to this workbook, you should note them in the revision area below. The revision area by default cotains the text *NONE*. The revision area consists of a Microsoft Word document. Thus, once you activate the revision area, there may be a slight delay while EXCEL activates MS Word.

NONE

	A	B	C	D	E	F
1	**Worksheet E01: Summary of Worker Exposure Assessments**					
2	**Application Rate:**	**8**	**lb a.e./acre**			E01aV5-1Wrkr
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Accidental/Incidental Exposures**					
6	Contaminated Gloves, 1 min.	Worker	0.0000288	0.000002812	0.0002394	C02a
7	Contaminated Gloves, 1 hour	Worker	0.001728	0.00016872	0.014364	C02b
8	Spill on Hands, 1 hour	Worker	0.003777786	0.000474209	0.018230883	C03a
9	Spill on lower legs, 1 hour	Worker	0.009309543	0.001168587	0.044926105	C03b
10	**General Exposures**					
11		Worker	0.048048	0.0036	0.64	C01

	A	B	C	D	E	F
1	**Worksheet E01: Summary of Worker Hazard Quotients (Toxicity)**					
2	**Application Rate:**	**8**	**lb a.e./acre**			E01aV5-1Wrkr
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**
4			**Central**	**Lower**	**Upper**	
5	**Accidental/Incidental Exposures**					
6	Contaminated Gloves, 1 min.	Worker	1E-05	1E-06	1E-04	**2**
7	Contaminated Gloves, 1 hour	Worker	9E-04	8E-05	7E-03	**2**
8	Spill on Hands, 1 hour	Worker	2E-03	2E-04	9E-03	**2**
9	Spill on lower legs, 1 hour	Worker	5E-03	6E-04	2E-02	**2**
10	**General Exposures**					
11		Worker	2E-02	2E-03	0.3	**2**

	A	B	C	D	E	F
1	**Worksheet E03: Summary of Exposure Assessments for the General Public**					
2	**Application Rate:**	**8**	**lb a.e./acre**			E03aV5
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Accidental Acute Exposures (dose in mg/kg/event)**					
6	Direct Spray of Child, whole body	Child	0.142732121	0.01791655	0.688798401	D01a
7	Direct Spray of Woman, feet and lower legs	Adult Female	0.01433886	0.001799896	0.069196646	D01b
8	Water consumption (spill)	Child	2.732030075	0.131934286	16.22142857	D05
9	Fish consumption (spill)	Adult Male	0.031165906	0.002467301	0.123365046	D08a
10	Fish consumption (spill)	Subsistence Populations	0.15188448	0.012024188	0.6012094	D08b
11	**Non-Accidental Acute Exposures (dose in mg/kg/event)**					
12	Vegetation Contact, shorts and T-shirt	Adult Female	0.009940179	0.00316236	0.024073777	D02
13	Contaminated Fruit	Adult Female	0.09408	0.043008	1.4928	D03a
14	Contaminated Vegetation	Adult Female	1.296	0.09	10.8	D03b
15	Swimming, one hour	Adult Female	3.48563E-08	1.01611E-09	1.10463E-06	D11
16	Water consumption	Child	0.006616541	0.000476992	0.074887218	D06
17	Fish consumption	Adult Male	7.54789E-05	8.92023E-06	0.000569522	D09c
18	Fish consumption	Subsistence Populations	0.00036784	0.000043472	0.00277552	D09d
19	**Chronic/Longer Term Exposures (dose in mg/kg/day)**					
20	Contaminated Fruit	Adult Female	0.015051517	0.006880694	0.238827644	D04a
21	Contaminated Vegetation	Adult Female	0.207342328	0.014398773	1.727852733	D04b
22	Water consumption	Adult Male	4.34286E-05	0.00001408	0.001590857	D07
23	Fish consumption	Adult Male	8.25143E-08	3.82171E-08	2.51886E-06	D09a
24	Fish consumption	Subsistence Populations	6.68366E-07	3.09559E-07	2.04027E-05	D09b

