▲ California Indian Basketweavers Association ▲

P.O. Box 1348, Woodland, California 95776 ciba@ciba.org

February 10, 2006

Mr. Brian Amme
PEIS Program Manager
Nevada State Office
PO Box 12000
Reno, Nevada 80520-0006 EMC0643

Re: *Draft Programmatic EIS for Vegetation Treatments* and *Vegetation Treatments Using Herbicides*

Dear Mr. Amme,

The California Indian Basketweavers Association (CIBA) is an intertribal, statewide organization dedicated to the preservation, promotion, and perpetuation of traditional Indian basket weaving. We advocate for protection of basketry plants and other native traditional resources that are integral parts of the culture of California Indian people. CIBA has been actively working since 1991 to educate public land management agencies about the issues of concern to Indian basket weavers. 2

Plants are gathered on public lands for basket materials, for food, teas, medicine or ceremonial purposes. In historical times, Indian people managed the land with fire to maintain abundant and vibrant populations of plants and wildlife. Today, many of the plants used for traditional purposes are disappearing. They are sometimes found to flourish only after forest fires. Fire is essential to maintain viable populations of culturally important plans. We are supportive of and encourage the use of beneficial or prescribed fire in fire adapted ecosystems in the west. 3

Indian basket weavers and traditionalists are extremely concerned about the potential for the contamination of basket plant materials, contamination of water, potential health threats to Indian people, and threats to wildlife, native plants and natural life cycles/processes from herbicide use on public lands. The use of chemical poisons in agriculture results in contamination of air and water through storm run-off, and through air-borne drift and volatilization. Streams and wetlands become polluted, contaminating basketry plants such as native rushes, sedge, and willows, while they poison fish and wildlife. Roadside (also called rights-of-way) spraying kills more native species than non-native weed species, and leaves herbicide residues on plants like deer grass, willow, and redbud that are used in basket 4

4 weaving. Public lands provide the only significant source of unpolluted plant materials and are essential to the maintenance of Native American culture throughout the continent.

5 The BLM intends to approve, via this EIS, a tripling of the use of herbicides on approximately 932,000 acres annually, on 6 million acres in 17 states. Approximately 70% of applications will be 2,4-D, glyphosate, picloram and tebuthiuron (p. 4-149). The EIS seeks to show an environmental clean bill of health for the use of a total of 14 herbicides.

6 The BLM is embarking, in this EIS, upon a new path that essentially would institutionalize a policy with the potential for irreversible long term, serious, adverse impacts to the environment. The use of chemical poisons to kill plants at this scale on public lands is unprecedented. It has been known for half a century that pesticides have unintended adverse effects on human health and the environment—such as increased risks for cancer, neurological disorders, reproductive disorders, endocrine and immune system dysfunction; impaired surface and ground water, and harm to fish and wildlife. Public lands play an essential role providing largely unpolluted refugia ensuring the survival of countless numbers of species of plants and wildlife.

7 Separate from this, the BLM has failed in this DEIS to document with scientific evidence that the use of herbicides will result in improving ecosystem health or restoring lands. In fact, there is much evidence in the scientific literature that suggests that the use of herbicides results in simplifying ecosystems and further reducing biological diversity, eliminating native species and setting the stage for worse invasions of weeds. We insist that the BLM follow up on these issues and address them in a substantive manner, with full documentation and with references footnoted, in the final EIS, as required by the National Environmental Policy Act. “The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences and take actions that protect, restore, and enhance the environment. 40 CFR § 1500.1 (c). Further, NEPA requires the agency to “make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement.” 40 CFR § 1502.24.

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9 CIBA provided scoping comments to the BLM for this draft EIS on March 29, 2002. (Attachment 1). These comments are attached and are now resubmitted, because many of the issues we raised then were not addressed in the DEIS. The BLM must respond to these issues (40 CFR § 1503.4). We also coauthored the Restore Native Ecosystems Alternative. The BLM has prepared an impressive and expensive draft programmatic EIS. However, we assert as we did in 2002 that it is not legally or scientifically valid to ignore the “cause and effect” bases for weed establishment while conducting analysis of the environmental impacts of alternative treatments including herbicides to kill weeds. It is not possible to accurately evaluate a range of alternatives without analysis and understanding of the sources and causes of weed establishment.

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Further, although the DEIS includes or references volumes of literature in support of the risk analysis for the chemicals, we find consistent data gaps that were avoided during this analysis, in those that preceded this one, and in those upon which this analysis are based. These data gaps are summarized here:

- Failure to fully analyze the environmental impacts of the chemicals as they are actually applied in the field, as a formulation or mixture
- Failure to fully analyze the environmental impacts of the degradates and secondary metabolites of the chemicals
- Failure to include data for endocrine disruption at environmentally relevant (dilute) exposures as a toxicological endpoint
- Failure to analyze the ecological effects to ecosystems from use of herbicides to manipulate vegetation. Ecological references by citation and footnote are almost completely lacking in the EIS. 40 CFR § 1502.24. The analysis must not be limited to toxicological effects analysis.
- Failure to document with citation and footnote proof that herbicides will achieve the desired results for restoration of natural plant communities and fire regimes

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These related issues are described in detail in our comments below.

Issue 1. The DEIS fails to analyze the causes of non-native plant weed invasions and altered fire regimes (shortened fire return interval). The purpose of the DEIS is to analyze various vegetation management treatment options necessary to restore degraded lands. Treatment options, however, cannot logically be compared unless the root causes and sources of the problems are properly identified and analyzed. Using the NEPA process, treatment options should naturally arise based on proper identification of the problem. Cumulative effects to native plants and animals resulting from herbicide use and other vegetation treatments may be worsened if the root causes of weed invasion and altered fire regimes have not also been addressed. Treatments are also not likely to be effective if root causes are not simultaneously addressed. This issue was brought to the attention of BLM by CIBA and others during scoping in 2002.