	A	B	C	D	E	F
1	**Worksheet E03: Summary of Hazard Quotients (Toxicity) for the General Public**					
2	**Application Rate:**	**8**	**lb a.e./acre**			E03aV5
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**
4			**Central**	**Lower**	**Upper**	
5	**Accidental Acute Exposures (dose in mg/kg/event)**					
6	Direct Spray of Child, whole body	Child	7E-02	9E-03	0.3	2
7	Direct Spray of Woman, feet and lower legs	Adult Female	7E-03	9E-04	3E-02	2
8	Water consumption (spill)	Child	**1.4**	7E-02	**8**	2
9	Fish consumption (spill)	Adult Male	2E-02	1E-03	6E-02	2
10	Fish consumption (spill)	Subsistence Populations	8E-02	6E-03	0.3	2
11	**Non-Accidental Acute Exposures (dose in mg/kg/event)**					
12	Vegetation Contact, shorts and T-shirt	Adult Female	5E-03	2E-03	1E-02	2
13	Contaminated Fruit	Adult Female	5E-02	2E-02	0.7	2
14	Contaminated Vegetation	Adult Female	0.6	5E-02	**5**	2
15	Swimming, one hour	Adult Female	2E-08	5E-10	6E-07	2
16	Water consumption	Child	3E-03	2E-04	4E-02	2
17	Fish consumption	Adult Male	4E-05	4E-06	3E-04	2
18	Fish consumption	Subsistence Populations	2E-04	2E-05	1E-03	2
19	**Chronic/Longer Term Exposures (dose in mg/kg/day)**					
20	Contaminated Fruit	Adult Female	8E-03	3E-03	0.1	2
21	Contaminated Vegetation	Adult Female	0.1	7E-03	0.9	2
22	Water consumption	Adult Male	2E-05	7E-06	8E-04	2
23	Fish consumption	Adult Male	4E-08	2E-08	1E-06	2
24	Fish consumption	Subsistence Populations	3E-07	2E-07	1E-05	2

	A	B	C	D	E	F
1	**Summary of Exposure Assessments for the Terrestrial Animals**					
2	**Application Rate:**	8	**lb a.e./acre**			G01V5
3	**Scenario**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Accidental Acute Exposures**					
6	**Direct Spray**					
7	first-order absorption	Small mammal	1.90E+00	6.04E-01	4.60E+00	F01
8	100% absorption	Small mammal	1.94E+02	1.94E+02	1.94E+02	F02
9	**Contaminated Water**					
10	Spill	Small Mammal	5.32E+00	4.21E-01	2.11E+01	F05a
11	Spill	Canid	3.06E+00	2.42E-01	1.21E+01	F05c
12	Spill	Large Mammal	2.35E+00	1.86E-01	9.31E+00	F05d
13	Spill	Small Bird	9.80E+00	7.76E-01	3.88E+01	F05b
14	Spill	Large Bird	1.36E+00	1.07E-01	5.37E+00	F05e
15	**Consumption of contaminated Fish**					
16	Spill	Fish-eating bird	1.89E+00	7.48E-02	1.12E+01	F08
17	**Non-Accidental Acute Exposures**					
18	**Contaminated Vegetation**					
19	Fruit	Small Mammal	9.42E+00	4.31E+00	2.02E+01	F03a
20	Grass	Small Mammal	1.14E+02	4.04E+01	3.23E+02	F03b
21	Grass	Large Mammal	1.50E+02	5.29E+01	4.23E+02	F10
22	Grass	Large Bird	2.36E+02	8.34E+01	6.67E+02	F12
23	**Contaminated Water**					
24		Small Mammal	1.29E-02	1.52E-03	9.72E-02	F06a
25		Canid	7.42E-03	8.77E-04	5.60E-02	F06c
26		Large Mammal	5.70E-03	6.73E-04	4.30E-02	F06d
27		Small Bird	0.023732	0.002805	0.179069	F06b
28		Large Bird	0.0032859	0.000388	0.024794	F06e
29	**Contaminated Insects**					
30		Small Mammal	1.85E+02	6.17E+01	5.55E+02	F14a
31		Small Bird	3.02E+02	1.01E+02	9.05E+02	F14b
32	**Consumption of small mammal (after direct spray) by predator**					
33		Carnivorous mammal	1.68E+01	1.68E+01	1.68E+01	F16a
34		Carnivorous bird	2.59E+01	2.59E+01	2.59E+01	F16b
35	**Consumption of contaminated Fish**					
36		Fish-eating bird	4.58E-03	2.70E-04	5.18E-02	F09a
37	**Chronic/Longer Term Exposures**					
38	**Contaminated Vegetation**					
39	On-site	Small Mammal	1.51E-01	3.44E-02	6.46E-01	F04a
40	Off-Site		6.53E-04	8.30E-05	5.37E-03	F04b
41	On-Site	Large Mammal	7.19E+00	8.46E-01	6.77E+01	F11a
42	Off-Site		1.04E-01	2.04E-02	5.63E-01	F11b
43	On-Site	Large Bird	1.13E+01	1.33E+00	1.07E+02	F13a
44	Off-Site		1.64E-01	3.22E-02	8.88E-01	F13b
45	**Contaminated Water**					
46		Small Mammal	2.23E-04	1.03E-04	6.79E-03	F07a
47		Canid	1.28E-04	5.93E-05	3.91E-03	F07c
48		Large Mammal	9.84E-05	4.56E-05	3.00E-03	F07d
49		Small Bird	4.10E-04	1.90E-04	1.25E-02	F07b
50		Large Bird	5.68E-05	2.63E-05	1.73E-03	F07e
51	**Consumption of contaminated Fish**					
52		Fish-eating bird	7.90E-05	1.83E-05	3.62E-03	F09b

	A	B	C	D	E	F	G
1	**Summary of Hazard Quotients (Toxicity) for the Terrestrial Animals**						
2	**Application Rate:**	8	**lb a.e./acre**			G01V5	
3	**Scenario**	**Receptor**	**Hazard Quotients**			**Toxicity Value**	
4			**Central**	**Lower**	**Upper**		
5	**Accidental Acute Exposures**						
6	**Direct Spray**						
7	first-order absorption	Small mammal	1E-02	3E-03	3E-02	175	NOAEL
8	100% absorption	Small mammal	**1.1**	**1.1**	**1.1**	175	NOAEL
9	**Contaminated Water**						
10	Spill	Small Mammal	3E-02	2E-03	0.1	175	NOAEL
11	Spill	Canid	2E-02	1E-03	7E-02	175	NOAEL
12	Spill	Large Mammal	1E-02	1E-03	5E-02	175	NOAEL
13	Spill	Small Bird	2E-02	1E-03	7E-02	540	NOAEL
14	Spill	Large Bird	3E-03	2E-04	1E-02	540	NOAEL
15	**Consumption of contaminated Fish**						
16	Spill	Fish-eating bird	3E-03	1E-04	2E-02	540	NOAEL
17	**Non-Accidental Acute Exposures**						
18	**Contaminated Vegetation**						
19	Fruit	Small Mammal	5E-02	2E-02	0.1	175	NOAEL
20	Grass	Small Mammal	0.7	0.2	**1.8**	175	NOAEL
21	Grass	Large Mammal	0.9	0.3	**2**	175	NOAEL
22	Grass	Large Bird	0.4	0.2	**1.2**	540	NOAEL
23	**Contaminated Water**						
24		Small Mammal	7E-05	9E-06	6E-04	175	NOAEL
25		Canid	4E-05	5E-06	3E-04	175	NOAEL
26		Large Mammal	3E-05	4E-06	2E-04	175	NOAEL
27		Small Bird	4E-05	5E-06	3E-04	540	NOAEL
28		Large Bird	6E-06	7E-07	5E-05	540	NOAEL
29	**Contaminated Insects**						
30		Small Mammal	**1.1**	0.4	**3**	175	NOAEL
31		Small Bird	0.6	0.2	**1.7**	540	NOAEL
32	**Consumption of small mammal (after direct spray) by predator**						
33		Carnivorous mammal	1E-01	1E-01	1E-01	175	NOAEL
34		Carnivorous bird	5E-02	5E-02	5E-02	540	NOAEL
35	**Consumption of contaminated Fish**						
36		Fish-eating bird	8E-06	5E-07	1E-04	540	NOAEL
37	**Chronic/Longer Term Exposures**						
38	**Contaminated Vegetation**						
39	On-site	Small Mammal	9E-04	2E-04	4E-03	175	NOAEL
40	Off-Site		4E-06	5E-07	3E-05	175	NOAEL
41	On-Site	Large Mammal	4E-02	5E-03	0.4	175	NOAEL
42	Off-Site		6E-04	1E-04	3E-03	175	NOAEL
43	On-Site	Large Bird	0.3	3E-02	**2**	43	NOAEL
44	Off-Site		4E-03	7E-04	2E-02	43	NOAEL
45	**Contaminated Water**						
46		Small Mammal	1E-06	6E-07	4E-05	175	NOAEL
47		Canid	7E-07	3E-07	2E-05	175	NOAEL
48		Large Mammal	6E-07	3E-07	2E-05	175	NOAEL
49		Small Bird	1E-05	4E-06	3E-04	43	NOAEL
50		Large Bird	1E-06	6E-07	4E-05	43	NOAEL
51	**Consumption of contaminated Fish**						
52		Fish-eating bird	2E-06	4E-07	8E-05	43	NOAEL