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NEPA requires the agency to "study" significant issues, and the information in the EIS must be of "high quality," using "accurate scientific analysis, expert agency comments, and public scrutiny." 40 C.F.R. 1500.1 (b). Furthermore, alternatives must be "rigorously explored." 40 C.F.R. 1502.14.

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Section 102 of the National Environmental Policy Act (NEPA), states:
"All agencies of the Federal Government shall—
(E) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources; [and]
(H) **Initiate and utilize ecological information** in the planning and development of resource-oriented projects." (Emphasis added). Sec. 102, (E), (H) [42 U.S.C. § 4332].

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Proper use of ecological information requires an analysis of the relationship between historical and current lands uses and the stated problem (unwanted vegetation changes, degraded ecosystems, declining numbers of diverse wildlife and native plants). Over the

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last century, the following activities have been common on BLM lands: grazing by non-native livestock, frequently at unsustainable levels; seeding with non-native invasive grasses that have become established on millions of acres (sometimes aerially via airplane); use of herbicides to kill native sagebrush and other native vegetation; chaining and bulldozing to remove native species; unregulated off highway and recreational vehicle use in non-roaded areas; mining and energy extraction; and fire suppression policies that do not mimic the natural fire disturbance regime. None of these facts are disputable; they are documented in history books and the administrative records of the agency. These legacy and on-going impacts are *inextricably related* to the degraded status of desirable native vegetation currently existing in the area, and *inextricably* tied to the stated need for the vegetation treatments/restoration the BLM now acknowledges.

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For over half a century, herbicides were used by the BLM to kill *native* sage brush, juniper, pinyon pine, bitterbrush, and other native shrubs and trees on millions of acres of BLM lands (as documented in CIBA scoping letter, March 29, 2002). This was justified, at that time, to provide more "rangeland" for non-native livestock. Today, the vegetation on millions of acres of the intermountain region has been degraded and transformed by this policy. The use of 2,4-D and other dioxin herbicides, atrazine, triclopyr (and other herbicides termed "selective" because they don't kill grasses) has contributed to the establishment of non-native weed grasses such as cheat grass, *Bromus tectorum* (as documented by range scientist James Young in CIBA, 2002 comments). The establishment of weedy annual grasses also caused a shift in the natural fire regime, creating fire prone habitats where none existed (Mack 1986, Billings 1990 in CIBA, 2002). Widespread seeding of non-native, invasive perennial grasses, such as *Bromus inermis*, frequently via aerial application, has also contributed to altered vegetation communities.

Further, it has been well documented in the historical and scientific literature that the BLM has a long history of programs and policies to *clear* native sagebrush, shinnery oak, juniper and pinyon pine from this region to make more rangeland, to provide fuelwood and charcoal, and to produce timber for mining. Some of these programs are on-going today.

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Treatment alternatives that amount to treating the symptoms only, rather than the causes of unwanted vegetation changes, are a waste of taxpayers' money during a time of tight budgets. This course may also result in causing further harm when evaluated correctly in the context of cumulative impacts.

Accurate analysis is essential in order to develop appropriate alternatives and to evaluate the impacts of the use of herbicides at this scope, and requires "cause and effect" analysis of the root causes and sources of non-native species invasions and altered fire regimes. Such analyses will provide the BLM with the information needed to plan cost-effective and ecologically sustainable alternatives to restore public lands. It is not accurate for the BLM to portray the issues so narrowly that appropriate alternatives cannot even be developed.

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Issue 2. The DEIS did not analyze the effects of the herbicide chemicals as they are actually applied in the field, as *mixtures* of two or more chemicals.

18 Risk assessments must analyze the herbicide products as they are actually applied in the field—in other words, as the full formulation, as it is supplied by the manufacturer, purchased off the shelf, and also as they will be combined with any other added products such as the surfactant, colorant, buffering agent, or other additives. Each product as it is applied in the field is a *mixture*.

19 The EPA has defined a mixture as "any combination of two or more chemical substances regardless of source or of spatial or temporal proximity" (U.S. EPA 1986). The EPA has published guidelines for assessing the environmental impacts of mixtures: "The basic assumption in ***the recommended approach*** is that risk assessments on chemical mixtures are best conducted using toxicologic data on the mixture of concern or a reasonably similar mixture."(Ibid, emphasis added).

As noted recently in *Environmental Health Perspectives*, published by the National Institutes for Health,

> 20 "Registrants [pesticide manufacturers] are generally required to conduct acute toxicity tests on formulated products, but they traditionally conduct chronic toxicity tests **on the active ingredient alone**." (Surgan 2005, emphasis added). (See Attachment 2).

21 The methodology used to inform the current risk assessment process in the DEIS does not incorporate the latest science that is known concerning environmental risks from pesticides.

For example, recently a team of scientists from University of California, Berkeley, found highly significant increases in adverse effects to tadpoles exposed to mixtures of pesticides at low concentrations. Frog tadpoles were exposed to nine pesticides and herbicides individually, and to mixtures with all nine chemicals. While an average of 4 percent of the tadpoles died when exposed to a single pesticide, an average of 35 percent of the tadpoles died when subjected to mixtures. The frogs developed an array of health problems also, including meningitis, because the chemicals suppressed their immune 22 systems. They also took longer to complete the transformation from tadpole to frog, which reduces their chances of survival (Hayes et al. 2006).

In the paper, published in January, 2006 in the journal *Environmental Health Perspectives*, the authors conclude: "the current study revealed that estimating ecological risk and the impact of pesticides on amphibians using studies that examine single pesticides at high concentrations, only, may lead to ***gross underestimations of the role of pesticides in amphibian decline***."(emphasis added).