	A	B	C	D	E	F	G
1	**Worksheet G03: Summary of Hazard Quotients for Aquatic Species**						
2	**Application Rate:**	**1**	**lb a.e./acre**			AqToxSumV5	
3	**Exposures**		**Concentrations** (mg/L)				
4		**Scenario**	**Central**	**Lower**	**Upper**	**Worksheet**	
5		**Accidental**	36.336	2.8766	143.83	D05	
6		**Peak EEC**	0.088	0.0104	0.664	D06	
7		**Chronic**	0.00152	0.000704	0.0464	D07	
8	**Receptor**	**Type**	**Hazard Quotients**			**Toxicity**	**Toxicity**
9			**Central**	**Lower**	**Upper**	**Value**	**Endpoint**
10	**Accidental Acute Exposures**						
11	Fish	Sensitive	**757**	**60**	**2,996**	**0.048**	NOAEC*
12		Tolerant	**73**	**6**	**288**	**0.5**	NOAEC*
13	Amphibian	Sensitive	**908**	**72**	**3,596**	**0.04**	NOAEC*
14		Tolerant	**14**	**1.1**	**55**	**2.6**	NOAEC*
15	Invertebrate	Sensitive	**484**	**38**	**1,918**	**0.075**	NOAEC*
16		Tolerant	**16**	**1.3**	**63**	**2.3**	NOAEC*
17	Macrophyte	Sensitive	**443**	**35**	**1,754**	**0.082**	NOAEC
18		Tolerant	0.2	2E-02	0.8	**170**	NOAEC
19	Algae	Sensitive	**443**	**35**	**1,754**	**0.082**	NOAEC
20		Tolerant	**10**	0.8	**38**	**3.8**	EC10
21	**Non-Accidental Acute Exposures**						
22	Fish	Sensitive	**1.8**	0.2	**14**	**0.048**	NOAEC*
23		Tolerant	0.2	2E-02	**1.3**	**0.5**	NOAEC*
24	Amphibian	Sensitive	**2**	0.3	**17**	**0.04**	NOAEC*
25		Tolerant	3E-02	4E-03	0.3	**2.6**	NOAEC*
26	Invertebrate	Sensitive	**1.2**	0.1	**9**	**0.075**	NOAEC*
27		Tolerant	4E-02	5E-03	0.3	**2.3**	NOAEC*
28	Macrophyte	Sensitive	**1.1**	0.1	**8**	**0.082**	NOAEC
29		Tolerant	5E-04	6E-05	4E-03	**170**	NOAEC
30	Algae	Sensitive	**1.1**	0.1	**8**	**0.082**	NOAEC
31		Tolerant	2E-02	3E-03	0.2	**3.8**	EC10
32	**Chronic/Longer Term Exposures**						
33	Fish	Sensitive	3E-02	1E-02	1.0	**0.048**	NOAEC*
34		Tolerant	3E-03	1E-03	9E-02	**0.5**	NOAEC*
35	Amphibian	Sensitive	4E-02	2E-02	**1.2**	**0.04**	NOAEC*
36		Tolerant	6E-04	3E-04	2E-02	**2.6**	NOAEC*
37	Invertebrate	Sensitive	2E-02	9E-03	0.6	**0.075**	NOAEC*
38		Tolerant	7E-04	3E-04	2E-02	**2.3**	NOAEC*
39	Macrophyte	Sensitive	2E-02	9E-03	0.6	**0.082**	NOAEC
40		Tolerant	9E-06	4E-06	3E-04	**170**	NOAEC
41	Algae	Sensitive	2E-02	9E-03	0.6	**0.082**	NOAEC
42		Tolerant	4E-04	2E-04	1E-02	**3.8**	EC10
43							
44	Note: NOEC*, NOAEC* or a similar designation - i.e., NOEC or NOAEC followed by an asterisk (*) --						
45	indicates that the NOEC or similar value was estimated from an LC_{50} ,EC_{50}, or an LOEC. See the risk						
46							

Summary of Exposure Assessment and Risk Characterization for Terrestrial Plants from Runoff

Short Title	Runoff to terrestrial plants
Receptor	Terrestrial vegetation
Duration	Acute
User-Specified Gleams-Driver File	None

Parameter/Assumption	Code / Range	Value	Units	Reference
Worksheet Application Rate	$ApRt_{WB}$	8	lb/acre	Worksheeet A01
Offsite Application Rates Inputs				
Run ID:	Risk Assessment			
Application Rate Used in Run:	$ApRt_{Run}$	1	lb/acre	
Functional Off-site Application Rate	$ApRt_{Offsite}$			
	Central	0.00315	lb/acre	
	Lower	0.0000001		
	Upper	0.089		
Calculated Values				
Normalized Off-site Functional Application Rate	$NormApRt_{Offsite}$	$ApRt_{Offsite}$ / $ApRt_{Run}$		
	Central	0.00315	Unitless	Eq
	Lower	0.0000001		Eq
	Upper	0.089		Eq
Off-site Application Rate at Workbook Application Rate	$ApRt_{WB}$	$ApRt_{WB}$ x $NormApRt_{Offsite}$		
	Central	0.0252	lb/acre	Eq
	Lower	0.0000008		Eq
	Upper	0.712		Eq
Toxicity Values (seedling emergence) in units of lbs/acre				
		Sensitive	Tolerant	
	Endpoint	NOEC	NOEC	
		3.6	5	Table 29
Hazard Quotients				
	Central	7E-03	5E-03	
	Lower	2E-07	2E-07	
	Upper	0.2	0.1	

General Worksheet Note

Typically, this worksheet is filled in by WorksheetMaker using offsite application rates that are derived in the Forest Service risk assessment. Several different *Application Rates* are noted in the cells in this worksheet this note explains why this is done.

The **Worksheet Application Rate** refers to the application rate that is set by the user in Worksheet A01.