23 Documentation of the EPA's acknowledgement of the potential for underestimating risk in the case of 2,4-D, due to not requiring testing of full formulations, are addressed below in our discussion of 2,4-D.

24 The EIS must analyze the direct, indirect, and cumulative environmental, health and cultural impacts of the chemical products as they will actually be used, ***as mixtures***, in the field and ***at environmentally relevant concentrations.*** (See Attachment 3).

Further, common sense dictates that pesticide products in full formulation that have not been tested for their environmental impacts should not be permitted for use on the public's lands unless there are overriding, emergency situations in which their use is absolutely essential. Pesticides should be used only as a "last resort" in integrated pest management programs, as affirmed by former Secretary of Agriculture Anne Venneman (U.S. GAO 2001 cited in CIBA's comments, 2002). As alternative methods of prevention and control such as were recommended by CIBA in the Restore Native Ecosystems Alternative have not been implemented by the BLM, it is clear that pesticides are not a "last resort" method.

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Issue 3. The BLM failed to analyze the environmental impacts of the degradates and secondary metabolites of the chemicals.

The BLM analyses contain little to no information about the environmental effects of the degradates of the herbicides proposed. Research has shown that degradates are prevalent in ground water and are frequently detected more often than their parent compounds. An extensive review of the literature (in Kolpin et al. 2004) found that 30% of the degradates found in groundwater were more toxic than the parent compound. Kolpin et al. state: "[S]imply stating that relatively few detections of herbicide parent compounds were observed in ground water provides a false impression that little chemical transport to ground water is occurring from herbicide applications at the land surface."

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The EIS must analyze the environmental and health impacts of the degradates and metabolites of the chemicals proposed for use, in the context of direct, indirect, and cumulative impacts relative to human health, water, cultural impacts to Indian people, and to wildlife.

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Issue 4. The DEIS failed to utilize the most current scientific information regarding risks to human health and wildlife from endocrine disruptor chemicals at environmentally relevant (low dose) exposure concentrations.

This issue was brought forward in public scoping comments by CIBA and others in 2002 and is part of the administrative record for this EIS. The effects that have been documented by endocrine disruptor chemicals in the environment are summarized below:

> "Examples of such [endocrine] disruptions are a decline in the sperm quality of fish, interference with the sexual development of alligators and turtles, disruption of pregnancies in laboratory animals, interference with blastocyst implantation, and inappropriately induced progesterone receptor expression and uterine weight increases (summarized in Witorsch 2002). In addition, environmental estrogens have been shown to inhibit the human sperm acrosomal reaction (Turner et al. 1997), and xenoestrogens are also suspected of causing breast cancer cell and vaginal epithelial cell proliferation (Krishnan et al. 1993; Long et al. 2000)." (Bulayeva and Watson (2004).

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29 To this I would add the recent work of Dr. Tyrone Hayes demonstrating hermaphroditic frogs resulting from exposure to herbicides at environmentally relevant concentrations as low as 0.1 ppb (Hayes et al. 2002; 2003; 2005; 2006).

Do present risk assessment methods capture these risks? No, according to the authors of a recent review of the mechanisms of estrogenic endocrine disruptor chemicals (EEDCs). Welshons et al. (2003) concluded that:

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> "Information about the mechanism of action of EEDCs, together with information concerning mechanisms of hormone action, predict that current risk assessment assumptions can lead to a dramatic underestimation of responses (and thus risk) associated with exposure to low doses of EEDCs, particularly during development when the effects of very small changes in hormonal activity are permanent." (Ibid p. 1003).

In 1996, Congress passed the Food Quality Protection Act (FQPA), largely due to recommendations from the National Academy of Sciences, and required the EPA to establish limits on pesticide residues on food, called "tolerances." In addition, Section 408 (p) of the Food, Drug, and Cosmetic act as amended by FQPA required the EPA to "provide for testing of all pesticide chemicals" based on a screening protocol developed
31 "not later than 3 years" from the passage of the Act, to "determine whether certain substances may have an effect in humans that is similar to an effect produced by a naturally occurring estrogen, or such other endocrine effect as [EPA] may designate.'' (FFDCA 21 U.S.C. 346a(p)). ''Pesticide chemical'' is defined as ''any substance that is a pesticide within the meaning of the Federal Insecticide, Fungicide, and Rodenticide Act [FIFRA], including all active and inert ingredients of such pesticide.'' (FFDCA section 201(q)(1) (21 U.S.C. 231(q)(1)).

While the EPA has failed to meet the timeline mandated by the statutes of FQPA, the BLM is not exempt from utilizing existing and readily available information to inform its risk analyses in order to meet NEPA standards for scientific integrity. 40 C.F.R. 1500.1
32 (b), 1502.24. Hermaphroditic wildlife, or animals with ambiguous gender or deformed secondary sex characteristics have now been documented among frogs, fish, river otters, polar bears, and alligators; endocrine disruptor chemicals have also been implicated in skewed human sex ratios and low fertility rates. The scientific literature is filled with documentation of these effects, to such a degree that it cannot be ignored. Yet, the BLM risk assessment does not even raise the topic of endocrine disruptor chemicals.

Several chemicals widely in use in the region covered by this EIS have been shown to
33 behave as endocrine disrupting chemicals (herbicides atrazine, surfactants containing nonylphenol, the pesticide endosulfan, 2,4-D, Roundup, and a number of other chemicals and mining by-products).

A recent study in California, conducted by the California Department of Pesticide Regulation, examined herbicide residues on plants of importance to Native Americans
34 resulting from forest plantation spraying (Ando et al. 2003). One thing that became clear to us after analysis of the data was that the residues found on forest plants used by Indian people exceeded the EPA residue tolerances set for the same chemicals used on crop

34 plants--certain fruits, berries, herbs, and grains. These residues were exceeded by many times, sometimes hundreds or even thousands of times, the amounts of residue that are allowed on foods you could buy in the grocery store. The EPA regulatory system fails to provide the same level of protection for traditionally used plants gathered by Indian people, on public lands.