The next section of the worksheet (**Offsite Application Rate Inputs**) is initially set by the WorksheetMaker Program. The Application Rate Used in Run refers to the application rate used in the simulation software (typically Gleams-Driver) used to derived the Functional Off-site Application Rate. This is the application rate to the nontarget site based on runoff. In Forest Service risk assessments, a unit application rate of 1 lb/acre is always used. If you set a custom Gleams-Driver input file in Worksheet B04, the information from the Gleams-Driver input file will replace the values that had been initially filled in by the WorksheetMaker program. Alternatively, you can fill in any of these values manually.

In the **Calculated Values** section, this worksheet normalizes the Functional Offsite Application Rate. If the values are from a risk assessment (where an application rate of 1 lb/acre is always used in the Gleams-Driver run), these rates will be identical to the rats in the above section.

The **Toxicity Values** are typically those used in the risk assessment. You can change these if you have a good reason for doing so. Also, you can add columns it you want to show HQ values for other species of particular concern. To ensure that any values for new plants will format correctly, you should insert the new information between the Sensitive and Tolerant entries. To do this, select from the cell above labeled Tolerant (D24) down to the upper range of the hazard quotient (D30). While these cells are selected, do a *Right Mouse Click* and then scroll down to *Insert*. Then, select the *Shift Cells to Right* option. If you want to add more than one plant species, hit Control-Y to repeat this operation. If this is not clear, Press F1 (Help) and review the Excel Documentation for inserting cells into a worksheet or consult a reference book on Excel.

	A	B	C	D	E
1	**Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Drift After Backpack Directed Foliar Application.**				
2	Short Title	Drift to terrestrial plants			PlntDrift2
3	Receptor	Terrestrial vegetation			
4	Duration	Acute			
5	**Parameter/ Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**
6	Application Rate	ApRt	**8**	lb/acre	Worksheet A01
7	Toxicity Values(Post-emergence in lb/ac)				
8	Sensitive species	**NOEC**	**0.0013**	lb/acre	Table 29
9	Tolerant species	**NOEC**	**0.445**	lb/acre	Table 29
10	Proportion of Drift at distances downwind in feet [0 feet = direct spray]	**Prop**			
11	0		1	unitless	
12	25		0.00832		
13	50		0.00433		
14	100		0.00241		
15	300		0.000941		
16	500		0.000579		
17	900		0.000312		
18	Estimates of functional offsite application rate	**OfApRt**	***=ApRt x Prop***		
19	0		*8*	lb/acre	Eq
20	25		*0.06656*		Eq
21	50		*0.03464*		Eq
22	100		*0.01928*		Eq
23	300		*0.007528*		Eq
24	500		*0.004632*		Eq
25	900		*0.002496*		Eq
26	Hazard Quotients (Sensitive Species)	**HQ_{Sens}**	***= OfApRt / ToxVal $_{Sens}$***		
27	0		**6,154**		
28	25		**51**		
29	50		**27**		
30	100		**15**		
31	300		**6**		
32	500		**4**		
33	900		**1.9**		
34	Hazard Quotients (Tolerant Species)	**HQ_{Tol}**	*= OfApRt / ToxVal $_{Tol}$*		
35	0		**18**		
36	25		0.1		
37	50		8E-02		
38	100		4E-02		
39	300		2E-02		
40	500		1E-02		
41	900		6E-03		

	A	B	C	D	E
1	**Summary of Exposure Assessment and Risk Characterization for Sensitive and Tolerant Terrestrial Plants from Wind Erosion at the Specified Application Rate.**				
2	Short Title	Wind erosion, terrestrial plants			PlntWind2
3	Receptor	Terrestrial vegetation			
4	Duration	Acute			
5	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/ Designation**
6	Application Rate	ApRt	**8**	lb/acre	Worksheet A01
7	Toxicity Values(Post-emergence in lb/ac)				
8	Sensitive species	**NOEC**	**0.0013**	lb/acre	Table 29
9	Tolerant species	**NOEC**	**0.445**	lb/acre	Table 29
10	Soil losses due to wind ersion	**Loss_TonHa**			
11		Central	5	Tons per hectare per year	Scenario parameter
12		Lower	1		Scenario parameter
13		Upper	10		Scenario parameter
14	Conversion for tons/ha to grams per cm^2	**Conv1**	0.01		
15	Soil losses in grams/square centimeter	**Loss_GrCm**			
16		Central	*0.05*	g/cm^2 per year	Eq
17		Lower	*0.01*		Eq
18		Upper	*0.1*		Eq
19	Soil Density	**Dens**	2	g/cm^2	
20	Soil losses in cm/day	**Loss_CmDay**	***= Loss_GrCm /(Dens * 365)***		
21		Central	*6.84932E-05*	cm per day	Eq
22		Lower	*1.36986E-05*		Eq
23		Upper	*0.000136986*		Eq
24	Depth of incorporation	**Depth**	1	cm	Scenario parameter
25	Proportion of contaminated soil lost per day	**PropLost**			
26		Central	6.84932E-05	unitless	
27		Lower	1.36986E-05		
28		Upper	0.000136986		
29	Estimates of functional offsite application rate	**OfApRt**	***=ApRt x PropLost***		
30		Central	*0.000547945*	lb/acre	Eq
31		Lower	*0.000109589*		Eq
32		Upper	*0.00109589*		Eq
33	Hazard Quotients (Sensitive Species)	**HI_{Sens}**	***= OfApRt / ToxVal $_{Sens}$***		
34		Central	0.4		
35		Lower	8E-02		
36		Upper	0.8		
37	Hazard Quotients (Tolerant Species)	**HI_{Tol}**	*= OfApRt / ToxVal $_{Tol}$*		
38		Central	1E-03		
39		Lower	2E-04		
40		Upper	2E-03		

	A	B	C	D	E
1	**Consumption of Contaminated Fruit/Large Insects by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Fruit			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Fruit/Large Insects			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**8**	lb/acre	Worksheet A01
8	Amount consumed per day	**Amnt**			
9	per unit body weight	Central	**1.3**	kg food/kg BW	Waldbauer 1968
10		Lower	**0.6**	per day	Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**7**	mg/kg food per	Worksheet A01
14		Lower	**3.2**	lb/acre	Worksheet A01
15		Upper	**15**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*56*	mg/kg food item	Eq
20		Lower	*25.6*		Eq
21		Upper	*120*		Eq
22	Toxic Equivalency Factor	**TEF**			
23	for formulation: (See risk	Central	**1**	Unitless	Worksheet A01
24	assessment if this has a value	Lower	**1**		Worksheet A01
25	other than 1.)	Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*72.8*	mg/kg bw	Eq
28		Lower	*15.36*		Eq
29		Upper	*264*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Broadleaf/Small Insects by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Broadleaf			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Broadleaf/Small Insects			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**8**	lb/acre	Worksheet A01
8	Amount consumed per day per unit body weight	**Amnt**			
9		Central	**1.3**	kg food/kg BW per day	Waldbauer 1968
10		Lower	**0.6**		Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**45**	mg/kg food per lb/acre	Worksheet A01
14		Lower	**15**		Worksheet A01
15		Upper	**135**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*360*	mg/kg food item	Eq
20		Lower	*120*		Eq
21		Upper	*1080*		Eq
22	Toxic Equivalency Factor for formulation: (See risk assessment if this has a value other than 1.)	**TEF**			
23		Central	**1**	Unitless	Worksheet A01
24		Lower	**1**		Worksheet A01
25		Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*468*	mg/kg bw	Eq
28		Lower	*72*		Eq
29		Upper	*2376*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Short grass by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Short Grass			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Short grass			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**8**	lb/acre	Worksheet A01
8	Amount consumed per day	**Amnt**			
9	per unit body weight	Central	**1.3**	kg food/kg BW	Waldbauer 1968
10		Lower	**0.6**	per day	Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**85**	mg/kg food per	Worksheet A01
14		Lower	**30**	lb/acre	Worksheet A01
15		Upper	**240**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*680*	mg/kg food item	Eq
20		Lower	*240*		Eq
21		Upper	*1920*		Eq
22	Toxic Equivalency Factor	**TEF**			
23	for formulation: (See risk	Central	**1**	Unitless	Worksheet A01
24	assessment if this has a value	Lower	**1**		Worksheet A01
25	other than 1.)	Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*884*	mg/kg bw	Eq
28		Lower	*144*		Eq
29		Upper	*4224*		Eq