35 In sum, the DEIS did not address long term or cumulative effects from the tripling of herbicide use in the assessment area relative to the issue of endocrine disruption from the chemicals proposed for use. Most of these chemicals that have not even been tested for their potential effects as endocrine disruptors but even existing knowledge was ignored by the BLM and was not analyzed in the DEIS. NEPA requires cumulative impact analysis in light of past, present, and reasonably foreseeable future actions regardless of what agency, person, or company/corporation undertakes such other actions (40 CFR § 1508.7).

36 **Issue 5. The DEIS did not include any research and analysis of impacts to wildlife from herbicides due to inter-species variability.** Recent studies demonstrate the likelihood of serious harm resulting from extrapolation from a limited number of test organisms in laboratory settings. For example, researchers at University of Pennsylvania found that different species of frogs react differently to the same chemical exposures. For example, in Relyea 2005a, Roundup exposure at realistic concentrations killed all leopard and gray tree frog tadpoles and 98 percent of wood frog tadpoles, but did not significantly effect spring peeper and American toad tadpoles. The DEIS did not include any analysis or provide evidence for this type of environmental impact.

37 **Issue 6. The DEIS inappropriately limited ecological risk assessment to the six "new" herbicides proposed for use by the BLM and relied upon a set of data that was inappropriately dominated by industry funded studies, and makes conclusions ma.** The DEIS justifies no further analysis of eight chemicals by stating:

> "These herbicides have been evaluated in a previous BLM EIS (USDI BLM 1991), as well as more recently in an invasive plant EIS prepared by the U.S. Department of Agriculture Forest Service (Forest Service; USDA Forest Service 2004)." (DPEIS, Vol. 2, Appendix C; p. C-1).

The most current of these analyses, the Forest Service's 2005, Region 5 Invasive Species EIS, is based on chemical literature review evaluations made by contractor SERA (Syracuse Environmental Research Associates). These reviews by SERA do not incorporate the latest, published information concerning the ecological and environmental effects of the chemicals. The reviews are found to rely predominantly on old industry registrant studies that are not peer reviewed and unpublished. We ask BLM to reject all such literature if it is not published in a peer reviewed journal. The final SERA reports themselves were peer-reviewed to test methods and assumptions, but the data reports upon which the SERA reports have been drawn from have largely *not* been published or peer reviewed. These SERA reports are the foundation of the BLM's health risk assessment for these eight chemicals, yet they are both out of date, incomplete, and over biased towards industry generated studies.

38 We believe that BLM's acceptance of industry sources that demonstrate lack of harm, and exclusion of current sources found in mainstream, academic and peer-reviewed scientific journals that document harmful effects, suggests a *biased analysis* and fails to provide a reliable foundation for decision making as required under NEPA.

39 Open literature from unbiased, academic and peer reviewed journals appears to be almost completely lacking. In some instances, new information that is readily available and highly topical has been ignored. This is especially true relative to impacts to frogs and other amphibians. Given the current downward trend among amphibian populations globally, it is unconscionable for the BLM to ignore the latest science relative to this issue. The widespread use of poisons in agriculture today creates a greater obligation on public lands to provide unpolluted refugia for wildlife.

40 For example, in the case of glyphosate, the most current SERA analysis cited is from 2003. In 2004 and 2005, research published from University of Pennsylvania documents the severe effects from glyphosate products containing the surfactant POEA (in Monsanto's Roundup) upon frog tadpoles at exposure concentrations considered "environmentally relevant"—in other words, at dilute concentrations easily encountered by the organism in the field where run off may occur (Relyea 2005a, b, c). Further, Relyea found that different species react differently to the same chemical exposures. For example, in Relyea 2005a, Roundup exposure at realistic concentrations killed all leopard and gray tree frog tadpoles and 98 percent of wood frog tadpoles, but did not significantly effect spring peeper and American toad tadpoles. Glyphosate products were also implicated as endocrine disrupting chemicals in 2005 (Richard et al. 2005) and found to interfere with transcription during cell mitosis (Marc et al. 2002, 2005). A summary of problems associated with Roundup—and not just glyphosate--compiled by the New York State Consumer Fraud division of the Attorney General's office are attached (Attachment 4). Monsanto was fined $50,000 and found guilty of false advertising in New York in 1996. Among other things, the NY State Attorney General's office ordered:

> "Monsanto will immediately cease and desist from publishing or broadcasting any advertisements that represent, directly or by implication, that: a) its glyphosate-containing pesticide products or any component thereof are safe, non-toxic, harmless or free from risk;… f) its glyphosate-containing products or any component thereof might be classified as 'practically non-toxic'…g) to the extent that any representations are based on data for individual components (e.g., the active ingredient), rather than for mixtures (formulated product) as applied, such representations must be clear as to whether the claim is being made for the active ingredient or for the product."(Attachment 4).

41 The preparers of the DEIS make identical unfounded and inaccurate claims: "For both workers and members of the general public, there were **no risks** at the typical or maximum application rate" for glyphosate (p. 4-185). The EIS must remove this type of language and provide a truthful analysis of the risks to Native Americans and to other people from exposures to the full formulations of glyphosate products, not simply the active ingredient.

42 The EIS must contain scientific information that is accurate and of high quality (40 CFR § 1500.1 (b)) and must include a summary of credible, current, and relevant scientific evidence relative to the project. 40 CFR § 1502.22 (b).

Issue 7. The DEIS has failed to accurately analyze the impacts to Native American culture and has not mitigated those impacts. The DEIS makes claims that are not supported by the record. Cumulative effects to Native people were not accurately documented. In addition to the cumulative effects deficiencies of the DEIS discussed
43 relative to endocrine disruptor chemicals, chemical mixtures, and degradates, the DEIS did not accurately document the *cumulative and long term effects* to Native people and their cultural practices from potential exposure to herbicides from this project, in addition to other avenues of exposure to chemicals from the high use of herbicides on private lands, contamination of private water systems, wells, and springs used by Native or other people in the region, in light of past, present, and reasonably foreseeable future actions regardless of what agency, person, or company/corporation undertakes such other actions, as required by NEPA (40 CFR § 1508.7).

NEPA requires analysis and mitigation of effects including those which are aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. (40 CFR § 1508.8 (b)). Indian tribes throughout the BLM analysis area continue to suffer adverse impacts to their health and culture, resulting from impacts that may be social,
44 economic, and environmental, due to BLM's land management practices. The current proposal adds additional cumulative impacts that are not been mitigated by this DEIS. The mitigation measures found on page 2-24 (Table 2-7) are wholly inadequate to protect Native American health and cultural practices. The mitigation promises nothing but grants BLM full latitude to implement mitigation measures at the agency's discretion. Mitigations are mere suggestions without any accountability.

The DEIS even concludes that risks to Native people and others "would be greatest under the Preferred Alternative." Risks to wildlife, air quality, and water quality are also the
45 highest under the Preferred Alternative. The DEIS also finds, "However, as the long term objective of treatment is to restore native plant communities and habitats, including those of traditional importance to Native Peoples, the greatest benefits would accrue under the Preferred Alternative."(page 4-221, also see p 2-34 Table 2-8). There is no explanation as to how these binaries are weighed one against another.

Further, the BLM implies that none of the other alternatives share the objective of restoring native communities, which is not accurate. In 2002, CIBA spent many weeks working with a coalition of other conservation biologists and analysts to develop a citizens/scientists alternative to the BLM herbicide proposal. This alternative, included as
46 an appendix (G-i) in the volume 2 of the DEIS, included extensive references from the scientific literature, each of which was included as a hard copy reference provided to the BLM with annotations to each reference. In spite of this major contribution, the BLM did not use any of the scientific literature to inform the analysis. This is contrary to the NEPA process which states: "Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." 40 CFR § 1500.1 (b). The Restore Native Communities Alternative exemplifies a best science management approach to achieve this objective. The DEIS failed to demonstrate that this or other alternatives would not be

46 effective. The conclusion is not supported anywhere in the record, and the DEIS is inaccurate and misleading.

47 The DEIS also does not substantively demonstrate through citation to scientific studies that the Preferred Alternative and the use of herbicides to kill unwanted vegetation will in fact in any way achieve the desired goals for restoration of native habitats.

48 Also, the DEIS claims that impacts to Native Americans are further mitigated because "Three of the four herbicides proposed for use are relatively harmless to native peoples and other human receptors." (p. 2-34, Table 2-8). This statement is without factual basis and is misleading. The preparers of the DEIS have confused a lack of published studies with a lack of harm. As noted under the discussion of Monsanto and glyphosate (see Attachment 4), it is not factual to state that any of the chemicals are "relatively harmless to native peoples." Further, the DEIS states that 70% of applications will be **2,4-D, picloram, tebuthiuron, or diuron--all of which are moderate to highly toxic chemicals.** Deficiencies in the DEIS related to these four chemicals are summarized here:

(1). 2,4-D

The phenoxy herbicide 2,4-dichlorophenoxyacetic acid (2,4-D) is toxic to aquatic life. It is among the most heavily used herbicides in the United States, with estimated annual sales of 46 million pounds. At least one third of 2,4-D use occurs in urban areas, where it is commonly applied to lawns, often as part of a "weed and feed" product. It may also be applied directly to surface waters to control aquatic weeds. In the U.S. Geological Survey
49 National Water Quality Assessment, 2,4-D was one of the most commonly detected herbicides. This herbicide is a significant source of dioxin in the environment. Many of the nation's surface waters contain enough dioxins to make fish in those water bodies unsafe for human consumption. In the most recent federal review of the environmental impacts of re-registering 2,4-D, the EPA's Environmental Fate and Effects Division wrote:

> "The Environmental Fate and Effects Division (EFED) of the Office of Pesticide Programs (OPP) has considered available information on 2,4-dichlorophenoxyacetic acid (2,4-D) toxicity, potential use areas, fate properties, and application methods in characterizing ecological risks related to labeled use. Upon review and synthesis of this information, EFED concludes use of 2,4-D on terrestrial sites presents the greatest potential risks to: **(1) non-target terrestrial plants, (2) mammals, and (3) birds, while the use of 2,4-D for aquatic weed control presents risk to aquatic organisms and aquatic plants. Modeling results also indicated potential risks to endangered species including freshwater fish and invertebrates, estuarine invertebrates, birds, mammals, aquatic vascular plants, and terrestrial non-target plants"** (US EPA 2004b).

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51 The DEIS fails to properly assess the cumulative impact of dioxins in the environment from the high use of 2,4-D by the BLM in the past, present, and future. We are particularly concerned about exposures to dioxins from 2,4-D through the food supply

(i.e., bioaccumulation from feed), as EPA has determined that for most U.S. residents, the largest exposure to dioxins is through the food we consume, particularly meat (beef, chicken, fish) and dairy products. Since the risk quotient calculation (RQ) was based EPA's label recommendations for 2,4-D uses on food crops, the risk assessment prepared by SERA may significantly underestimate dioxin contamination in meat produced on rangeland, where much of BLM uses occur. The EPA acknowledged:

> "The risk assessment has relied on the 2,4-D Master Label for application rates. As noted previously, there are a number of currently registered 2,4-D products which include higher application rates [e.g., rangeland] than those modeled in this assessment and hence the risk associated with these application rates would be greater" (US EPA 2004b).