	A	B	C	D	E
1	**Consumption of Contaminated Tall Grass by a Herbivorous Insect, acute exposure after a single application**				
2	Short Title	Tallt Grass			FdPropBW_Ac
3	Receptor	Herbivorous Insect			
4	Duration	Acute			
5	Material consumed	Tall Grass			
6	**Parameter/Assumption**	**Code / Range**	**Equation/ Value**	**Units**	**Reference/Designation**
7	Application Rate (lbs/acre)	**ApRt**	**8**	lb/acre	Worksheet A01
8	Amount consumed per day	**Amnt**			
9	per unit body weight	Central	**1.3**	kg food/kg BW	Waldbauer 1968
10		Lower	**0.6**	per day	Reichle et al. 1973
11		Upper	**2.2**		Waldbauer 1968
12	Residue Rates	**rr**			
13		Central	**36**	mg/kg food per	Worksheet A01
14		Lower	**12**	lb/acre	Worksheet A01
15		Upper	**110**		Worksheet A01
16	Drift	**Drift**	1	proportion	*Scenario parameter*
17	Proportion remaining after washing	**PropR**	1	proportion	*Scenario parameter*
18	Concentration on vegetation	**Conc**	***ApR × rr × Drift × PropR***		
19		Central	*288*	mg/kg food item	Eq
20		Lower	*96*		Eq
21		Upper	*880*		Eq
22	Toxic Equivalency Factor	**TEF**			
23	for formulation: (See risk	Central	**1**	Unitless	Worksheet A01
24	assessment if this has a value	Lower	**1**		Worksheet A01
25	other than 1.)	Upper	**1**		Worksheet A01
26	Dose	**Dose**	***Conc × Amnt***		
27		Central	*374.4*	mg/kg bw	Eq
28		Lower	*57.6*		Eq
29		Upper	*1936*		Eq

	A	B	C	D	E	F
1	**Summary of Exposure Assessments for the Herbivorous or Predatory Insects**					
2	**Application Rate:**	8	**lb a.e./acre**			InstHerbSum
3	**Food Item**	**Receptor**	**mg/kg/day or mg/kg/event**			**Detail Worksheet**
4			**Central**	**Lower**	**Upper**	
5	**Acute Exposures**					
6	Fruit/Large Insects	Insect	72.8	15.36	264	G07a
7	Broadleaf/Small Insects	Insect	4.68E+02	7.20E+01	2.38E+03	G07b
8	Short Grass	Insect	8.84E+02	1.44E+02	4.22E+03	G07c
9	Long Grass	Insect	374.4	57.6	1936	G07d

	A	B	C	D	E	F	G
1	**Summary of Hazard Quotients (Toxicity) for the Herbivorous or Predatory Insects**						
2	**Application Rate:**	8	**lb a.e./acre**			InstHerbSum	
3	**Food Item**	**Receptor**	**Hazard Quotients**			**Toxicity Value**	
4			**Central**	**Lower**	**Upper**		
5	**Acute Exposures**						
6	Fruit/Large Insects	Insect	0.2	4E-02	0.6	**430**	NOEC
7	Broadleaf/Small Insects	Insect	**1.1**	0.2	**6**	**430**	NOEC
8	Short Grass	Insect	**2**	0.3	**10**	**430**	NOEC
9	Long Grass	Insect	0.9	0.1	**5**	**430**	NOEC