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Further, the EPA also notes the potential for underestimating risk through testing active ingredients solely without evaluating the impacts from testing full formulation products, in other words, as a **mixture**:

> "[M]ost toxicity testing has been conducted using technical forms of 2,4-D, while 2,4-D is typically applied in the field in an end use product mixed with surfactants, inert ingredients and other pesticides. Often, toxicity testing with an end use product may result in lower endpoints (i.e., greater toxicity) for risk assessment" (*ibid*).

Further, other chemically similar herbicides are part of nearly every 2,4-D product (e.g., MCPP-p, 2,4-DP, and dicamba). EPA's own analysis showed that phenoxy acid equivalent application rates are often twice the application rates of 2,4-D alone, and sometimes exceed the highest application rates considered in the 2,4-D risk assessment (EPA 2004c.). In California alone in 2004, 523,725 pounds of 2,4-D were reported used (California Department of Pesticide Regulation 2004 PUR).

Because of these issues, we believe the BLM DEIS is flawed and fails to accurately disclose the real risks of the use of 2,4-D on public lands. As noted, the EIS claims that 70% of herbicides used under the Preferred Alternative will be 2,4-D, picloram, tebuthiuron, or diuron. These cumulative impacts and sources for risk assessment error must be corrected in the EIS.

(2). Picloram

Picloram is not registered for use in California and this gross oversight must be corrected in the EIS. Picloram, like 2,4-D, is a source of dioxin in the environment. To date, the EPA has failed to release a cumulative impacts analysis of the human health effects of dioxins. The BLM is not exempt from evaluating the cumulative impact of dioxin containing herbicides on public lands. Although both picloram, 2,4-D, dicamba, and diflufenzopyr + dicamba are sources of dioxin, the DEIS fails to evaluate this cumulative impact.

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(3). Diuron

Diuron is an EPA list B2 carcinogen and is listed by Proposition 65 in the State of California as a chemical "known to cause cancer." Diuron is also listed on California's

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list of known groundwater contaminants. In 2004, a total of 1,397,638 pounds of diuron were applied to lands in California. This chemical is a known cancer-causing chemical, mutagen, and immune system toxin. It is highly toxic to fish and other aquatic species. In summarizing pesticide use in California in 2004, the California Department of Pesticide Regulation found that,

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> "The pounds of chemicals classified as carcinogens increased (up 1.1 million pounds or 3.8 percent), but acres treated decreased (down 160,000 acres or 4.1 percent). The increase in pounds was mainly due to increase in use of the fumigant 1,3-D, one of several alternatives to methyl bromide. However, **diuron had the largest increase in acres treated…**Use of chemicals categorized as ground water contaminants increased from 2003 to 2004. Use by pounds increased 81,000 pounds applied (3.6 percent), and cumulative acres treated increased by about 170,000 acres (11 percent). Nearly all of the increase was due to **diuron and simazine**."

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Diuron products are widely used for roadside spraying in California. Roadsides are direct conduits to streams and other waterways. Chemicals that legally cannot be applied near streams or watercourses are nevertheless applied to roadsides, where they easily are washed into streams after rainfall. In California in 2004, the second most commonly used herbicide for rights-of-way use was diuron (693,026 pounds, or almost 50% of all diuron use).[1] Over 4 million pounds of pesticides were applied on rights of way in the state. Many of these chemicals will present as mixtures when they are swept into aquatic environments. A 1999 study by the U.S. Geological Survey found the herbicide diuron in 86 percent of the water samples taken from urban areas in the Sacramento River basin. In a study conducted by the California Department of Pesticide Regulation, concentrations of diuron from natural run-off after roadside spraying ranged from 46 to 2849 parts per billion. The U.S. EPA health advisory for diuron is 10 ppb for drinking water.

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We do not believe that these uses are sustainable, and we believe that the high cumulative impact of the use of diuron in California demonstrates that the current regulatory system is not protective of human health and the environment. We do not have data for areas outside of California. However, the BLM is not exempt from acquiring these types of quantitative cumulative data in order to accurately assess the impacts of increasing the use of diuron and other herbicides on public lands.

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(4). Tebuthiuron

Our comments on tebuthiruon are captured by the comments of Caroline Cox from the Northwest Coalation for Alternatives to Pesticides. We wish to incorporate the comments of Ms. Cox and NCAP by reference.

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Finally, we note that impacts to plant materials used by Native American people for maintenance of tribal cultural traditions may occur anywhere on BLM lands. Impacts to these resources are not limited to known gathering areas. Indian people may gather plants for traditional uses anywhere where such plants are found to occur naturally. Thus, the

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[1] Glyphosate is the most commonly used roadside herbicide, in the form of the Roundup that is highly toxic to amphibians. Nearly 2 million pounds of glyphosate were applied on rights of way in California in 2004.

58 possibility of impacts to Native people through exposure to chemicals is a certain outcome from this proposal, with direct impacts to culture through the loss of native plant materials, resulting in significant impacts that are not been mitigated in this DEIS.

59 The DEIS has failed to accurately analyze the impacts to Native American health and culture and has not mitigated impacts to an acceptable level. The DEIS makes claims that are not supported by the record and has failed to demonstrate that the benefits of herbicide use outweigh the harm from their use.

60 **Issue 8. Inaccurate characterization of "less toxic" herbicides.** The EIS makes a recurring generalization throughout the document, namely that "the herbicides proposed for use by the BLM are less harmful to non-target vegetation, fish and wildlife, and humans than most currently-available herbicides used by the BLM, and any future herbicides used by the BLM would also likely have low risk." (eg, p. 4-221, Herbicide DEIS.). This statement is not factually correct. "Less toxic" is a relative term: relative to what? Several of the proposed "new" herbicides, in the ALS group, are **exponentially more toxic** to plants than any of the herbicides currently in use.[2]

61 The chemicals in this class have been demonstrated to be extremely toxic to plants. They are classified by the EPA as belonging to a class of herbicides known as inhibitors of acetolactate synthase (ALS) or acetohydroxyacid synthase (AHAS), an enzyme that catalyzes the biosynthesis of three branched-chain amino acids, all of which are essential for plant growth. In the case of sulfometuron methyl (Oust), the EPA found that

> 62 "The highest application rate that may be considered in Forest Service programs – i.e., 0.38 lb/acre – is over 15,000 times the NOEC [No Observable Effect Concentration] in sensitive species and a factor of about 490 above the NOEC in tolerant species. Given these relationships, damage to sensitive nontarget species could be expected in ground broadcast applications at distances of about 900 feet from the application site in areas in which off-site drift is not reduced by foliar interception. This risk characterization applies only to ground broadcast applications. When used in directed foliar applications (i.e., backpack), offsite drift could be reduced substantially but the extent of this reduction cannot be quantified." (SERA 2004, referenced in DEIS).

63 Researchers found that chlorsulfuron, one of the sulfonylurea herbicides, reduced pea yield by up to 99 percent if just trace amounts of the herbicide contact the plant at their most vulnerable stage of development. The plants appearance would otherwise appear normal (Fletcher et al. 1995, 1996):

> 64 "Thus, chlorsulfuron and perhaps other sulfonylurea herbicides appear to have influences on plant reproductions which are not characteristic of many common herbicides. This property would have gone unnoticed during the registration process since registrants are not required to submit

[2] These include chlorsulfuron, imazapyr, metsulfuron methyl, and sulfometuron methyl in the DEIS.

any test data collected on mature and/or reproducing plants...It is accepted that chlorsulfuron and other sulfonylurea herbicides are 100 times more toxic to the vegetative growth of plants than older, commonly used herbicides such as atrazine and 2,4-D. Our data indicate that sulfonylurea herbicides are even more toxic to plant reproduction....Analysis of spray-drift data collected under field conditions have been reported by Bird (1992) to range, depending upon meteorological conditions, from 0.02 to 2% of the application rate at distances as great as 1/4 mile from the application zone."(*ibid*).

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For these "new" chemicals, more precaution is needed, because a large body of scientific literature has not yet accumulated over years of study by academic and independent scientists that fully demonstrates their true environmental impacts. It should be noted that in all cases, these harmful characteristics have not been captured under the EPA mandated testing that the chemicals undergo in order to be registered for use under FIFRA. Even atrazine, banned in most European countries, was recently re-registered by the EPA in the U.S. in spite of volumes of literature showing it to be a cancer causing chemical,an endocrine disruptor, and a probable link in the global decline of amphibians (Hayes et al. 2002, 2003, 2005). And as noted in our discussion about 2,4-D, above, the EPA itself has acknowledged that it has failed to require testing data on the actual chemicals as they are applied in the field. These deficiencies do not exempt the BLM from its duties under NEPA to address this issue and to make decisions that are protective of the environment.

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Clearly, a lack of sufficient, targeted study does not equate to a lack of harm. A lack of studies rather suggests the need to take a precautionary approach and to act conservatively. The list of existing studies for each toxicological endpoint should be listed in table style for each chemical, and not tucked away in an appendix in digital format, that is not easily accessible either to the public or decision makers. Studies demonstrating ecological harm should be listed also. It is not appropriate for BLM to limit analysis to toxicological endpoints mirroring EPA registration format. The agency "shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement." 40 CFR § 1502.24.

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Issue 9. The DEIS makes claims that are unsupported by data.
The DEIS does not provide scientific documentation from field collected data demonstrating that its plan to utilize herbicides and clearing of native trees such as juniper and pinyon and other types of vegetation manipulations will result in "reduce[ing] the negative effects of invasive species on soil" (p. 4-20). Further, the DEIS makes repeated claims about harm to human health resulting from invasive species. These claims purport to offset any environmental or health harm from the use of herbicides. The BLM must document by citation to scientific literature any such claims about harm from invasive species to human health.

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Issue 10. Risks to Air Quality and Water Quality are both highest in the BLM "Preferred Alternative" (p. 4-9 and 4-32). The EIS claims to offset these impacts by stating that "benefits" are highest in these alternatives as well, (the benefits being the elimination of non-native weeds from public lands). Yet, the EIS offers no scientific

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documentation for the promise of benefits or success. What evidence can the agency show to demonstrate that the use of herbicides at any scale can or has had an appreciative effect on the presence or expansion of invasive weeds?

69 In fact, research has shown that herbicide intervention has the net effect of simplifying ecosystems and reducing biological diversity (e.g., Groves 1989, referenced in CIBA 2002). In particular, without concomitant plans to limit invasion-promoting disturbance and protecting uninvaded areas, the use of herbicides as proposed in this EIS is nothing but a waste of time and money. Weeds will simply return, with herbicide resistance and with less competition from the native species that are easily killed by the chemical herbicides. These issues were well referenced and documented in CIBA's previous comments in scoping, 2002.

Issue 11. The DEIS fails to accurately document cumulative impacts from the use of pesticides at this scale.

70 The EIS must include an ecological risk assessment that captures the impacts to wildlife species from herbicide uses occurring on private lands and from other sources that may cumulatively pose a threat to their continued viability. The high amount of herbicides used on private timber lands, agricultural lands, from roadside or rights-of-way clearing, and private range lands presents a cumulative risk issue for all native frogs and amphibians, pollinators, avian shrub-dependent species, deer, and other wildlife.

In 2003, the California Department of Pesticide Regulation's Pesticide Use Report (PUR) database reports 229,134 pounds of pesticides for forestry applications in California. 71 Atrazine has been found to cause gender reversal or hermaphroditism among frogs, both in the field and in the laboratory, at concentration rates that are easily encountered from forestry applications (as low as 0.1 parts per billion) (Hayes et al. 2002, Hayes et al. 2003, Hayes 2005). Additional impacts affecting amphibian survival from herbicide mixtures at environmentally relevant concentrations have also been demonstrated recently (Rohr et al. 2006; Hayes et al 2006). While the BLM proposes to forego the use of atrazine in this EIS, its high use on private timber lands and elsewhere outside of California increases the 72 importance of *unpolluted habitat* on BLM and national forest lands for these species. 59,461 pounds of atrazine were applied in California in 2003, and over half of that was on forest lands (30,101 pounds), primarily private timber lands in the state. We do not know what the statistics are for other states. These statistics must be displayed in the EIS.

Another significant source of cumulative impacts to sensitive species stems from the high use of herbicides for roadside and other rights of way (ROW) spraying. The 2004 California PUR reports 4,318,165 pounds of herbicides were sprayed on rights of way in the state. 73 Roadside spraying is particularly risky for rare aquatic and riparian species because roads are conduits that channel herbicides directly into streams and rivers. Diuron and Roundup are the two most commonly used herbicides for roadside spraying throughout the state (nearly 2 million pounds of glyphosate, 693,026 pounds of diuron).

In a study conducted by the California Department of Pesticide Regulation, concentrations 74 of diuron from natural run-off after roadside spraying ranged from 46 to 2849 parts per billion. The U.S. EPA health advisory for diuron is 10 ppb for drinking water. Clearly,

74 roadside spraying is a significant source of water contamination with high potential for adverse impacts to drinking water, frogs, fish and other organisms.

75 The cumulative impact of these sources of impacts to wildlife as well as the impacts on surface and groundwater drinking water supplies, from the full formulation (mixture) of the herbicide products proposed for use and for their degradates (Kolpin et al 1998, 2004) must be evaluated in this EIS. The role of unpolluted lands remaining as natural habitat and refuge for imperiled wildlife is underscored by the real statistics regarding pesticide use. The DEIS fails to incorporate real life quantitative information in its cumulative effects analysis.

76 **Issue 12. Insufficient data relative to species in project area.** Research has shown that different species react very differently to the same chemical exposures. For example, in Relyea 2005a, Roundup exposure at realistic concentrations killed all leopard and gray tree frog tadpoles and 98 percent of wood frog tadpoles, but did not significantly effect spring peeper and American toad tadpoles. The DEIS relies upon laboratory to ecosystem extrapolation. The DEIS does not contain available relevant data for assessing impacts for amphibians.

77 Berrill et al. (1993) tested the formulations of triclopyr to determine their impacts on frogs and concluded, "Ranid tadpoles are likely to be paralyzed or killed by residues of the ester formulation [BEE or Garlon 4] of triclopyr that could occur in small ponds as a result of forest management spraying programs. Paralysis is likely to render tadpoles more vulnerable to predation, and when it is associated with slower growth it could also reduce later reproductive fitness." The DEIS fails to adequately mitigate for impacts to amphibians.

78 **Issue 13. Clopyralid (Transline) is emerging as a serious groundwater contaminant in California and it is highly persistent in the environment.** Oddly, these attributes of clopyralid were not addressed substantively in the DEIS. Clopyralid is restricted for use in the state of California (2003) and throughout the nation for most lawn uses because it has been found to contaminate compost made from lawn clippings. Even after the high temperatures generated in the manufacture of compost, after 18 months the herbicidal action of the chemical was still active and resulted in mortality to vegetable plants in nurseries using the compost that contained clopyralid-contaminated grass clippings (Bezdicek 2001, Vanderoort et al. 1997). If this chemical can remain active this long after composting, there is little chance that it will break down any more rapidly in nature. This suggests that the chemical may become an environmental and health threat due to its unusual pattern of long persistence rates. The BLM should prohibit the use of this dangerous chemical on public lands.

79 **Issue 14. Triclopyr BEE, diuron, and tebuthiuron products are among those under a court ordered restriction for use in listed salmonid habitat; similar precaution is needed for non-listed species.** Court ordered restrictions on the use of these products are not found on product labels and were not addressed in the DEIS. Currently, these three herbicides cannot be applied within 20 yards of federally listed salmonid bearing streams or within 100 yards in the case of aerial application. *Washington Toxics Coalition et al. v. EPA , Ninth Circuit Court of Appeals, 2005.* Similar cautionary restrictions are necessary for non-listed aquatic species, including amphibians.

In sum, we believe that inadequate documentation of the cumulative impact of the use of herbicides or plant poisons, failure to accurately incorporate balanced and unbiased science, and the failure to incorporate ecology based scientific "cause and effect" analysis into vegetation treatment proposals will result in a significant threat to Indian people who may be exposed to these chemicals. These cumulative impacts threaten the persistence of Indian cultural practices. Further, these impacts present a significant threat to the continued viability of many species of plants and wildlife. 80

Thank you for the opportunity to collaborate with the BLM in development of a sound science-based management plan relative to vegetation management on our public lands. Please continue to keep us informed through the EIS process. 81

Sincerely,

s/Vivian Parker

Vivian Parker
Resource Policy Analyst
California Indian Basketweavers Association

Attachment 1. CIBA's scoping comments from 2002.

Attachment 2. Surgan, M.H. 2005. Letter: Toxicity Tests: "Inert" and Active Ingredients. *Environ Health Perspect.* 113(10):A657-8.

Attachment 3. The Secret Ingredients in Pesticides: Reducing the Risk Attorney General of New York State / Environmental Protection Bureau May 2000

Attachment 4. Consumer Frauds and Protection Bureau. Environmental Protection Bureau. 1996.

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